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Charting a Healthy Future for Fish Farms

An Interview with Professor Martin Krkosek, Ecosystem Biologist
University of Toronto

How is climate change affecting ecosystems?

The world is changing in profound ways through climate change, habitat modification, overfishing and so on. And what we're learning about how ecosystems respond to that is that they can respond in ways that are not predictable, not necessarily smooth, and these changes can result in dramatic collapses of ecosystems or sudden outbreaks of infectious disease. These things can happen without warning and so we're trying to understand the mechanisms of these types of ecosystem responses and how to predict them, and how to respond to them.

What are the risks of fish farming?

Fish farming is definitely the way of the future for providing seafood to humanity. But what we're learning through our work on infectious diseases is that we have to be very careful about how this is conducted, where we place them, and in particular, how we respond to disease outbreaks on fish farms because the conditions on fish farms is very conducive to changing diseases in ways that are not beneficial for humans: it creates diseases that are more virulent, that spread more quickly, and those can spill over to marine ecosystems and affect the wild fisheries that we're trying to protect and rebuild. So the potential for disease transmission is really profound. It can be exported over oceanic scales and the implications are dramatic for lucrative fisheries in Canada, Russia and the United States.

How has your research influenced policy?

Focusing our research on applied problems that are relevant to policy is a main motivator for what we do in the lab. Some of our work on diseases in salmon aquaculture have been translated into on the ground changes in management and policy. And those have turned out to be effective for rebuilding wild salmon stocks and controlling infectious disease. It's really important to engage the public on these issues because changes may be most easily achieved by consumer preference – the public putting pressure on governments to change or industries themselves to change by exercising their decisions in the supermarket. I'm going to buy this fish because it's produced sustainably, I'm not going to buy this fish because it's overexploited or it's causing disease problems.