

Resources related to Aquatic restoration and fish passage. Download the latest version from

[https://github.com/NewGraphEnvironment/dff-2022/raw/main/docs/Aquatic restoration and fish passage resources.pdf](https://github.com/NewGraphEnvironment/dff-2022/raw/main/docs/Aquatic%20restoration%20and%20fish%20passage%20resources.pdf)

Resource	URL	Details
bcfishpass	<a href="https://github.com/smnorris/bcfishpass">https://github.com/smnorris/bcfishpass</a>	Maintain an aquatic connectivity / fish passage database for British Columbia to track known barriers to fish passage, model potential barriers to fish passage, model passability/accessibility of streams based on species swimming ability, model streams with potential for spawning and rearing activity, etc
fpr	<a href="https://github.com/NewGraphEnvironment/fpr">https://github.com/NewGraphEnvironment/fpr</a>	R package used for cleaning, transforming and extracting data to build interactive reports related to fish passage planning including fish passage assessments and habitat confirmation assessments at road-stream crossings
dff-2022	<a href="https://github.com/NewGraphEnvironment/dff-2022">https://github.com/NewGraphEnvironment/dff-2022</a>	Building digital field forms, mobile QGIS projects and processing data collected using standardized provincial data layer and data collection templates. Utilizes open source software including R, python, bash and QGIS and others.
Parsnip_Fish_Passage	<a href="https://newgraphenvironment.github.io/Parsnip_Fish_Passage/">https://newgraphenvironment.github.io/Parsnip_Fish_Passage/</a>	Interactive reporting for 2019 fish confirmation assessments in the Parsnip Watershed Group north of Prince George in the Peace Region.
Restoring Fish Passage in the Peace Region 2021	<a href="https://newgraphenvironment.github.io/fish_passage_parsnip_2021_reporting/">https://newgraphenvironment.github.io/fish_passage_parsnip_2021_reporting/</a>	Interactive reporting for 2021 fish passage restoration planning activities in the Parsnip Watershed Group north of Prince George in the Peace Region. Includes interactive planning dashboard and <a href="#">webmapping</a> .
Restoring Fish Passage in the Peace Region 2022	<a href="https://newgraphenvironment.github.io/fish_passage_peace_2022_reporting/">https://newgraphenvironment.github.io/fish_passage_peace_2022_reporting/</a>	Interactive reporting for 2022 fish passage restoration planning activities in the Parsnip Watershed Group north of Prince George in the Peace Region. Includes interactive planning dashboard.
Bulkley River and Morice River Watershed Groups Fish Passage Restoration Planning 2020	<a href="https://newgraphenvironment.github.io/fish_passage_bulkley_2020_reporting/">https://newgraphenvironment.github.io/fish_passage_bulkley_2020_reporting/</a>	Interactive reporting for Fish passage assessments at 30 sites. Habitat confirmation assessments were conducted at 22 sites in the Bulkley River watershed group and one site in the Morice River watershed group.
Bulkley River and Morice River Watershed Groups Fish Passage Restoration Planning 2021	<a href="https://newgraphenvironment.github.io/fish_passage_skeena_2021_reporting/">https://newgraphenvironment.github.io/fish_passage_skeena_2021_reporting/</a>	Interactive reporting for Fish passage assessments at 191 sites. Habitat confirmation assessments were conducted at 29 sites in the Bulkley River and Morice River watershed groups.
Bulkley River Watershed Group Fish Passage Restoration Planning 2022	<a href="https://newgraphenvironment.github.io/fish_passage_bulkley_2022_reporting/">https://newgraphenvironment.github.io/fish_passage_bulkley_2022_reporting/</a>	Interactive reporting for Fish passage assessments at 9 sites. Habitat confirmation assessments were conducted at 8 sites and one dam in the Bulkley River watershed group.
Skeena Fish Passage Restoration Planning 2022	<a href="https://newgraphenvironment.github.io/fish_passage_skeena_2022_reporting/">https://newgraphenvironment.github.io/fish_passage_skeena_2022_reporting/</a>	Interactive reporting for Fish passage assessments at 61 sites. Habitat confirmation assessments were conducted at 8 sites and one dam in the Morice River, Zymoetz River and Kispiox River watershed groups.

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Richfield Creek Riparian Fencing 2021	<a href="https://github.com/NewGraphEnvironment/fish_passage_skeena_2021_reporting/raw/master/docs/Attachment_4.pdf">https://github.com/NewGraphEnvironment/fish_passage_skeena_2021_reporting/raw/master/docs/Attachment_4.pdf</a>	Leveraging other investments in the watershed by Morice Watershed Monitoring Trust (streambank stabilization and riparian planting at four locations) we supported the installation of 1100 m of fencing on the west of Richfield Creek in the Upper Bulkley Watershed.
Richfield Creek Riparian Restoration 2022	<a href="https://github.com/NewGraphEnvironment/fish_passage_bulkley_2022_reporting/raw/main/docs/SERN_Richfield_Fencing_2022_Final%20Report.pdf">https://github.com/NewGraphEnvironment/fish_passage_bulkley_2022_reporting/raw/main/docs/SERN_Richfield_Fencing_2022_Final%20Report.pdf</a>	Leveraging other investments in the watershed by Morice Watershed Monitoring Trust (streambank stabilization and riparian planting at four locations) and A Rocha Canada, we supported installation of 840m of cattle exclusion fence on previously unfenced areas of rangeland adjacent to high fisheries values in Richfield Creek. Installation of live cuttings in four distinct polygons covering 866m <sup>2</sup> of riparian area. Use of drone to gather Lidar and temperature data to help inform future process-based restoration actions in the Upper Bulkley Watershed.
fish-passage-22	<a href="https://github.com/poissonconsulting/fish-passage-22">https://github.com/poissonconsulting/fish-passage-22</a>	Mapping stream discharge and temperature causal effects pathways to focus aquatic restoration actions in areas of highest potential for positive impacts on fisheries values
fissr-explore	<a href="https://github.com/NewGraphEnvironment/fissr_explore">https://github.com/NewGraphEnvironment/fissr_explore</a>	Exploratory analysis of provincial fish sampling dataset to explore utility for building evidence based approach to the parameters used to model the best habitat for individual fish species to help make decisions around where to invest in aquatic restoration activities
fissr-explore-21	<a href="https://www.poissonconsulting.ca/f/1386346791">https://www.poissonconsulting.ca/f/1386346791</a>	Analysis of relationships between rainbow trout density (from province wide electrofishing dataset), channel width and gradient
channel-width-21b	<a href="https://www.poissonconsulting.ca/f/859859031">https://www.poissonconsulting.ca/f/859859031</a>	Modelled estimate of channel width based on watershed area and mean annual precipitation. Used to help estimate rearing and spawning suitability of streams for fish use by numerous species in <a href="#">bcfishpass</a> .
bcdata	<a href="https://github.com/smnorris/bcdata">https://github.com/smnorris/bcdata</a>	Simplifies downloads of BC geographic data ( <a href="https://catalogue.data.gov.bc.ca/">https://catalogue.data.gov.bc.ca/</a> ) and DEMs. Integrates with postgres databases using schema and table names identical to those of the province. Allows real-time updates of datasets and collaborative sharing of scripts/workflows.
fwapg	<a href="https://github.com/smnorris/fwapg">https://github.com/smnorris/fwapg</a>	Extends British Columbia's Freshwater Atlas (FWA) with PostgreSQL/PostGIS to enable speedy upstream/downstream queries throughout BC, quickly and cleanly generate watershed boundaries upstream of arbitrary locations, enable quickly serving FWA features as vector tiles, etc.
bcfishobs	<a href="https://github.com/smnorris/bcfishobs">https://github.com/smnorris/bcfishobs</a>	Locate up to date fish observation points as linear referencing events on the Freshwater Atlas.
roadintegrator	<a href="https://github.com/smnorris/roadintegrator">https://github.com/smnorris/roadintegrator</a>	Merge multiple BC road datasets into a single layer for Cumulative Effects analysis
designatedlands	<a href="https://github.com/smnorris/designatedlands">https://github.com/smnorris/designatedlands</a>	Combine spatial data for 40+ designations that contribute to land management to create a single 'Designated Lands' layer for British Columbia
Fish Passage Maps	<a href="https://hillcrestgeo.ca/outgoing/fishpassage/projects/">https://hillcrestgeo.ca/outgoing/fishpassage/projects/</a>	Georeferenced maps for all Skeena watershed groups, Elk River as well as the Parsnip River, Crooked, and Carp River watershed groups in the Peace Region. Can be imported to phone or table for navigation real-time in Avenza Maps.