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Sea lice a drag on their hosts; Biologist suggests the parasites could reduce salmon survival rates

Try swimming in the Pacific Ocean wearing a backpack, and that might hint at difficulties faced by juvenile salmon when sea lice are hitching a ride, according to conservation biologist Michael Price.

After years of researching the number of lice on salmon in the Discovery Islands, where there is a high concentration of fish farms, Price believes the wrong question is being asked in the polarized and often bitter debate over sea lice and the effect of farms on wild salmon.

"A lot of the mortality work done on pink and chum focuses on the size and lethal levels of lice," Price said.

Instead, the question should be whether lice reduce survival because afflicted fish cannot swim as fast or catch as much food and are more susceptible to predation, Price said.

Arguments that bigger fish, such as sockeye, are not killed by lice, lose sight of other effects, he said.

"If these juveniles host lice, it is going to affect their behaviour and likely slow them down," said Price, who, during recent research on pinks and chums for Raincoast Conservation Foundation, also found juvenile Fraser River sockeye with lice.

"Early marine survival is at the core of salmon survival. They need to grow and they need to grow fast to avoid predators, and this could be slowing down their growth," Price said.

However, little research has been done on sockeye. With the apparent collapse of this year's Fraser River sockeye runs, Price cannot understand why the Department of Fisheries and Oceans is not considering that salmon farms might be partially responsible.

"I don't think salmon farms alone are responsible for the collapse, but I think it's certainly likely they are contributing," Price said.

In Europe, Atlantic salmon and sea trout runs were damaged by sea lice -- and they are bigger fish than juvenile sockeye, said Price, who wants to see farms moved from migration routes.

Closing farms might hurt some economically, but it is easier than solving challenges such as climate change and ocean productivity, he said.

The ultimate solution is closed containment -- something salmon farming companies and government say is not yet practical.

Price disagrees.

"There are closed-containment fish farms all over the world. They are not producing salmon, but it should be an easy one to fix," he said.

Simon Jones, DFO research scientist, agreed that there is little direct research on the effects of lice on sockeye, but said research on pinks and chum is likely to continue.

"There are many factors that influence ocean survival of juvenile Pacific salmon, and I don't think there is a simple answer. Climate change and freshwater habitat conditions play a role, and sea lice may be one of those issues," he said.

A 2008 DFO study found that, in a laboratory, high concentrations of sea lice led to deaths of juvenile pink salmon under 0.7 grams, but there was no mortality of larger fish. Juvenile sockeye are five to 10 grams when they migrate to the ocean.

"By extrapolation, you can predict that sockeye are large enough that lice wouldn't affect them," Jones said.

European problems with Atlantic salmon and sea trout are not relevant because those fish are more susceptible to disease and attract a different species of louse, he said.

Mary Ellen Walling, B.C. Salmon Farmers Association executive director, said sockeye appear to be protected by their size.

"By the time they emerge, they have a fully developed immune system," she said.

Farms have taken extraordinary measures to protect other species of salmon, such as fallowing pens or stocking them only with small fish when wild fish are migrating through the area, treating farm fish with the chemical Slice at an early stage and co-ordinating treatment with other farms in the area, Walling said.

"They are being quite careful in the period when they think wild salmon are most vulnerable," she said.

"Assigning the blame to salmon farms is not making a lot of sense. It is much more complex. People need to start thinking about fishing and urbanization."

In the Broughton Archipelago and northern Vancouver Island, where farms have taken mitigation measures, pink salmon runs are excellent this year.

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