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## Trout losing sense of smell to chemicals

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June 13, 2008

Pesticides are causing rainbow trout to lose their delicate sense of smell.

That could harm the fish's ability to avoid predators, find mates and migrate back from sea, according to a study by a team of Simon Fraser University researchers working with Environment Canada and Fisheries and Oceans Canada.

The findings, reported in the June issue of the journal Environmental Science and Technology, show that during tests, pesticide-treated trout could sense an odour - an amino acid called L-serine - but couldn't accurately sense changes in the scent's concentration.

Such detection is important, says Keith Tierney, who led the study while a graduate student at SFU. He says animals, even humans, tend to "tune out" smells that don't change.

"You can imagine if a fish is unable to detect just how close it is to a (wading) bear," reported Tierney, who is currently at the University of Windsor. Other SFU researchers involved include biologists Christopher Kennedy (professor of aquatic toxicology) and Jessica Sampson.

Fisheries experts have long questioned the possible link between pesticides and a fish's sense of smell. But other studies have focused on single chemicals at high concentrations. Streams typically carry a mixture of chemicals at low concentrations.

The SFU researchers and their collaborators measured the water quality in South Surrey's 34-kilometre Nicomekl River and found at least 40 chemicals, most at trace concentrations.

Using a realistic mix of the 10 most abundant pesticides (including diazinon) they exposed trout - which are members of the salmon family - to the mixture for several days, then tested how it affected the fish's odour-sensing cells when exposed to a scent molecule produced by predators.

They found that the trout could not perceive changes in scent levels as well as unexposed trout.

Tierney points out that salmon typically swim through pesticide and contaminant-polluted waters that can change from day to day, depending on the characteristics of the runoff entering the river system.

While the researchers found that exposure to low levels of pesticides impaired neuron responses to predator scent, the same neurons are believed to perceive odorants responsible for return migration. Their overriding concern is that a loss of smell may mean that fewer salmon survive to spawn each year.

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