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Small fry may be big problem

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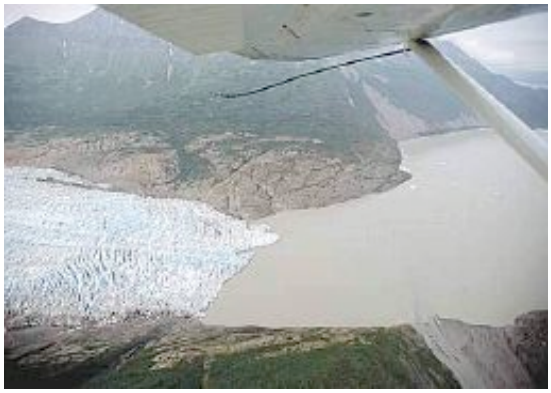

Silty melt water collects in a small lake at the receding toe of Skilak Glacier earlier this year. The water contributes to the Kenai River watershed, where a researcher says it is affecting the size of young fish.
Photo by M. Scott Moon

Researchers with the Alaska Department of Fish and Game say sockeye salmon fry in Skilak Lake are getting smaller, a fact they attribute to increasingly silty water caused by the rapid melting of Skilak Glacier.

Fish and Game researcher Mark Willette has been part of a team studying salmon fry in the lake for nearly two decades. He said last week that the average salmon fry sampled this year has been less than half as large as the average for the past decade.

Willette said he started to notice smaller fry early in the spring, and as the research team continued sampling fish throughout the summer, noticed a strange and troublesome trend.

"I was just amazed at how little they were growing," he said.

The average size of fry sampled in Skilak Lake this year has been around six-tenths of a gram ‹ the smallest on record for fish that should have weighed more than a gram.

"We've found that they were really small," Willette said.

When researchers looked at what might be causing the fry ‹

baby salmon that spend a year in the lake before heading out to sea as smolt ‹ to be so small, the first thing they discovered was there isn't a lot for the fish to eat.

According to department research, the trend over the past 15 years has been for the fry to get smaller. During that same period, the amount of copepods ‹ tiny crustaceans that are the primary food source for salmon fry ‹ also has followed a similar trend. And when researchers looked at why this might be, they found an ominous culprit ‹ glacial silt.

Skilak Glacier sits at the head of Skilak Lake and provides the bulk of the water flowing into the Kenai River. Over the past few decades, the glacier has been undergoing a retreat that's seen it cut back by more than two miles over the past 30 years, according to Mark Laker, an ecologist with the U.S. Fish and Wildlife Service.

The melting of the glacier is part of a general trend for all glaciers on the peninsula. University of Alaska Fairbanks researcher Dennis Trabant said he's been closely watching Wolverine Glacier, which also is in the Kenai Mountains. He said that since 1990, researchers have noticed a significant increase in how quickly the ice is retreating.

"The rate of volume loss is greater than at any time in the past 40 years," he said. "And it seems to be happening since 1990. That's when we hit the turning point."

The retreat of Skilak Glacier actually has caused another small, silty lake to form at its base ‹ a lake that appeared around the same time as the current warming trend.

Willette said Fish and Game researchers have found that since the late 1980s, the mean euphotic zone ‹ how far light can penetrate into the water ‹ steadily has decreased in Skilak Lake, in almost an identical trend to the amount of copepods present in the lake. Since copepod survival is directly linked to how much sunlight they get, he said the obvious conclusion is there are fewer copepods because there is more silt.

"You'd expect it because that blocks out the light," he said.

What all this means for the future of salmon in the Kenai River is unclear. However, since the majority of the Kenai's sockeye run ‹ millions of fish each year ‹ are reared in Skilak Lake, the consequences of having smaller fry could be devastating.

Willette said the ability of

Salmon are an important part of the Kenai Peninsula economy.
Clarion file photo

juvenile fish to survive the winter depends on how much weight they can pack on during the summer. If the fry become too small, it could potentially decimate the run.

"There's got to be a point where most fish won't make it," he said.

Smaller fry doesn't necessarily mean a small return. The smallest average fry size previously observed was in 1997, a year that Willette said produced a decent run in 2002.

"We actually had a reasonably good return," he said.

However, if the amount of copepods in the lake continues to decline, and the fry continue to be smaller and smaller, Willette said there will be a point when the fry won't be able to survive the winter. When that happens, the impact on sockeye returns could be significant.

"If we had a low overwinter survival, and that happens to be combined with poor ocean conditions, you could have a very weak return," he said.

And there doesn't appear to be much biologists can do about that, other than continue to watch salmon returns and try to manage sport and commercial fisheries for optimal returns.

"We can't do anything about the glacier melting, obviously," he said. "The only thing we can do is control the number of spawners we put into the system."