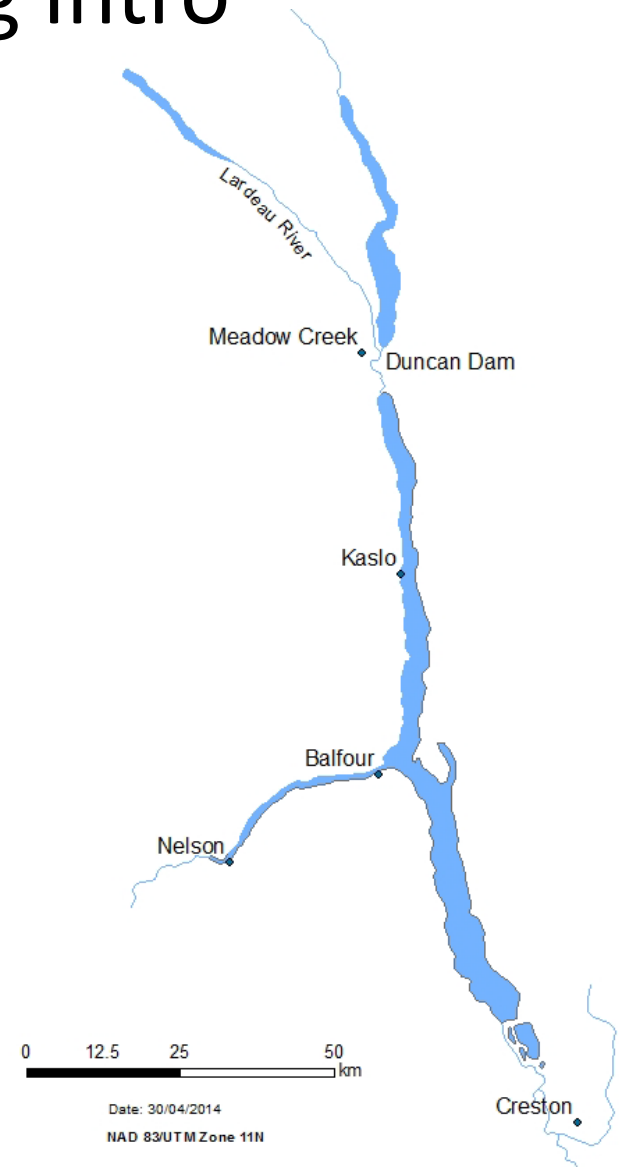


Kootenay Lake Fisheries Update & West Arm Shore Spawning Intro



Jeff Burrows BC Ministry of FLNR
Fish and Wildlife
Kootenay Lake Summit 3 2015, Nelson

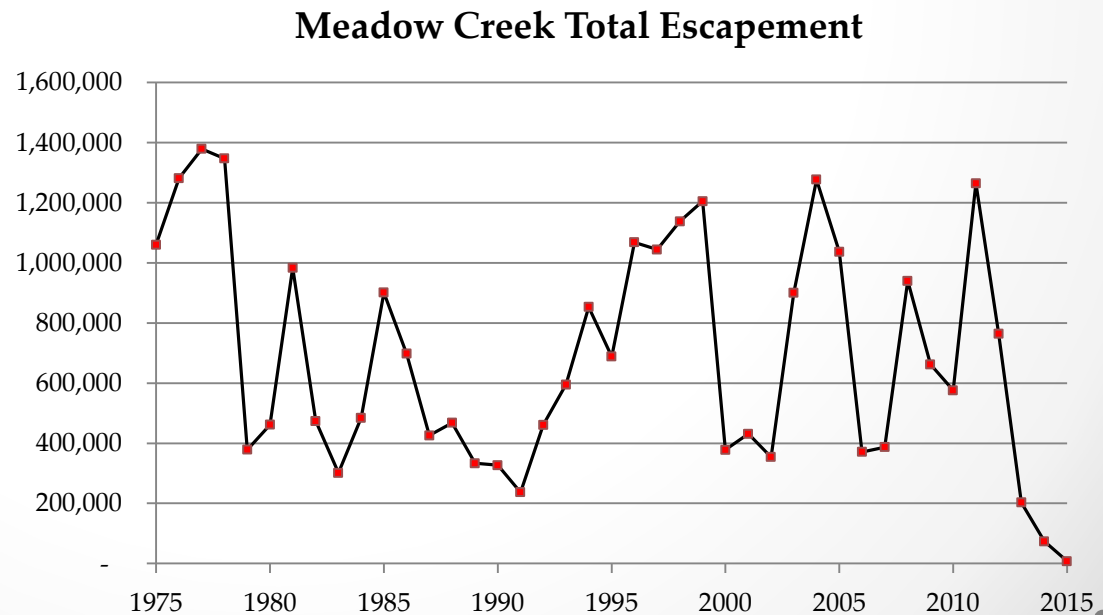
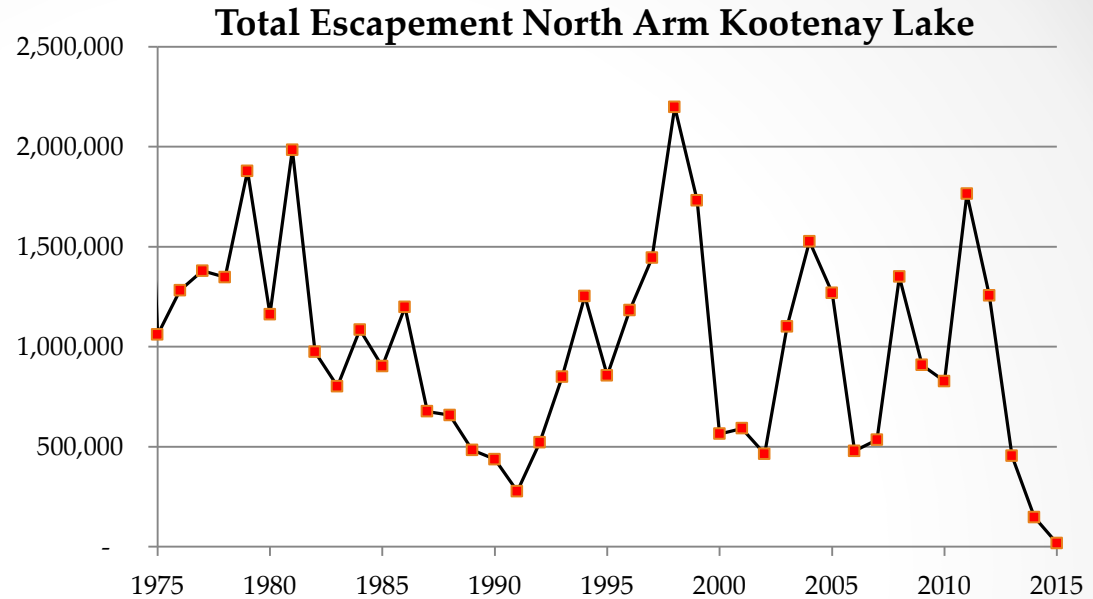


Outline

- Kootenay Lake – main body fisheries
 - Current status of kokanee and Gerrard rainbow trout
 - Actions
- West Arm shore spawning kokanee
 - Context – stream and shore spawners
 - Abundance, distribution/habitat
 - Conservation
 - What you can do

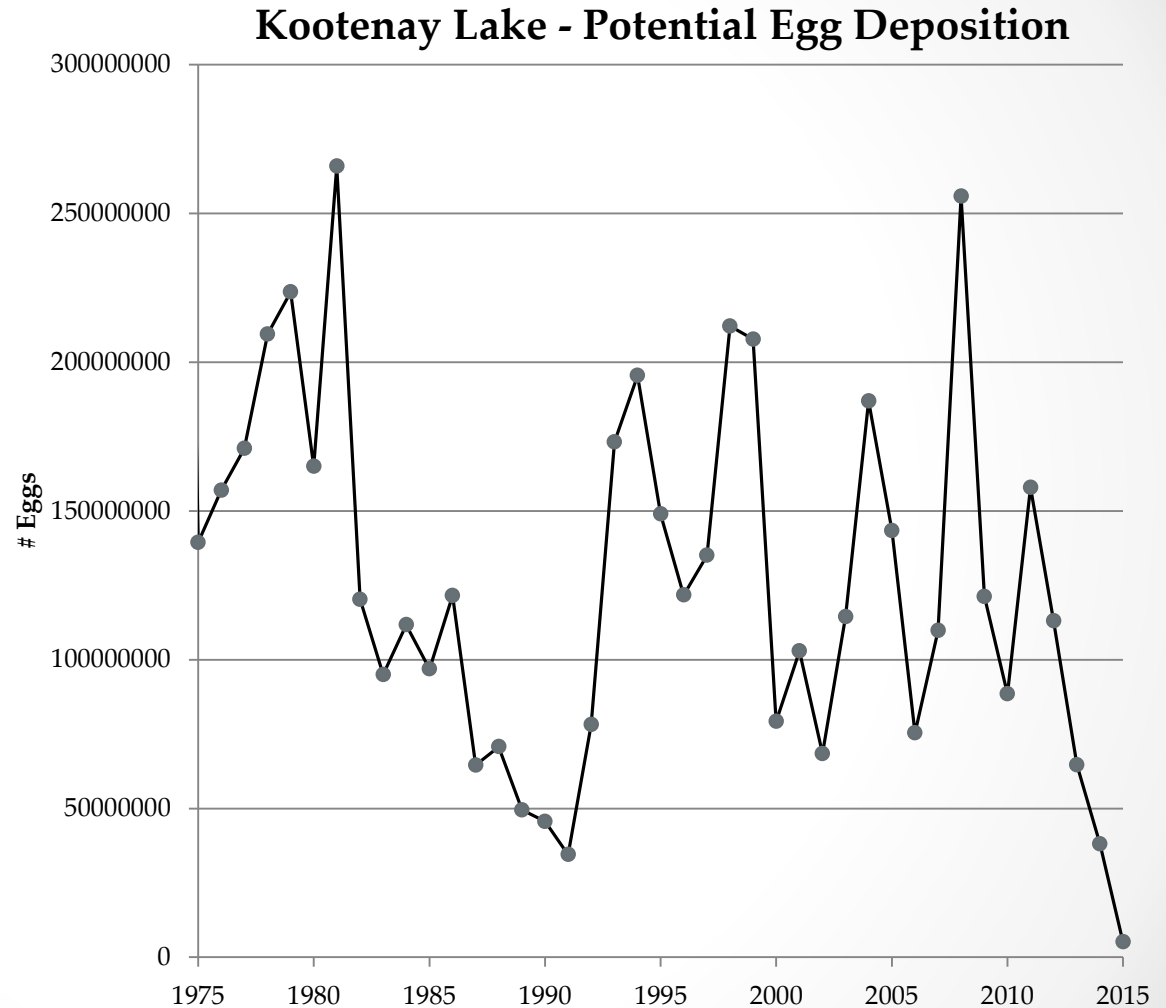
Main Lake kokanee update - spawners

- Meadow Escapement – 7631, draft fecundity 570, draft potential egg deposition= 1.32 million
- Duncan Lardeau Escapement – 10,308, fecundity assumed 570, draft potential egg deposition= 2.94 million
- Total North Arm Kootenay Lake Escapement to October 1, 2015 = **17,939** kokanee,



Main Lake Kokanee Update - eggs

- Potential egg deposition= **4.26 million eggs**
- **Historical context –**
Lowest years ~35 Million
Highest years ~250 million



Kokanee connections -



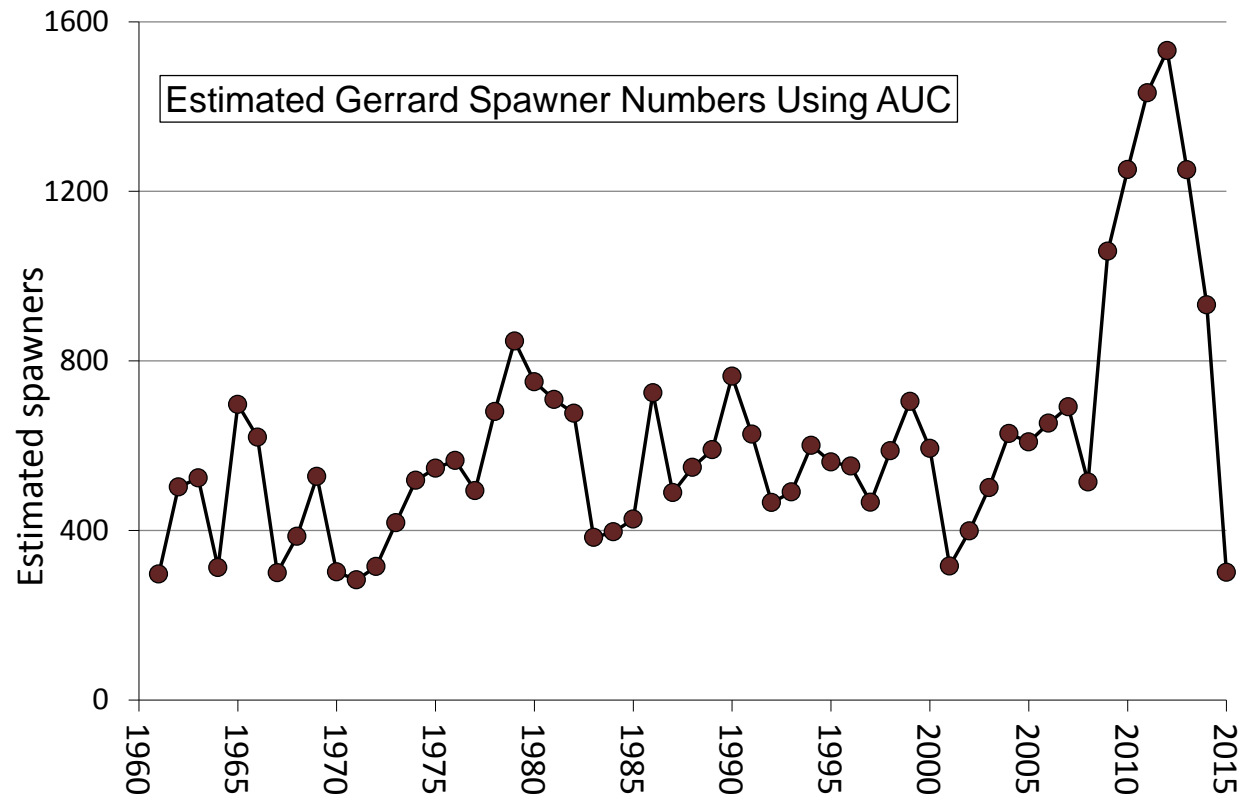


photo © Kovish 2003



Main Lake - Gerrard Rainbow Trout Update

- Spawner estimate in 2015 = 301
- Significant decline from 2014; similarly low in 7 other years since 1960
- Likely high enough to allow continued production of juvenile Gerrards for the next generation
- Although short term impact to angling, a reduction of this magnitude required to help start kokanee recovery



Actions

- Expert team formed, remains engaged
- We will or already have implemented all high and some moderate priority actions expert team identified early 2015
 - angling regulations and your opportunity to help
 - decreased kokanee quota (0/day), may have provided 2.5 million extra eggs
 - increased rainbow quota on the main lake (4/day), 1 over 50cm - decreasing juvenile Gerrard abundance has likely benefits for kokanee recovery (50,000 caught in 2014-15, only 16,000 harvested)
 - reviewing an increase to bull trout quota (< 2kg catch very high)
 - kokanee supplementation
 - 95,000 kokanee fry were stocked in May 2015 into Crawford and Hendryx Creeks
 - 1.4 million eggs collected elsewhere in BC this fall (had expected more)
 - 510,000 eyed eggs to Meadow Creek spawning channel next week
 - 540,000 raised to fry stage for release next spring
 - Hedges pros and cons

Actions

- Extended nutrient addition season (2 weeks): food for kokanee
- Continue to limit IHN virus at spawning channels where we have some control
 - carcass removal
 - flushing
 - summer drying
 - kokanee testing will continue annually
- Expert team work continues
 - Reviewed and will review in-season data for recommendations around recovery actions
 - Assist in analysis/modelling to understand predator/prey dynamics in the lake and better inform future management decisions and develop refined action plan, including potential additional actions

Staying informed - main lake fisheries

- As we implement, and further develop actions
 - If you want to know more: answers to common questions, information on current monitoring and updates around ongoing actions are and will be here:
www.env.gov.bc.ca/kootenay/fsh/main/mainfish.htm
Google “Kootenay Fisheries”
 - jeff.a.burrows@gov.bc.ca
 - matt.neufeld@gov.bc.ca
 - phone us 250.354.6333

West Arm shore spawning kokanee

- Context – stream and shore spawners
- Abundance, distribution/habitat
- Conservation
- What you can do





West Arm shore spawning kokanee

- Stream spawners
 - Spawning channels - Redfish Creek and Kokanee Creek
 - Other streams
 - Duhamel, Laird, Lasca, Mill (Harrop), Sitkum
 - Sporadically in others e.g. Slater, Five Mile, Proctor
- Shore spawners – not uncommon elsewhere
 - West Arm locations from McDonald Landing (6 Mile) to Harrop



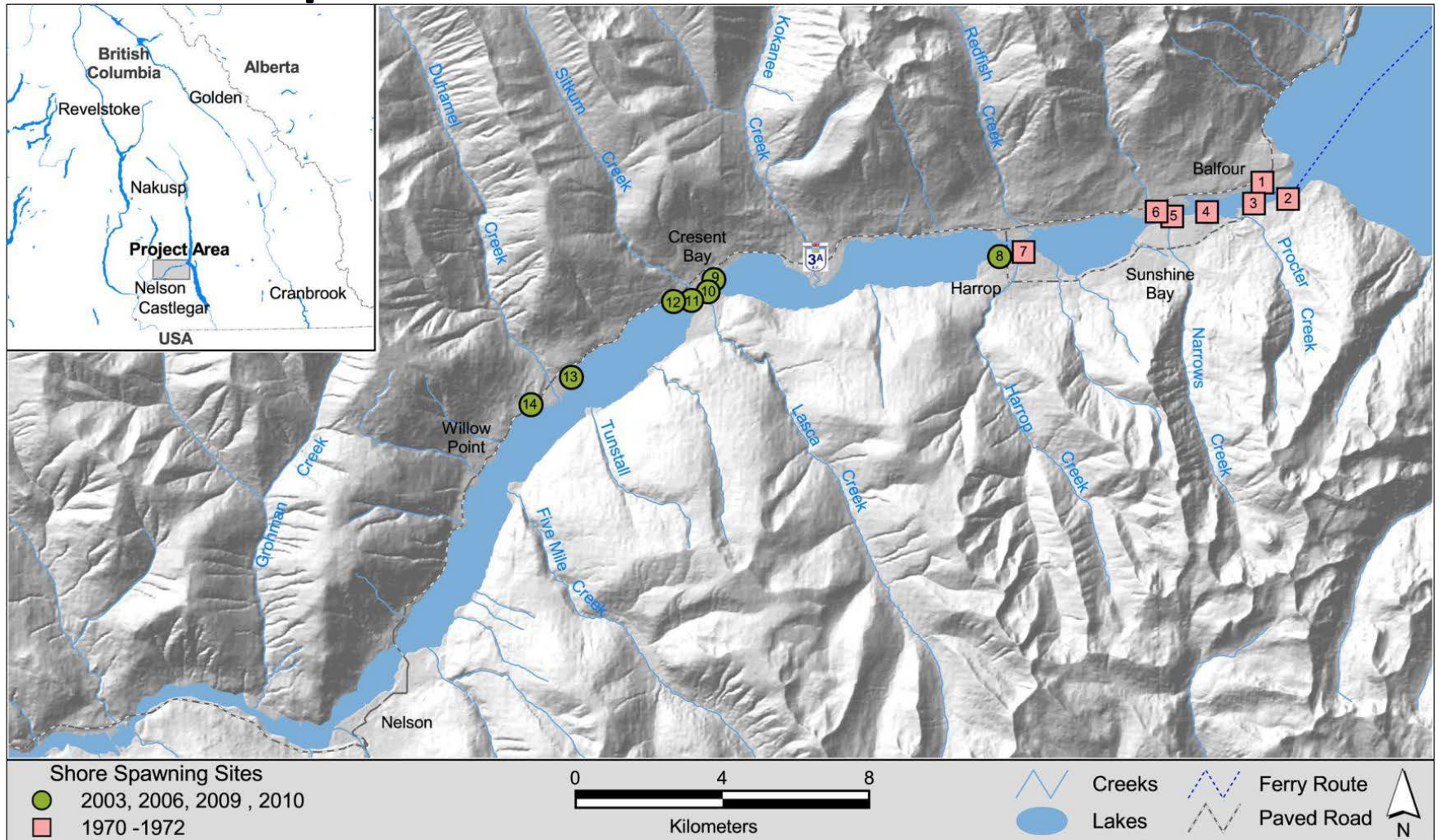
Shore spawners from 2012



Shore spawners - abundance

Year	Kokanee Creek	Redfish Creek	Other Creeks	Shore spawners	Total
2007	7,429	8,364	1,748	238	17,779
2008	11,450	15,198	8,336	520	35,504
2009	14,671	13,246	4,688	2,718	35,322
2010	8,236	13,220	3,572	115	25,143
2011	4,798	6,347	3,735	738	15,618
2012	13,953	4,259	4,109	2,078	24,398
2013	18,962	19,747	5,181	0	43,890
2014	5,008	5,903	2,439	345	13,695

Shore spawners - distribution



Irvine, R.L., G.F. Andrusak, and H. Andrusak. 2012.

Assessment of Lake Levels and their Variation on the Recruitment of Shore Spawning Kokanee Fry within the West Arm of Kootenay Lake. Report prepared for Columbia Operations Fisheries Advisory Committee.

Conservation

- A. Veale and M. Russello, UBCO 2015: “Kootenay Lake West Arm shore-spawning kokanee are genetically distinct from neighboring stream-spawners ... ”
- Pragmatic reason to conserve and protect shore spawners: water temperature
- Significant protection measure – hydro utilities implemented in 2012 and again in 2015 kokanee shore spawner lake level reductions (from normal) in fall, to reduce redd dewatering and stranding of embryos in spring
- Results: (report for COFAC, Andrusak and Andrusak 2013)
 - 2012 shore spawners experienced 35% dewatered redds
 - Compare to: ~80% since 2003 and 12% pre-development 1928-1932

What you can do

- “Report a spawner” 250.354.6333 so we can continue to build on this work
- Avoid shoreline disturbance – beach grooming and groin construction etc:



spring 2015, work being done on Heddle Rd., back eddy pushed the silt onto shore
spawner spawning habitat and embryos at MacDonald's Landing

Q&A



Gerrard Rainbow

photo © Kovish 2003

What else may be done?

Moderate priority:

- Make additional areas of Kootenay Lake fishable by removing angling closures (longer term; 2017-19 synopsis review).
- Change regulation on number of rods that anglers can have in the water at one time – allow 2 or more rods per person (not a Regional decision, will recommend to Provincial Committee).
- Investigate opportunities to increase entrainment of kokanee past Libby Dam (likely no feasible options).
- Test kokanee from trawl samples for IHN virus (exploring potential of historic samples to inform future actions)
- Research feasibility and benefits of Mysid harvest (medium term, necessary to act if mysid abundance increases)

Low priority or long term potential but no immediate benefit to short term recovery:

- Conduct stream habitat improvements to benefit kokanee spawning.
- Conduct mysid harvest if required in future

What are we not doing currently?

Moderate priority:

- Allow guides by Scientific Collection Permit to collect additional Gerrard trout for biological sampling and kokanee predator reduction (not client consumption).
- Remove bull trout in spawning tributaries.

Low priority or long term potential but no immediate benefit:

- Tag Gerrard trout with floy tags, and have a lottery style reward for fish harvested.
- Reduce Kootenay Lake rainbow trout licence to \$0.
- Reduce Gerrard trout in Lardeau River or at Gerrard.
- Transplant kokanee fry or eggs from Meadow Creek to another Kootenay tributary.