

New culprit identified in chronic acid rain problem

Unique liming program may be solution

By Paul Withers, [CBC News](#)

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Research from Environment Canada is offering discouraging new insights on the long-term impact of acid rain in Nova Scotia.

"This is the only part of the world where acidity is not improving with major cuts in acid rain emissions," said Tom Clair, an acid rain scientist with Environment Canada.

This summer, Clair published a study in the *Canadian Journal of Fisheries Sciences*. He sampled 92 salmon rivers in Atlantic Canada.

"The poor fish. They are in for a rough ride"

—Tom Clair

In southern Nova Scotia where population loss is greatest, he found seven rivers had toxic levels of aluminum activated by acid rain. Until now, it was thought organic carbon – what makes rivers and streams tea coloured – neutralized aluminum.

"We realized that carbon is not enough to protect the fish from aluminum in that part of the world. It was surprising," Clair said.

He said analytical tools that made his findings possible did not exist 20 years ago.

"The chemistry in those rivers probably won't come back for another 100 years to the point where they were before acid rain started," he said. "The poor fish. They are in for a rough ride."

Clair's findings have lent new urgency to a test liming project underway in the Gold River system in Lunenburg County, N.S. It's one of the rivers identified with dangerous levels of aluminum, but still has a salmon population.

"It really changed the way we think about the toxicity of aluminum," says Shannon Stirling, an assistant professor of earth sciences at Dalhousie University.

Long term solution

In May, her team – which included students from nearby New Germany Rural High School – deposited 30 tonnes of crushed limestone along the shoreline of a tributary of the Gold River.



Lewis Hinks says liming offers hope for salmon. (CBC)

It's the first time "catchment" liming has been used in Nova Scotia. Almost all of the limestone has been incorporated into the soil into the nearby stream.

"It's a long term solution that doesn't need to be maintained. It's one application that lasts for 50 years," she said.

The first samples taken since the catchment liming have shown improved levels of acidity. They are still waiting for lab results on aluminum data.

"The results we are seeing are encouraging. There is hope for the Atlantic salmon."

Lewis Hinks of the Atlantic Salmon Federation said Clair's findings mean "the hill may be a little steeper to climb," but he's optimistic, looking for "a cookbook" from the catchment liming project underway on the Gold River.

"What do we need to do? How much lime? Where do you apply it...what we need are the tools. Once we have the tools we can generate the support," Hinks said.

Next steps

For Clair, the report on aluminum toxicity was "tidying up some loose ends scientifically." After a lengthy career, he's retiring from Environment Canada in the new year.

"We knew aluminum could be a problem, but no one in the published literature had done anything with the levels of carbon as high as we had," he said from his office in Dartmouth. "It was one of those things that easy to solve from our standpoint now and it was nagging me for a long time. I thought we would try it."

Clair has been an advisor with the catchment liming project underway at the Gold River system.

He said liming targeted habitats to preserve specific populations makes sense. It's impractical, he said, to lime large rivers, noting that Atlantic salmon have been extirpated in several rivers he studied in Nova Scotia.