

Between Inclusion and Erasure: How Indigenous Stewardship Informs Environmental Monitoring in Canadian Conservation Research

Indigenous knowledge (IK) and peoples are increasingly recognized as essential to understanding ecosystem change, conserving and monitoring biodiversity (Indigenous Circle of Experts 2018; Maracle et al. 2025). Despite this growing acceptance, recognition does not necessarily translate into meaningful authority (Thompson et al. 2020), as IKs have historically been treated as supplementary to scientific knowledge (McGregor 2004) or incorporated only when they align with existing frameworks. *Between Inclusion and Erasure* is an ongoing project that seeks to understand how Indigenous peoples' relationships to land and water are framed within monitoring frameworks, and how Indigenous peoples' representations (or lack thereof) can affect both equitable and effective conservation.

The project began with a narrative review focused on understanding critiques of conventional Western monitoring frameworks, examples of Indigenous stewardship frameworks, and emerging models for equitable practices such as co-governance models and Indigenous community-based monitoring. The review found that in recent years, there has been significant commitment to acknowledging the importance both environmentally, and equitably, of Indigenous peoples' involvement in monitoring, but that there are significant barriers to meaningful inclusion. A central distinction emerged between inclusion and authority (McGregor 2021); Indigenous peoples may be included in monitoring without substantially influencing what is being monitored, how knowledge is interpreted, or how decisions are made. At the same time, community-based and collaborative monitoring initiatives (Danielson et al. 2021; Mercer et al. 2023), demonstrate possibilities for environmental monitoring that is both scientifically rigorous and responsive to Indigenous stewardship and place-based values.

Building on these findings, a comparative case study examined six Canadian environmental monitoring and stewardship initiatives; the Metal Mining Environmental Effects Monitoring (EEM), Mackenzie River Basin Monitoring Network (MRBMN), Gwaii Haanas, ALMCA's community-based monitoring program, and the Ontario Boreal Caribou Monitoring Program. They were compared using consistent criteria related to governance, Indigenous participation and knowledge integration, monitoring design, data governance, and links to stewardship and decision-making. Information from primary and grey literature was compared across cases to identify how governance influenced the recognition and inclusion of IK and stewardship. These case studies highlight how the distinction between Indigenous inclusion and exclusion is rarely absolute, with differing configurations of participation, knowledge recognition and authority. Monitoring frameworks like EEM privilege biophysical understandings of the environment, with Indigenous peoples participating primarily through consultation and broader public participation mechanisms (Environment Canada 2012). In contrast, Indigenous-led and co-governed initiatives such as ALMCA's community-based monitoring, the Coastal Guardian Watchmen programs, and Gwaii Haanas more explicitly situate monitoring within relationships of stewardship, place, responsibility, and governance (Kirby & Kotaska 2017; Council of the Haida Nation & Parks Canada 2018; O'Connor et al. 2022).

Together, these findings suggest that epistemic and governance equity are interconnected: recognizing Indigenous relational understandings can broaden what is monitored, how environmental change is understood, and which responses are considered appropriate. With the growing threats posed by climate change and Canada's commitments to Indigenous rights, equitable environmental science requires approaches that bridge ecological and social understandings while recognizing Indigenous peoples as longstanding stewards and rights-

holders of these lands and waters. Environmental monitoring is therefore not solely an ecological practice, but also a social and governance process that shapes whose knowledge is recognized, whose priorities inform environmental assessment, and who holds authority in responding to environmental change.

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