

For the Fraser River delta, a crucial choice looms for species and a way of life

Scientists say there is a cost-effective path to protecting one of the richest and most threatened ecosystems in Canada — if only someone had the power to take it

[Ivan Semeniuk](#) Published November 26, 2020



Lia Chalifour, a doctoral student at the University of Victoria, measures water salinity and temperature as part of a field study of the Fraser River estuary. This region is a rich ecosystem, but more than 70 per cent of its wild habitat has been consumed by human activity over the years, and new research suggests that, without action, many species will no longer thrive there.

Michael Snyder

When conservation biologist Laura Kehoe first came to Canada's West Coast in 2016, she was astonished by what she found on the Fraser estuary – the broad, fertile plain where British Columbia's longest river empties into the Salish Sea just south of Vancouver. Here, in the shadow of one of Canada's densest urban centres, alongside farms, commercial fisheries and the nation's largest shipping port, was an ecological treasure unlike anything she had encountered in her native Ireland or elsewhere in Europe.

"I was really stunned that a place that's so close to a big city could have so much wildlife," she said. "One day I'd see a bald eagle in a housing estate, with people walking by like it's normal, or spot orcas on the ferry from Vancouver to Victoria. I just couldn't get over it."

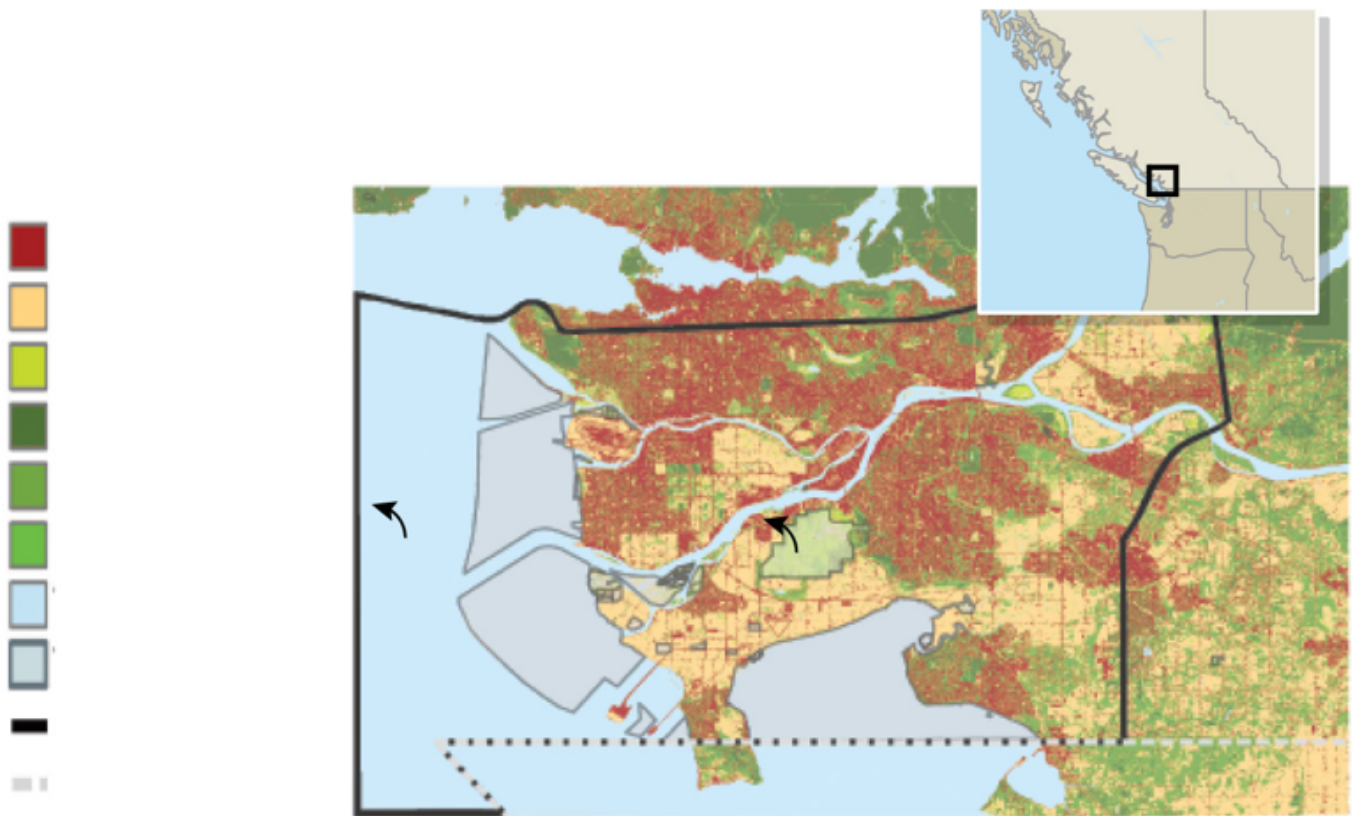
The revelation was more than casual sightseeing. As part of a joint project with researchers at the University of Victoria and University of British Columbia, Dr. Kehoe's assignment was to document the stress that urbanization, land use and industrial activity are putting on scores of species at risk in one of Canada's most extraordinary and contentious landscapes – and then figure out how much it would cost to save them.

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Now the results are in and they make clear that the Fraser estuary is at a crossroads. More than 70 per cent of the region's wild habitat has already been consumed by human activity. Major new disturbances are looming on the horizon, including a large shipping terminal and the Trans Mountain Pipeline, which, though not situated on the river delta, would significantly increase marine traffic. Numerous smaller-scale developments – residential, industrial and agricultural – are also under way and affecting habitat. Meanwhile, climate change, with the threat of sea-level rise and other effects, is beginning to exert additional pressure on the estuary's struggling ecosystem.

Dr. Kehoe, who is now based at Oxford University in Britain, said the Fraser

estuary is a place that should be bursting with life for generations to come. "But right now it's on the brink of collapse."



Diversity of Fraser River estuary

ivan semeniuk and JOHN SOPINSKI/THE GLOBE AND MAIL

SOURCE: Conservation Science and Practice/Laura Kehoe

Her detailed study of the area, published Thursday in the journal Conservation Science and Practice, leaves no doubt about where things are heading without a new approach.

The study focused on a swath of the lower Fraser River running through major municipalities south of Vancouver and adjacent marine waters that spans more than 1,000 square kilometres. Within that area, Dr. Kehoe and her co-authors analyzed threats faced by 102 species, most of which are

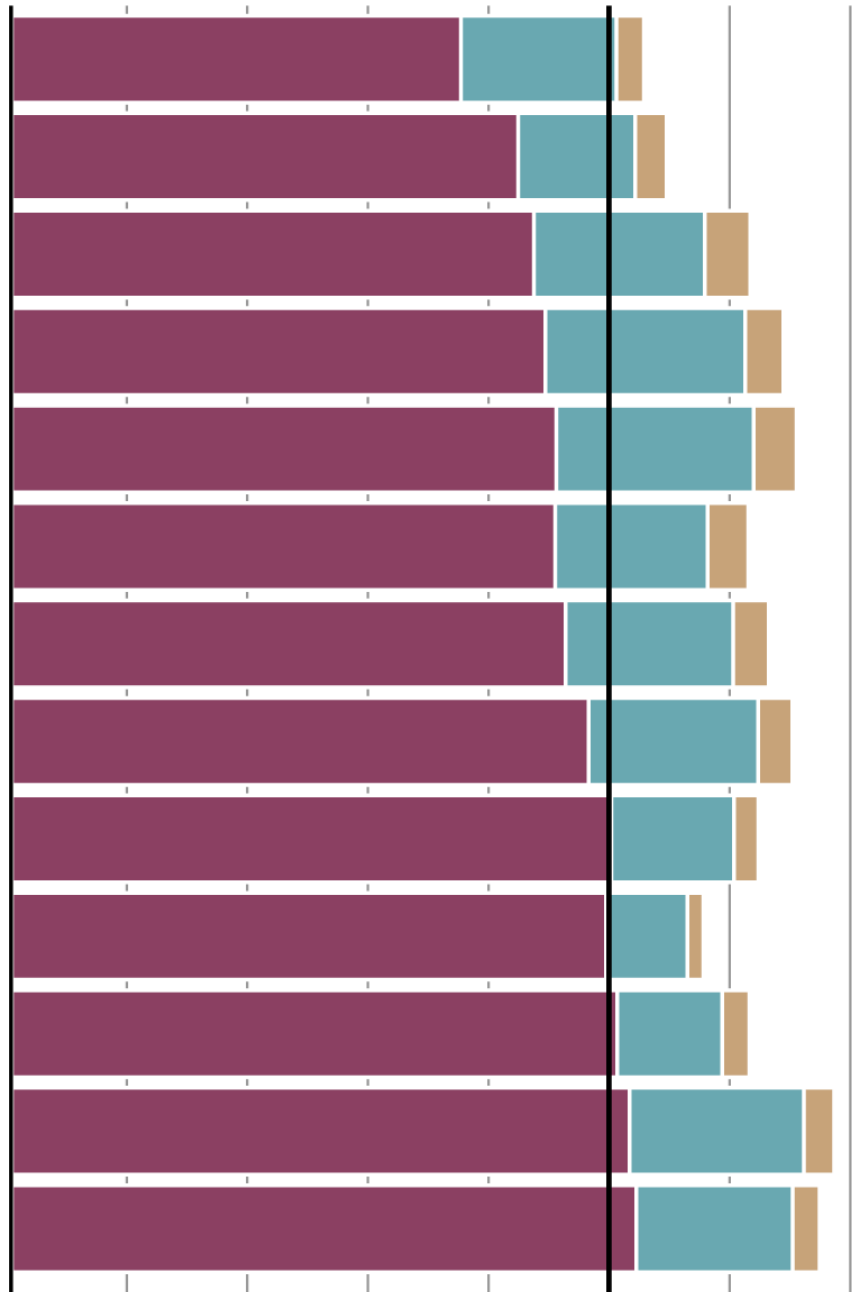
considered at risk.

The list includes all five species of commercially harvested salmon in British Columbia, along with numerous other marine and freshwater fish, migrating birds, dozens of smaller animals and plants that live in the estuary's grasslands, salt marshes and forest ecosystems. Also on the list is the region's most well-known species at risk: the beleaguered southern resident killer whale, with a population that numbers just 74 at latest count.

Drawing on detailed data and the expertise of 65 specialist contributors, the team found that two-thirds of those species had a less than 50-per-cent chance of surviving on the estuary over the next 25 years. However, the study also shows that a specific set of management actions could boost the odds for nearly all of the species persisting to better than 60 per cent. The estimated cost of doing so amounts to \$381-million, or \$15-million a year.

"That's about one beer per year for every person in Greater Vancouver," Dr. Kehoe said. "If we all raised a toast to the Fraser, we could ensure that the estuary has a brighter future."

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fraser river estuary: a case for action

Probability of persistence by species group, %, (number of species)

Anadromous

fisheries (12)

ivan semeniuk and JOHN SOPINSKI/THE GLOBE AND MAIL

sOURCE: Conservation Science and Practice/Laura Kehoe



Tara Martin of UBC, a senior author of the study of the Fraser ecosystem, stands with graduate student and co-author Dan Stewart.

Cassandra Holt

Tara Martin, a senior author on the study who directs the University of British Columbia's Conservation Decisions Lab, said the price tag is counterbalanced by the benefits that the wildlife of the estuary provides through fishing and tourism. And there are other benefits that come from preventing the total degradation of one of Canada's richest ecological sites.

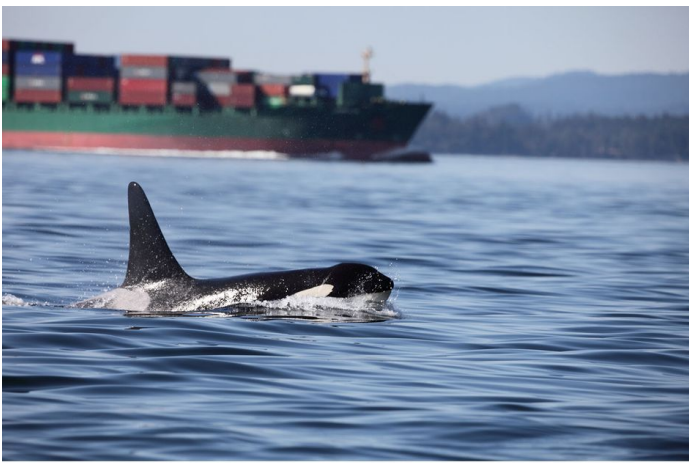
Dr. Martin specializes in priority-threat management, an approach that includes ranking conservation actions based on which are most likely to deliver the best outcome for the amount invested. Because of the number of species and the diversity of stakeholders involved, the Fraser estuary is one of the most complex systems where the approach has been tried.

Despite the competing demands on the estuary, the study found there is still a chance of rescuing most or all of the native species that depend on it.

"I think it's quite remarkable and it speaks to the resilience of this system," Dr. Martin said. "But it also speaks to the need to get busy and implement these actions now."

The study is an important step forward because it offers a road map, said Jonathan Moore, a professor of aquatic ecology and conservation at Simon Fraser University who was not involved in the work. It highlights that the chief obstacle to restoration is not cost but the lack of an overarching plan or body with the mandate to manage and conserve the estuary as a whole.

"Ecosystems are sort of slipping through the cracks between jurisdictions, and at the boundaries of water and land, or cities and nature," Dr. Moore said. "There's a real need for co-ordination and accountability."



Killer whales, barn owls, coho salmon and bog orchids are some of the species that make up the Fraser River delta ecosystem.

Tom Middleton, Connor Stefanison, Alex Harris and Fernando Lessa

The closest thing the estuary has had to a co-ordinating body was the Fraser River Estuary Management Plan, or FREMP, which was cancelled by the Harper government in 2013. Conservation groups say that while FREMP was flawed because it had neither the funding nor the authority to protect the estuary adequately and left out First Nations groups as key stakeholders, its absence has left a patchwork of federal, provincial and municipal regulations that have mainly served to protect the status quo in the form of continued development.

“It has, for the most part, been a lawful process ... but at the same time a very destructive one,” said Deborah Carlson, a staff lawyer for West Coast Environmental Law, a Vancouver-based environmental law firm.

A current focus of the debate over continued development on the estuary is

the Roberts Bank Terminal 2, a project proposed by the Port of Vancouver. The project has undergone an environmental assessment and is awaiting a decision from federal authorities about whether it can proceed. The terminal would generate hundreds of millions of dollars a year, said Arpen Rana, a spokesperson for the port, who added that if the terminal is approved, "it will be built in a way that upholds our mandate to protect the environment."



The Fraser River delta is a busy shipping area, and regulators are weighing whether a new proposed terminal is worth the potential environmental risks.

Michael Snyder

With so much economic potential tied to the estuary, Dr. Martin at UBC said some might argue that conservation resources might be better directed toward preserving more intact wilderness areas elsewhere. The problem with that thinking, she said, is that it overlooks the rare combination of resources and location that has allowed so many species, including humans, to flourish on the estuary for thousands of years.

"It's not by accident that we landed here," Dr. Martin said. "We choose to live on estuaries because their biodiversity is so rich. That means we stand to lose a lot."

That includes any hope of recovering the former productive salmon fisheries on the Fraser, in part because the estuary plays such an important role in the salmon life cycle.

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"Juvenile salmon from throughout the Fraser River basin will spend days to months feeding and growing in the estuary," said Brendan Connors, a biologist with Fisheries and Oceans Canada who was among the specialists who provided information for the study. And while salmon face numerous and growing threats as they migrate back and forth from the river to the open ocean, Dr. Connors said the estuary is critical to sustaining healthy populations.

The same is true for hundreds of thousands of migrating birds that use the estuary as a stopping point.

"You really can't overstate how important this place is," said James Casey, who is the region's conservation lead for Birds Canada. "It's one of maybe a half-dozen estuaries along all of the Pacific coast of the Americas that support this level of abundance for birds."

Mr. Casey said the region is a litmus test that will determine whether economic interests can be managed in a way that maintains natural abundance.

To that end, the study considered a range of management practices aimed at preserving the estuary's biodiversity alongside continued human presence. They include measures such as restoring and connecting both public and private land, improved flood management, active control of



Western sandpipers are one of the migrating bird species that pass through the delta each year.

invasive species, tighter enforcement on illegal fishing, and ways of reducing pollution and disturbance owing to marine traffic. But atop all of that, the study emphasizes the need for a form of co-governance that would bring together federal and provincial interests together with First Nations groups as a part of an overhaul of how the estuary is managed.

Murray Ned, executive director of the Lower Fraser Fisheries Alliance, which represents First Nations interests on the delta, including restoration planning, said the time is long overdue for First Nations inclusion in a decision-making process that, till now, has largely left out their concerns and has been driven by economic considerations over species sustainability.

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“There hasn’t been enough emphasis put on the fact that we’re in a crisis and have been for decades,” Mr. Ned said. He added that after generations of displacement, First Nations groups are still in the early days of taking up an active role in conservation management but that bringing them to the table as part of a broader move toward reconciliation would also enable species protection to proceed in a more co-ordinated fashion.

Dr. Martin said that all the measures the study considered would be boosted by a co-governance arrangement with the more than 30 First Nations groups on the lower Fraser because “there is a higher likelihood that the actions will be implemented successfully when First Nations and other governments are working together.”

The question is who, if anyone, will make a move toward co-governance and potentially write the next chapter for the Fraser estuary. After a successful provincial election, the NDP government has yet to state its approach to the region. The federal government, too, has not yet articulated which way it wants to go.

Dr. Martin said the scientific evidence underscores why the estuary is now facing the most pivotal moment in its history.

“If we continue business as usual then we’ll lose most of these species,” she said. “Or we have an opportunity to change and develop in a way that averts the loss of future economic opportunities from having such a biodiverse region.”

For First Nations people with a connection to the estuary, there is even more at stake if the effort to preserve the region’s unique natural bounty falters, Mr. Ned said.

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“At the end of the day it’s our entire cultural identity and the loss of who we are,” he said. “I don’t know how else I can translate its importance. That’s the reality we live in.”

