The science behind an urbanized ocean: a literature review of the Metro Vancouver ocean

Question: **CITY × MARINE ECOSYSTEM = ?**
What is the current state of Metro Vancouver's marine environment as a critical land-sea interface that faces sustainability pressure from rapid urban development?



Solution: **Literature Review. What we searched:**

Published scientific literature on marine ecosystems

Spatial coverage: Around Metro Vancouver's ocean

Temporal coverage: 1921 - 2025

The literature was being examined through qualitative categorization and thematic coding analysis by (1) study discipline, (2) time, (3) location, and (4) other criteria of interest.

Image: Kitslano Beach, by Jerry KK Wong (2026)

Key Findings:

History and path dependencies of research:

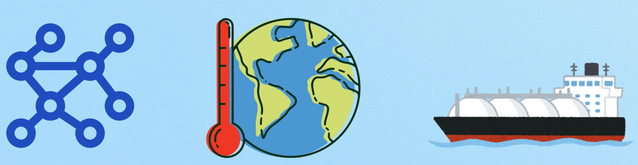
- Emphasis on species distri./abundance
- Low amount of studies on ecological outcomes from urbanization effects
- Discipline studied linked to hyperlocal events

Gaps and Future:

1) Expand research on climate adaptation
   - Effects of extreme heat/precipitation
   - Sea level rise + waterfront development

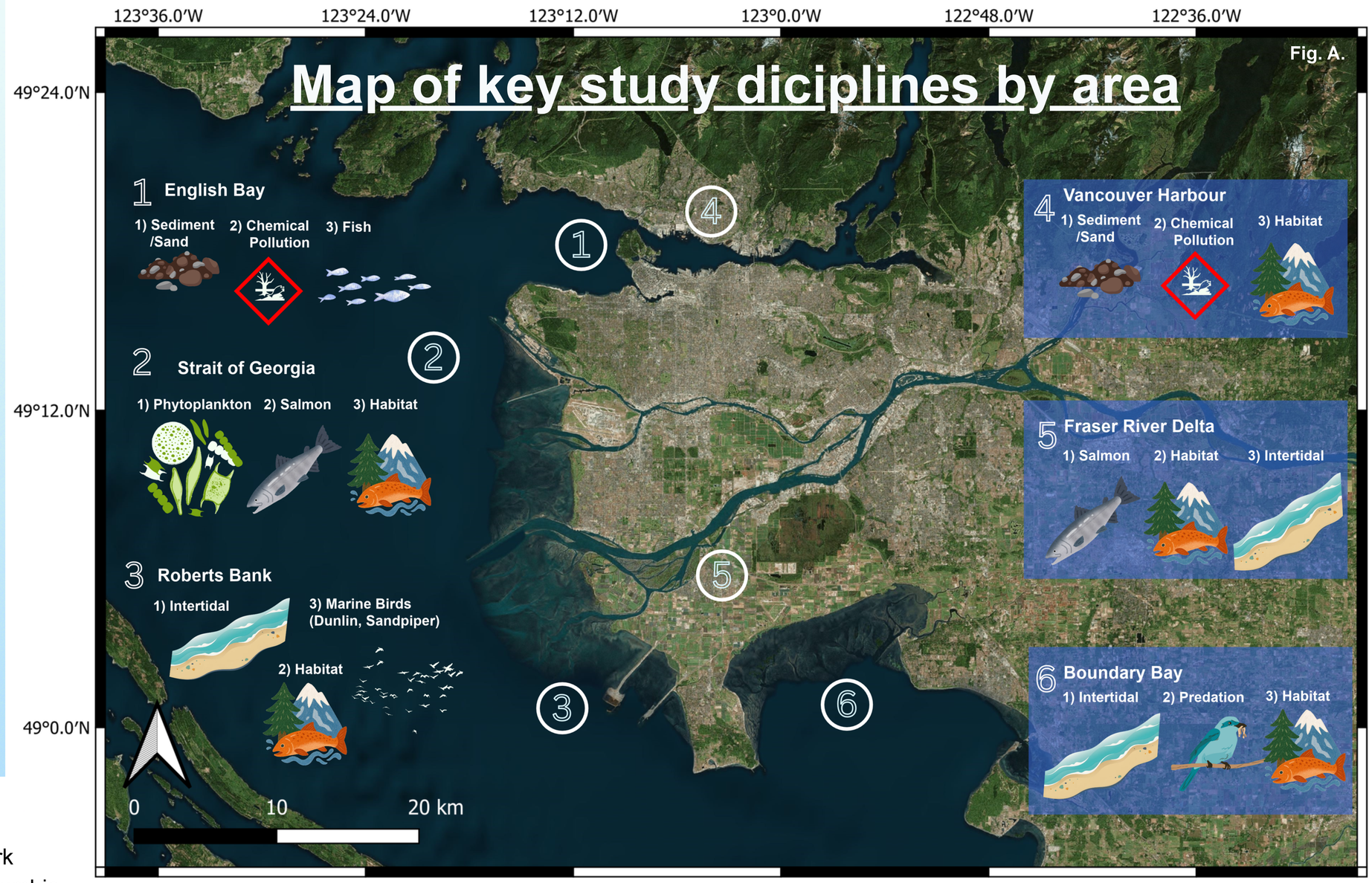
2) Explore effects of emerging env. impact in relation to urban growth trajectory
   - Marine vessel traffic + dredging of inlets
   - Oil spill risks + shift in industrial pollutant

3) Share findings and connect with researchers, practitioners, stewards, communities, and agency working in the region



Map of key study diciplines by area

Fig. A.



Publication counts and discipline change over time

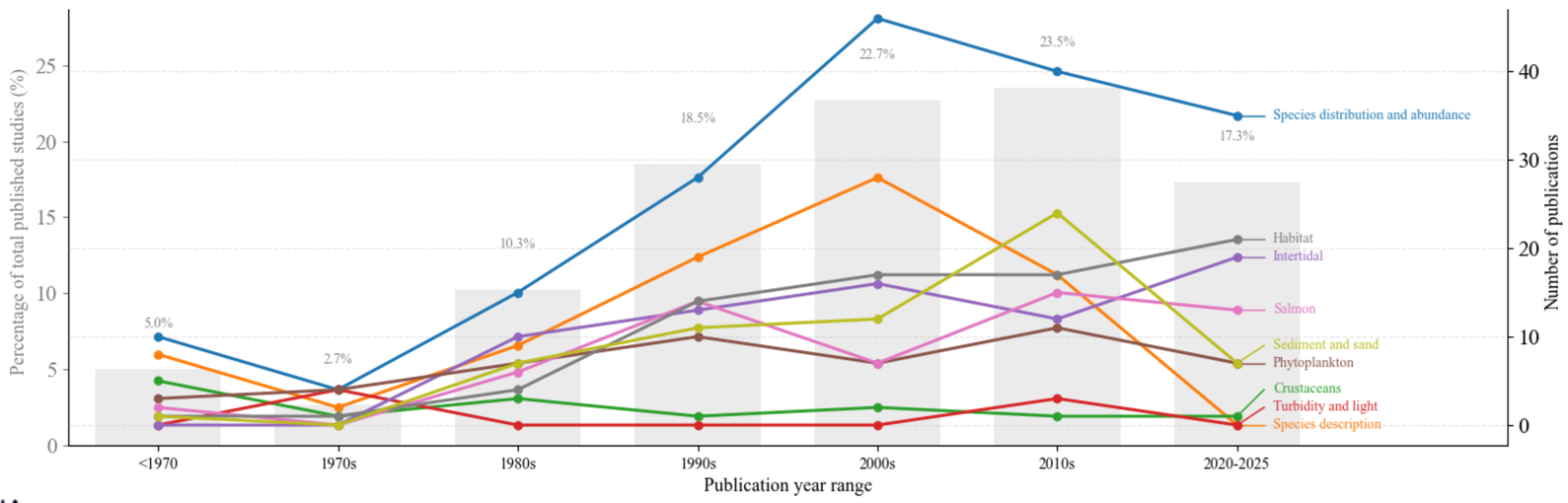


Fig.B. Publication counts of respective research disciplines over time for line graph; top three research disciplines from each decade were selected. Bar graph displays the percentage distribution of all publication by year groups from before 1970 to the 2020-2025 timeframe, divided by the decade for years in between (n = 445).

Land Acknowledgement

This study is presented for the research work primarily conducted at the University of British Columbia, located on the traditional unceded territories of the hən̓q̓əmin̓ən̓əm̓ speaking xʷməθkʷəy̓əm (Musqueam) people.

We acknowledge that the scope of this research covers marine and terrestrial spaces colloquially known as Metro Vancouver, which is situated on traditional and unceded territories of the xʷməθkʷəy̓əm (Musqueam), Sḵwx̱wú7mesh Úxwumixw (Squamish Nation), səlilwətaɬ (Tsleil-Waututh) Nations, q̓iċəy̓ (Katzie), q̓ʷɑːn̓ƛ̓ən̓ (Kwantlen), kʷikʷəƛ̓əm (Kwikwetlem), máthxwi (Matsqui), qiqéyt (Qayqayt), Semiahmoo, and scəw̓aθən məsteyəxʷ (Tsawwassen).



PELAGIC ECOSYSTEMS LABORATORY

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Jerry Kwan Ki Wong[1,2*], Grace K. Melchers[1] and Brian P.V. Hunt[1,3]

*email: jkw28@sfu.ca , [1] Institute for the Oceans and Fisheries, University of British Columbia, Vancouver, BC, Canada.
[2] School of Resource and Environmental Management, Simon Fraser University, Burnaby, BC, Canada.
[3] Department of Earth, Ocean and Atmospheric Sciences, University of British Columbia, Vancouver, BC, Canada.

This project is funded by **B. Hunt's Natural Sciences and Engineering Research Council Grant (RGPIN-2017-04499)**, **Wall Research Award (AWD-030387)**, and the University of British Columbia Faculty of Science **Enhanced Science Undergraduate Research Experience (EnSURE) Awards**. We sincerely thank all contributors and supporters of this project.