

River's dead -- fisheries

Copper pollution may have killed the Tsolum

By FRANCES BULA

In the spring of 1982, 2½ million pink-salmon fry were released from the Tsolum River pilot hatchery.

Those fry should have come back one showed up.

Copper pollution from a long-abandoned mine near Mt. Washington is one of the primary suspects.

"We don't even have one egg to come back in '86," says hatchery manager Harry Genoe. "That river is totally dead. The question is why."

Genoe and other fisheries personnel are worried about a little more than a run of pink salmon that has been wiped out. The Tsolum River hatchery, built as an experimental project in 1981 at an unknown cost to the federal government, is "almost an embarrassment", says one fisheries worker. Another comments glumly, "We don't even want to talk about it."

The Comox Department of Fisheries supervisor, Lyle Freeman, who worried openly that the project will be seen as an example of "wasted government money", said that it is a "very, very sensitive issue here" that he was not

prepared to discuss without permission from other Department personnel.

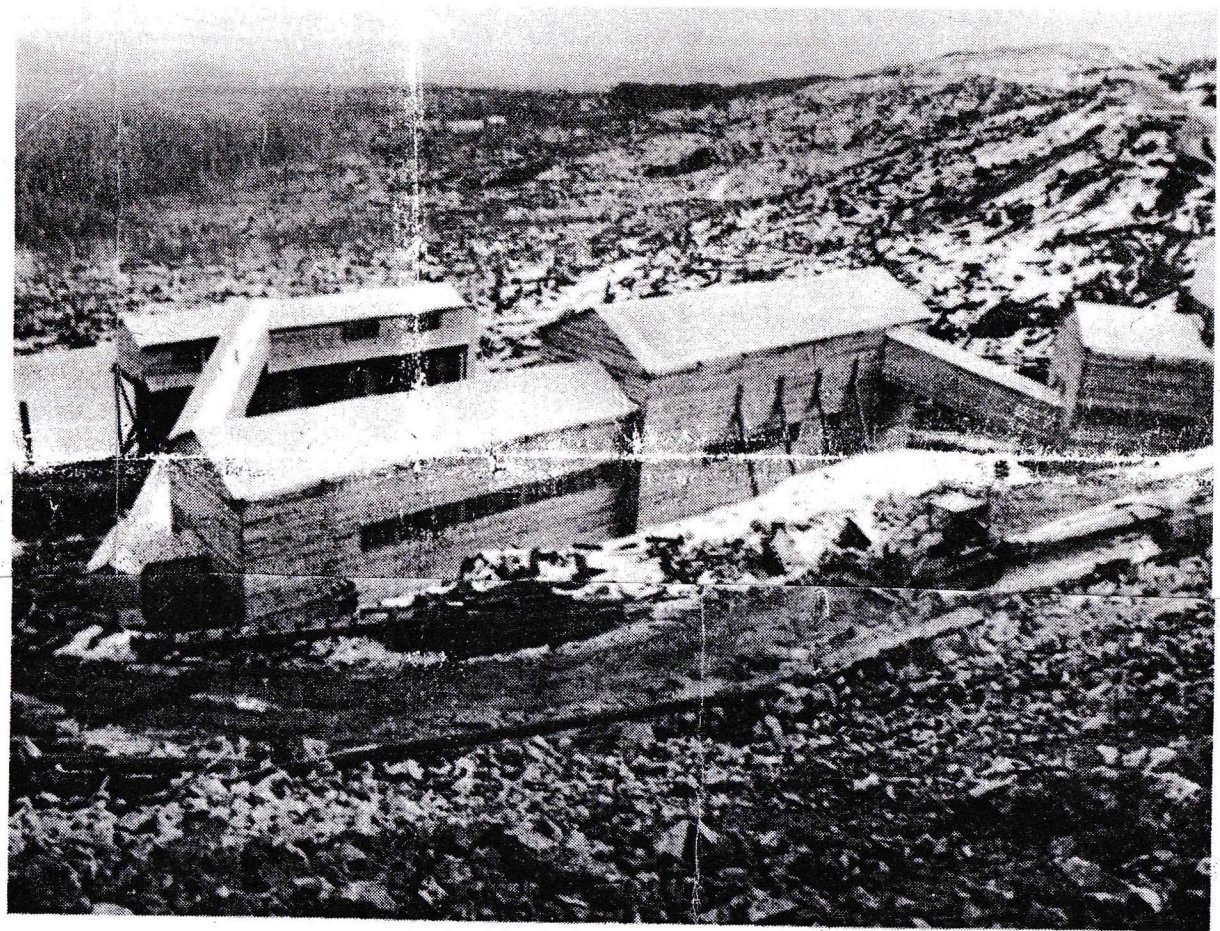
The reasons for the apparent disappearance of the 1984 run does result of any fisheries actions. Copper pollution in the Tsolum River, originating at an abandoned copper mine on Mt. Washington, may be a substantial contributing factor.

According to Bill McLean, a support biologist and chemist with the federal fisheries department, there have been regular and "very significant" pulses or peaks of high copper levels in the Tsolum River downstream from the abandoned mine.

McLean told a meeting of the Vancouver Island Resources Society last weekend that 92 per cent of the copper is in the dissolved form which is potentially most toxic to salmonids and the levels are "most definitely of concern to anybody operating a hatchery."

The waste-management branch of the environment ministry began testing water samples in creeks all around Mt. Washington in 1976, and have established a data base of results.

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Overall view of Cumberland-Mt. Washington's mill site shown from road above.

Other factors in river's demise

Bill McLean, a support biologist with the federal fisheries department, said it would be "dangerous and simplistic" to jump on copper pollution as the only cause of a river gone dead.

It was McLean who publicized the levels of copper in the Tsolum River, which he says he can't remember ever finding at such high levels in any hatchery.

But, he says, "I'm hesitant about naming copper as the culprit. There is a tendency for people to look for a scapegoat. That's the history of the fishing industry—to blame other people."

Some of the factors that he and fisheries staff think have contributed to killing the Tsolum are logging, drawing off water from the river for irrigation, the pressure of commercial fishing, and the removal of gravel from the mouth of the river.

There is a conspicuous lack of gravel in the lower reaches of the river, states a report from fisheries officers who worked in the area during the 70s. When the Comox airport was built, large amounts were taken in

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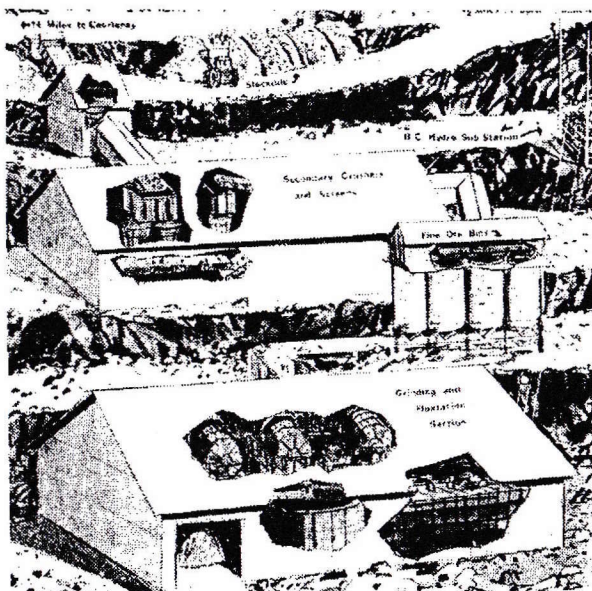
Salmon wiped out in Tsolum

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Although Ron Bollins, the assistant regional waste manager for the ministry from Nanaimo, did not have precise data, he said the ministry is aware that levels in the Tsolum are unusually high.

In 1983, fisheries personnel working in the area started doing testing on the water, after only 1,000 adult pinks returned to the river. The normal run in the river used to be 100,000-200,000 fish, says Genoe.

What made fisheries staff even more suspicious was that 500 to 1,000 marked Tsolum River fish came into the Puntledge hatchery that year. Salmon will normally only return to the stream they came from, even battling dry river beds to do so, but, says Genoe, "water quality can make fish change systems."



Drawing of former copper mine

Testing of water samples led Genoe and others to pinpoint the source of the copper pollution to an open-pit copper mine on the north face of Mt. Washington. The mine, shut down in 1966, now has water running through the

quarter-mile-long pit, which eventually reaches Murex Creek, a tributary of the Tsolum.

Although the Tsolum River hatchery is actually located on Headquarters Creek, where water samples show clean water,

says Genoe, the fry have to enter the Tsolum as they migrate to the ocean.

McLean told the meeting that one of the three yearly peaks of copper tends to be around the high spring runoffs of May and June when smolts are migrating through the system and are thought to be especially vulnerable to the heavy metal.

"One of the effects on smolts is that their migration is reduced. It's very effective in making them unable to migrate to salt water," he said.

He also said that other adverse effects of copper poisoning in fish can be disorientation, strain, and disrupted downstream and upstream migration.

McLean said that in the United States tests have shown that levels as low as five to 10 milligrams per litre of water have had adverse effects on salmonids and he feels that under those circumstances

significant effects are very likely being produced in the Tsolum, and especially in Murex Creek, 12 miles from the mouth of the Tsolum, where levels are particularly high.

McLean reproduced graphs which indicated that in one pulse in the Tsolum last spring, the levels of dissolved copper went up about seven times, from around 11 milligrams to 75 per litre. An acceptable level of copper that has been defined for runoff from Westmin Mines' Myra Lake ponds is .06 milligrams per litre, says Bollins.

Wayne White, waste management branch technician in the Campbell River office of the environment ministry, also speaking at the meeting, said that Esso Minerals did experimental testing on the Tsolum River from 1979-81, because copper levels were high enough that it hoped to retrieve

some of the metal commercially.

White said that the branch has found levels as high as 20,000 parts per million (which equals 20,000 milligrams per litre) and some thought has been given to using a system similar to Esso's reduce the heavy-metal levels. He said, however, that it has not been shown to be very effective in seepages from the Britannia Mine near West Vancouver.

The branch has other figures on the levels in various parts of the system and Mike Roch, a University of Victoria researcher, is due in the area in November to start preliminary work on a bioassay

Although the Tsolum River is dead now, it doesn't have to stay that way, says Genoe. The Puntledge River, where Genoe also manages a hatchery, has been renewed with wild fry trapped

River's demise

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1943 and '44.

Harry Genoe, Puntledge River and Tsolum River hatcheries manager, says irrigation was a big problem in the 50s. Lower water levels in any river means less area for rearing fry and noticeable changes in water temperature.

The river is still recovering from poor logging practices in the 50s, as well. Flash floods, unrestrained by any substantial growth, mean a flooded river that is having its bottom scoured.

And heavy commercial fishing is still having an effect on more rivers than just the Tsolum. McLean points to the Bear River hatchery as a facility that has failed in getting any adults to return to it: primarily because they are all being intercepted by the commercial fishing

The Oyster River, like the Tsolum, had large runs of pinks in the 50s—75,000 to 100,000. Now, the run is down to the low hundreds. Although fisheries people have tested for high levels of minerals in the Oyster River, they have found nothing.

While McLean acknowledges that copper levels in the Tsolum are high enough for him to be concerned, he comments philosophically that the whole river is a lesson on man-

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