



Prof. Scott Hinch



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Investing in the future of wild Pacific salmon

Numbers-based decision-making may be our best bet to save threatened salmon populations

“Despite all the pressures they’re facing, Pacific salmon are still showing up,” says UBC Forestry Prof. **Tara Martin**.

Chinook, coho and sockeye salmon runs are quintessentially BC; however, stocks have been on a marked decline since the mid-1990s, largely due to habitat loss, warming ocean temperatures from climate change, fishing and shifting landscape uses.

“Climate change is perhaps the single biggest overarching factor because it’s depleting salmon’s food sources in the ocean, where some species spend the majority of their lives,” notes UBC Forestry Prof. **Scott Hinch**, Director of the Pacific Salmon Ecology and Conservation Lab.

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In the Fraser Valley, around 85% of floodplain habitat used by 19 genetically and ecologically distinct Pacific salmon populations has been lost to agriculture, housing and businesses. In addition, “our research also shows that around 64% of stream length is now either lost entirely or inaccessible to salmon due to barriers, such as dams, floodgates and road culverts,” says Tara.

To address this, Tara and her team have embarked on a project that takes a Priority Threat Management approach to quantify threats to wild Pacific salmon species and the related costs of protecting them. Developed by Tara’s Conservation Decisions Lab, Priority Threat Management is a decision-making tool that illustrates how to recover the most species for the least cost using a scientific, data-driven approach.

“Priority Threat Management draws on empirical data and expert knowledge of major threats to biodiversity to forecast the expected outcome of tailored management strategies on species recovery and persistence, along with the cost and feasibility of those strategies,” says Tara.

The approach can help decision-makers in Indigenous, federal, provincial and municipal governments select the most prudent path forward to save as many species as possible for the least cost. Importantly, research also shows that the expected benefit of implementing salmon management strategies increases when supported by Indigenous and crown governments, Tara adds.

Learn more at:
pacificsalmonecologyconservationlab.ca



Habitat restoration is a key lever

Tara and Scott's research, published in the *Journal of Applied Ecology* in April 2022, calculated that to support healthy populations of 14 distinct salmon species in the Lower Fraser River would cost approximately \$20 million per year for 25 years. Moneys would go towards a suite of habitat restoration strategies that would involve restoring coastal areas found at the tidal mouths of rivers, along with freshwater restoration, barrier removal, habitat protection and updates to watershed management policies.

Implementing conservation strategies for an additional three salmon species would double the cost, their assessment concluded. Doing nothing will likely lead to the slow decline of all 19 salmon species found in the Lower Fraser.

"Run sizes in the southern latitudes are shrinking, whereas salmon populations in northern regions are doing ok," says Scott. While the number of salmon in the north Pacific continues to increase, population diversity is declining, which will ultimately further weaken salmon's resilience to climate change, adds Scott. 🌱



Prof. Tara Martin



We've hit a tipping point where ecosystems are collapsing,"

Tara says. "Now is the time to support science-based conservation and climate adaptation efforts."

Learn more at:

taramartin.org/research-lower-fraser-river-salmon

