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Research & Consulting

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Ministry of Environment
and Fisheries and Oceans Canada

Re: Fish Permit Application

A summary of sites to be potentially assessed is included as Tables 1 - 2, details of fish species potentially encountered is presented in Table 3 and an overview map displaying potential sample locations is included as Figure 1. A kml file of the sites is included as an attachment to the application and can also be downloaded from here at this link. Please note that there is an extensive amount of information contained in the kml file (accessed by clicking on sites) including brief summaries of background reporting data (when available).

This work is a multi-year collaboration of many groups and an initiative of the Society for Ecosystem Restoration Northern BC. It includes planning, implementation and monitoring of fish passage and other aquatic habitat restoration.

Funding for the project is through the Habitat Trust Conservation Foundation, Ministry of Transportation and Infrastructure and the Provincial Fish Passage Technical Working Group. Al Irvine, R.P.Bio and Mateo Winterschiedt from New Graph Environment Ltd. are leading the fieldwork with field and office collaboration with teams from the Office of Wet'suwet'en (contact Mike Ridsdale - mike.ridsdale@wetsuweten.com or Dave Dewit - david.dewit@wetsuweten.com), Gitskan Watershed Authorities (contact Alicia Fernando - afernando@gitksanwatershed.com) and Gitsxan Environmental Services (contact Chaz Ware - chaz.ware@gitxsanbusiness.com). Past reports are below:

- https://newgraphenvironment.github.io/fish_passage_bulkley_2020_reporting/
- https://newgraphenvironment.github.io/fish_passage_skeena_2021_reporting/

- https://newgraphenvironment.github.io/fish_passage_bulkley_2022_reporting/
- https://newgraphenvironment.github.io/fish_passage_skeena_2022_reporting/
- https://newgraphenvironment.github.io/fish_passage_moti_2022_reporting/

Rationale for sampling is to inform fish presence/absence, species composition/density, abundance estimates, movement, growth, and survival as part of habitat confirmations and effectiveness monitoring related to fish passage restoration at barrier culverts. Although methods are evolving they are based on those in the Fish Passage Technical Working Group Phase 2 protocol. Presence/absence of fish, species composition/abundance, distribution limits, fish health and fish movement can be useful for prioritizing which crossings are a best fit for fish passage restoration and inform effectiveness monitoring.

Sampling is proposed at streams included in Tables 1 - 2 where we will be performing habitat confirmations and follow up site visits related to past habitat confirmations/fish passage remediations.

Sampling methodologies will be dependent on the site, fish species suspected, type of habitat encountered, risks to aquatic organisms potentially present and ongoing communications. Sampling methods may include minnowtrapping, electrofishing, and dipnetting upstream and downstream of barrier culvert locations.

As part of this permit application we are proposing tagging. Our study plan is (when time allows and PIT tagging is expected to increase our state of knowledge about the subject system) to electrofish small sites both upstream and downstream of priority culvert “barrier” sites and insert biomark APT12 PIT tags into the body cavity of all fish captured over 60mm. Fish location (UTM), length and weight will also be collected. In addition to providing information on abundance upstream and downstream of potential culvert restoration sites, the study will also provide baseline information for monitoring programs to document fish movement, growth and survival at these sites over multi-year timeframes and evaluate if

1. fish are moving into restored areas,
2. through sites where stream crossing structures (culverts) likely causing connectivity issues before any remediation is conducted and to
3. evaluate if productivity of the systems are increasing following bridge installation and/or if fish are moving upstream/downstream of where replaced/removed structures are located).

It should be noted that we are not necessarily tagging all fish we capture - however there are sites in which this may be helpful for baseline and ongoing monitoring. In these situations as we wish to tag all species of interest (stream dependent) over 60mm in each site sampled we would like to apply for a permit allowing a maximum of 720 fish with a maximum of 120 fish/stream. Although we are requesting a maximum of 120 fish/stream, we have listed 120fish of each species per stream because we will not know the species composition of the sites until the sampling occurs. It should be noted however that we will not tag more than 60 fish of one species within each stream (30 upstream and 30 downstream of road/stream crossings).

Please note that the sampling will be completed before October 31 (end of August till mid-September) however the end-date of the sampling period is listed as Dec 31 on the application to allow time outside of the busy field season for the data to be processed, QA'd and organized so that required reporting can be as informative as possible when submitted.

Please do not hesitate to contact me if you need more information or have any questions or concerns.

Al Irvine, R.P.Bio

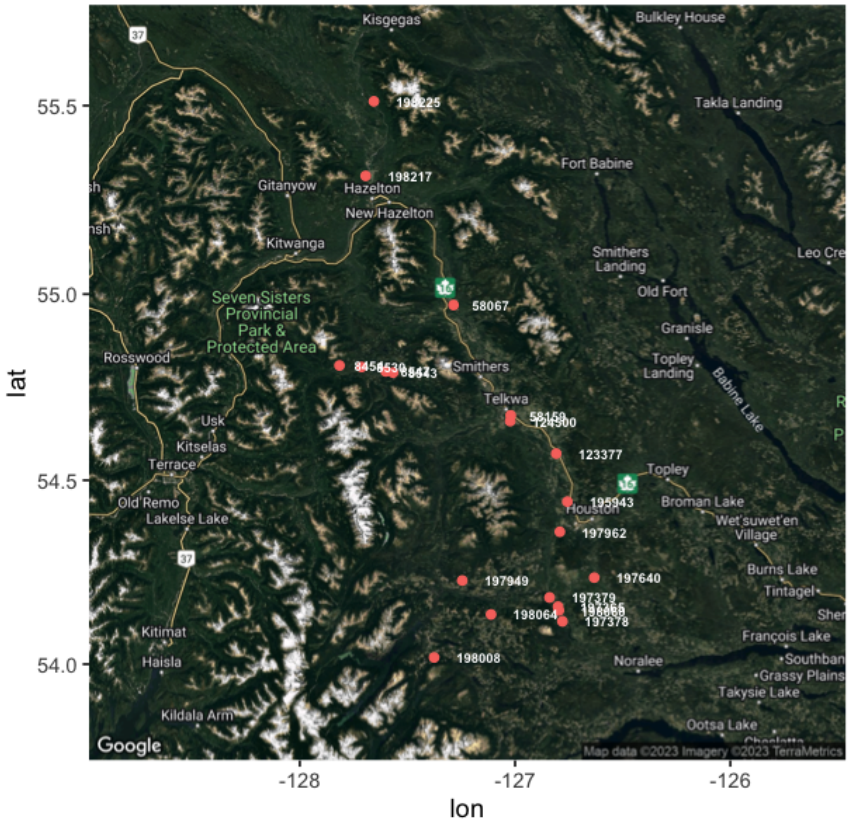

Figure 1: Location of potential sample sites.

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Table 1: Potential sampling locations.

id	stream_name	wsc_code	lat	long	watershed_group_code
123377	Thompson Creek	460-517700-00000-00000-0000-0000-000-000-000-000-000	54.57223	-126.8090	BULK
124500	Helps Creek	460-437000-00000-00000-0000-0000-000-000-000-000-000	54.65954	-127.0228	BULK
195943	Stock Creek	460-589500-00000-00000-0000-0000-000-000-000-000-000	54.44226	-126.7571	BULK
197365	Tributary to Owen Creek	460-600600-23900-32500-0000-0000-000-000-000-000-000	54.15719	-126.8005	MORR
197378	Tributary to Owen Creek	460-600600-23900-59400-0000-0000-000-000-000-000-000	54.11705	-126.7802	MORR
197379	Tributary to Owen Creek	460-600600-23900-13000-0000-0000-000-000-000-000-000	54.18203	-126.8400	MORR
197640	Tributary to Buck Creek	460-636000-36664-00000-0000-0000-000-000-000-000-000	54.23614	-126.6322	BULK
197949	Tributary to Tagit Creek	460-600600-44500-38900-0000-0000-000-000-000-000-000	54.22832	-127.2452	MORR
197962	Peacock Creek	460-600600-07100-00000-0000-0000-000-000-000-000-000	54.36060	-126.7921	MORR
198008	Tributary to Nanika River	460-600600-64400-11700-5110-0000-000-000-000-000-000	54.01832	-127.3761	MORR
198060	Tributary to Owen Creek	460-600600-23900-39300-0000-0000-000-000-000-000-000	54.14676	-126.7967	MORR
198064	Tributary to Lamprey Creek	460-600600-36400-26300-0000-0000-000-000-000-000-000	54.13584	-127.1117	MORR
198217	Tributary to Skeena River	400.444583	55.31427	-127.6942	KISP
198225	Sterritt creek	400-490000-00000-00000-0000-0000-000-000-000-000-000	55.51122	-127.6556	KISP
58067	Tributary to Gramophone Creek	460-223800-00000-00000-0000-0000-000-000-000-000-000	54.97087	-127.2858	BULK
58159	McDowell Creek	460-435300-00000-00000-0000-0000-000-000-000-000-000	54.67521	-127.0204	BULK
8454	Tributary to Zymoetz River	400.221484.662358.258775.251976	54.80904	-127.8155	ZYMO
8530	Tributary to Zymoetz River	440-767000-07400-00000-0000-0000-000-000-000-000-000	54.80512	-127.7128	ZYMO
8543	Tributary to Zymoetz River	440-854000-00000-00000-0000-0000-000-000-000-000-000	54.78990	-127.5667	ZYMO
8547	Tributary to Zymoetz River	440-847000-00000-00000-0000-0000-000-000-000-000-000	54.79305	-127.6005	ZYMO

Table 2: Potential sample site details.

id	stream_name	sp_upstr	fish_tags
123377	Thompson Creek	{CT,DV,RB}	120
124500	Helps Creek	{CT,DV,LNC,LSU,RB}	120
195943	Stock Creek	–	120
197365	Tributary to Owen Creek	–	120
197378	Tributary to Owen Creek	{DV,LNC,MW,RB}	120

id	stream_name	sp_upstr	fish_tags
197640	Tributary to Buck Creek	{RB}	120
197949	Tributary to Tagit Creek	{CT}	120
197962	Peacock Creek	–	120
198008	Tributary to Nanika River	–	120
198060	Tributary to Owen Creek	{DV,RB}	120
198064	Tributary to Lamprey Creek	{DV}	120
198217	Tributary to Skeena River	–	120
198225	Sterritt creek	–	120
58067	Tributary to Gramophone Creek	{RB,ST}	120
58159	McDowell Creek	{CO,RB}	120
8454	Tributary to Zymoetz River	–	120
8530	Tributary to Zymoetz River	–	120
8543	Tributary to Zymoetz River	{DV,RB}	120
8547	Tributary to Zymoetz River	–	120

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Table 3: Fish species recorded in the region.

Scientific Name	Species Name	Species Code	BC List	Provincial FRPA	COSEWIC	SARA
Catostomus catostomus	Longnose Sucker	LSU	Yellow	–	–	–
Catostomus commersonii	White Sucker	WSU	Yellow	–	–	–
Catostomus macrocheilus	Largescale Sucker	CSU	Yellow	–	–	–
Chrosomus eos	Northern Redbelly Dace	RDC	Yellow	–	–	–
Coregonus clupeaformis	Lake Whitefish	LW	Yellow	–	–	–
Cottus aleuticus	Coastrange Sculpin (formerly Aleutian Sculpin)	CAL	Yellow	–	–	–
Cottus asper	Prickly Sculpin	CAS	Yellow	–	–	–
Couesius plumbeus	Lake Chub	LKC	Yellow	–	DD	–
Entosphenus tridentatus	Pacific Lamprey	PL	Yellow	–	–	–
Hybognathus hankinsoni	Brassy Minnow	BMC	No Status	–	–	–
Lota lota	Burbot	BB	Yellow	–	–	–
Mylocheilus caurinus	Peamouth Chub	PCC	Yellow	–	–	–
Oncorhynchus clarkii	Cutthroat Trout	CT	No Status	–	–	–
Oncorhynchus clarkii	Cutthroat Trout (Anadromous)	ACT	No Status	–	–	–
Oncorhynchus clarkii clarkii	Coastal Cutthroat Trout	CCT	Blue	–	–	–
Oncorhynchus gorbuscha	Pink Salmon	PK	Yellow	–	–	–
Oncorhynchus keta	Chum Salmon	CM	Yellow	–	–	–
Oncorhynchus kisutch	Coho Salmon	CO	Yellow	–	–	–
Oncorhynchus mykiss	Rainbow Trout	RB	Yellow	–	–	–
Oncorhynchus mykiss	Steelhead	ST	Yellow	–	–	–
Oncorhynchus mykiss	Steelhead (Summer-run)	SST	Yellow	–	–	–
Oncorhynchus nerka	Kokanee	KO	Yellow	–	–	–
Oncorhynchus nerka	Sockeye Salmon	SK	Yellow	–	–	–
Oncorhynchus tshawytscha	Chinook Salmon	CH	Yellow	–	–	–
Prosopium coulterii	Pygmy Whitefish	PW	Yellow	–	NAR (Nov 2016)	–
Prosopium coulterii pop. 3	Giant Pygmy Whitefish	GPW	Yellow	–	–	–
Prosopium williamsoni	Mountain Whitefish	MW	Yellow	–	–	–
Ptychocheilus oregonensis	Northern Pikeminnow	NSC	Yellow	–	–	–
Pungitius pungitius	Ninespine Stickleback	NSB	Unknown	–	–	–
Rhinichthys cataractae	Longnose Dace	LNC	Yellow	–	–	–

Scientific Name	Species Name	Species Code	BC List	Provincial FRPA	COSEWIC	SARA
Richardsonius balteatus	Redside Shiner	RSC	Yellow	–	–	–
Salvelinus confluentus pop. 26	Bull Trout	BT	Blue	–	–	–
Salvelinus fontinalis	Brook Trout	EB	Exotic	–	–	–
Salvelinus malma	Dolly Varden	DV	Yellow	–	–	–
Salvelinus namaycush	Lake Trout	LT	Yellow	–	–	–
–	Arctic Char	AC	–	–	–	–
–	Cutthroat/Rainbow cross	CRS	–	–	–	–
–	Dace (General)	DC	–	–	–	–
–	Lamprey (General)	L	–	–	–	–
–	Minnow (General)	C	–	–	–	–
–	Salmon (General)	SA	–	–	–	–
–	Sculpin (General)	CC	–	–	–	–
–	Sucker (General)	SU	–	–	–	–
–	Whitefish (General)	WF	–	–	–	–