

TROUT STREAMS ON STEROIDS



SWIMMING IN AIR Rainbow trout rest beneath a bed of watercress on a small limestone spring creek in central Montana. The clear water and abundant vegetation are typical of these trout-rich streams.

PHOTO BY KENTON ROWE



Formed by ancient crustacean and mollusk fossils, limestone produces some of Montana's most productive trout waters.

By Jeff Erickson

As we followed the streamside trail, my wife Mary and I marveled at the cold, crystalline water racing downstream from one of the nation's largest freshwater limestone springs. The meandering stream was a trout paradise: extensive undercut banks, waist-deep runs, and underwater holes big enough to hide a moose, with a bottom covered in luxuriant, waving fronds of aquatic vegetation, and banks anchored by thick stands of willows and tall grass.

Fly rods in hand, we were just south of Lewistown exploring the Brewery Flats stretch of Big Spring Creek, an area restored in the early 2000s after decades of industrial use and now a premier trout stream.

Big Spring, one of Montana's most productive spring-fed trout creeks, exemplifies how limestone mixed with sufficient groundwater can create exceptional trout habitat, populations, and fishing. Precipitation in the nearby Big Snowy Mountains infiltrates the uplifted limestone and gushes to the surface at a consistent 50,000 to 64,000 gallons per minute, chilled to a trout-friendly 52 degrees and rich with calcium carbonate that supercharges production of the mayflies, caddis flies, and other aquatic insects that trout eat. "Steady and abundant flows, cold water temperature, and just the right water chemistry—Big Spring Creek has it all," says Don Skaar, a recently retired FWP senior fisheries manager who worked on the stream for more than 30 years.

RIVERS THAT RUN THROUGH LIMESTONE

Montana is known mainly for its many “free-stone” rivers like the Bitterroot, Blackfoot, Gallatin, Stillwater, and Yellowstone. These rivers depend on rain and summer snowmelt from surrounding mountains, where most of them originate. Their flows and temperatures fluctuate widely throughout the year, ranging from icy mountain runoff in late spring to tepid trickles in late summer. Underwater invertebrates, including large stoneflies, live among the stone-filled streambeds.

Far less abundant are Montana’s limestone spring creeks, waters more commonly associated with Pennsylvania or the Midwest’s Driftless Region, which encompasses parts of Wisconsin, Minnesota, and Iowa. Though harder to locate in Montana, I find these streams particularly appealing, not only for their big and abundant trout, but as places where geology, chemistry, and biology

combine beneath the earth’s surface to fuel abundant plant and animal life above, often amid parched, desertlike surroundings.

To find these productive trout waters, I regularly consult my Geologic Map of Montana. Poring over this massive cartographic masterpiece, which covers our dining room table, I look for areas of porous limestone through which aquifers flow, bubbling up as cold, fertile trout water.

Most common is Madison limestone. This vast geologic formation stretches from the Black Hills of South Dakota to eastern Idaho, and includes the Big Belt, Little Belt, Big Snowy, and Little Snowy mountains of central Montana. These ranges in turn feed trout waters like the Smith, Judith, and upper Musselshell rivers, along with Belt, Sixteen-mile, and Big Spring creeks. Also containing Madison limestone are the Bighorn and Pryor mountains south of Billings, through

which flow Sage and Crooked creeks. To the west, the Boulder River cuts through a limestone band wrapping around the largely volcanic Absaroka Range and flows north into the Yellowstone at Big Timber.

Limestone deposits also exist in southwestern Montana, including layers in the Blacktail, Snowcrest, Beaverhead, and Tendency ranges, whose aquifers contribute water to streams like Big Sheep and Blacktail Deer creeks and the Beaverhead and upper Ruby rivers.

Montana’s most famous spring creeks are three privately managed pay-to-fish waters in the Paradise Valley south of Livingston: Nelson’s, DePuy, and Armstrong, the latter described as “one of the world’s richest little trout streams, in both insect life and trout population” by author Tom Rosenbauer in *The Orvis Guide to Prospecting for Trout*.

THE CRUSTACEAN CONNECTION

Between 65 and 600 million years ago, during the Paleozoic and Mesozoic eras, sedimentary sheets of limestone, dolomite, shale, and sandstone were deposited across much of what is today Montana, Wyoming, and Idaho. The region was also covered by shallow, warmwater seas, teeming with primitive crustaceans and mollusks that extracted calcite from the water to form hard, protective shells. As sea levels rose and fell over eons, thick layers of trillions upon trillions of these tiny sea creatures collected on the bottom, eventually solidifying with dead vegetation and silt into limestone rock.

Limestone is named for its ability to pro-

duce quicklime (calcium oxide) when subjected to high heat. Quicklime is used in a wide range of industrial applications, including water purification, glass manufacturing, and building construction.

In nature, limestone is readily dissolved by the natural acidity of rain and groundwater, creating Swiss cheese-like fissures through which water flows. The water becomes rich in calcium carbonate, which

Just because an area contains limestone doesn’t mean productive trout streams are flowing down the hillsides.

acts like fertilizer for aquatic plants, insects, and crustaceans such as scuds and crayfish. “Even though limestone is rock, it feeds things and functions as building blocks for life,” says David Schmetterling, FWP fisheries research coordinator.

One of the most important things limestone feeds is trout. Streams rich in calcium carbonate produce more trout than those without the chemical compound. They also grow lots of big trout. Describing Armstrong Creek, Rosenbauer writes, “You can wade across its transparent riffles and barely get your ankles wet, yet every day of the year a trout over 20 inches is a possibility.”

ABSORPTION AND REFRIGERATION

In addition to influencing water chemistry, limestone has beneficial, moderating effects on streamflows and temperatures. The porous, fractured rock acts as an enormous sponge, absorbing precipitation then releasing it in steady, trout-friendly increments. Similar to the tailwaters below dams, streams fed by limestone aquifers are less likely to whiplash between extreme floods and drought-stricken trickles.

Limestone springs also cool streams during summer heat and warm them in midwinter. Trout require chilly water because it holds the high levels of dissolved oxygen they need to survive. When a stream’s water temperature exceeds 70

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CLEAR AND COLD Belt Creek, which cuts through Sluice Boxes State Park southeast of Great Falls, flows out of the Madison limestone formation. Like other limestone-influenced streams, the water is clear, cold, and fertile, creating ideal conditions for trout.

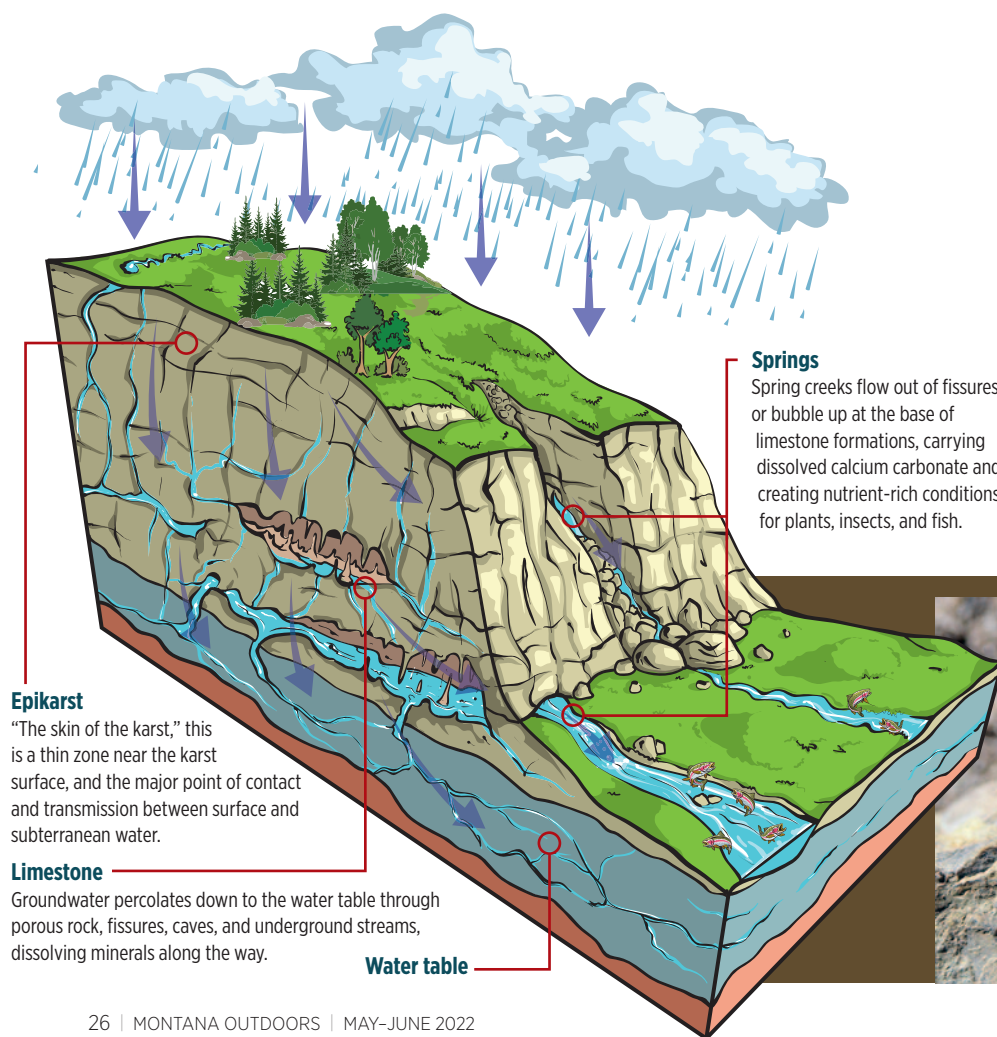
degrees, trout begin to die outright or are far more likely to perish from the stress of being caught by anglers.

But the water can’t be too cold. Once temperatures drop below 45 degrees, trout become dormant to conserve calories. They feed a bit, but not much. Many freestone streams freeze over and even produce “anchor ice” along the bottom, creating inhospitable conditions for trout and the aquatic insects they eat. Limestone-fed

springs help keep temperatures in the sweet zone of 55 to 60 degrees year round, allowing trout to feed throughout the winter and grow larger than those in nearby freestone waters.

LIMESTONE PLUS WATER

Just because an area contains limestone—and Montana is packed with it—doesn’t mean productive trout streams are flowing down the hillsides. It needs water, too. Cracks, fissures, caves, and sinkholes in the limestone



FOSSIL FERTILIZER Below: Clam fossils in limestone indicate the connection between ancient sea creatures and the nutrient-rich waters that flow through these geological formations.



LEFT TO RIGHT: SHUTTERSTOCK; LUKE DURAN; JOHN LAMBING

formations—typical of what’s known as “karst” topography—allow subterranean water to move through the calcium-rich stone to the surface. “I can’t overemphasize the importance of faults for providing springs,” says Dr. Rob Thomas, a professor of geology at the University of Montana-Western.

But even the winning combination of limestone and underground springs doesn’t always guarantee great trout water. For instance, Florida has enormous limestone-fed springs, but the warm water temperature is more conducive to growing largemouth bass than salmonids.

Another factor is the degree to which a stream receives underground water. In true spring creeks, most flow comes from underground rather than rain and snowmelt. But on others, subterranean water may have less influence, or affect only certain stretches.

For instance, Belt Creek and the Smith River are rimmed with limestone walls, yet both receive much of their flow from runoff, not springs. The Boulder River has even less limestone, so the rock’s influence there is even more reduced.

Yet even a little limestone spring water

Fishing spring creeks is my way of staying close to this reminder of life’s eternal cycle.

can mean a lot for fish. “Basin-fed freestone rivers have many periods that are not favorable for trout growth,” like warm summer flows, cold winter temperatures, and high turbidity during early summer runoff, Schmetterling says. The moderating and

fertilizing effects of limestone springs help rivers like the Boulder produce more and larger trout than they could otherwise.

Beyond the science, limestone spring creeks symbolize an ageless metamorphosis and reincarnation, as if gushing from the earth’s mysterious subconscious. Fossil-filled limestone exemplifies the cycle of life, destruction, and rebirth. Like the primordial crustaceans that formed these vast stone formations, all living creatures die then become biologically resurrected into something new and beautiful—as soil, a plant, or a fat spring creek trout.

Fishing spring creeks is my way of staying close to this reminder of life’s eternal cycle in places where, as author Ted Leeson writes in *Jerusalem Creek*, “life rises somehow closer to the surface and makes itself more sharply felt.” 🐟



TROUT PARADISE VALLEY Lush stream vegetation indicates limestone-influenced streams, such as Armstrong Spring Creek southeast of Livingston. Living among the aquatic plants are insects that grow trout to remarkable sizes. Though these streams are small, trout can reach 20 inches in the fertile waters.

STEVEN AKRE

How to fish a spring creek



For anglers accustomed to watching their chunky caddis imitations float through rocky riffles or flinging thumb-size salmonfly imitations against willow-lined banks, fishing a spring creek can be infuriatingly difficult.

First some good news. Because spring creek temperatures and water levels are relatively stable and runoff is less of an issue, you can fish them year round. For instance, while the adjacent Yellowstone River in the Paradise Valley can be a muddy torrent when snowmelt gushes down from the surrounding Gallatin and Absaroka ranges, anglers visiting Armstrong, DePuy, and Nelson’s spring creeks often find the fishing to be nearly as good as in midsummer.

And then there’s the sheer number of trout, usually big trout, that spring creeks produce, with densities several times that of similar-size freestone streams.

Now the tough news. Whereas an angler on the Bitterroot or Big Hole can luck out and occasionally draw a strike with a sloppy cast, spring creeks offer no such forgiveness. The waters are virtually transparent, and the fish can easily spot you and your clumsy motions. You must go low and slow. Wear earth colors and save your bright lime-green bonefishing shirt for the bar afterward. Trout can also feel



A careful approach, pinpoint casts, and drag-free drifts are essential on Nelson’s Spring Creek.

and hear you wade, so stay on the bank as much as possible. Never cast over a rising fish, because even the line’s shadow can spook it. False cast to the side before sending out the main cast.

Use a small 3- to 5-weight rod. Leaders should be at least 10 feet long topped by a 2- to 3-foot tippet of 5X to hair-thin 7X.

WATCH YOUR DRIFT

As for technique, if you remember only one thing about fishing spring creeks, it’s that a drag-free drift is essential. Doing that is even harder in summer, as aquatic vegetation creates complicated microcurrents that make your fly skid around the water surface. The trick is to lay out plenty of curves in your line and leader. Picky risers often require a downstream “reach” cast followed by several shakes of the rod tip to put even more line on the water as the fly drifts down to the fish ahead of the tippet.

Try to fish on overcast days—including those with light rain or snow—which often ignite a stream’s most prodigious hatches.

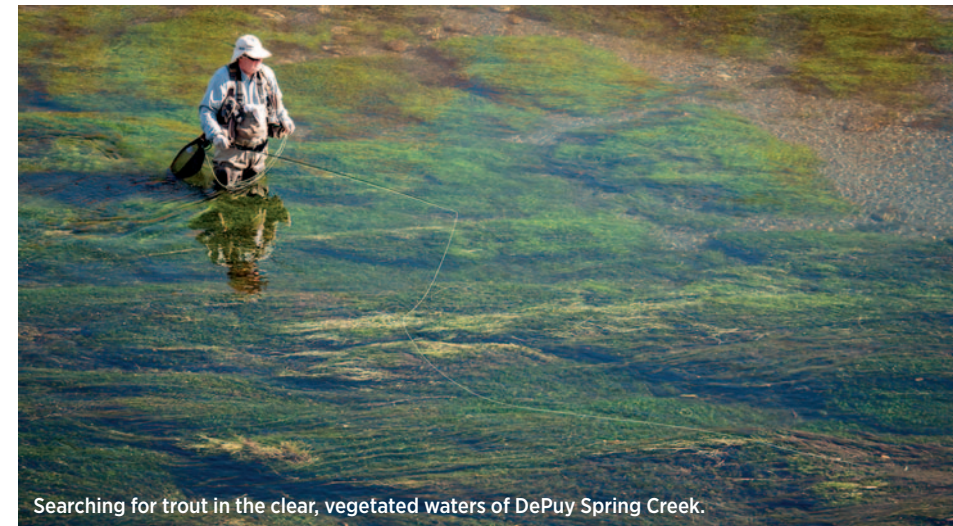
Fly-fishing anywhere requires patience and careful observation, and that’s even more true on a spring creek. There may be hatches occurring simultaneously, with different fish keying on dissimilar insects or particular life stages. Carry—and experiment with—a diverse selection of nymphs, emergers, cripples, duns, and spinners. Trout may also frustratingly shift preferences as a hatch progresses. Remain mellow, intuitive, and resolute, like a major league hitter digging in, studying the pitcher for tells about what’s coming next.

TOSS TINY FLIES

The fastidious gourmants inhabiting Montana spring creeks enjoy abundant, year-round buffets. That makes them finicky about how, when, and what they eat. Frequently, their meals are tiny, no larger than size 16. Prime hatches often include Blue-Winged Olives (*Baetis*, size 18–24, March through late May, and mid-August through mid-December); Pale Morning Duns (PMDs, size 14–20, mid-June to September); Sulphurs (size 18–22, June to September); Tricos (size 18–24, late July to September); caddis (various species, size 12–22, mid-April to September); and midges (size 16–28, year round). Small ants and beetles are key during the warmer months. Meatier terrestrials like hoppers and crickets plopped bankside entice fish from late summer into early fall.

Scuds and sowbugs are money patterns anytime, as are thin Pheasant Tail nymphs (a pattern originally developed for the spring creeks of southern England). Try streamers like leech and sculpin imitations in the spring, fall, and any season on a cloudy day. ■

—Jeff Erickson



Searching for trout in the clear, vegetated waters of DePuy Spring Creek.

FROM TOP: STEVEN AKRE; JEREMIE HOLLIMAN