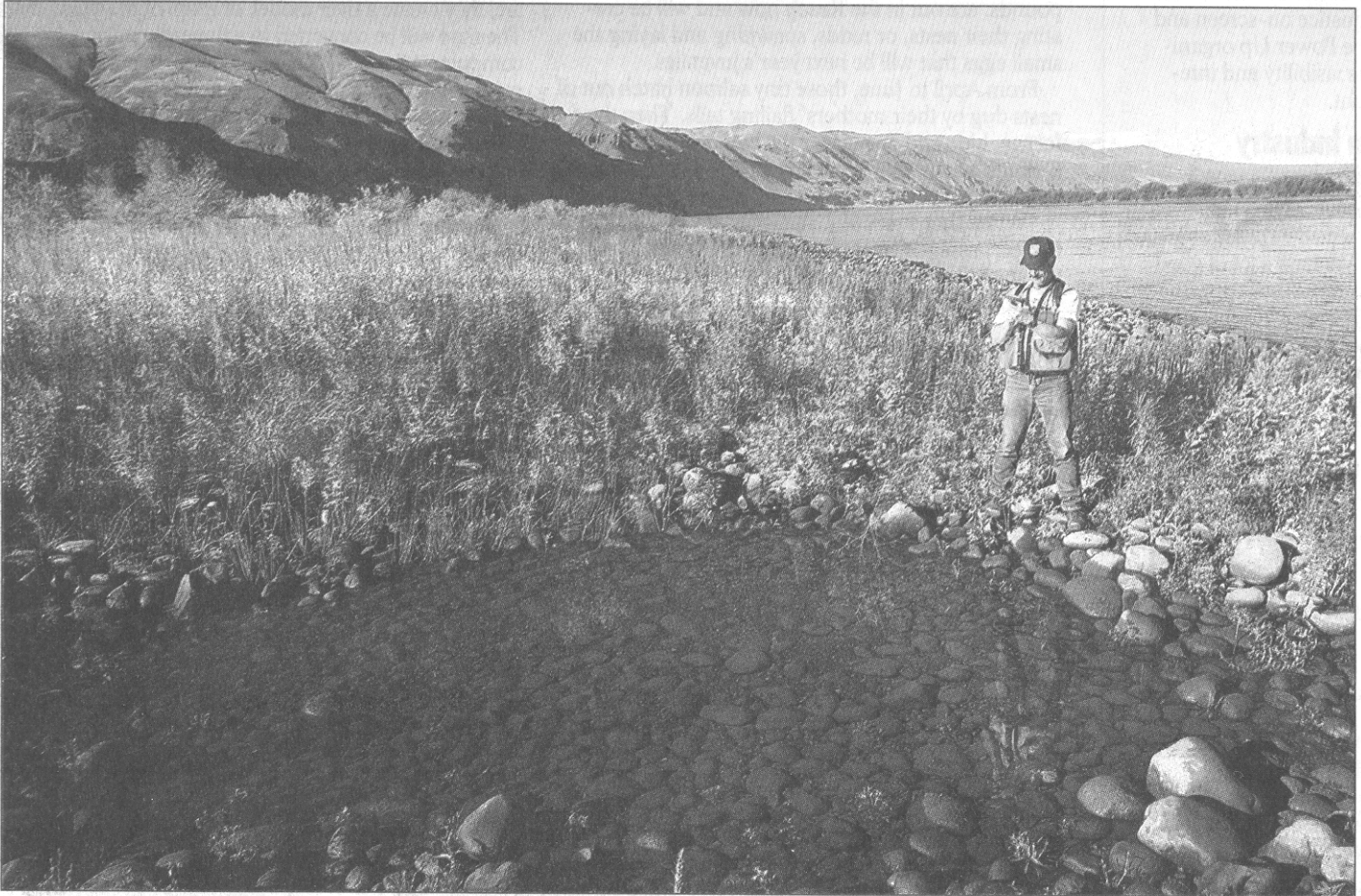


Fish and Wildlife Service official maps depressions

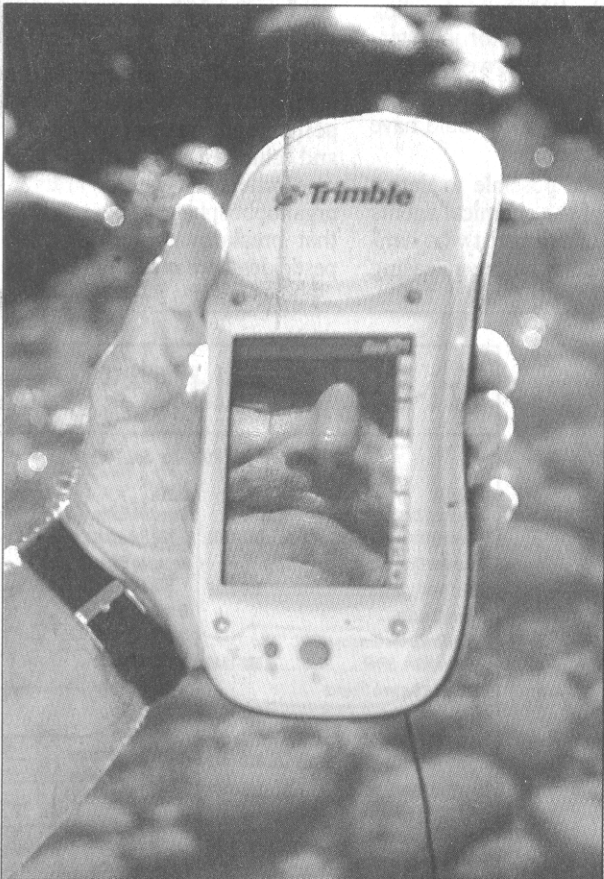


Herald photos/Paul T. Erickson

Don Anglin, a supervisory fishery biologist for the U.S. Fish and Wildlife Service, plots depressions on the edge of the Hanford

Reach. Wild juvenile salmon get trapped in the depressions when the water level is lowered.

Stranded salmon



Anglin uses a handheld global positioning system unit to mark the location of riverside depressions along the Hanford Reach.

Riverbank depressions a danger as low water levels trap juvenile fish

By Anna King
Herald staff writer

Floating down the Columbia River on a sunny day most boaters probably wouldn't notice them.

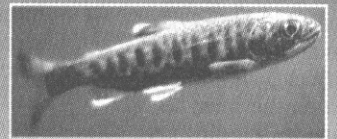
They look benign. But these riverbank depressions — just holes in the earth — are clever killers.

A team of scientists wants to know how many of these depressions pockmark the banks of the Hanford Reach, and how many small fish are stranded in them each year.

The water-filled submerged depressions offer young fish tasty food, a slower current and a place to hide from predators.

However, changing demands for hydropower can eliminate these safe havens. The wild juvenile salmon don't notice the water receding until it's too late.

The Columbia River can drop about 10 feet in 12 hours, said Don Anglin, supervisory fishery biologist for the U.S. Fish and Wildlife Ser-



Fry facts

- There are about 100 million salmon eggs deposited every year on the Hanford Reach.
- 10 to 30 million fry hatch from those eggs.
- They are about 1½ inches long when they hatch.
- The young fish double in size between April and June.
- Young salmon use the shallow, slow, near-shore areas as they grow.
- Most of the juveniles migrate downstream leaving the Reach by July.

*SOURCE: U.S. Fish and Wildlife Service
Herald/Sherry Emery*

vice. River water is released from behind dams when there's demand for power — every time a light is switched on or a hair dryer plugged

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Stranded: Millions killed, research says

Continued from A1

in. Then when demands for power stop, so does the water. And almost every time the river fluctuates, it traps tiny fish.

"They are in a pool and the river goes out," Anglin said. "Then the pool drains out."

"We know we are killing fish, and we know we are killing big numbers."

As many as 125,000 to 1.7 million juvenile fish could be killed per year, based on a study conducted from 1999 to 2002, by the state Department of Fish and Wildlife and Pacific Northwest National Laboratory. But Anglin's gut feeling is that number is much higher, and the state has launched a new study to determine what that is. This new research might show that 1 million to 5 million baby fish are killed per year, he said.

And how many salmon come from the Reach is a vital concern to many in the Mid-Columbia and beyond. The concern comes despite this year's record returns of fall chinook, about 607,000 have swum past Bonneville Dam near Portland so far. That's the largest run of fall chinook since officials began counting in 1938, said Matt Rabe, spokesman for the Portland District of the Army Corps of Engineers.

Those chinook, which can reach upwards of 50 pounds, are out in the Reach now and will be creating their nests, or redds, spawning and laying the small eggs that will be next year's juveniles.

From April to June, those tiny salmon hatch out of nests dug by their mothers' flailing tails. Then they forage, hide and grow near the banks of the Columbia until they are ready to travel downstream to the ocean.

"When they first come out, they are kind of like babies," said Joe Skalicky, a fisheries biologist with the state Department of Fish and Wildlife. "They're kinda helpless."

Every wild salmon is considered important. They are a measure of the health of the river. This compares with hatchery fish that have less genetic diversity and are less able to adapt to the wild river after being raised in captivity.

"This is the last fish factory in the Columbia," Anglin said. "All we have to do is not mess up the water conditions, and they will take care of themselves."

Even Alaska depends on wild Hanford Reach salmon.

"In Southeast Alaska the economy is as dependent on fisheries as your area is on agriculture," said David Bedford, deputy commissioner of the Alaska Department of Fish and Game from his Juneau office.

"In the chinook salmon fishery, some 15 percent

is of Columbia River fish," he added, referring to the Southeast Alaska commercial catch.

In fact, the Alaska Department of Fish and Game carries the heaviest burden of paying for Anglin's study, about \$600,000, he said. The total cost of the study was about \$1 million, Anglin said. Money also came from the Fish and Wildlife Service and the Columbia River Inter-Tribal Fish Commission.

But proving that fluctuating water levels kill fish is tricky.

First, scientists in the field had to wait for low water levels to expose the depressions. Once water levels dropped, they organized teams to walk about 102 miles of riverbank.

Scientists started the study in April and started walking the riverbank on Oct. 19. They finished recording the depression locations Thursday.

Last week, a few boats ferried team members from below the Vernita bridge to positions on shore. After jumping off the boat onto slick, grapefruit-sized cobbles, they walked slowly, examining many of depressions they found.

The 14 teams — two people per team — carried global position system technology to map every depression about 3 feet in diameter or larger.

Once the scientists and volunteers locate each depression and record how high up the riverbank they are, they create a river model, or map, of the sites. The map will be converted to a three-dimensional computer-generated model and allow scientists to predict what will happen with different river flows. With it, they will know how many depressions would be exposed and how many young fish would be killed.

"The goal isn't to stop fluctuations, because you can't do that and make power," Anglin said.

But they hope the study helps dam operators come up with river management strategies that minimize the impact, he said.

But to implement the knowledge, the scientists are pressed for time. They have to provide their report in March so it can be considered for federal relicensing of Priest Rapids Dam.

"It's a once-in-a-lifetime opportunity to get some information published before the hourglass sand runs out," Anglin said. "They have 50 years to operate it under the license."

The Reach is the most productive salmon-rearing habitat left on the Columbia River. The rest has been flooded by dams, polluted or developed.

"Now, all that's left is this," Anglin said. "That's why we are so adamant about this 50-mile piece of river."

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