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BRIAN T. MEEHAN STAFF WRITER (503) 221-4341 FAX (503) 227-5306



The Oregonian

DAILY AND SUNDAY

1320 S.W. Broadway · Portland, Oregon 97201

. . .

Jan. 3, 1995

Dr. Robert Behnke Dept. of Fisheries and Wildlife Biology, Colorado State University, Fort Collins, Colo., 80523.

Dear Dr. Behnke,

Enclosed is a copy of the article I wrote on redband trout. I appreciate the time you took with me on the subject. It was a big help.

Charlie Corrarino passes along his regards. He admits he was not a crackerjack student; too many hours afield with a fly rod.

Please give a call if you ever get to Portland.

All the best in the New Year.

Sincerely,

Bran Muhan

Realm of Realmand

The desert rainbow survives in harsh conditions where no trout should and offers a lesson in biodiversity

By BRIAN T. MEEHAN

of The Oregonian staff

PRINEVILLE — Snow falls softly on the pine and juniper of Mill Creek canyon. It coats river rocks and the shelf ice that seals the slow, deep pools where redband trout live.

But a foot of powder cannot hide what two biologists sloshing through the creek know too well. Man has pushed the desert trout's landscape hard. On the valley floor, farmers siphon watersheds for irrigation. Cattle strip streambanks of vegetation and spur erosion. Loggers cut timber along mountain headwaters that have meant sanctuary for these fish since inland seas flooded Eastern Oregon 30,000 years ago.

Somehow the fish survive. No hatchery truck could ever replace trout that evolved under such harsh conditions.

"We really didn't have the data until recently to show how unique these fish were," says Bob Hooton, trout program coordinator with Oregon Department of Fish and Wildlife. "They are a very unique evolutionary link among trout. The stuff they can withstand are on the real fringes of any known conditions salmonids can handle. So they are very, very special."

A shrill beep blares from the electrofishing machine on the back of Tom Groshens, a U.S. Forest Service biologist.

Please turn to **REDBAND**, Page A6





Oregon Department of Fish and Wildlife

Top left:
Redband trout,
such as this
one from
3-Mile Creek
in Catlow Valley,
tend to be much
more colorful
than coastal
rainbow, such
as this one from
the Willamette
River above
Harrisburg,
bottom left.



DOUG BEGHTEL/The Oregonian

Tom Groshens, a Forest Service biologist, pokes an electrofishing machine's wand into the currents of Mill Creek as Dave Noite of Trout Unlimited stands by to net a wild redband trout.

[oregonian Re 26, 1994]

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Gephardt presidency?

Richard A. Gephardt is the subject of a behind-the-scenes chatter on Capitol Hill among Democrats who fear that President Clinton's popularity will not rebound. The Democrats believe that Gephardt would be a logical alternative should the president decide not to seek re-election — whether by his own choice or because he is forced into early retirement.

Page A12

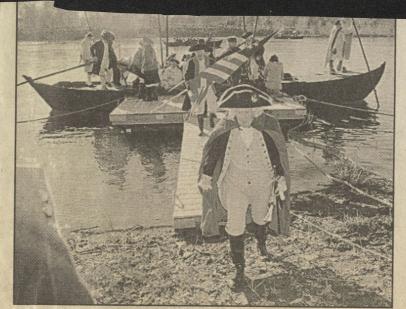
Cut in foreign aid?

The new Republican-led Congress is aiming at an old target as it seeks to cut government spending, proposing drastic reductions in the \$13.7 billion the United States gives other countries. Page A16

Long view of weather due

The nation's weather forecasters have decided to stick their necks way out and predict the weather more than a year in the future. Previously, the National Weather Service has limited its long-range projections to 90 days.

Page A17



CHARLES REX ARBOGAST/Associated Press

Surprise attack: Gen. George Washington, played by Jim Gallagher, steps onto the banks of the Delaware after Sunday's re-enactment of the famous Christmas Day crossing in 1776.



ROGER WERTH/Associated Pres

Peaceful now: Writer Klindt Vielbig, 66, of Portland glides on his cross-country skis near Elk Rock in the upper Toutle River Valley in southwest Washington. Mount St. Helens (background) erupted in 1980.

THE NORTHWEST

Russian ends treatment

Sunday's chemotherapy treatment may have been the best Christmas present Maxim Golotvine will ever receive. One year after starting the gut-twisting chemotherapy and radiation treatments, the Russian's Christmas Day treatment may be the last one he needs. Page B1

Re-entering politics

Mel Gordon, the veteran of Oregon politics, will be sworn in Tuesday as Clark County's newest commissioner after 13 years in the private sector. As a Multnomah County commissioner, Gordon helped propose home rule for the county. He also helped kill the Mount Hood Freeway. Page B1

Meningococcal disease

Oregon has been hit hard with the potentially deadly meningococcal disease in 1994, sickening a reported 140 people and killing eight.

EUROPEAN YOUTH ENCOUNTER

Thousands of young people from Eastern and Western Europe will take part in the European Youth Encounter in Paris starting Monday.

What to watch for: The youth encounter runs through Jan. 1.

VERDICT EXPECTED IN TURKEY

A verdict is expected Monday in a trial of 124 Muslim fundamentalists accused of involvement in the massacre of 35 leftist intellectuals in July 1993. Scores of people were injured when rampaging extremists set fire to a hotel in Sivas, 275 miles east of Ankara, Turkey. Most of the victims died of smoke inhalation when the rioters torched a hotel where a group of left-wing writers and intellectuals were gathered. Rioters reportedly were angered by the alleged atheism of the writers, who were commemorating a 16th-century poet hanged for his defiance of Ottoman oppression.

VIKINGS MEET SAN FRANCISCO

In the final regular season game of the campaign, San Francisco travels to Minnesota for a Monday night encounter. It will air tape-delayed on KATU (2) at 7 p.m. The 49ers are the champions in the NFC West. The Vikings can win the NFC Central by defeating the 49ers.

What to watch for: Minnesota quarterback Warren Moon has sprained knee ligaments and might not be able to play.

GURREGION

■ A story about efforts to restore the Columbia River Historic Highway misstated the section affected. It is between Hood River and Mosier.

Readers may call The Oregonian's attention to errors by calling 221-8221 or by writing to the Public Editor, The Oregonian, 1320 S.W. Broadway, Portland, Ore. 97201

LUTTERIES

Winning numbers for Saturday, Dec. 24:

- OREGON DAILY FOUR: 7-0-5-4.
- OREGON MEGABUCKS: 2-20-24-36-42-44.
- **WASHINGTON DAILY GAME:** 6-1-0.
- **WASHINGTON LOTTO:** 1-9-11-26-40-43.
- WASHINGTON QUINTO: Jack of Spades, Six of Spades, Seven of Hearts, Six of Hearts, Six of Diamonds.
- POWERBALL: 11-20-22-31-34, Powerball 31.
 Because of Christmas, the Washington Daily
 Game drawing was not held Sunday, Dec. 25.
 Story on Page B12

NAVSTRACK

A summary of recent news stories reported in The Oregonian

nuter carrier's safety s. (12/22)

ZON VIOLATIONS: past three years, Ho-Air has been cited case that involved a student at Western Oregon State College in Monmouth. The flu season normally starts in December

GUILTY: A Washington County jury Thursday convicted Bradly M. Cunningham, 46, of murdering his wife, Cheryl C. Keeton, was sentenced to life in prison Monday for raping and murdering the 2-yearold daughter of an American military couple in Germany. (12/20) timber plan is legal. The ruling means that new sales will be allowed from federal timberlands in 1995 in Western Oregon, Wahington and Northern Collingia. (1996)

lice near the White House arrest a man carrying a gun in the Ellipse and another claiming he had a plutonium bomb in his car. Another intruder was arTARY: Rep. Dan Glickman, D-Kan., who lost his bid for re-election last month, is likely to be named the next agriculture secretary. (12/ 22) FOOTBALL: Joe Montana led the Kansas City Chiefs into the NFL playoffs with a 19-9 win over the Los Angeles Raiders in the L.A. Memorial Coliseum. The

Redband: Desert trout an example of nature's ability to adapt

■ Continued from Page One

biologist. Groshens and Dean Grover, fish biologist for the Ochoco National Forest, are sampling the stream for wild redband trout. Groshens pokes a wand under the ice. The electrofisher discharges a direct current that stuns a fish and pulls it toward the wand.

The 6-inch trout is all red and silver for the holidays. Gleaming ellipses, called parr marks, paint its flanks green. Its pectoral fins are tinted orange, and a brick-red lateral stripe gives the fish its name: redband trout.

The redband is a rainbow trout, though it's distinct from the coastal rainbow of the West Coast. Grover has found redbands alive in isolated pools of 80-degree water in the bonedry Maury Mountains southeast of Prineville.

"A lot of times those streams will almost dry up," Grover says. "You'll have pools and intermittent dry stretches between the pools. And you'll have fish there, just hanging in there, waiting for the flows to come up again. To me, it is really amazing. These are tough little fish."

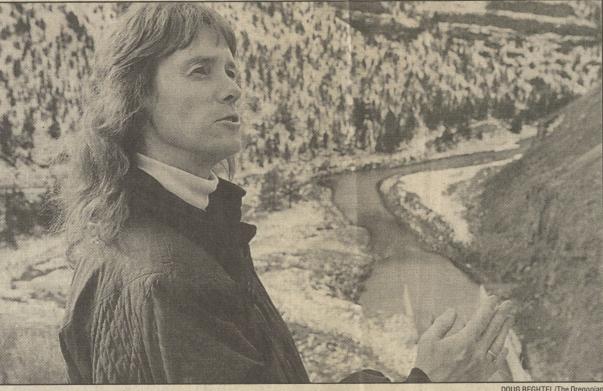
The desert trout provides a glimpse into nature's buoyancy. Redband trout demonstrate life's compulsion to adapt, even as human development tests their resiliency. The redband's rich genetic heritage also presents a prehistoric mystery about the evolution of trout east of the Casade Mountains.

Rainbow and cutthroat trout evolved from a common ancestor. Cutthroat spread first across the West; rainbow trout came later. During the last ice age, lakes spread over the West. These inland seas allowed rainbow trout to invade interior Oregon. When the climate changed and the lakes shrank, remnant populations evolved into redband trout

At the turn of the 20th century, scientists mistook the redband for cutthroat trout. It was not hard to do. Redbands resemble cutthroat trout; some even have the orange gill slash that gives the cutthroat its name.

"They had a lot of characteristics that made them look like cutthroat trout," said Ken Currens of the Oregon Cooperative Fishery Research Unit. "People had known for some time those trout were different. Dr. Behnke was the first one to say these are more related to rainbow trout."

In the early 1970s, Robert Behnke of Colorado State University began collecting redband trout. Behnke, the world expert on trout, first suspected the fish were a natural hybrid between rainbow and cutthroat. Some redbands had basibranchial teeth on their tongues, a characteristic of the more primitive cutthroat



DOUG BEGHTEL/The Oregonian

Amy Stuart, fish biologist for Department of Fish and Wildlife's Prineville District, stands atop Bowman Dam. She says more reliable winter flows have sent redband trout populations soaring in Crooked River below the dam.

trout.

Behnke discarded the hybrid idea as he isolated differences. These desert trout were more brightly dressed in hues of orange and yellow. Unlike other trout, parr markings lasted through adulthood and spotting was more pronounced. The redbands had other physiological differences and a huge advantage in the dry country: they survived conditions that would kill other trout.

An Oregon biologist took Behnke to a Harney County stream called Swamp Creek.

"We went up a dry wash, and there were intermittent pools of water," recalls Behnke. "The pools looked stagnant and the temperature was 83 degrees, but there in the middle was a big redband trout.... I couldn't believe it. I put that thermometer in all around. I thought maybe there were cold springs coming in. But it still measured 83 degrees. That's the type of habitat the redband can survive in when hatchery trout are not going to make it."

Behnke classified the redband into two broad subspecies of rainbow trout: the Columbia River redband and the Oregon Basin redband. But the story does not end there. Behnke also noted some strains were different enough to consider as separate subspecies. The redband genetic stew was rich indeed.

Redbands are found from the McCloud River in California to the Frasier River in British Columbia. The Cascade crest marks their western boundary; they range as far east as southern Idaho and Nevada's

Owyhee River country. Historically, Steens Mountain blocked redband trout from the Alvord basin, the only corner of Eastern Oregon where redbands did not replace cutthroat as the native trout.

Redbands range from the 6- to 9-inch fish of tiny Mill Brook to the giant Kamloops trout of British Columbia, which grow German shepherd-sized maws and fatten to 40 pounds on kokanee salmon. Both redband and coastal rainbows produce steelhead. Redband steelhead tend to be summer run fish while most coastal steelhead are winter run.

For the past 10 years, Ken Currens has been trying to unravel the genetic time line of redband trout. How long ago did they diverge from coastal rainbows or from their cutthroat ancestors?

Currens' work shows redband often vary by watershed.

"There are a number of separate lines of inland trout that are as different from each other as the inland fish are from the coastal fish," says Currens.

He has identified at least nine distinct redband groups, from the Columbia River variety that occupies drainages such as the Crooked and Malheur rivers to isolated groups in the Catlow Valley and in the White River, a tributary of the Deschutes River.

Redbands often are associated with ancient glacial lakes. Drainages in southeast Oregon such as Warner Lake, Catlow Valley, Fort Rock, Goose Lake and Chewaucan all were tied into lakes. Currens says the fossil record shows redband trout grew to large size in the foodrich lakes. Today, 10-pound redbands are common in the Williamson River, north of Klamath Falls. Like their ancestors, these fish travel between the river and the rich food supply of Klamath Lake.

When the ancient lakes dried up, as they did in Catlow Valley and Fort Rock, the fish retreated to headwater streams. It was a prehistoric tactic they later used in the face of human development.

Currens is concerned about the future of these adaptable trout.

"We've dewatered the valleys and logged the headwaters," he says, "You have to ask yourself, where will these fish go?"

That is a question Dave Nolte of Trout Unlimited asks himself when

he tours the tattered drainages of the Crooked River. The river system has been used hard for more than 100 years.

Wild populations of redband trout are fragmented by more than 700 irrigation dams and two major impoundments in the Crooked River system. More than 20 pockets of fish are isolated by lethal peak summer water temperatures and by low flows during irrigation season.

"We have found redbands in little pools of water that you just can't believe they are still there," says Nolte, national coordinator of Trout Unlimited's Bring Back the Natives program. "Your thought is, what else can we do to these fish before they disappear? They are a hardy, interesting desert trout, but let's not push their envelope."

Native fish were not a priority when the West was settled, and the arid climate steered ranchers toward bottomlands.

Redband trout moved higher into drainages as summer water temperatures in the mainstem Crooked River above Prineville Reservoir soared into the 80s. But even alpine streams have not escaped. Most of the Ochoco National Forest has been grazed. The Forest Service has built roads up about every drainage. Fifty years of logging has pared summer shade and raised stream temperatures.

The overall impact is that the Crooked River system is among the more beleaguered redband drainages. And the redband trout is listed as a sensitive species in Oregon.

"Most of the middle section of the river is inhospitable to salmonids," says Amy Stuart, fish biologist for Oregon Department of Fish and Wildlife's Prineville District.

But there are hopeful signs amid the Ponderosa pine of redband country. Nolte of Trout Unlimited runs an educational program for Crook County students about the value of riparian management. In October, students from Crook County High School used an electrofishing machine to capture redband trout that were stranded in irrigation canals.

The redband is aided by its own resiliency and by the chemistry that

REDBAND TROUT



The Oregonia

makes Eastern Oregon waters so rich.

The fishery below Prineville Reservoir is an example.

A bald eagle perches in a juniper across the river from a basalt spike called Chimney Rock. Snow and green lichen paint a weird December canvas on the red rock canyon walls.

The river runs a smoky green. Winter produces the lowest flows of the year as water is stored for irrigation. During summer, stream flows ballon as water is released from the bottom of the reservoir. The cold steady plume creates a rich fishery for 13 miles before an irrigation canal swallows much of the flow.

A lone angler casts a fly rod in the wan December light.

"There are gobs of fish in here," says the angler, Kurt Boettger of Bend. "This is very productive river."

Amy Stuart says a 1994 stream survey found more than 4,000 redband trout to the mile in this canyon. The redband trout wastes few opportunities; it is a lesson written in the history of the desert trout.

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