Valentine's Day: True love makes pacific salmon healthier

February 13 2014

Salmon can spot their true love across a crowded stream, according to research from a university-industry partnership involving the University of Waterloo. Allowing female salmon to follow their heart and mate with the male of their choice produces healthier babies than those who have their mates selected for them.

Open breeding is just one of many unconventional practices in salmon aquaculture developed by the University of Waterloo, Yellow Island Aquaculture, Ltd. and five other Canadian universities.

Professor Brian Dixon, of the Faculty of Science at Waterloo, is investigating the immunology of these fish on a molecular level to understand why these breeding strategies produce a superior salmon. He holds the Canada Research Chair in Fish and Environmental Immunology.

The research team's work has helped Yellow Island to be become the first commercial salmon farm in Canada to raise certified organic Pacific Chinook salmon.

"Our research has resulted in high-quality salmon for some of the best restaurants in Vancouver," said Professor Dixon. "The biggest challenge with raising native Pacific Chinook salmon is keeping them healthy. One sick fish can wipe out an entire stock. By creating a more robust stock from the ground up we avoid using antibiotics and vaccines, which are both costly to producers and stressful for the fish."

To boost resistance, Professor Dixon exposes some salmon to different diseases. Next, the survivors are reintroduced to the main stock and allowed to breed naturally. The new immunity is passed onto the next generation and the overall strength of the stock increases.

"Diseases and parasites that should normally produce up to 80 to 90 per cent mortality, now only cause 20 per cent mortality in the Yellow Island stock," said Professor Dixon.

This innovation earned the company and the researchers a 2013 NSERC Synergy Award for $200,000 on February 3, 2014 which will help the team expand their breeding program.

The Synergy Awards for Innovation were launched in 1995 by Natural Sciences and Engineering Research Council of Canada to recognize partnerships in natural sciences and engineering research and development between universities and Canadian industry. Since their inception, the Awards have honoured the most outstanding achievements of these collaborations in the natural sciences and engineering.

This project highlights the vital role and benefit of aquaculture research. Wild fisheries peaked 18 years ago but the human population continues to grow.

"If we expect to continue eating fish as a main source of protein, we need to work out ways to make aquaculture environmentally friendly and socially acceptable," said Professor Dixon.

More information: www.yellowislandaquaculture.com/

Provided by University of Waterloo