



Free the Rivers... For the Sake of the Ocean



Advocating for Dam Removal in Marine Conservation

Upriver dams are not often considered in discussions surrounding marine conservation. However, their removal can be a powerful tool to employ in efforts to restore marine ecosystems.

This briefing aims to:

- provide context to the issue of dams in marine conservation
- outline the environmental, social, and economic benefits resulting from the removal of dams
- provide recommendations for effective action moving forward

Quick Dam Facts

- Dams are used to enable reliable access to water and electricity and to prevent downstream flooding (when they are properly functioning)

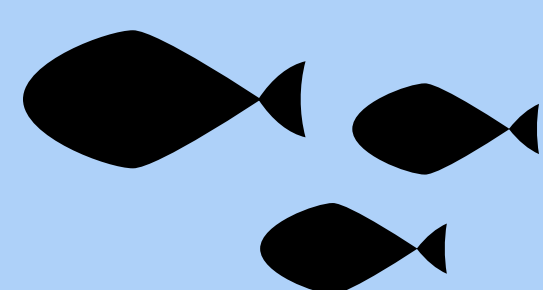
(The Report of The World Commission on Dams, 2016)

- Many dams, especially in North America, are old and outdated. These dams can pose a safety risk if proper upkeep does not occur. Complete removal is often more economically viable than dam upkeep

(American Society of Civil Engineers, 2017)

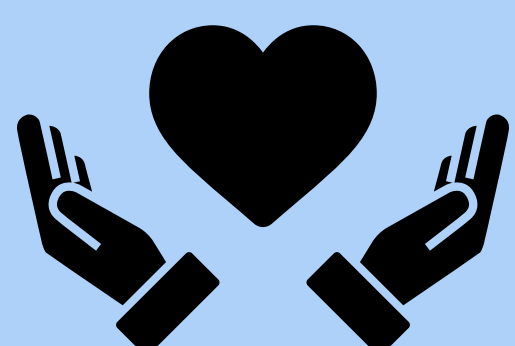
- There is increasing public awareness and concern surrounding the negative environmental and social impacts of dams

At a Glance: Benefits of Dam Removal



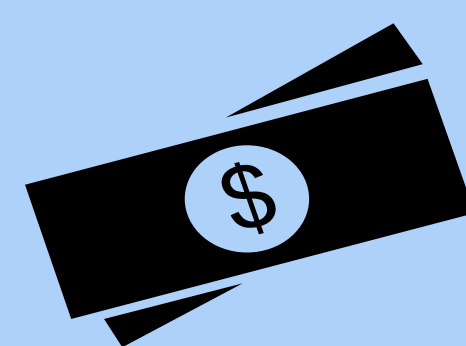
Environmental

Boosts fish stocks by permitting anadromous fish migration and restoring estuarine habitat



Social

Restores sociocultural resources for Indigenous and non-Indigenous peoples



Economic

Supports healthy fish stocks and encourages tourism

Approximately
40,000
dams exist worldwide.
3,700 more are planned.

(Barbarossa et al, 2020)

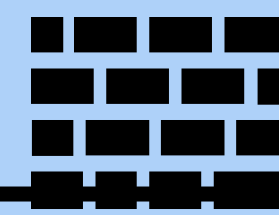
93%
of rivers
will be altered upon the
completion of approved
dams worldwide

(Barbarossa et al, 2020)

There is a quickly
accelerating trend for
the removal of big
dams worldwide

(American Rivers, 2016)

Dam Removal Benefits Breakdown



Environmental

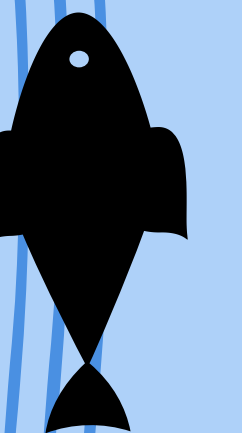
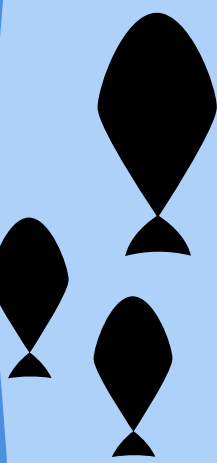
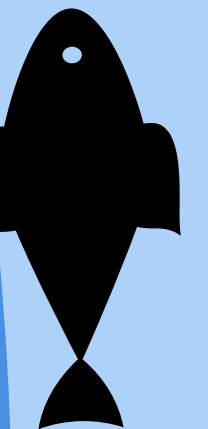
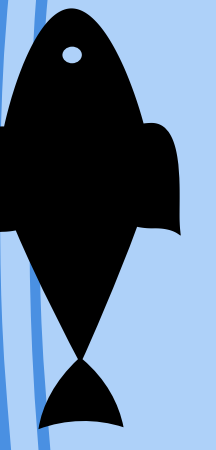


Salmon migrating upstream; dam removal allows for this type of movement (Photo: World Atlas)

A variety of anadromous fish will be able to access critical upriver spawning grounds. Impressive recovery in the migration patterns of salmon, eel, sturgeon, shad, and bass have been observed after the removal of even extremely prolonged blockages. Access to spawning grounds increases species recruitment which eventually results in healthier and more resilient stocks in the marine environment. (Ligon et al, 1995)

Estuaries will return to their pre-disturbance states. Salinity levels will decrease and temperatures will become more dependent on river temperature. These changes favour species that were adapted to the estuarine conditions destroyed by the construction of dams. Nutrients and organic materials will be delivered to the estuary instead of remaining trapped upriver; this enriches estuarine food webs from the bottom up. (Foley et al, 2015; Rubin et al, 2017)

Huge amounts of sediment will be released (90% of river sediment), replacing the chronic deficiencies in estuaries. Sediment is critical in the formation of substrate that supports fish nursery habitat; this greatly improves the viability of fish stocks. (Rubin et al, 2017)



Social

In British Columbia, salmon are extremely culturally important to First Nations peoples. Salmon are used for food, trade, and ceremonial purposes. Improving the health of salmon stocks will therefore assist First Nations communities. (First Nations and Indigenous Studies UBC, 2009)

Social benefits such as improvements in fisheries management, a less problematic shifting baseline effect, and increased environmentalism may follow dam removal. (McClenachan, Lovell, & Keaveney, 2015)



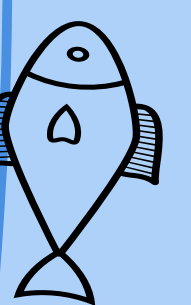
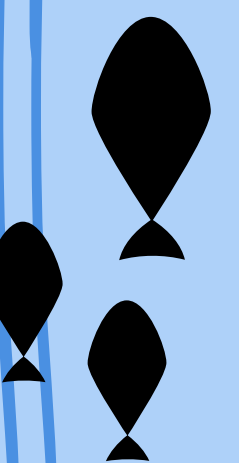
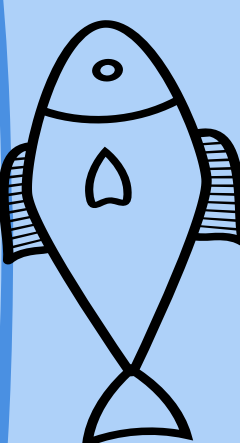
A traditional salmon preservation technique used by First Nations peoples in BC (Photo: Tina Joseph)



Expansions in fishing and tourism industries represented by large numbers of well maintained boats (Photo: Newfoundland and Labrador)

Economic

The restoration of fish stocks and estuarine habitat can result in an expansion in the fishery and tourism industries in coastal communities. Industry expansion will likely result in an expansion of the job market and increased revenue coming into individual households and communities in general, boosting local economies (Whitelaw & Macmullan, 2002)



Recommendations for Success Moving Forward

In order to ensure success when considering dam removals as a marine conservation tactic and policy option, the following recommendations should be adhered to:

- Indigenous peoples must be engaged with meaningfully (ideally in a co-governance type arrangement). Adherence with UNDRIP is mandatory.
- Stakeholders should be extensively consulted with before, during, and after the dam removal process. Failure to do so will greatly reduce the likelihood of project success.
- Dramatic ecosystem composition changes and trade offs should be expected, especially in the first few years following removal. Temporary negative impacts may occur in the short term but ecosystems will stabilize in the long run.
- Careful monitoring should continue long after dam removal to assess project success and help inform future projects.

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