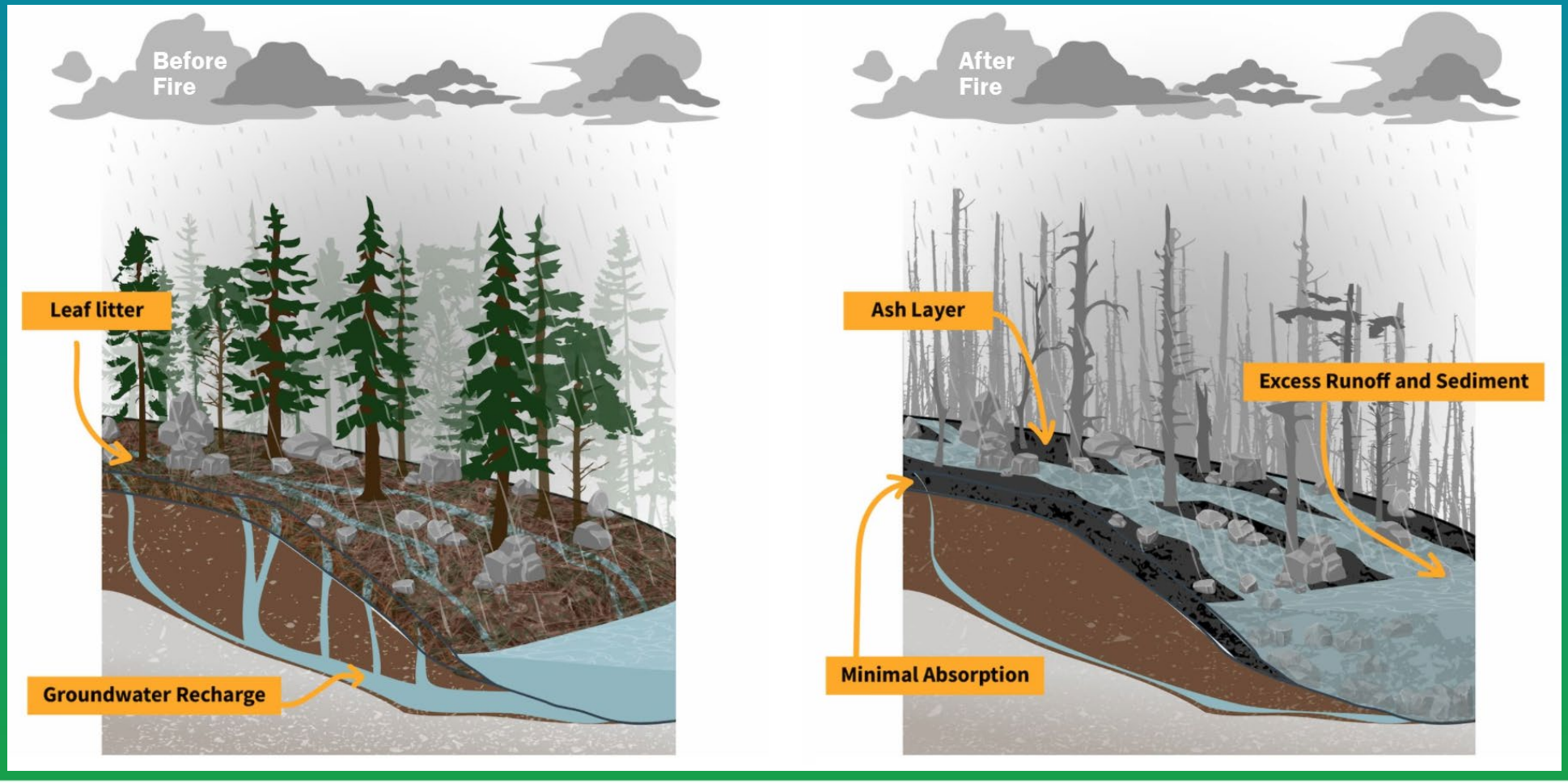
Nature-Based Approaches for Recovery and Resilience After Fire

Jennifer Rogers (RPBio, M.Sc.)
Restoration Project Manager
Jennifer.rogers@bcwf.bc.ca

Wildfires in BC

Frequency, extent and intensity of wildfires are increasing



↑ Runoff

↑ Sediment Mobilization

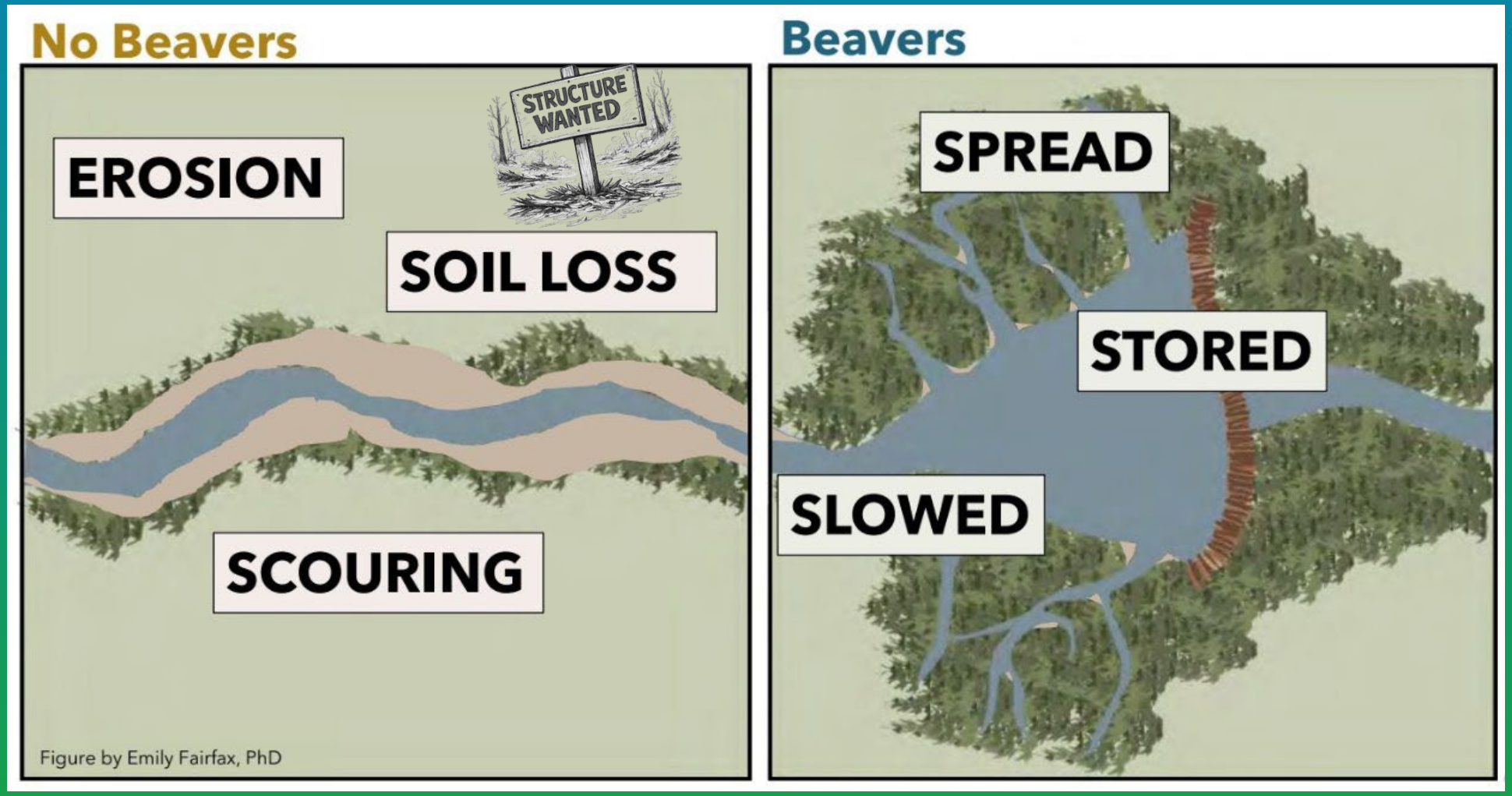
(USGS, 2020)

Emergency Response

Structure needed as soon as possible

(Coalition for the Poudre River Watershed, 2022)

Emergency Response



(Fairfax, 2021)

Emergency Response

Emergency Response

Twaal Creek Project

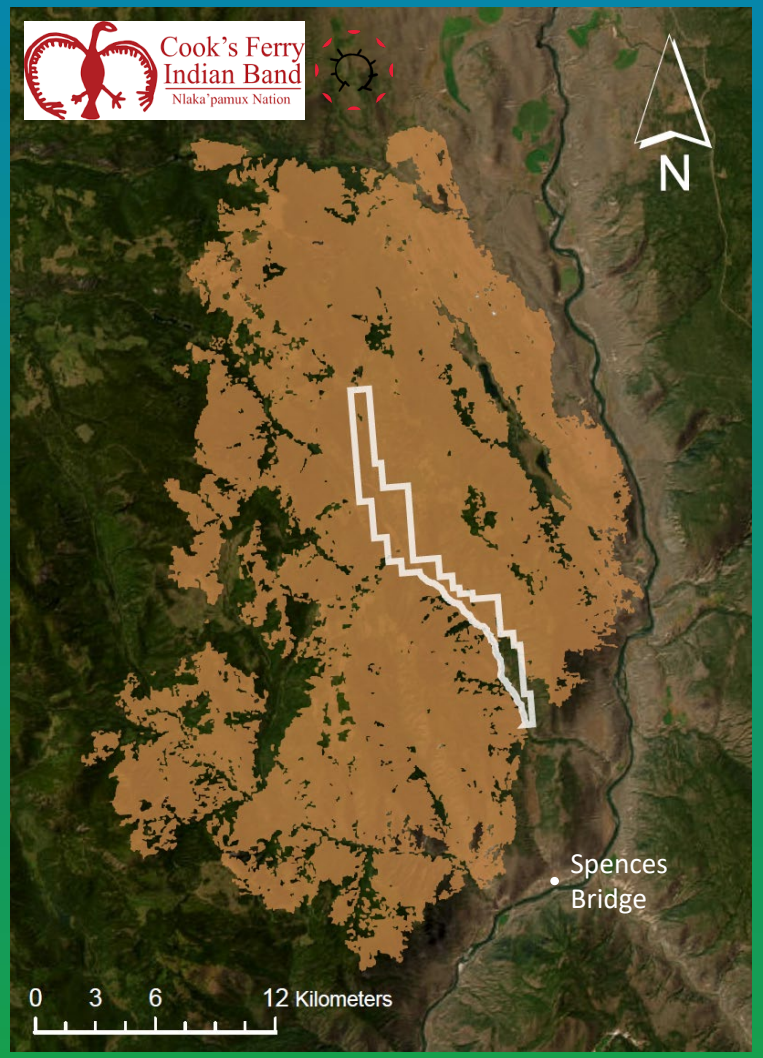


Image credit: BC Wildfire Service

SHETLAND CREEK WILDFIRE

By Aaron Schulze

Shetland Creek wildfire doubles in size to 12,000 ha; travel advisory in place on Highway 1

Jul 19, 2024 | 10:23 AM

(CFJC Today, 2024)

Twaal Creek Project

Initial Desktop Assessment: February 2025

- Gradient
- Access
- Level of confinement
- BRAT outputs
- Natural structure

Meeting with Community: March 2025

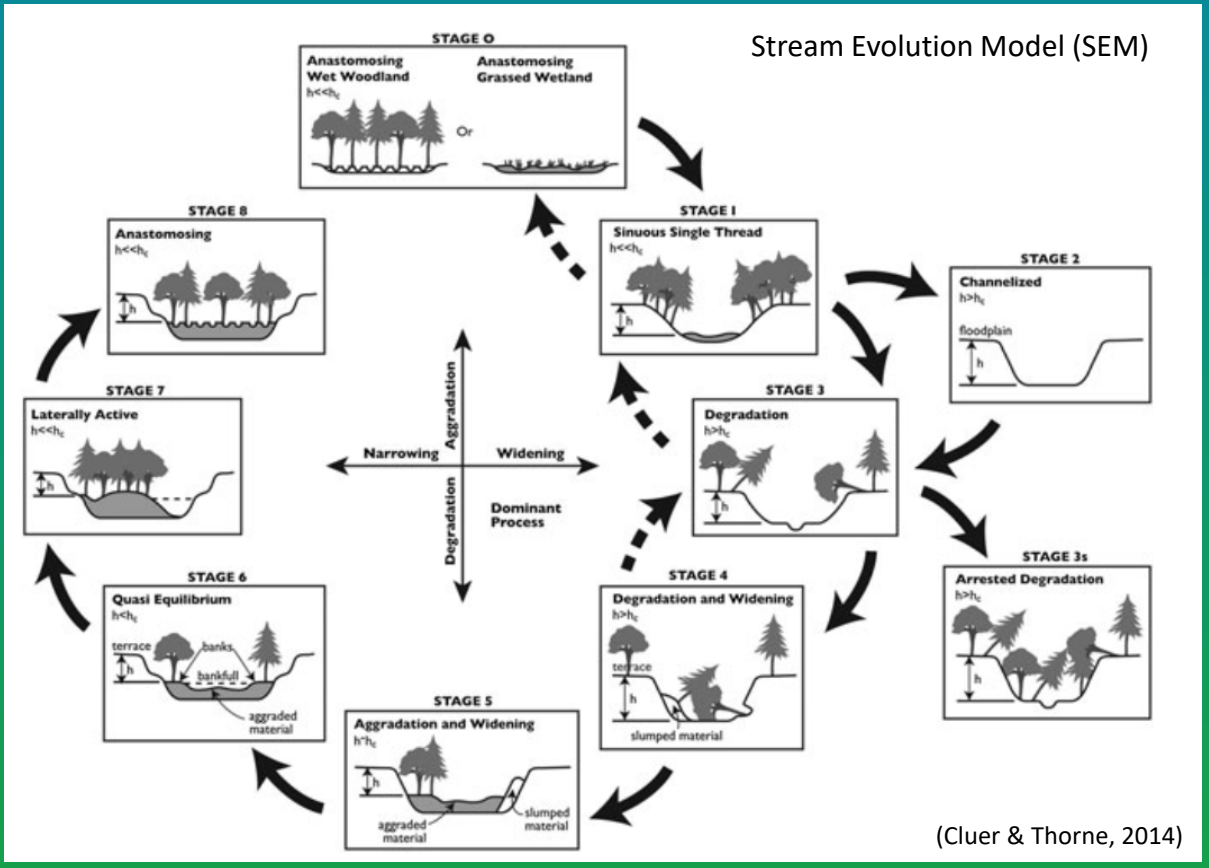
- Historic conditions
- Restoration objectives
- Community concerns/input

Twaal Creek Project

Field Assessment: April 2025

- Divided the stream into reaches based on historic condition, current condition (SEM) & restoration potential

Stream Evolution Model (SEM)



(Cluer & Thorne, 2014)

Twaal Creek Project

Some reaches unsuitable for LTPBR (highly confined)

Twaal Creek Project

Some reaches had wide, accessible floodplains and were not yet incising

Twaal Creek Project

- PALS to disperse flow laterally onto floodplain during high flow
- High priority area for planting

Twaal Creek Project

Some reaches were actively incising

Twaal Creek Project

- Bank-attached PALS to promote widening
- Channel-spanning PALS to promote aggradation

Twaal Creek Project

Two historic beaver complexes (last known activity ~40 years ago)

Twaal Creek Project

- BDAs/reinforced natural beaver dams to promote lateral connectivity, pooling, dissipate stream energy and aggrade sediment
- High priority for planting & potential future beaver relocation

Before/After

Before/After

Post-Fire Building Considerations

- Safety considerations
  - Plan and budget for a danger tree assessor & faller
  - Know the geo-hazard risks level and have a plan for emergency site evacuation
- Timing is key – talk with regulators early in the planning process
- Consider building material availability & proximity
- Highly dynamic systems, manage expectations and be flexible and willing to adapt to the system's response

Next Steps at Twaal

- Monitor, maintain & adaptively manage structures
- Plan Phase 2 of implementation
- Riparian planting
- Assess additional opportunities for upland restoration (planting, gully stuffing etc.)
- Assess suitability for beaver relocation