



Tsleil-Waututh Nation səlilwətał



Recent research on cumulative effects in Tsleil-Waututh territory

Tsleil-Waututh Nation (TWN) has published [three new research reports](#) detailing how cumulative effects of contamination, historical fishing practices, and shoreline alteration have severely degraded the health of Burrard Inlet. These impacts have greatly affected TWN's way of life and left TWN members with very limited opportunities to harvest many culturally important foods from our waters. This exceeds what is allowable under Tsleil-Waututh law, and infringes our inherent and constitutionally-protected Aboriginal rights under Canadian law.

In June 2021, the BC Supreme Court set a standard for actions the Crown must take if cumulative effects infringe upon a First Nation's constitutionally-protected rights when the [Blueberry River First Nations \(BRFN\)](#) demonstrated this had happened in their territory¹. In this case, the court prohibited any further activities that impact BRFN rights until the Crown and BRFN jointly established enforceable mechanisms to manage cumulative effects and ensure that constitutional rights are respected. TWN applauds this decision and agrees that First Nations require recognized and enforceable decision-making authority within their own territories for any activities that may impact their rights.

Given TWN's inherent rights and title, the evidence of cumulative effects in Burrard Inlet, and the precedent under Canadian law, TWN expects recognized decision-making authority for activities that affect our rights in Burrard Inlet. This means that we want to work collaboratively with the Crown to jointly review and authorize activities that impact TWN rights in Burrard Inlet. This is an essential step to uphold our way of life and constitutionally-protected rights. Additionally, both BC and Canada have enshrined UNDRIP into their respective laws, and cooperative joint-decision making would be a prudent step to align Crown legislation with UNDRIP. We see significant opportunity and believe the time is right to take a meaningful step to collaboratively ensure all activities in Burrard Inlet occur in alignment with our respective laws and obligations.

¹ Yahey v. British Columbia, 2021 BCSC 1287

Background

Burrard Inlet has been the home of Tsleil-Waututh since time out of mind. The productivity and abundance of the marine, intertidal and upland resources of the inlet supported many thousands of Tsleil-Waututh ancestors who established legal obligations to protect, defend and steward the land, water and resources of their territory. These legal obligations and territorial jurisdiction have been continuously maintained and exist today.

Following European contact in 1792, the abundant resources of the area attracted extensive settlement, resource extraction, and urban, industrial and port development. Today, these ongoing impacts have gravely degraded the health of Burrard Inlet and severely diminished TWN's rights and ability to use the lands and waters of the territory in accordance with their way of life. While some impacts of long-term development in Burrard Inlet are easily recognized, such as the closure of shellfish harvesting due to contamination since 1972, details of other impacts are harder to discern or have been obscured by time. TWN is conducting a cumulative effects assessment of Burrard Inlet to quantify total impacts to the inlet since European contact.

This complex work is based on quantifying the differences between pre-contact and current conditions in Burrard Inlet, and on examining how colonial development and activities have driven these changes. When complete, this cumulative effects assessment will produce tools to inform decision-making by establishing management goals that uphold TWN rights and outline the steps we need to take to reach these goals. However, before the comprehensive assessment is complete, individual research projects that are part of this ongoing process can provide evidence outlining how cumulative effects have changed the inlet and inform restoration or regulatory priorities.

The new TWN research details how three key impacts of colonial development affect Burrard Inlet and TWN rights: contamination, historical fishing practices, and shoreline alteration. The key findings of the three reports are summarized below and some of the impacts can be viewed in an [online map here](#).

Overview of new reports on major cumulative effects in Burrard Inlet

1. [Contamination in Burrard Inlet](#)

Title: A review of Burrard Inlet water quality data to understand the impacts of contamination on Tsleil-Waututh Nation's safe harvesting practices. ²

What we did

- Over the last several years, TWN and BC's Ministry of Environment have collaborated to update [Water Quality Objectives for Burrard Inlet](#). This work included an extensive review of available data on water quality in Burrard Inlet to establish known contaminant levels. It also established contaminant-specific thresholds in water, sediment and animal tissue that are protective of various marine uses, including seafood consumption at rates relevant to TWN.
- This new report compared the known contaminant levels in Burrard Inlet to the contaminant-specific thresholds to determine which contaminants exceed safe benchmarks for various marine uses, including seafood consumption.

What we found

- The review found that over 700 different contaminants have been identified in Burrard Inlet.
- At least 56 of these contaminants exceeded safe thresholds for any of the marine uses considered.
- Of the 56 exceedances, 24 contaminants exceeded thresholds protective of human consumption of seafood at rates relevant to coastal Indigenous people, including lead, mercury, arsenic and many pesticides.
- Further, 27 of the contaminants that exceeded safe thresholds are currently included in provincially authorized waste water discharge permits in Burrard Inlet.
- Finally, the review identified over 600 sources contributing contaminants throughout the inlet.

Conclusions

- Contamination of the inlet severely limits TWN's ability to exercise constitutionally-protected rights, such as the right to harvest traditional foods.
- Contamination has been a serious issue for over a century, and all bivalve harvesting has been closed in Burrard Inlet since 1972. Hundreds of regulated and unregulated contaminant sources continue to contribute to the problem.

² Rao, A.S. (2022). A review of Burrard Inlet water quality data to understand the impacts of contamination on Tsleil-Waututh Nation's safe harvesting practices. Tsleil-Waututh Nation Research Report.

- Contamination in Burrard Inlet must be managed on a basin-wide scale and consider cumulative effects and the condition of the receiving waterbody in its entirety, rather than managing contamination on a source-by-source basis.

2. [Historical marine ecology and fisheries practices in Burrard Inlet](#)

*Title: Historical Ecology in Burrard Inlet: Summary of Historic, Oral History, Ethnographic, and Traditional Use Information.*³

What we did

- TWN commissioned a review of early Euro-Canadian documents, including fisheries catch records and settler journals, to identify references to marine ecology and fisheries practices immediately following European contact in 1792 to the early to mid-1900s. These records were compared to harvesting practices referenced in TWN traditional use studies, spanning activities from the mid to late 1900s.
- In total, this review included 117 sources and identified 6,192 references to marine ecology and fisheries practices.

What we found

- In early post-contact times, Burrard Inlet was exceedingly ecologically rich and marine food sources were healthy, diverse, abundant and reliable. Various impacts, including overfishing, pollution and habitat loss caused substantial, and in many cases total, declines in populations of salmon, sturgeon, whales, herring, smelt, ooligan (eulachon), groundfish, clams, crab, and waterfowl.
- The review found previously underappreciated information about many important species and destructive settler fishery practices, including commercial whaling in Burrard Inlet that used “rocket driven harpoons”; large sturgeon that were commonly fished in False Creek; and a herring fishery that used dynamite to kill schools of fish, which were then processed into oil used as a lubricant for industrial logging operations. These practices resulted in extirpation of these species from the inlet.
- Many severe impacts had occurred by the late 1800s, decades before detailed Western documentation or scientific research began in the area. For example, the whaling industry collapsed by 1870, major herring populations collapsed in 1885, and no sturgeon have been reported in the inlet since 1900.

Conclusions

- Nearly all species identified, including salmon, sturgeon, whales, herring, smelt, ooligan, groundfish, clams, crab, and waterfowl have collapsed in abundance between an estimated 50% and over 99% compared to the early- or mid-1800s.

³ Morin, J., and Evans, A.B. (2022) Historical Ecology in Burrard Inlet: Summary of Historic, Oral History, Ethnographic, and Traditional Use Information. Fisheries Centre Research Report.

- Various impacts, including destructive fishing practices, pollution, habitat loss, and loss of prey species, caused these collapses in Burrard Inlet.
- These impacts have inter-connected and cumulative effects on the ecosystem, disrupting the ecological community of the inlet and triggering trophic cascades between producers, predator and prey.

3. Shoreline alteration and marine habitat loss in Burrard Inlet

Title: Reconstructing the pre-contact shoreline of Burrard Inlet (British Columbia, Canada) to quantify cumulative intertidal and subtidal area change from 1792 to 2020.⁴

What we did

- TWN and UBC collaborators digitally mapped the pre-contact shoreline of Burrard Inlet using historical maps, TWN knowledge and archival documents.
- We then compared the pre-contact and current shorelines to quantify total intertidal and subtidal areas lost to shoreline alteration and development since European contact.

What we found

- Shoreline alteration and development has eliminated 1,214 ha (3,000 acres) of intertidal and subtidal habitat, including 55% (945 ha) of intertidal habitats in Burrard Inlet.
- The most severe shoreline alteration occurred in False Creek and the Inner Harbour, including loss and elimination of ecologically productive and culturally important intertidal habitats at False Creek Flats (>99% intertidal area lost), the Capilano River Estuary (80% intertidal area lost), and the Seymour-Lynn Estuary (56% intertidal area lost).
- Urban development has destroyed important TWN canoe routes, including from present-day Coal Harbour to English Bay, and from the Inner Harbour to False Creek through Vancouver’s downtown eastside. These areas were historically intertidal habitat, and at high tides Stanley Park and downtown Vancouver were islands.

Conclusions

- Shoreline alteration and intertidal habitat loss has substantially changed Burrard Inlet’s physical boundaries, ecosystem, and TWN’s ability to practice their way of life.
- The incremental nature of shoreline development, generally viewed on a project-by-project basis over decades or centuries, conceals the extent of cumulative shoreline change in Burrard Inlet.

⁴ Taft, S., Oldford, G., Lilley, P.L., Oetterich, S.B., Morin, J., George, M., George, M., and Christensen, V. (2021). Reconstructing the pre-contact shoreline of Burrard Inlet (British Columbia, Canada) to quantify cumulative intertidal and subtidal area change from 1792 to 2020. Fisheries Centre Research Report

- Proposed new impacts to the shoreline must be considered in the context of the entire history of development in order to uphold constitutional obligations and Indigenous ways of life.

A collaborative approach to move forward together

While cumulative effects are hard to quantify, the impacts of contamination, destructive fishing practices, and shoreline development are undeniable and self-evident. Clam harvesting has been closed in Burrard Inlet for 50 years due to contamination, herring were functionally eradicated from the inlet with dynamite as far back as 1885, and estuaries and extensive intertidal habitats are now industrial facilities and condominiums.

While the impacts are stark, from some perspectives it may be tempting to sacrifice already degraded ecosystems for economic development. However, the current state of Burrard Inlet is not acceptable to TWN and we are actively working to restore the health of the territory to uphold the Nation's inherent and constitutionally-protected rights. Importantly, the Canadian judicial system recently acknowledged that as more impacts accrue in a First Nation's territory, development becomes ever-harder to justify under Canadian law, as the Crown must still fulfill its constitutional obligations to uphold Indigenous ways of life and consider historical impacts of development (*Yahey v British Columbia*, 2021 BCSC 1287). This legal precedent corroborates TWN's perspective on cumulative effects and indicates that in degraded ecosystems, any activities and authorizations must consider the impacts of existing cumulative effects on the life ways of local Indigenous peoples.

Considering the evidence discussed above and precedent under Canadian law, TWN believes that working collaboratively with the Crown to review and authorize activities in Burrard Inlet is essential to begin addressing cumulative effects in TWN territory to uphold our constitutionally-protected rights. In the age of UNDRIP, cooperative joint-decision making is an important way to move forward together to ensure that both Indigenous and Canadian laws and obligations are upheld and respected.