

Annual Report | 2022

ICSP

Indigenous Community Sampling Program

Site C Methylmercury Monitoring Plan (MMP)

FISH AS
TRADITIONAL FOOD

THE METHYLMERCURY
MONITORING PLAN

ICSP OBJECTIVES

2022 COMMUNITY
ENGAGEMENT

2022 RESULTS

content

ICSP | Annual Report | 2022

FEATURES

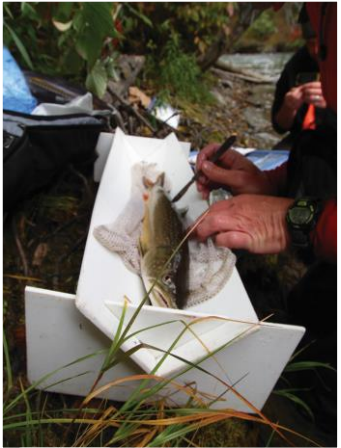
- 01 Fish is Good for You
- 03 Fish Methylmercury in Natural Habitats
- 05 Site C and Changes in Fish Methylmercury
- 07 The Methylmercury Monitoring Plan (MMP)
- 09 The Indigenous Community Sampling Program (ICSP)



17 Species specific results

- ICSP 2022 Samples 13
- ICSP 2022 Results 15
- ICSP Fish Species Specific Results 17

PAGE



11 ICSP Training

ICSP

Indigenous Community Sampling Program

FISH IS GOOD FOR YOU

HEALTH BENEFITS OF EATING FISH

Eating fish can provide numerous health benefits due to fish's rich nutritional profile.

- Studies have shown that traditional diets are healthier than non-traditional diets.
- Compared to other types of meat, fish have higher levels of good fats (omega-3 fats) and lower levels of bad fats (saturated fats).
- Fish are high in beneficial vitamins and minerals, like vitamin D and the essential elements selenium, and iron.
- Replacing store-bought processed foods with fish can help achieve a more balanced diet.

Photo 2 by Deborah Prince



FISH AS TRADITIONAL FOOD

In 2009 the First Nations Food, Nutrition and Environment Study concluded work in BC with the following findings:

- Fish is a culturally, spiritually, economically, and nutritionally important traditional food for many Indigenous Peoples in Canada.
- About half of Indigenous people in Canada face food insecurity.
- The current diet of many Indigenous people in Canada is nutritionally inadequate.
- Increased access to fish that is safe to eat can help address these issues.

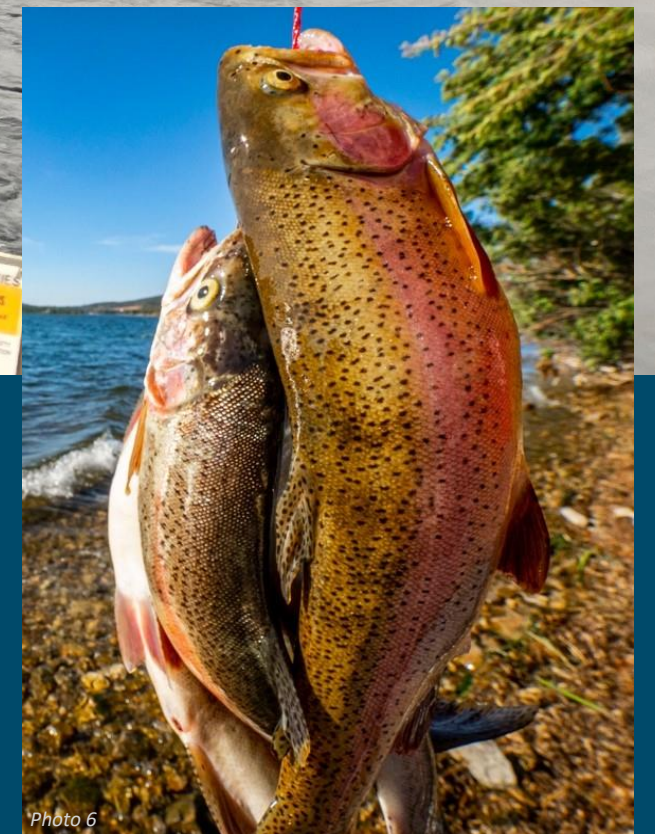


Photo 6

FISH METHYLMERCURY in NATURAL HABITATS

Mercury is a naturally occurring element that is found in low levels everywhere – in air, water, soil, plants, animals, and humans.

BIOMAGNIFICATION UP THE FOOD CHAIN

Bacteria in the bottom of lakes and rivers transform naturally occurring mercury into methylmercury (MeHg; see figure).

Methylmercury levels naturally increase up the food chain. Predatory fish have higher levels of methylmercury than fish lower down the food chain. That's why Lake Trout, Bull Trout and Walleye have more methylmercury than Kokanee, Mountain Whitefish or Rainbow Trout.

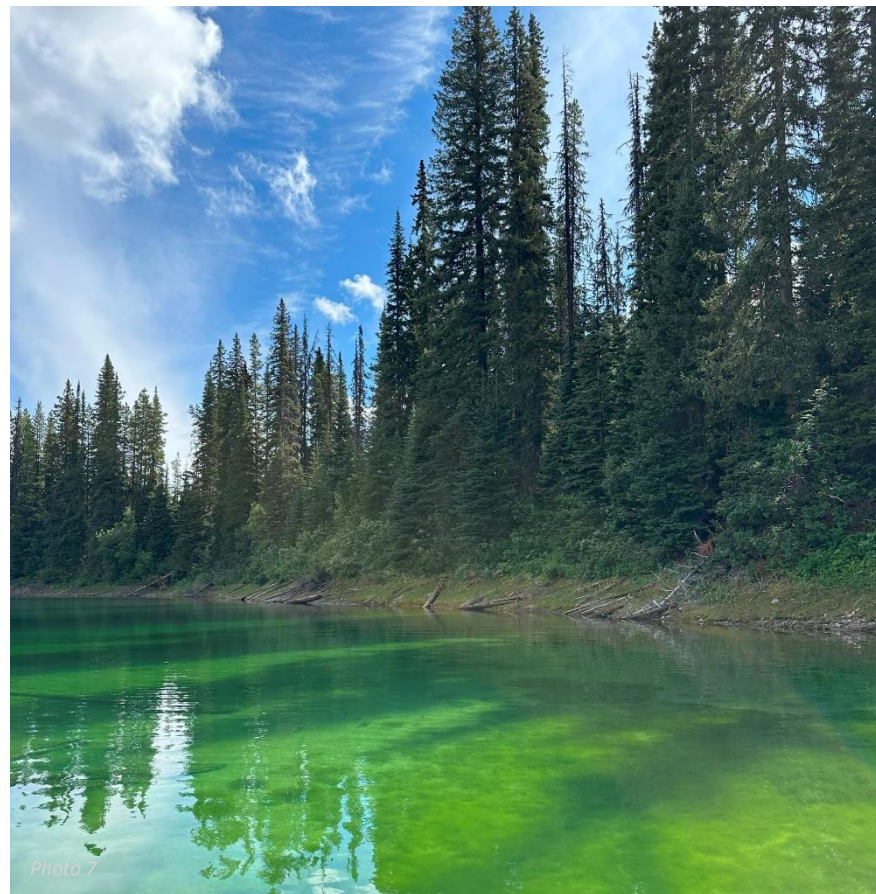
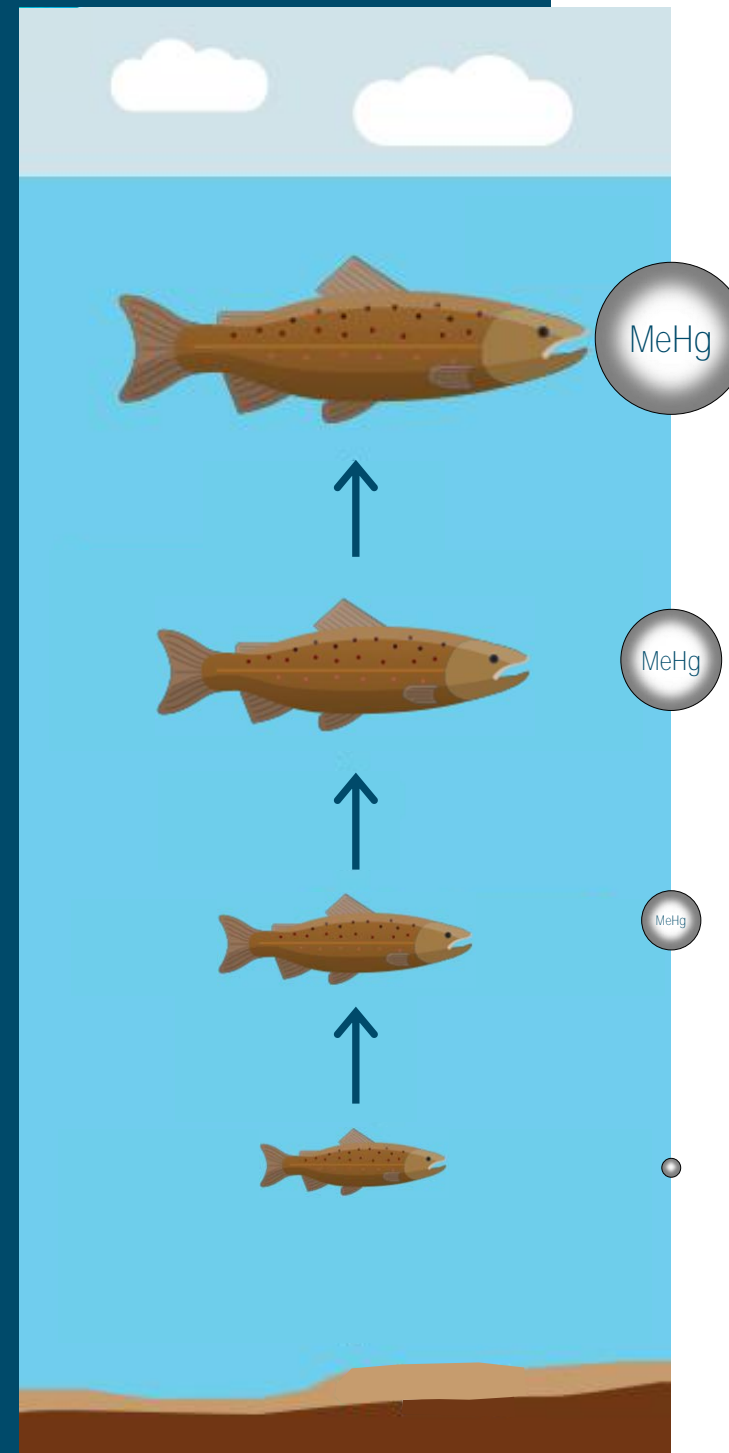
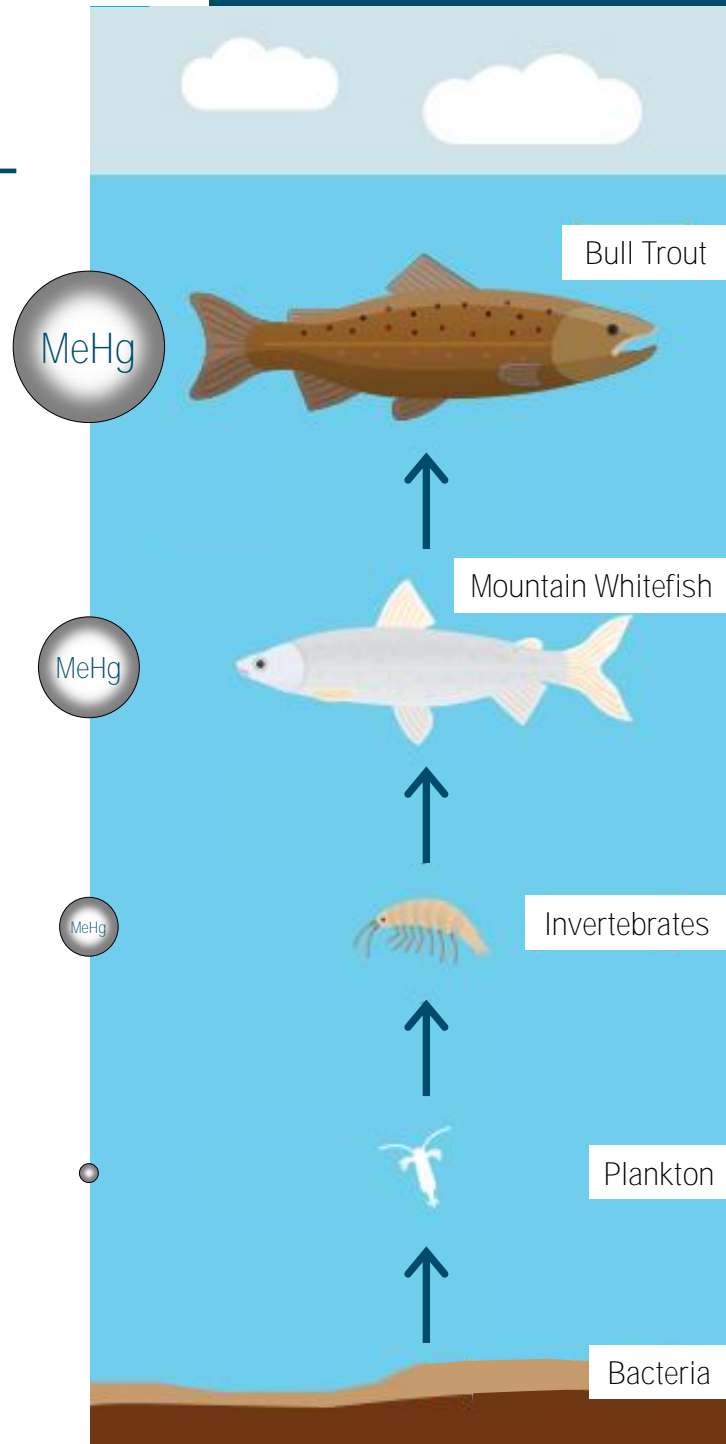


Photo 7



BIOACCUMULATION IN OLDER FISH

Larger, older fish of all species accumulate higher concentrations of methylmercury in their tissue compared to younger smaller fish (MeHg; see figure).



Photo 8

METHYLMERCURY IN ANIMALS

The amount of methylmercury in an animal depends on the amount and type of fish it eats. Non-fish-eating animals like moose have low levels, while fish-eating wildlife like loons can have higher methylmercury levels.

Humans consume small amounts of methylmercury when we eat fish.

For more information, scan below.



SCAN ME

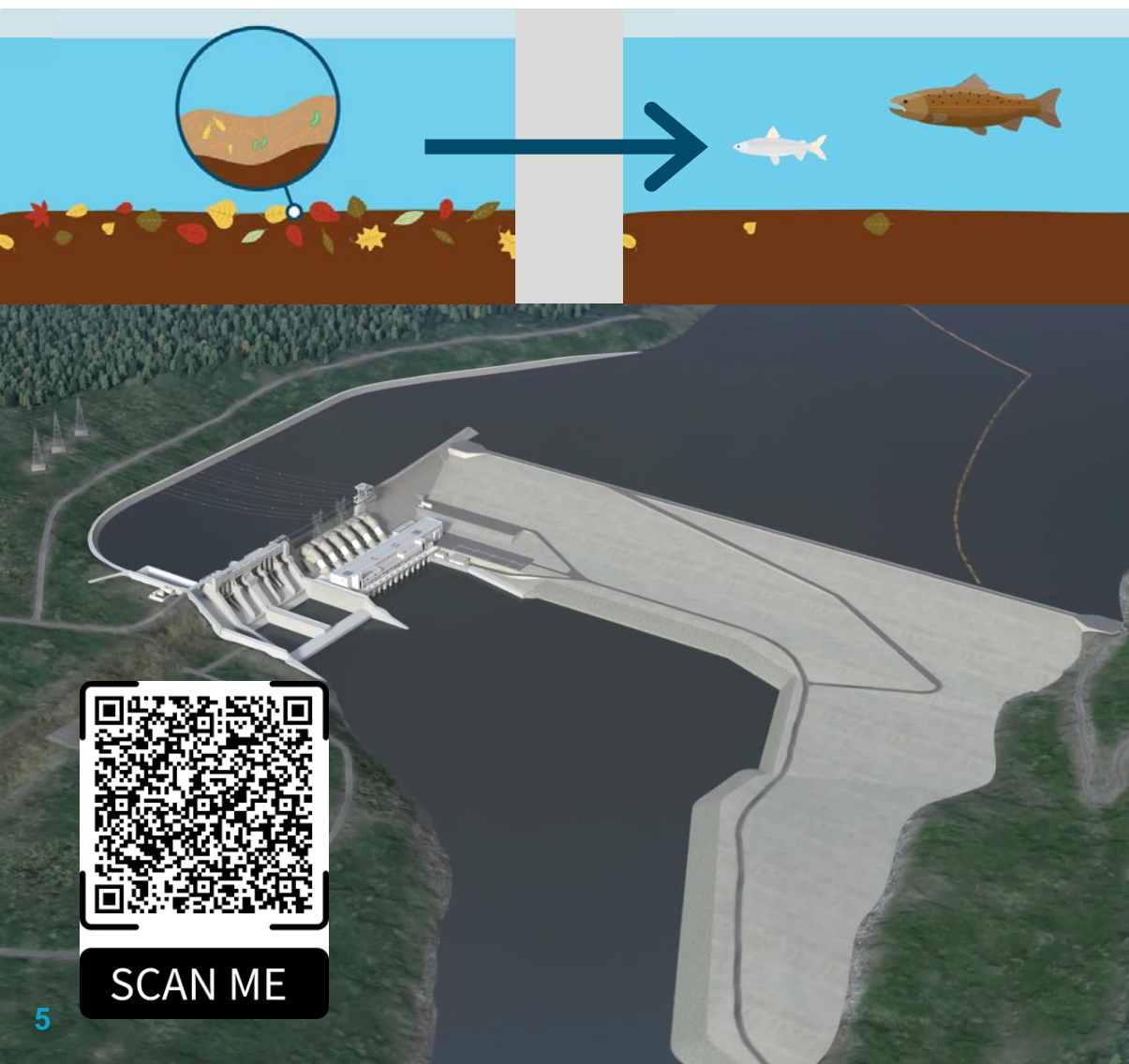
SITE C and changes in FISH METHYLMERCURY

RESERVOIR EFFECT

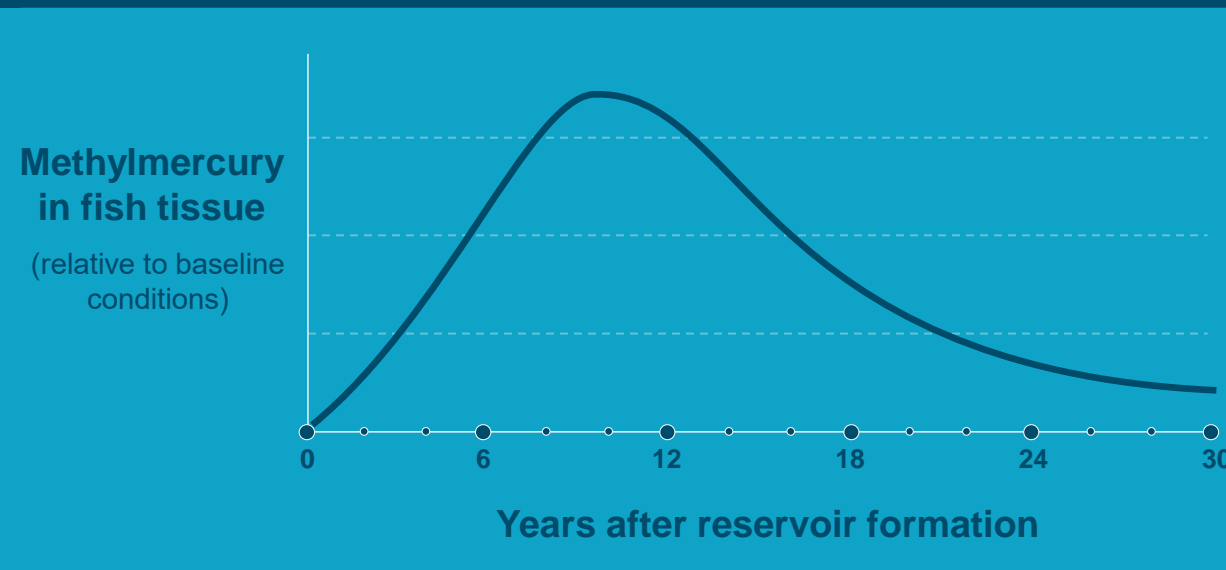
Currently, Peace River fish have low methylmercury levels, similar to other B.C. water bodies.

The creation of the Site C reservoir will lead to an initial increase in methylmercury as bacteria decompose organic material, converting inorganic mercury to methylmercury.

Over the years, as organic matter diminishes, methylmercury production will slow, causing levels to drop across the food chain.



SCAN ME



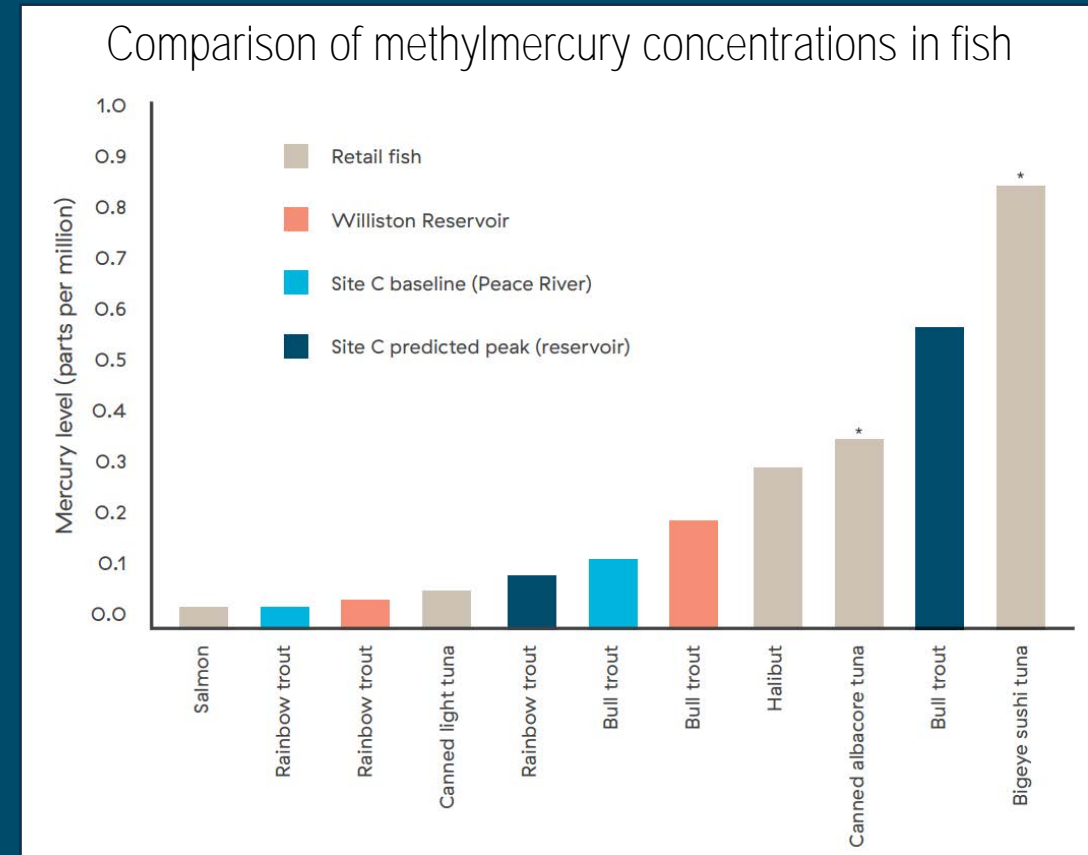
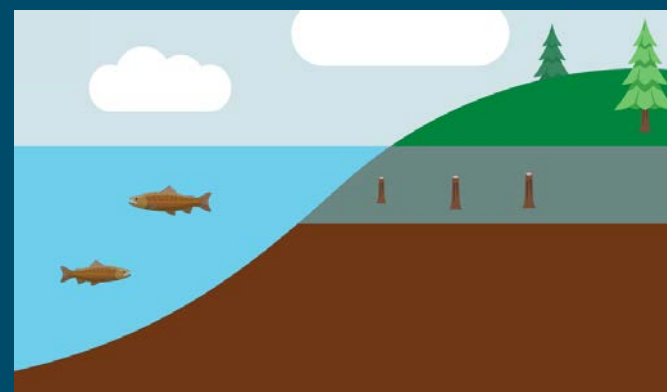
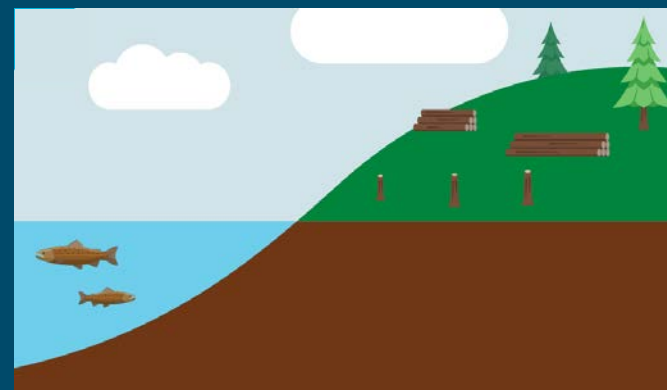
MONITORING

To verify the predicted affects that the Site C project will have on fish methylmercury levels, BC Hydro is working with Indigenous groups, communities and health authorities to implement a Methylmercury Monitoring Plan (MMP).

METHYLMERCURY INCREASES

When the Site C reservoir is created, levels of methylmercury in fish will increase for approximately 10 years. Tissue methylmercury concentrations of fish in the reservoir are predicted to increase by 3-4 times current levels, while concentrations in downstream fish are only expected to peak at 2x baseline (downstream of Many Islands, AB no increases are expected). This is followed by a decrease over the next 20-30 years to levels that are similar to natural lakes and rivers in the area.

The bar chart below compares baseline methylmercury concentrations to predicted peak concentrations, as well as concentrations in the Williston Reservoir and common retail fish.



*Refer to Health Canada for consumption guidelines for canned albacore tuna and fresh tuna: <https://www.canada.ca/en/health-canada/services/food-nutrition/food-safety/chemical-contaminants/environmental-contaminants/mercury/mercury-fish-questions-answers.html#ca2>

THE MMP

Methylmercury Monitoring Plan

WHAT IS THE MMP?

The Methylmercury Monitoring Plan (MMP) was developed to measure changes to levels of methylmercury in fish after the creation of the Site C Reservoir and provide information on how much fish is safe for people to eat.

The three components (figure right): the Core MMP, the Fish Consumption Program, and the Indigenous Community Sampling Program (ICSP).

The Core MMP targets six species of fish (see below) for mercury analysis, using non-lethal sampling.



TARGET FISH FOR THE CORE MMP:



Bull Trout



Walleye



Rainbow Trout



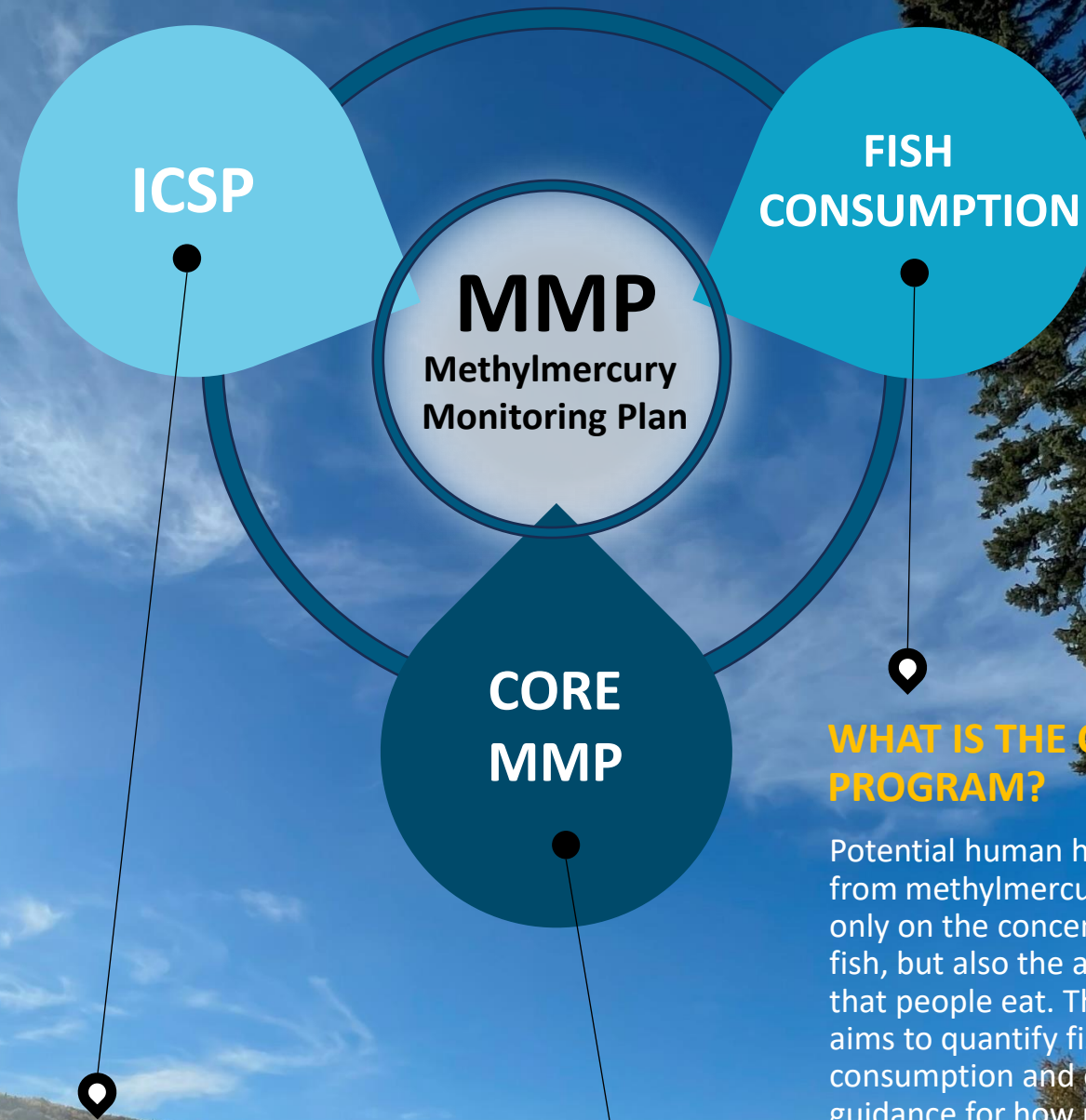
Mountain Whitefish



Longnose Sucker



Redside Shiner



WHAT IS THE ICSP?

The ICSP is an Indigenous community methylmercury monitoring program targeting fish commonly consumed by people, but distinct from the sampling locations and species covered under the Core MMP.

FISH CONSUMPTION

WHAT IS THE CONSUMPTION PROGRAM?

Potential human health risks from methylmercury depend not only on the concentration in fish, but also the amount of fish that people eat. This program aims to quantify fish consumption and establish guidance for how much fish is safe to eat.

WHAT IS THE CORE MMP?

It is the primary MMP sampling program, monitoring methylmercury in fish in the Peace River at the site of the future Site C reservoir and downstream to Many Islands, AB. The program also monitors mercury in water, sediment, porewater, and bugs.



SCAN ME

THE ICSP

Indigenous Community Sampling Program

An Indigenous community methylmercury monitoring program that samples fish people eat, but is distinct from the sampling locations and species covered under the Core MMP.

ICSP OBJECTIVES

There are three main objectives of the ICSP Program:

- Test the levels of methylmercury in fish that people eat, but which are not monitored in the Core MMP.
- Provide opportunities for Indigenous communities to participate in monitoring changes to the environment from the Site C Project.
- Improve food security and food sovereignty for Indigenous communities by building skills and knowledge related to methylmercury in fish.



COMMUNITY CHAMPIONS are trained to collect fish tissue samples and are the link between BC Hydro and Indigenous communities.

THE ICSP

Indigenous Community Sampling Program

2022 COMMUNITY ENGAGEMENT

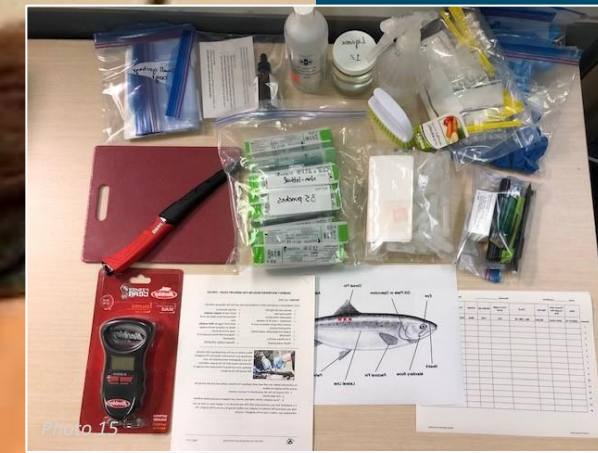
In 2022, the ICSP was fully implemented, providing baseline data on fish methylmercury levels before reservoir filling.

Three training events were conducted at Northern Lights College on May 26, June 9, and October 13, 2022. The sessions covered methylmercury in reservoirs, an MMP overview, and hands-on training in fish tissue sampling.



CHAMPIONS TRAINED IN 2022

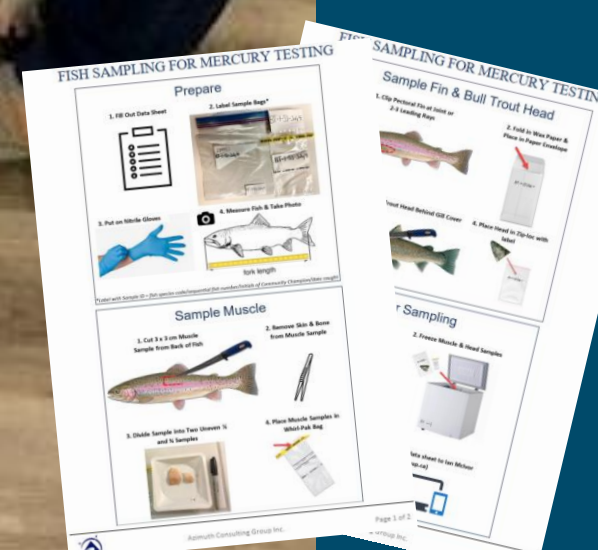
- 4 Blueberry River First Nation
- 2 Dene Tha' First Nation
- 4 Doig River First Nation
- 2 Duncan's First Nation
- 2 Fort Nelson First Nation
- 3 Halfway River
- 2 Horse Lake First Nation
- 4 Kelly Lake Cree Nation
- 4 McLeod Lake Indian Band
- 1 Metis Nation of BC
- 1 Prophet River First Nation
- 1 Saulteau First Nation
- 1 West Moberly First Nation



Indigenous Community Sampling Program
Site C Methylmercury Monitoring Program (MMP)

Community Champion: Gordon Pusnie Year: 2022

#	Date	Caught by? (First & last name)	Catch Location (Lake/River name and/or coordinates - UTM or Lat/Long)	Species Code	Sample ID	Fish Length (mm)	Fish Photo #	Tissue Sample? (yes/no)	Age Structure? (yes/no)
1	July 2022	Gordon Pusnie	57.191818, -110.113250	WT	WT-2022-07-01-01	300 mm	WT-2022-07-01-01	yes	yes
2	July 2022	Gordon Pusnie	57.191818, -110.113250	WT	WT-2022-07-01-02	17 inches	WT-2022-07-01-02	yes	yes
3	July 2022	Gordon Pusnie	57.191818, -110.113250	WT	WT-2022-07-01-03	14 inches	WT-2022-07-01-03	yes	yes
4	July 2022	Gordon Pusnie	57.191818, -110.113250	WT	WT-2022-07-01-04	17 inches	WT-2022-07-01-04	yes	yes
5	July 2022	Gordon Pusnie	57.191818, -110.113250	WT	WT-2022-07-01-05	27 inches	WT-2022-07-01-05	yes	yes



Each Community Champion received a "Fish Kit" for sampling.

Trained Community Champions sampled fish throughout summer, reporting data and submitting tissue samples for mercury analysis.

In 2022 and 2023, Azimuth created a "Quick Start Guide" and an online training video as reference guides. A Peace River Fish ID Key is also available.

Online Training Video



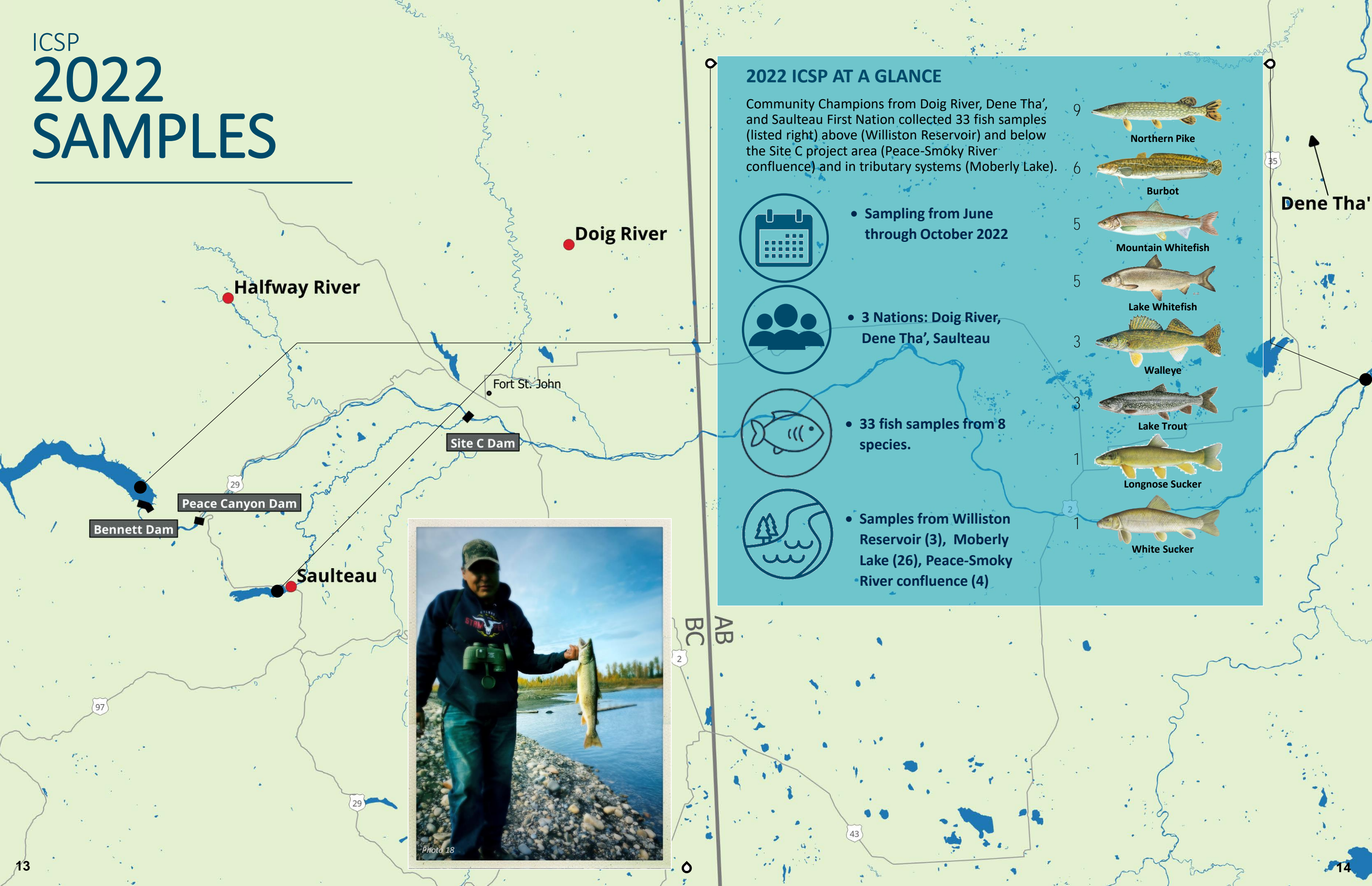
SCAN ME

Fish ID Guide



SCAN ME

ICSP 2022 SAMPLES



2022 ICSP AT A GLANCE

Community Champions from Doig River, Dene Tha', and Saulteau First Nation collected 33 fish samples (listed right) above (Williston Reservoir) and below the Site C project area (Peace-Smoky River confluence) and in tributary systems (Moberly Lake).



- Sampling from June through October 2022



- 3 Nations: Doig River, Dene Tha', Saulteau



- 33 fish samples from 8 species.



- Samples from Williston Reservoir (3), Moberly Lake (26), Peace-Smoky River confluence (4)

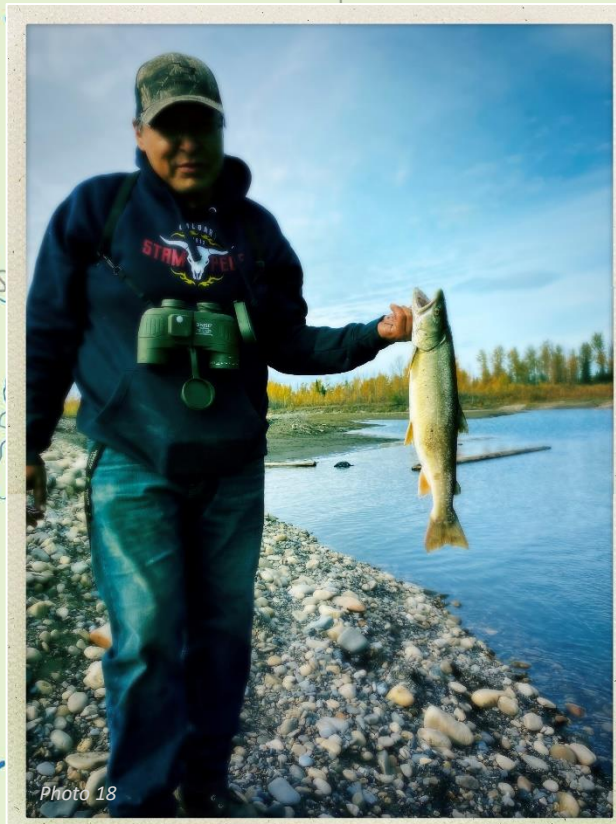
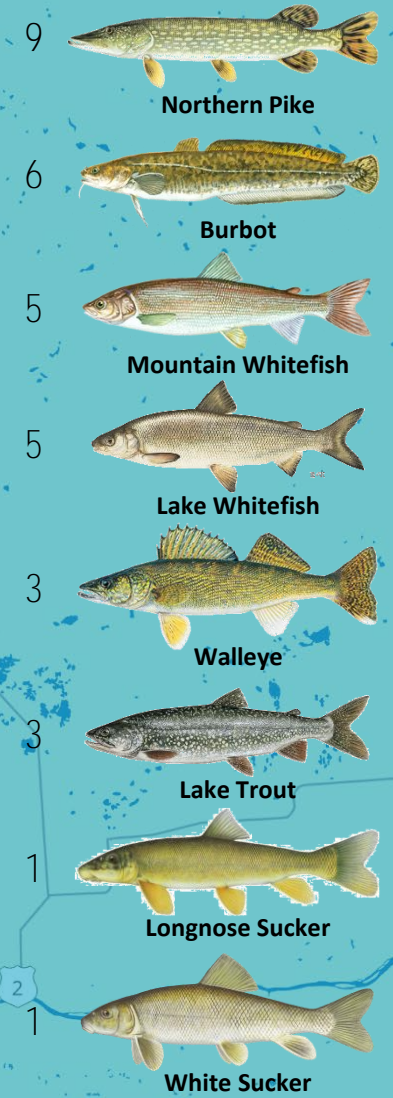


Photo 18

ICSP 2022 RESULTS

DATA ANALYSIS

When the ICSP fish methylmercury data were analyzed, the following variables were included:

- Mercury – total mercury concentrations in fish tissues.*
- Fork Length – fish length (nose to tail fork) was used as an indicator of fish size and age.

In the following pages, mercury data are presented for each species sampled in the ICSP program from 2022 and 2021 compared to results from the Core program. Note that the graphs all use the same scale to help visualize mercury content across species.

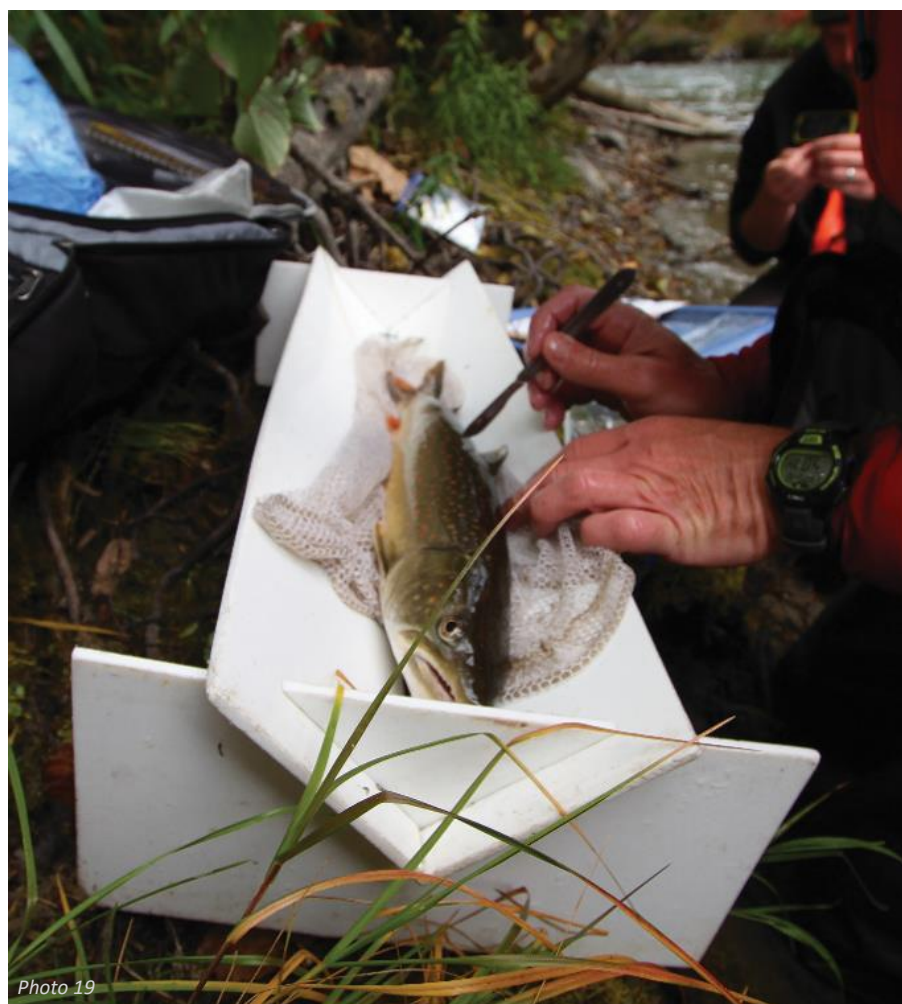


Photo 19













Photo 20

FISH MERCURY CONCENTRATIONS

Average mercury concentrations in muscle tissue for key fish species collected in the Core MMP (2017-2022) and ICSP (2021-2022) programs are summarized below in descending order. Bug-eating species such as Rainbow Trout and Mountain Whitefish tend to have lower mercury levels, while fish-eating species higher in the food web, such as Walleye, Burbot, and Northern Pike, have higher mercury concentrations.

These results are meant to provide a rough idea of the amount of mercury in these fish. Actual mercury concentrations will vary from place to place and over time, particularly once the reservoir is created. See the annual MMP reports for specific concentrations for targeted locations and species.

Fish Species	Mercury (mg/kg ww)
Walleye 	0.27
Burbot 	0.17
Northern Pike 	0.16
Lake Trout 	0.15
Bull Trout 	0.13
Lake Whitefish 	0.12
White Sucker 	0.10
Longnose Sucker 	0.08
Mountain Whitefish 	0.05
Rainbow Trout 	0.03

*Note that it is assumed that all mercury in fish tissues is present as methylmercury.

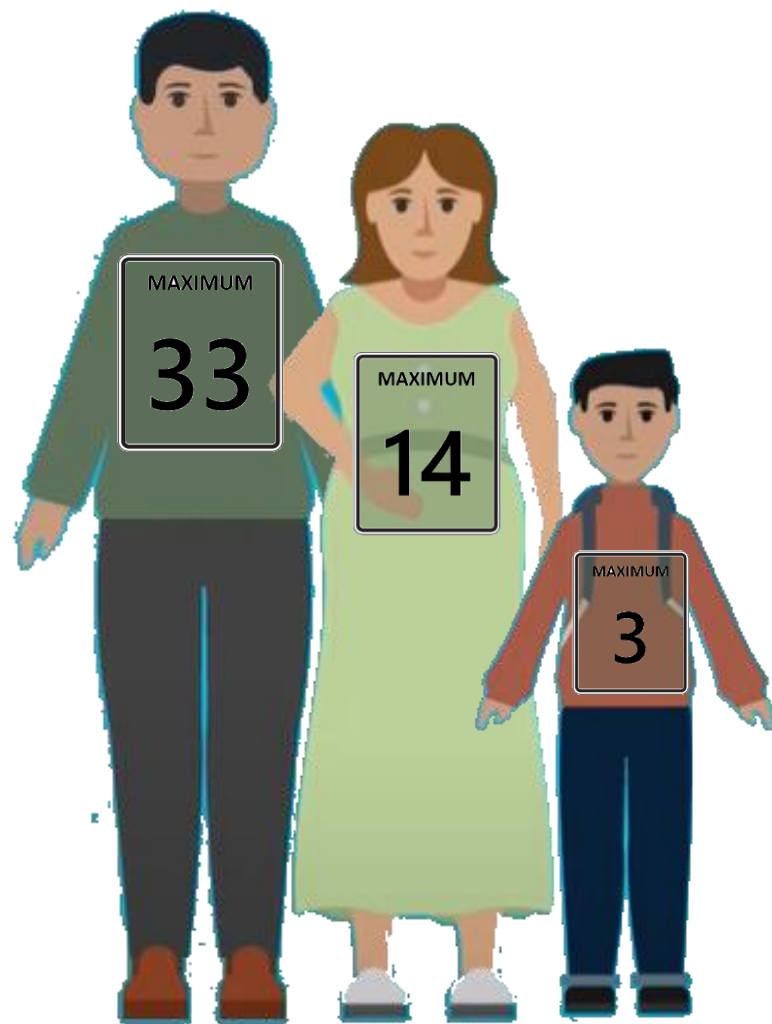
How Much Fish Can I Eat?

Health Canada guidance on safe levels of exposure

Methylmercury occurs naturally in fish and people are exposed to small amounts of methylmercury when they eat fish. People can safely tolerate exposure to some methylmercury, but exposure to too much methylmercury can be harmful to the brain and nerves.

Health Canada provides guidance on how much methylmercury people can be exposed to without risk of harm. These amounts vary, depending on a person's age and if they are, or could be pregnant.

Health Canada's guidance on methylmercury exposure are like speed limits – people won't necessarily be harmed if they exceed them, but it is best to keep exposure below them.



This brochure provides information on how much fish a person can safely eat

Information on the amount of methylmercury in fish was used to calculate how many servings of fish people can eat every month without going over Health Canada's safe levels of exposure for methylmercury. An example for Northern Pike is shown below.

Guidance is provided for different lengths of fish, measured in millimeters or inches

Guidance is provided for children less than 12 years old (C), people who are or could be pregnant (P), and others (O)

Northern Pike				
Size ^{mm} in	Mercury ^{ppm}	C	P	O
400 16	0.06	24	43	101
550 22	0.12	12	21	50
700 28	0.22	6	11	27

People who regularly eat more than one type of fish should see the detailed guidance in Figure 6-1 in the MMP report



The number of servings of fish a person can safely eat every month.

The squares are coloured according to the legend to the left.

HOW BIG IS A SERVING OF FISH?



100 g (0.2 lbs) serving size for children.



163 g (0.4 lbs) serving size for adult.

Walleye

OVERVIEW

- Walleye, a top predator in the Peace River, primarily eats other fish. It's high position in the food chain means that Walleye have higher levels of mercury. They are predominately found downstream of the Site C Dam.
- In 2022, there were three Walleye caught at the Peace-Smoky River confluence (lower plot; blue points) with lengths comparable to fish captured in the Core MMP (grey points).

Mercury vs Length - Walleye

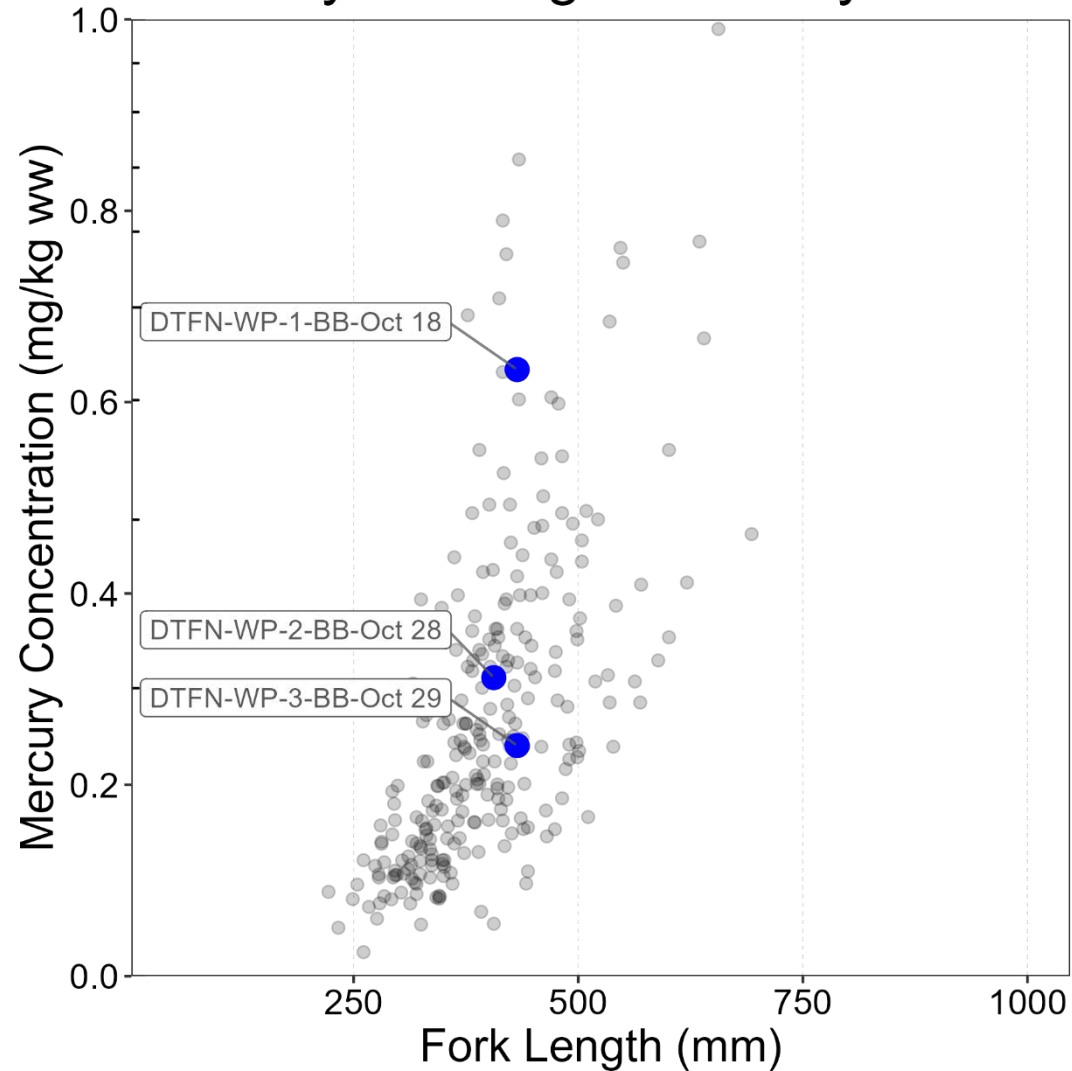


Photo 21

FISH MERCURY RESULTS

- Results show a positive relationship between mercury concentration and fish length, meaning larger/older fish have higher concentrations than smaller/younger fish.
- 2022 ICSP results are consistent with the Core MMP data.

FISH CONSUMPTION GUIDANCE

- Walleye (up to 20") can fall into serving categories of just twice a month for children
- For Walleye (up to 20") caught in the Peace River between Dinosaur Reservoir and Many Islands, follow consumption guidance based on the Core MMP (table below):

Walleye				
Size ^{mm} in	Mercury ^{ppm}	C	P	O
300 12	0.15	9	17	40
400 16	0.28	5	9	21
500 20	0.47	3	5	13

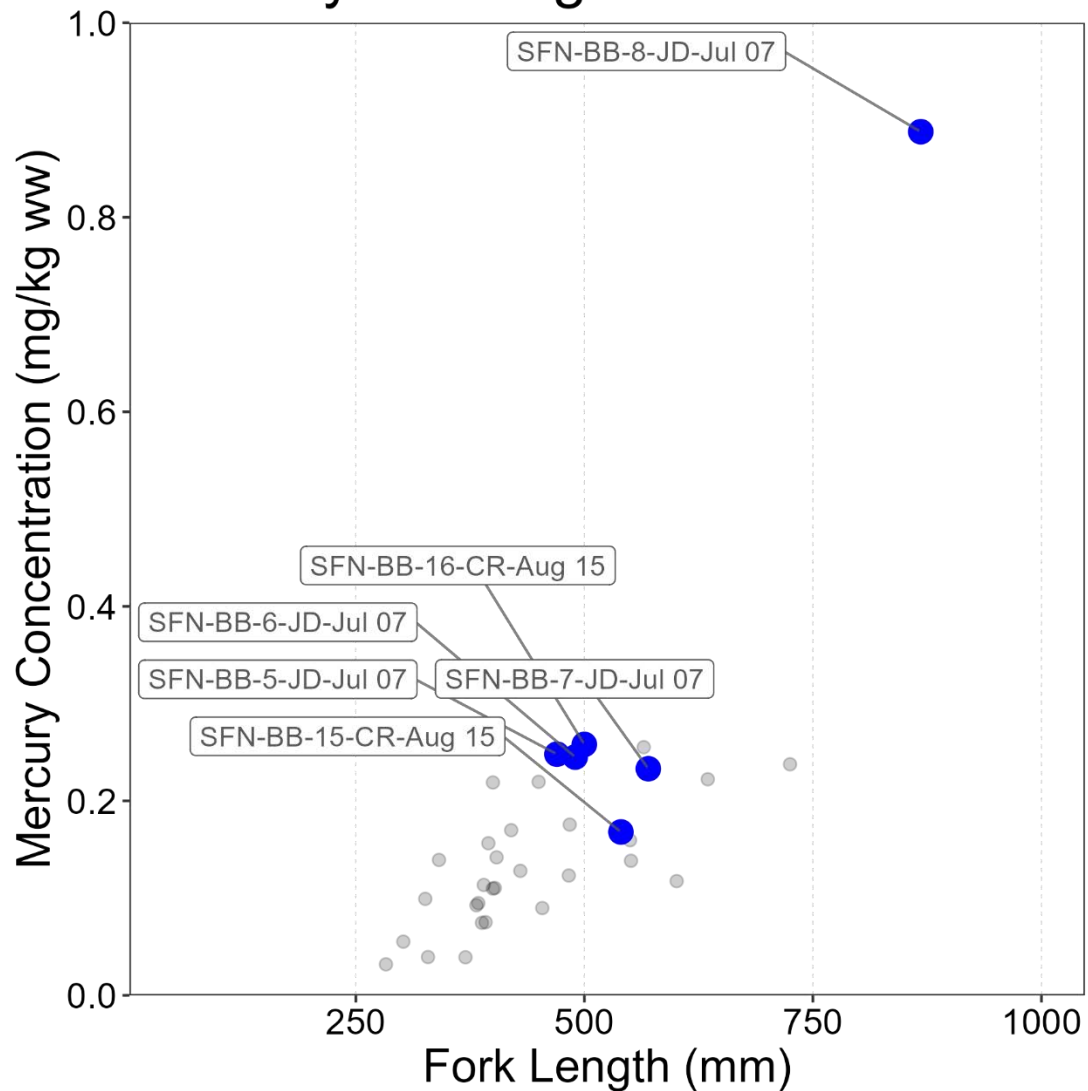
Mercury estimates from the CORE MMP in the Peace River; see 2022 Annual Report (Appendix F) for details.

Burbot

OVERVIEW

- Burbot are bottom dwellers, more common in the lower reaches of the Peace study area. They are long-lived and eat other fish, meaning they generally contain higher levels of mercury.
- Six Burbot were caught in Moberly Lake in 2022 (lower plot; blue points), one which was noticeably larger than any fish captured in the Core MMP (grey points).

Mercury vs Length - Burbot



FISH MERCURY RESULTS

- Results show a strong positive relationship between mercury concentration and fish length, meaning larger/older fish have higher concentrations than smaller/younger fish.
- 2022 ICSP results are consistent with the Core MMP data. The large Burbot (868 mm) is bigger than any Core MMP fish, but we would expect larger Burbot to have higher mercury levels.

FISH CONSUMPTION GUIDANCE

- All ICSP Burbot samples to date have been collected from Moberly Lake. Consumption guidance for Burbot in Moberly Lake will be provided separately by Azimuth in 2024.
- For Burbot (up to 23") caught in the Peace River between Dinosaur Reservoir and Many Islands, follow consumption guidance based on the Core MMP (table below):

Burbot				
Size ^{mm} in	Mercury ^{ppm}	C	P	O
325 13	0.08	18	32	76
450 18	0.13	11	20	47
575 23	0.21	7	12	29

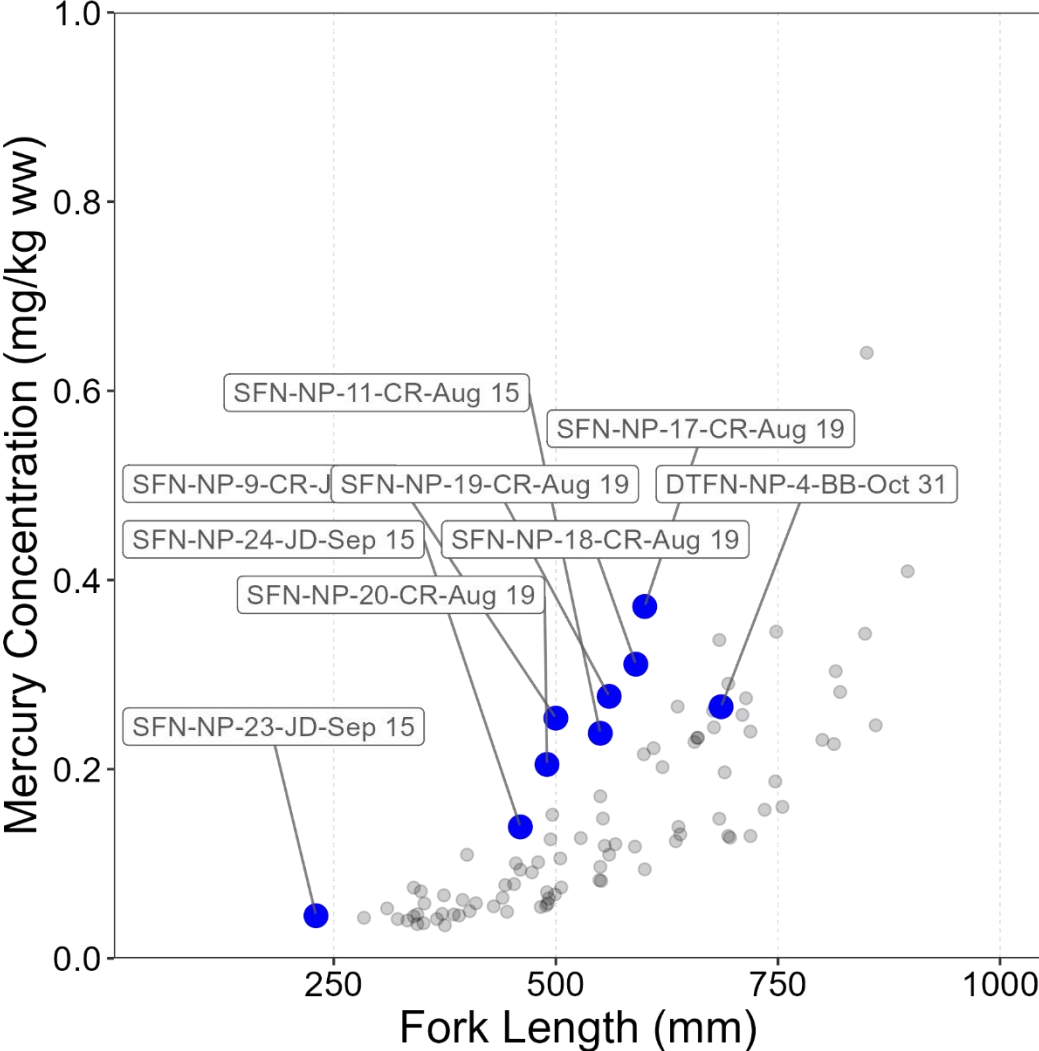
Mercury estimates from the CORE MMP in the Peace River; see 2022 Annual Report (Appendix F) for details.

Northern Pike

OVERVIEW

- Northern Pike prefer side channel and confluence habitat along the Peace River. As opportunistic ambush predators, they occupy a high position in the food chain and have higher levels of mercury.
- 2022 Northern Pike ICSP results are shown in the plot below as blue points compared to Core MMP fish (grey points). Of the nine ICSP pike, eight were caught in Moberly Lake, and one was caught at the Peace-Smoky River confluence (DTFN-NP-4-BB-Oct31).

Mercury vs Length - Northern Pike



FISH MERCURY RESULTS

- Results show a positive relationship between mercury concentration and fish length.
- Only the Northern Pike Caught at the Peace-Smoky River confluence appears to be consistent with the Core MMP data.
- Results from Moberly Lake are not consistent with Core MMP and have a higher mercury concentrations for a given fish length.

FISH CONSUMPTION GUIDANCE

- For Pike caught in Moberly Lake, Azimuth will provide separate consumption advice in 2024.
- For Pike (up to 28") caught in the Peace River between Dinosaur Reservoir and Many Islands, follow consumption guidance based on the Core MMP (table below):

Northern Pike				
Size ^{mm} in	Mercury ^{ppm}	C	P	O
400 16 0.06		24	43	101
550 22 0.12		12	21	50
700 28 0.22		6	11	27

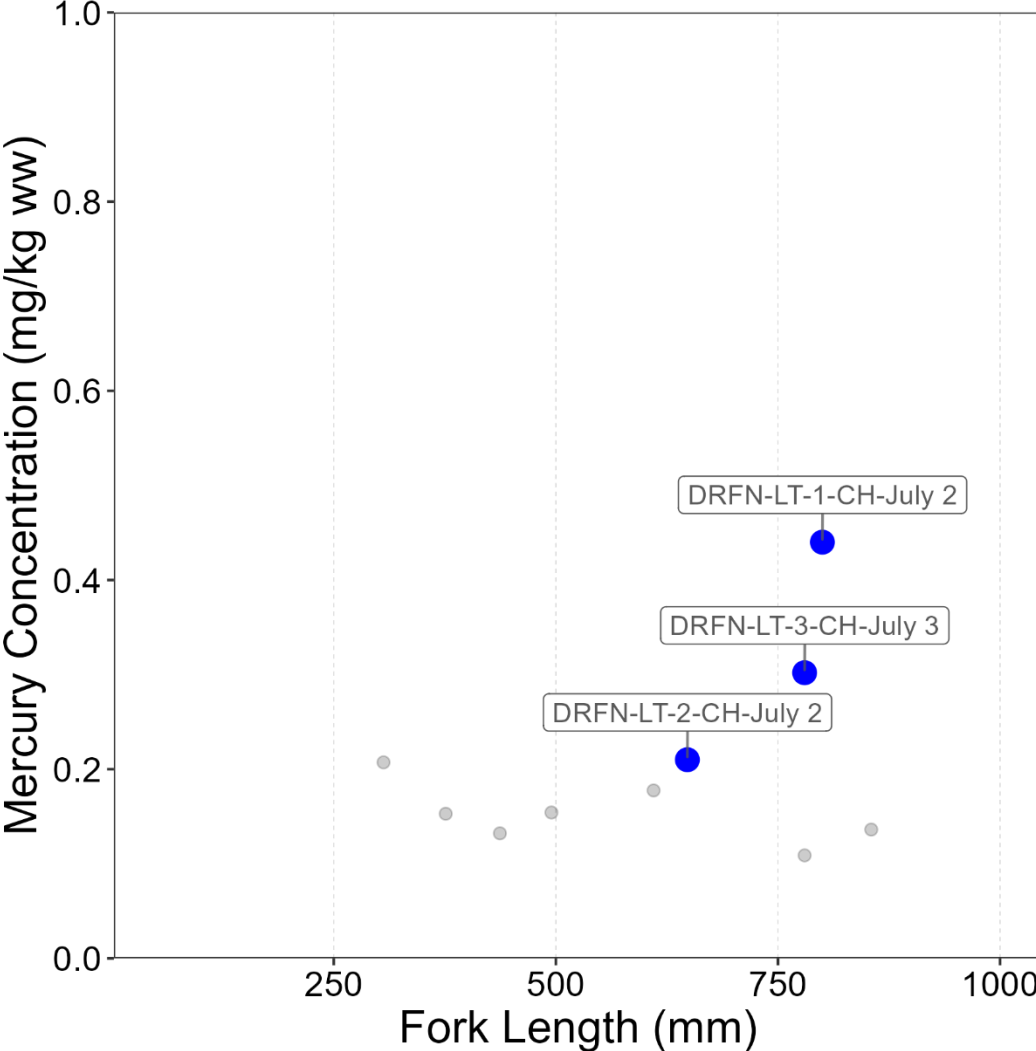
Mercury estimates from the CORE MMP in the Peace River; see 2022 Annual Report (Appendix F) for details.

Lake Trout

OVERVIEW

- Lake Trout are rare in the Peace River, but common in the upstream reservoirs. Young trout eat invertebrates, shifting to preying on other fish as they mature.
- Three ICSP Lake Trout were caught in the Williston Reservoir in 2022 (lower plot; blue points) with lengths comparable to fish captured in the Core MMP (grey points).

Mercury vs Length - Lake Trout



FISH MERCURY RESULTS

- ICSP results appear to show a positive relationship between mercury and fish length.
- Core MMP results do not demonstrate a positive length-mercury relationship.
- 2022 ICSP results are not directly comparable to the Core MMP results, since the ICSP fish were collected in Williston Reservoir.

FISH CONSUMPTION GUIDANCE

- Based on FWCP findings reported in 2019, the following consumption guidance applies to Lake Trout from Williston Reservoir:

Lake Trout				
Size ^{mm} in	Mercury ^{ppm}	C	P	O
400 16	0.19	7	13	32
550 22	0.22	6	11	27
700 28	0.31	4	8	19
850 33	0.57	2	4	10

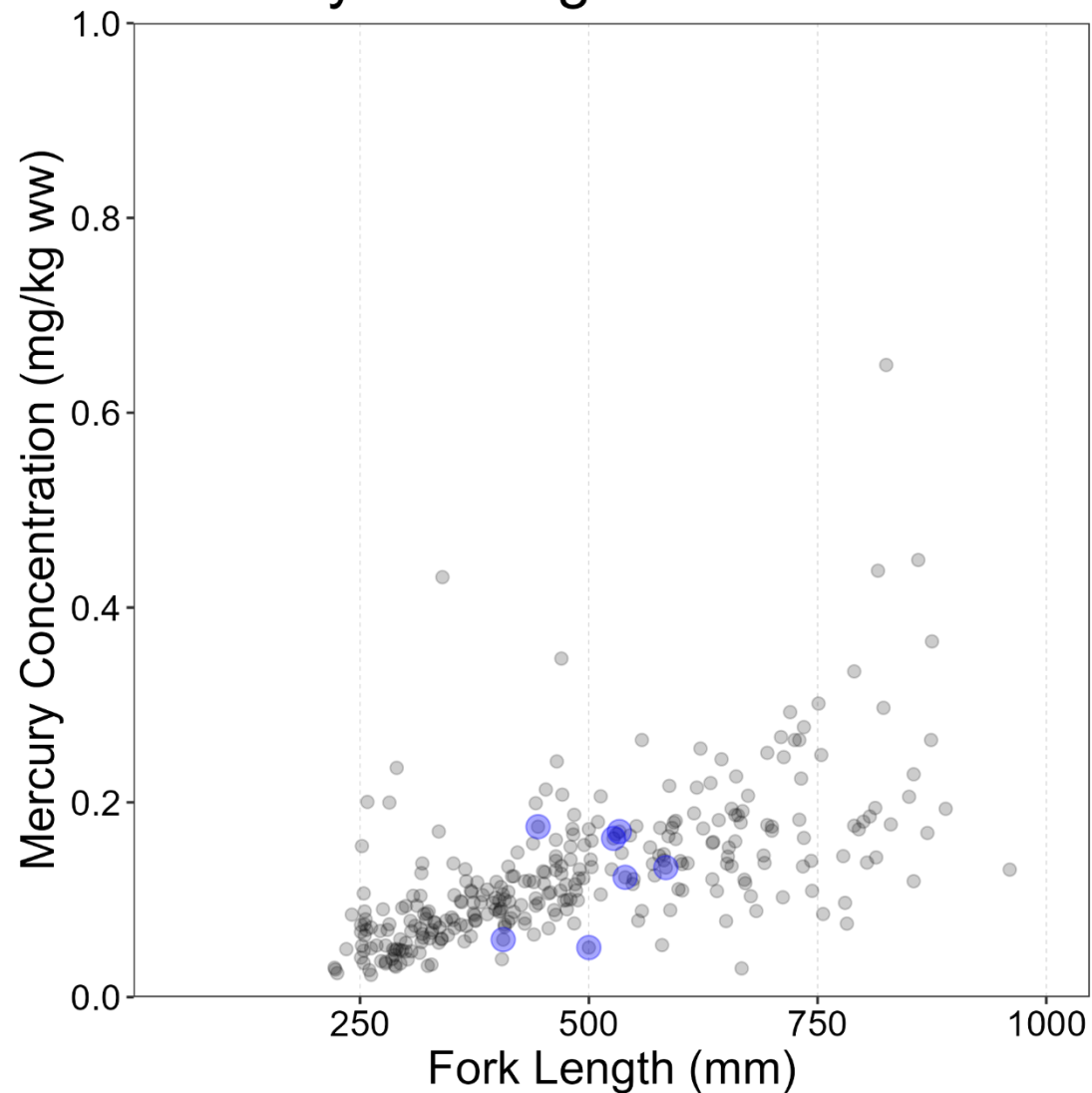
Mercury estimates from the FWCP in Peace Region; see 2022 Annual Report (Appendix F) for details.

Bull Trout Sa-pa*

OVERVIEW

- Bull Trout are most abundant upstream of the Peace-Beaton confluence, utilizing specific spawning habitat on the Halfway River. As opportunistic predators, they feed on invertebrates and fish, altering their diet depending on prey availability.
- No Bull Trout were caught in the 2022 ICSP program. Results from 2021 are shown in the lower plot as faded blue points.

Mercury vs Length - Bull Trout



FISH MERCURY RESULTS

- Results show a positive relationship between mercury concentration and fish length, meaning larger/older fish have higher concentrations than smaller/younger fish.
- 2021 ICSP results are consistent with the Core MMP data.

FISH CONSUMPTION GUIDANCE

- For Bull Trout (up to 28") caught in the Peace (between Dinosaur Reservoir and Many Islands) and Halfway Rivers, follow consumption guidance based on the Core MMP (table below):

Bull Trout				
Size ^{mm} in	Mercury ^{ppm}	C	P	O
400 16	0.11	13	23	55
550 22	0.15	9	17	40
700 28	0.18	8	14	33

Mercury estimates from the CORE MMP in the Peace River; see 2022 Annual Report (Appendix F) for details.



Lake Whitefish Ihuwe-dak'ale*

OVERVIEW

- Lake Whitefish are more common in the lakes of the Peace River watershed. They are bottom dwelling, feeding primarily on benthic invertebrates.
- ICSP results from 2022 are shown as blue points in the plot below. Five Lake Whitefish were caught in Moberly Lake. No data are available for Lake Whitefish from the Core MMP.

Mercury vs Length - Lake Whitefish

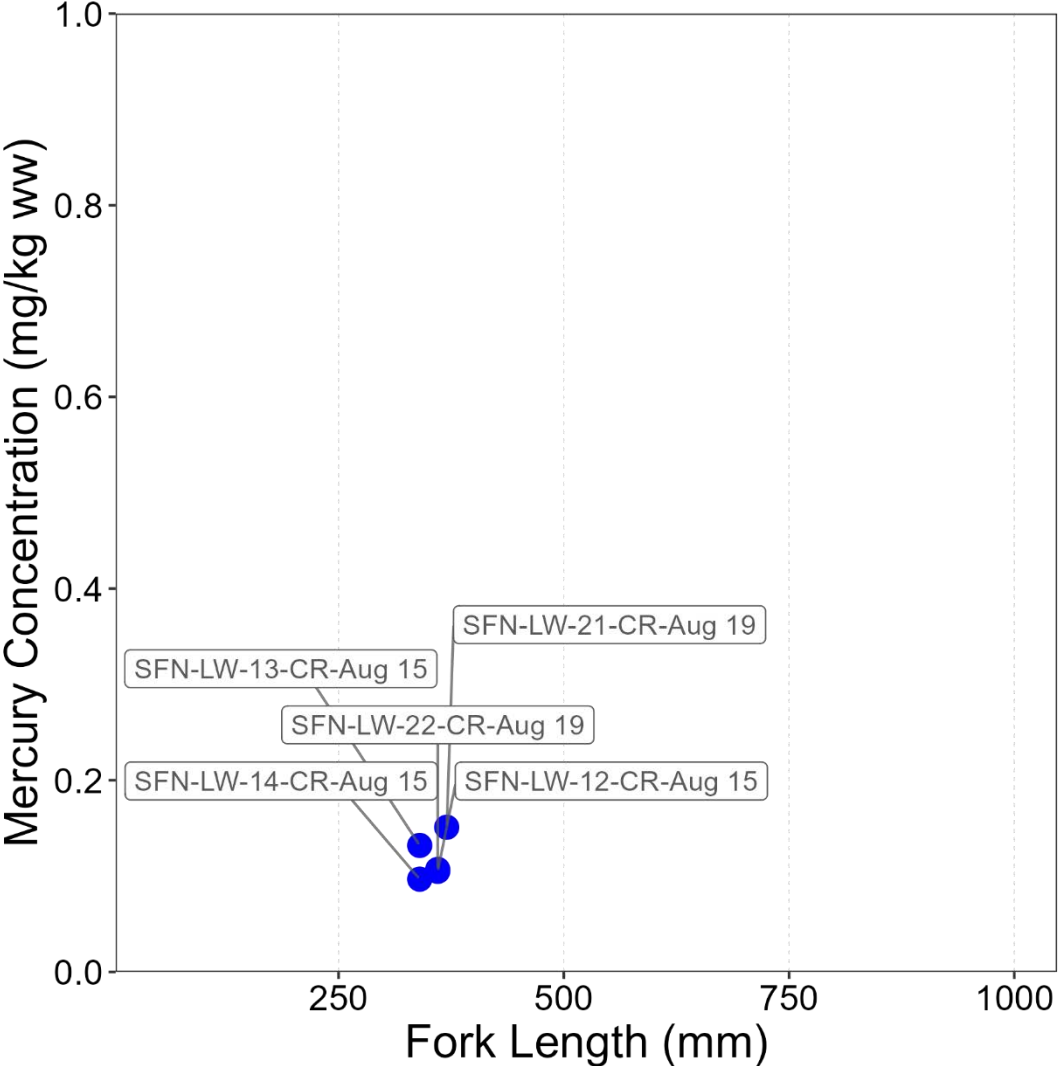


Photo 26

FISH MERCURY RESULTS

- Too few samples are available to make conclusions on length-mercury relationships for Lake Whitefish within Moberly Lake. However, the tissue concentrations found in 2022 are similar to regional reference lakes.

FISH CONSUMPTION GUIDANCE

- Based on FWCP findings reported in 2019, the following consumption guidance applies to Lake Whitefish (up to 12") and is applicable for Moberly Lake:

Lake Whitefish				
Size ^{mm} in	Mercury ^{ppm}	C	P	O
300 12	0.15	9	17	40

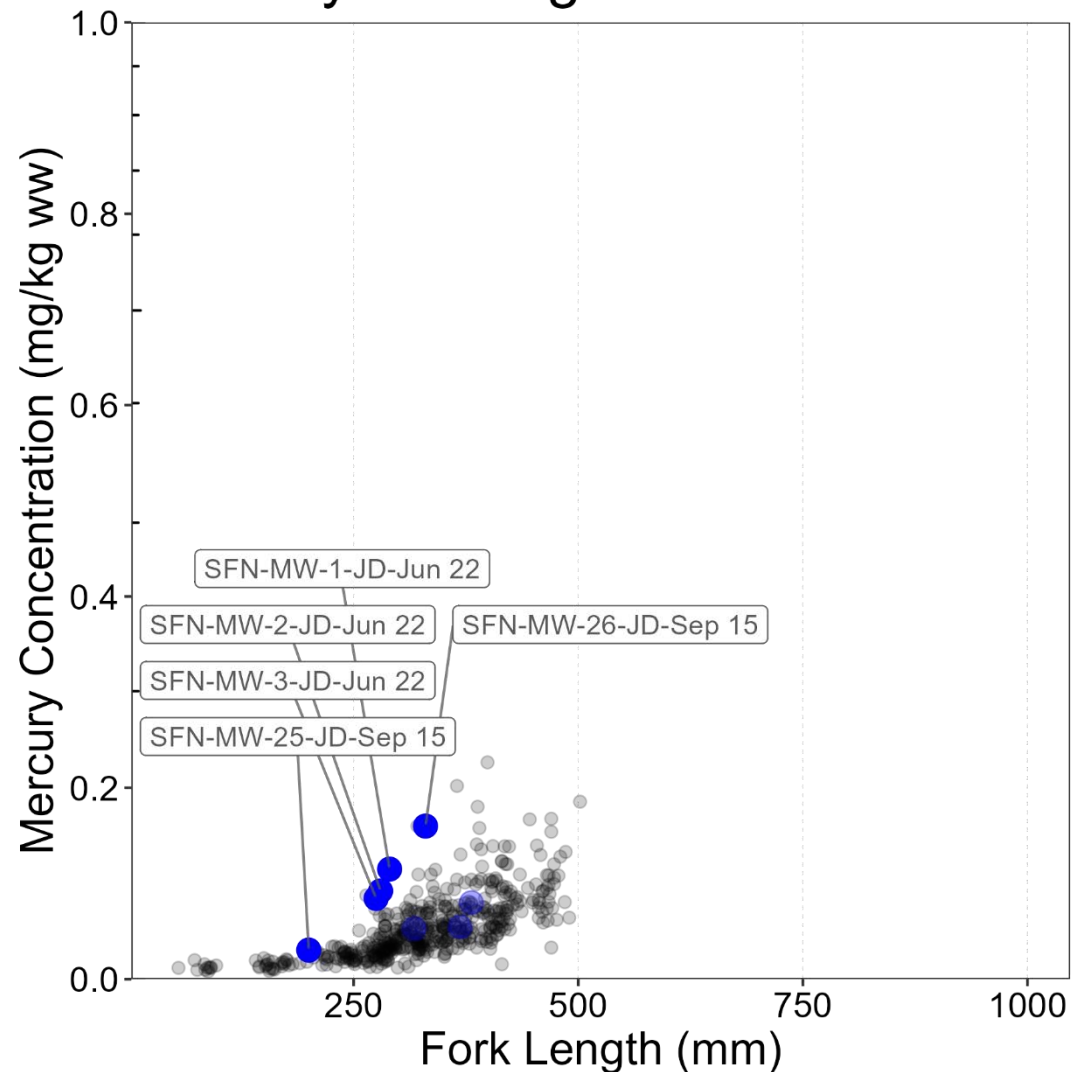
Mercury estimates from the FWCP in Peace Region; see 2022 Annual Report (Appendix F) for details.

Mountain Whitefish

OVERVIEW

- On the Peace River, Mountain Whitefish are most common above the Beaton River confluence, but also occur in lakes throughout the region. They are bottom dwelling, feeding primarily on benthic invertebrates.
- Mountain Whitefish ICSP results from 2022 (labelled blue points) and 2021 (faded blue points) are shown with Core MMP data (grey points) in the plot below. Five fish were caught in 2022 in Moberly Lake, while three fish were caught in 2021 in the Halfway River watershed.

Mercury vs Length - Mt. Whitefish



FISH MERCURY RESULTS

- Results show a positive relationship between mercury concentration and fish length.
- 2021 ICSP results from the Halfway River are consistent with the Core MMP data.
- 2022 ICSP results from Moberly Lake are not consistent with Core MMP data and have higher mercury for a given fish length.

FISH CONSUMPTION GUIDANCE

- For Mountain Whitefish caught in Moberly Lake, Azimuth will provide separate consumption advice in 2024.
- For Mountain Whitefish (up to 17") caught in the Peace River between Dinosaur Reservoir and Many Islands, follow consumption guidance based on the Core MMP (table below):

Mountain Whitefish				
Size ^{mm} in	Mercury ^{ppm}	C	P	O
275 11 0.04		37	65	152
350 14 0.05		29	52	122
425 17 0.08		18	32	76

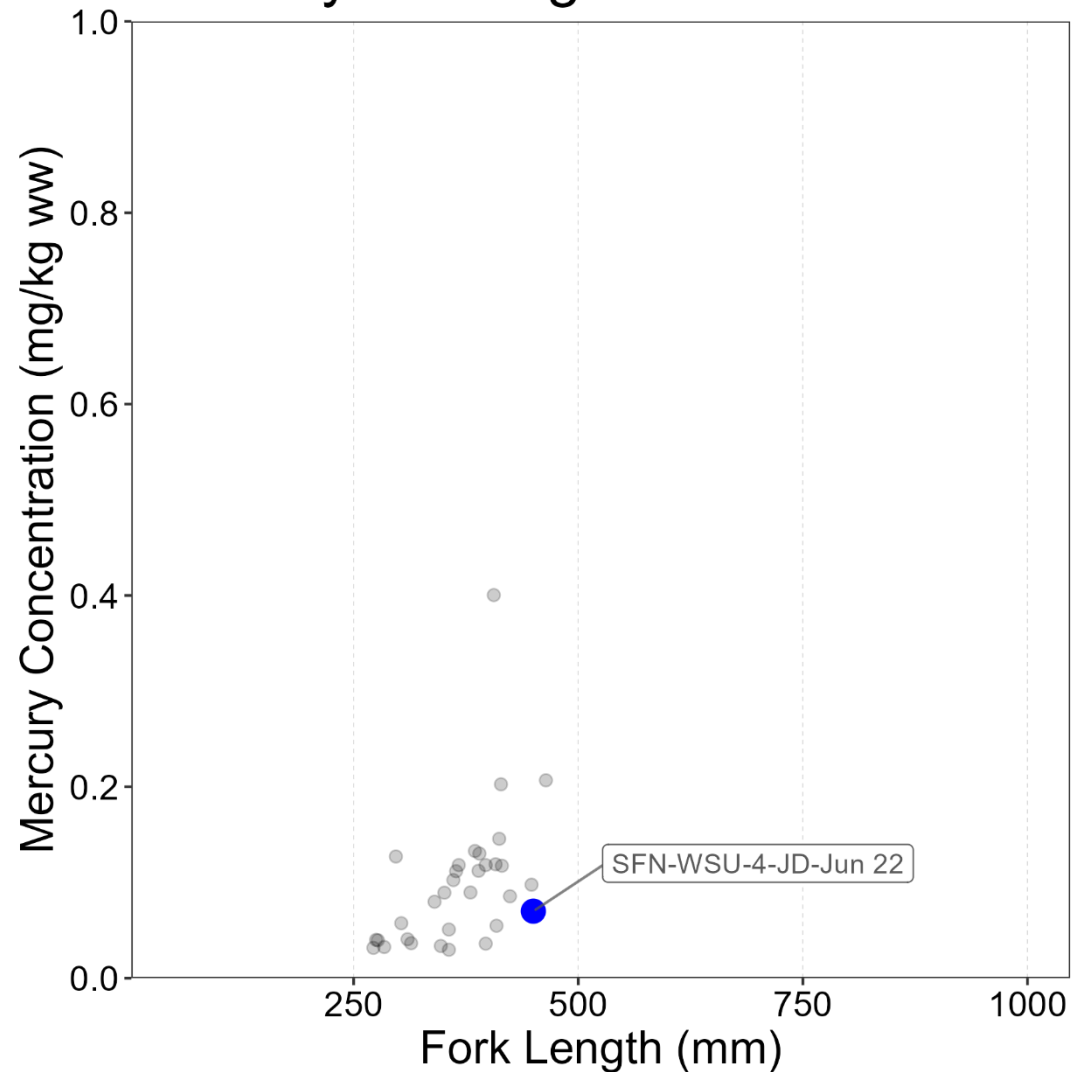
Mercury estimates from the CORE MMP in the Peace River; see 2022 Annual Report (Appendix F) for details.

White Sucker

OVERVIEW

- White Sucker are more common below the Site C Dam, but spawn on tributaries throughout the Peace River. They are also common in lakes across the region. Suckers feed in the bottom substrate, eating worms, clams, and insect larva.
- In 2022 a single ICSP White Sucker was caught in Moberly Lake (lower plot; blue point) of comparable size to those captured in the Core MMP (grey points).

Mercury vs Length - White Sucker



FISH MERCURY RESULTS

- Core MMP data show a positive length-mercury relationship. Larger/older fish have higher concentrations than smaller/younger fish.
- 2022 ICSP results are consistent with the Core MMP data.

FISH CONSUMPTION GUIDANCE

- For White Sucker (up to 17") caught in the Peace River (between Dinosaur Reservoir and Many Islands) and Moberly Lake, follow consumption guidance based on the Core MMP (table below):

White Sucker				
Size ^{mm} in	Mercury ^{ppm}	C	P	O
325 13	0.06	24	43	101
375 15	0.09	16	28	67
425 17	0.14	10	18	43

Mercury estimates from the CORE MMP in the Peace River; see 2022 Annual Report (Appendix F) for details.



Longnose Sucker

OVERVIEW

- Longnose Suckers are more common on the Peace River downstream of the Halfway River confluence. They are also common in the lakes of the region. Suckers feed in the bottom substrate, eating worms, clams, and insect larva.
- ICSP results from 2022 are shown as blue points in the length-mercury plot (below). In 2022 a single Longnose Sucker was caught in Moberly Lake of comparable size to those captured in the Core MMP (grey points).

Mercury vs Length - Longnose Sucker

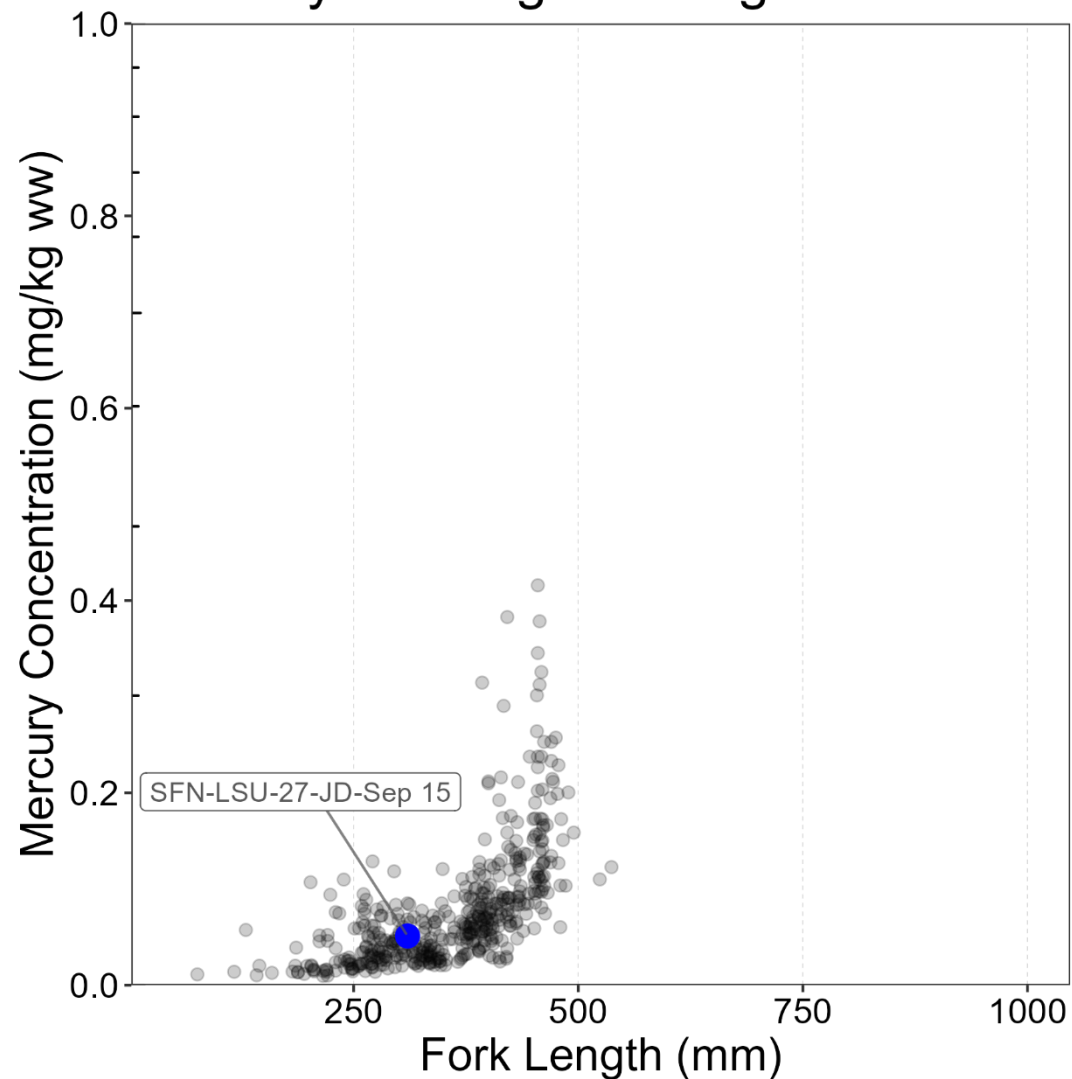


Photo 29

FISH MERCURY RESULTS

- Core MMP data show a positive length-mercury relationship. Larger/older fish have higher concentrations than smaller/younger fish.
- 2022 ICSP results are consistent with the Core MMP data.

FISH CONSUMPTION GUIDANCE

- For Longnose Sucker (up to 17") caught in the Peace River (between Dinosaur Reservoir and Many Islands) and Moberly Lake, follow consumption guidance based on the Core MMP (table below):

Longnose Sucker				
Size ^{mm} in	Mercury ^{ppm}	C	P	O
325 13	0.05	29	52	122
375 15	0.07	21	37	87
425 17	0.11	13	23	55

Mercury estimates from the CORE MMP in the Peace River; see 2022 Annual Report (Appendix F) for details.

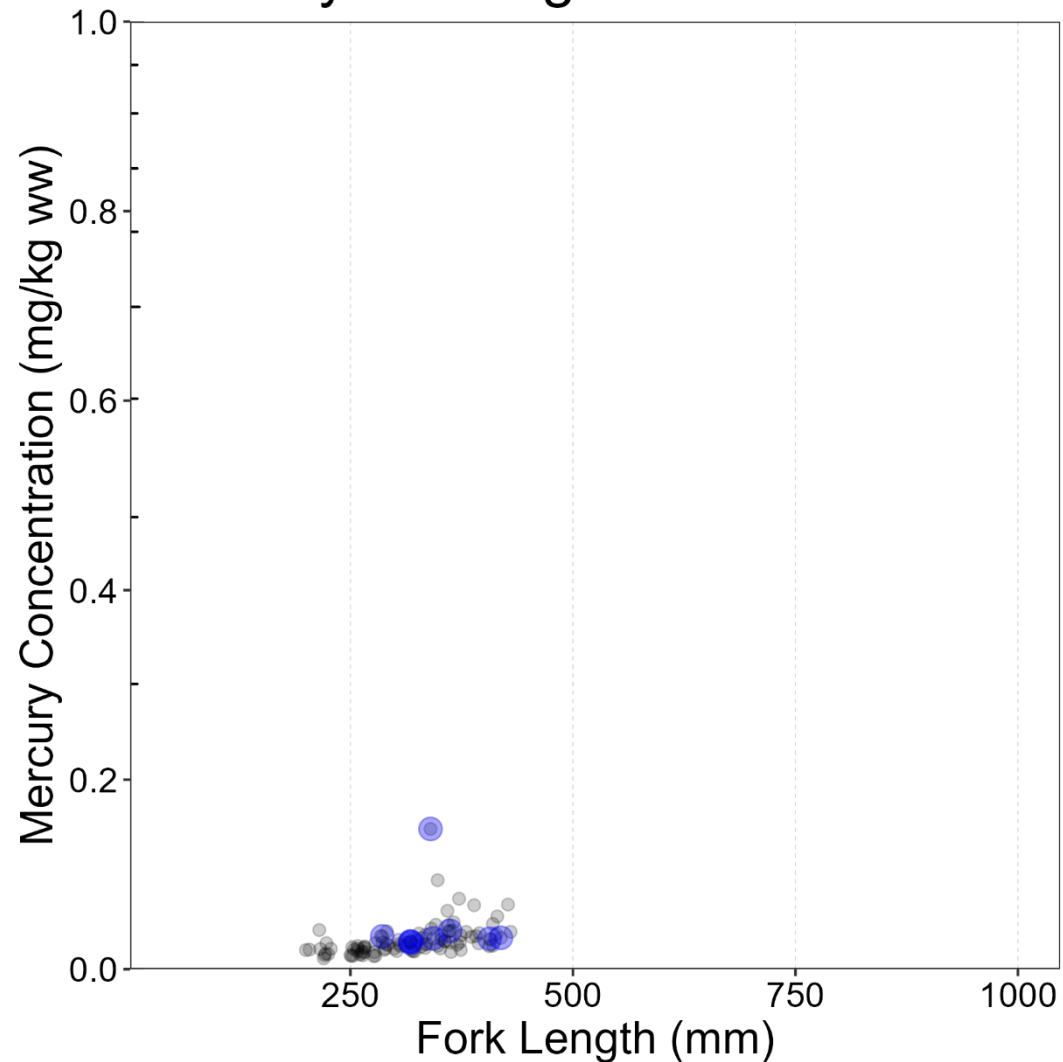


Rainbow Trout

OVERVIEW

- Rainbow Trout are most common upstream of the Site C Dam They primarily eat insects like caddisflies, mayflies, and midges. Feeding lower on the food chain means that Rainbow Trout have lower levels of mercury.
- No Rainbow Trout were caught in the 2022 ICSP. Results for nine fish from 2021 are shown in the plot as faded blue points. Lengths were comparable to fish captured in the Core MMP (grey points).

Mercury vs Length - Rainbow Trout



FISH MERCURY RESULTS

- Core MMP data show a slight positive length-mercury relationship. Larger/older fish have higher concentrations than smaller/younger fish.
- Mercury concentrations for this species are generally low.
- One trout in 2021 had unusually high mercury for its size class. This sample is considered an outlier.

FISH CONSUMPTION GUIDANCE

- For Rainbow Trout caught in the Peace River between Dinosaur Reservoir and Many Islands, follow consumption guidance based on the Core MMP (table below):

Rainbow Trout				
Size ^{mm} in	Mercury ^{ppm}	C	P	O
250 10	0.02	74	130	305
325 13	0.03	49	86	203
400 16	0.04	37	65	152

Mercury estimates from the CORE MMP in the Peace River; see 2022 Annual Report (Appendix F) for details.



Image Reference List

In order of appearance:

1. Photo by Brendan Bushy, 2023 ICSP sampling at the Peace-Smoky River confluence, provided by SMS on 29-Nov-2023.
2. Photo provided by Deborah Prince, 2023 ICSP sampling near McLeod Lake, provided by email on 27-Jul-2023.
3. A) rawpixel.com / U.S. Department of Interior (Source), Percussion Images, https://www.rawpixel.com/search/percussion?page=9&path=_topics&sort=curated
4. B) Flickr (Bezaire D, Havens-Bezaire S), Salmon filets hanging on a rack by a river in Alaska, <https://www.flickr.com/photos/75988799@N00/3697623415>
5. C) Vector Portal, Stock Silhouette Of A Runner 2 Vector Icon, <https://vectorportal.com/vector/vector-silhouette-of-a-runner-2/12673>
6. Flickr (USDA Photo by Preston Keres), A local catches a trout in at Georgetown Lake in the Pintler Ranger District of Beaverhead-Deerlodge National Forest Montana, <https://www.flickr.com/photos/usdagov/48762226763/>
7. Azimuth (photo by Ian Mclvor), 2023 water sampling at Bralorne-Takla, taken on 1-Aug-2024.
8. US Fish and Wildlife Service (Ryan Hagerty), Comparison of Rainbow trout sizes including a 3 inch, 5 inch, and 10 inch fish, <https://www.fws.gov/media/rainbow-trout-sizesjpg>
9. Fish and Wildlife Compensation Program (FWCP), Online information video: Methylmercury and fish consumption information in the Peace River system, <https://fwcp.ca/mercury/>
10. Azimuth (photo by Gary Mann), 2022 MMP supporting media sampling near the Peace-Halfway River confluence, taken on 27-Sep-2022.
11. Photo by Brendan Bushy, 2023 ICSP sampling at the Peace-Smoky River confluence, provided by SMS on 29-Nov-2023.
12. Photo provided by Deborah Prince, 2023 ICSP sampling near McLeod Lake, provided by email on 27-Jul-2023.
13. Photo by Brendan Bushy, 2023 ICSP sampling at the Peace-Smoky River confluence, provided by SMS on 29-Nov-2023.
14. Azimuth (photo by Laura Bekar), 2021 ICSP pilot program training session, taken on 28-Jul-2024.
15. Azimuth (photo by Laura Bekar), 2021 'Fish Kit' contents, taken on 27-Jul-2024.
16. Photo provided by Deborah Prince, Fish LT-2-CH-July2, provided by email on 27-Jul-2023.
17. Azimuth (photo by Ian Mclvor), Photo from the 'How To Video', 24-Apr-2023.
18. Photo provided by Amanda Metecheah, Danny Apsassin fishing on the Halfway River, provided by email on 24-Sep-2021.
19. Photo by Mike Tilson (Tsay Keh Dene First Nation), 2019 Site C MMP Internal Technical Forum Presentation, 7 November 2019.
20. Azimuth (photo by Gary Mann), 2022 MMP supporting media sampling near Hudson Hope, taken on 26-Sep-2022.
21. Flickr (Sam Stukel, USFWS), Walleye (Sander vitreus), <https://www.flickr.com/photos/usfwsmtmprairie/51745624627>
22. Flickr, Trüsche, Quappe, <https://www.flickr.com/photos/w-tommerdich/39974665553>
23. Przemek Pietrak, Esox Lucius at Bydgoszcz Zoo, <https://globalquiz.org/ru/иллюстрация-викторины/щука-1/>
24. Flickr (Tom Hart), Lake Trout – BWCA – Seagull Lake, <https://www.flickr.com/photos/thart2009/51218219333/in/faves-48599217@N08/>
25. BC Hydro, Site C Project – Fish and methylmercury in the reservoir, <https://www.sitecproject.com/sites/default/files/SiteC-methylmercury-info-sheet-updates.pdf>
26. Modified from a photo provided by Jessica Eastman, 2023 ICSP sampling on Moberly Lake, provided by email on 27-Sep-2023.
27. Modified from a photo provided by Patricia Apannah, 2021 ICSP Pilot sampling on the Halfway River, sent in autumn 2021.
28. Flickr (Sam Stukel, USFWS), White Sucker, <https://www.flickr.com/photos/usfwsmtmprairie/47383259832>
29. BC Hydro, Peace River Fish Identification Key (Draft 2022-01-31), <https://www.sitecproject.com/sites/default/files/Peace-River-Fish-Identification-Key.pdf>
30. Wikipedia (Liquid Art), Rainbow trout (Oncorhynchus mykiss), swimming underwater of river Vrelo in Perucac, Serbia. Tributary of river Drina., [https://en.m.wikipedia.org/wiki/File:Rainbow_Trout_\(Oncorhynchus_mykiss\)_\(cropped\).jpg](https://en.m.wikipedia.org/wiki/File:Rainbow_Trout_(Oncorhynchus_mykiss)_(cropped).jpg)

