



# USE OF REMOTE SITE INCUBATORS FOR BULL TROUT CONSERVATION TRANSLOCATIONS ABOVE A WATERFALL BARRIER

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## Introduction

- Bull Trout (BLTR) are both a keystone and indicator species.
- Bull Trout are an apex predator needing cold, clean, connected, and complex habitat.
- In Alberta (Saskatchewan-Nelson drainage) Bull Trout are federally listed as a threatened species due to various cumulative effects.
- Conservation translocation is the intentional movement of a species, inside or outside of its traditional range, with the goal of achieving a conservation benefit<sup>1</sup>.
- Use of Remote Site Incubators (RSIs) is not common for Bull Trout due to challenges such as streams freezing, developmental window, sedimentation, and low flow levels.

## Objectives

- Hatch Bull Trout eggs using remote site incubators above a waterfall barrier where Bull Trout have not previously existed.
- Use fish embryo monitoring systems (FEMS) to capture key developmental time points in stream substrate.

## Fall Creek

- Lower Fall Creek is a crucial spawning tributary to the Ram River for fluvial migratory Bull Trout<sup>2</sup>.

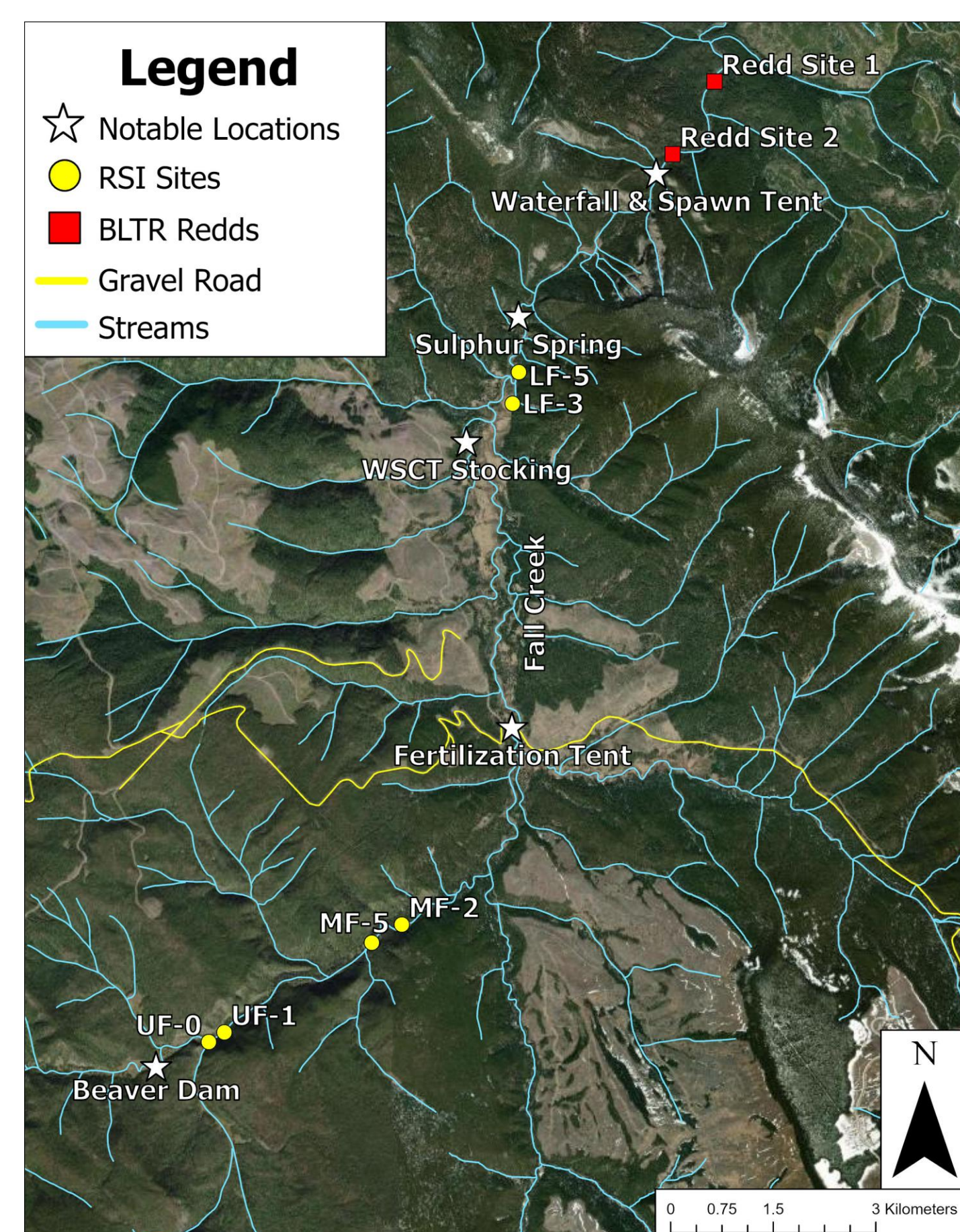


Fig 1. Map of Upper Fall Creek study area. Fall Creek is a tributary of the Ram River in the eastern slopes of Alberta, ~165 km northwest of Calgary.

- 42-76 redds counted per year, average of 1.2-1.3 spawners per redd<sup>3</sup>.
- West Slope Cutthroat Trout were stocked in Fall Creek (1980, 1983, 1992, & 1994<sup>4</sup>) and have established a self-sustaining population<sup>2</sup>.

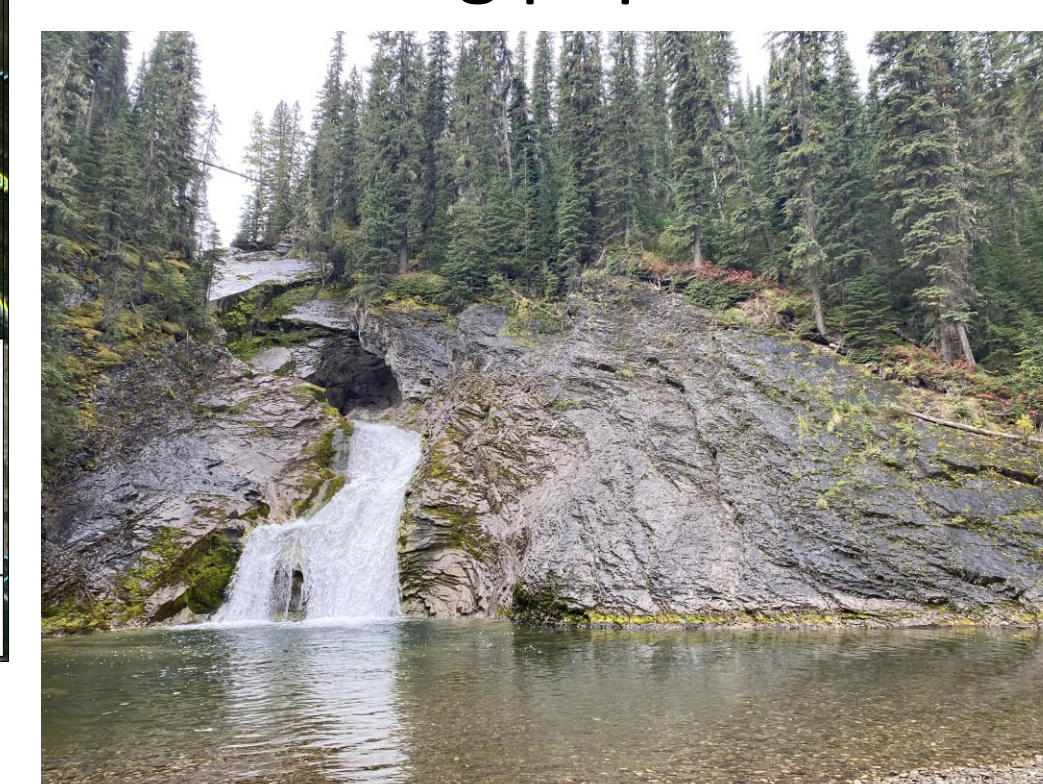


Fig 2. Waterfall barrier separating upper and lower Fall Creek.

## Spawning and Fertilization Timeline 2026

BLTR captured in lower Fall Creek via angling, electrofishing, and dip nets Sept 15-17<sup>th</sup> (Fig 3).

Captured fish held in flow-through tubs until they easily expressed gametes (max 48hrs).

Gametes were collected from 3 female and 9 male anesthetized fish Sept 17<sup>th</sup> (Fig 4).

Eggs of 3 female fish were divided in half, by volume, then combined into an egg mixture.

Milt of 4 male fish was added to the egg mixture for fertilization on Sept 18<sup>th</sup>.

Fertilized eggs were water hardened for 2hrs then disinfected in Ovadine.



Fig 3. Kenton and Lesley With a Bull Trout below the waterfall barrier on Fall Creek. Credit: Caitlin Gifford GOA.



Fig 4. Thomas stripping eggs from a Bull Trout captured on lower Fall Creek. Credit: Caitlin Gifford GOA.

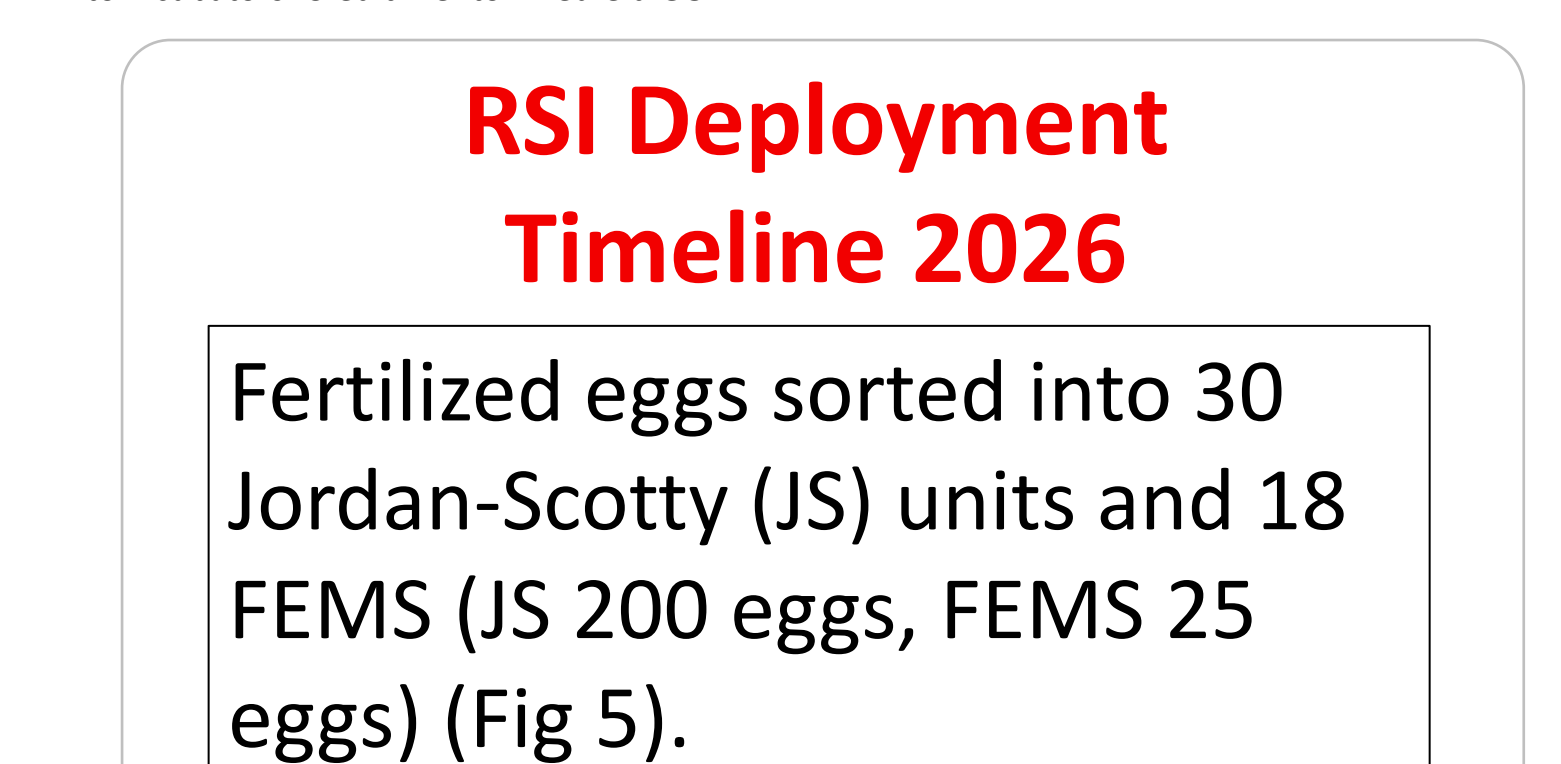


Fig 5. Inside fertilization tent Thomas, James, & Ben (seated) sorting fertilize Bull Trout eggs into incubators. Credit: Kenton Neufeld GOA.

## RSI Deployment Timeline 2026

Fertilized eggs sorted into 30 Jordan-Scotty (JS) units and 18 FEMS (JS 200 eggs, FEMS 25 eggs) (Fig 5).

JS units separated into 6 groups of 5; FEMS separated into 6 groups of 3 (Fig 1).

1 set of JS units placed in most upstream position followed linearly by 3 FEMS (Fig 10).

JS units buried parallel to flow, FEMS placed egg tray facing bottom of the pit.



Fig 11. Fish eggs in FEMS deployed in Alaska. Credit: Ben Barst U of C.

## Fish Embryo Monitoring Systems (FEMS)

- Timelapse cameras contained within waterproofed boxes pointed at egg trays (Fig 8).
- Photos taken every 12 hours, temperature logged every hour (Fig 11).
- Photos and temperature data will allow understanding of key egg development timing and cues.

## Progress to Date

- ~5,300 eggs were deployed in Jordan-Scotty units and 450 eggs in fish egg monitoring systems totaling ~5,750.
- 48 remote site incubators equipped with temperature loggers deployed in upper Fall Creek.
- 109 eggs were transported to Allison Creek Brood Trout Hatchery Station for assessment of fertilization success.

## Significance

- Understanding RSI success allows for better future site selection.
- Knowing which translocation tools to use will allow for greater success in the future conservation translocations.
- Conservation translocations above impassible barriers creates new populations and resilience against downstream threats including stream temperature warming, whirling disease, and hybridization.

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## Citations

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