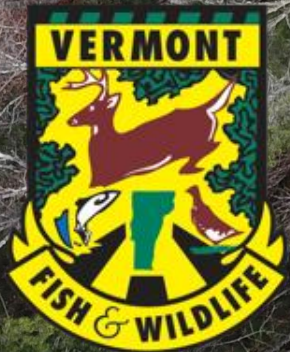


Lessons Learned from 14 Years of Strategic Wood Addition in Northeastern Vermont

Jud Kratzer

Fisheries Biologist

August 26, 2026



What is strategic wood addition?

- Strategic
- Wood
- Addition



Present

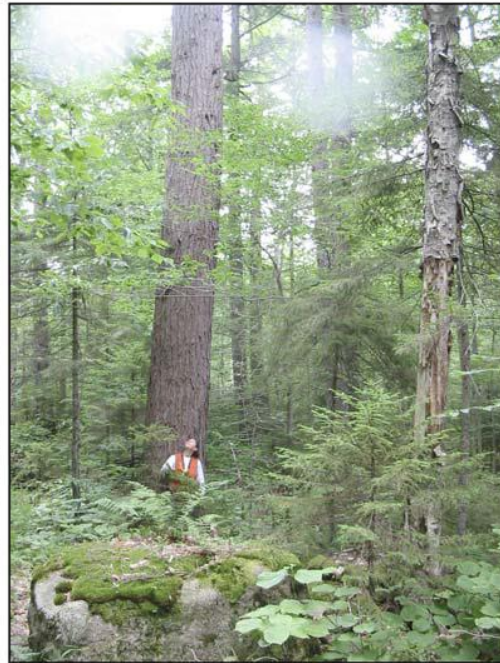


The Shifting Baseline

“...over time knowledge is lost about the state of the natural world, because people don’t perceive changes that are taking place. In this way, people’s perceptions of change are out of kilter with the actual changes taking place in the environment. In other words, due to short lifespans and faulty memories, humans have a poor conception of how much of the natural world has been degraded by our actions, because our ‘baseline’ shifts with every generation, and sometimes even in an individual. In essence, what we see as pristine nature would be seen by our ancestors as hopelessly degraded, and what we see as degraded our children will view as ‘natural’.” (Papworth, et. al., 2009).



Past



Bald Eagle State Forest, PA (Michael P. Gadomski)

Old growth forest in the Adirondacks, NY. Keeton, et al 2007

Natural sources of wood in streams

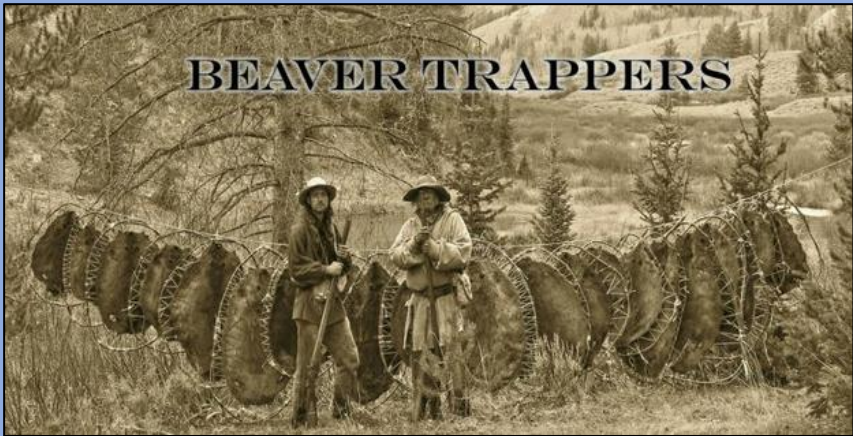
- Chronic mortality
- Wind storms
- Ice storms
- Wild fires
- Bank erosion
- Landslide
- Beavers



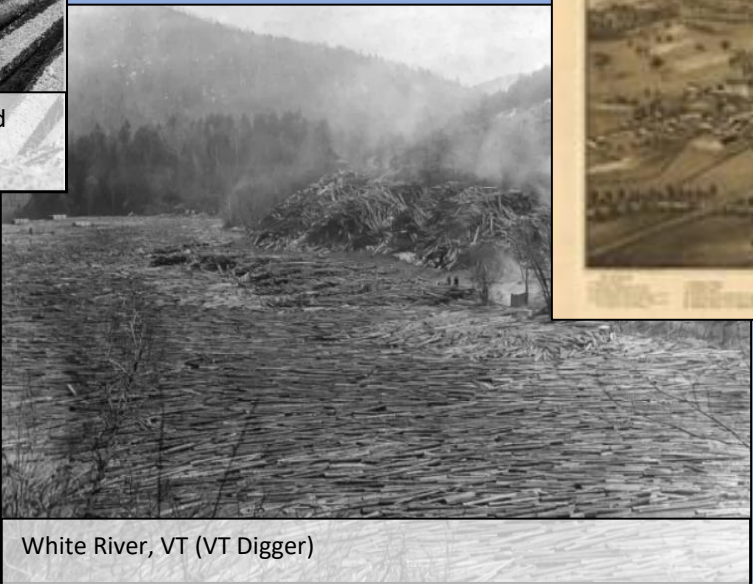
European Settlement



Machias River, ME (2023 Main Sustainability and Water conference)



Splash dam (Forest History Society)



White River, VT (VT Digger)



A photograph of a river or brook flowing through a forested area. The water is shallow and clear, revealing a bed of grey and brown gravel and stones. The banks are lined with tall, thin trees, some with bare branches and others with green foliage. The background shows a dense forest on a hillside. The text "Bethel Gilead Brook, Bethel" is overlaid in the center of the image.

Bethel Gilead Brook, Bethel

Natural Wood Removal

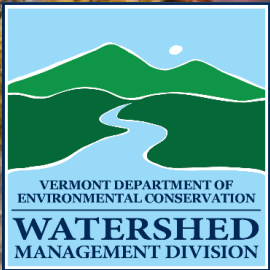
Saxton's River, Rockingham



The value of natural wood recruitment

- Prioritize protection and restoration of streamside forests
- Leave wood in the stream





Success!
14 years
72 stream miles
83,000 more brook trout





Low-Tech Process-Based Restoration

Strategic Wood Addition = SWA



Post-Assisted Log Structures = PALS

Beaver Dam Analogs = BDA



Two categories of SWA (in Vermont)

Chop-and-drop



Chop-and-grip



Chop-and-drop (light)



Chop-and-drop (heavy)



Hand placement



Chop-and-grip techniques

- Wedging
- Spearing
- Bending
- Rootwads



Wedging



Spearing



VERMONT STRATEGIC WOOD ADDITION HANDBOOK

Techniques and tactics for using large woody material to improve stream habitats



Jud Kratzer
Vermont Fish and Wildlife Department
June 2020



Outline

- Lesson #1: Function
- Lesson #2: Fine sediment storage
- Lesson #3: Brook Trout response
- Lesson #4: Longevity



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Retaining organic material



Protect Rhode Island Brook Trout



Retaining sediment, narrowing, scouring



Forming pools

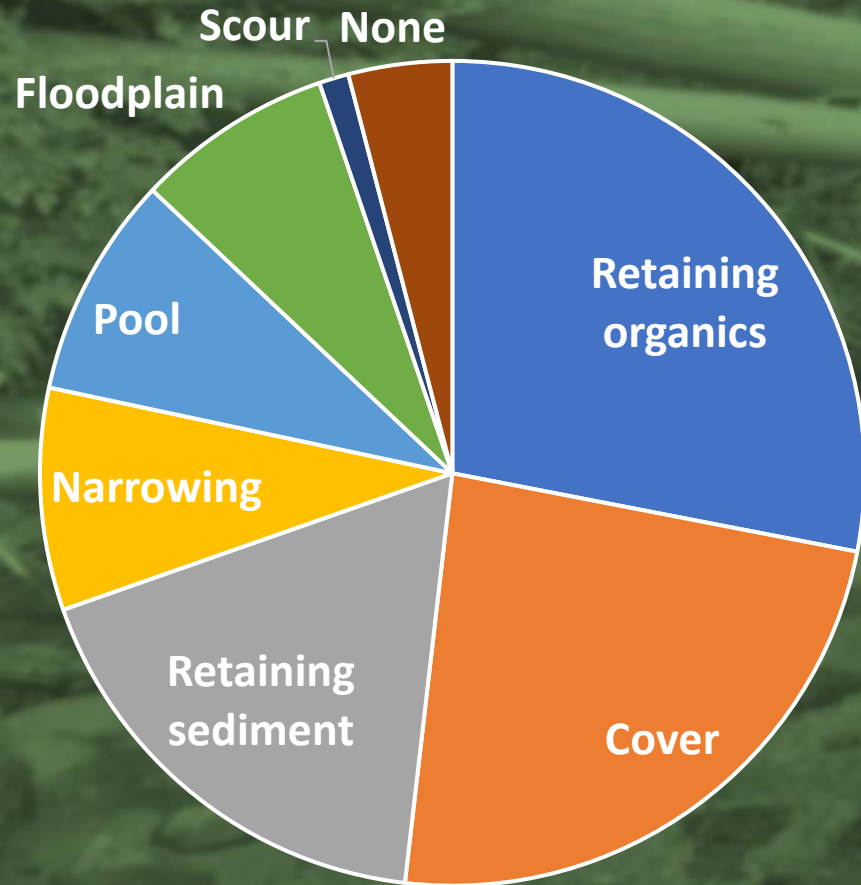


Floodplain access

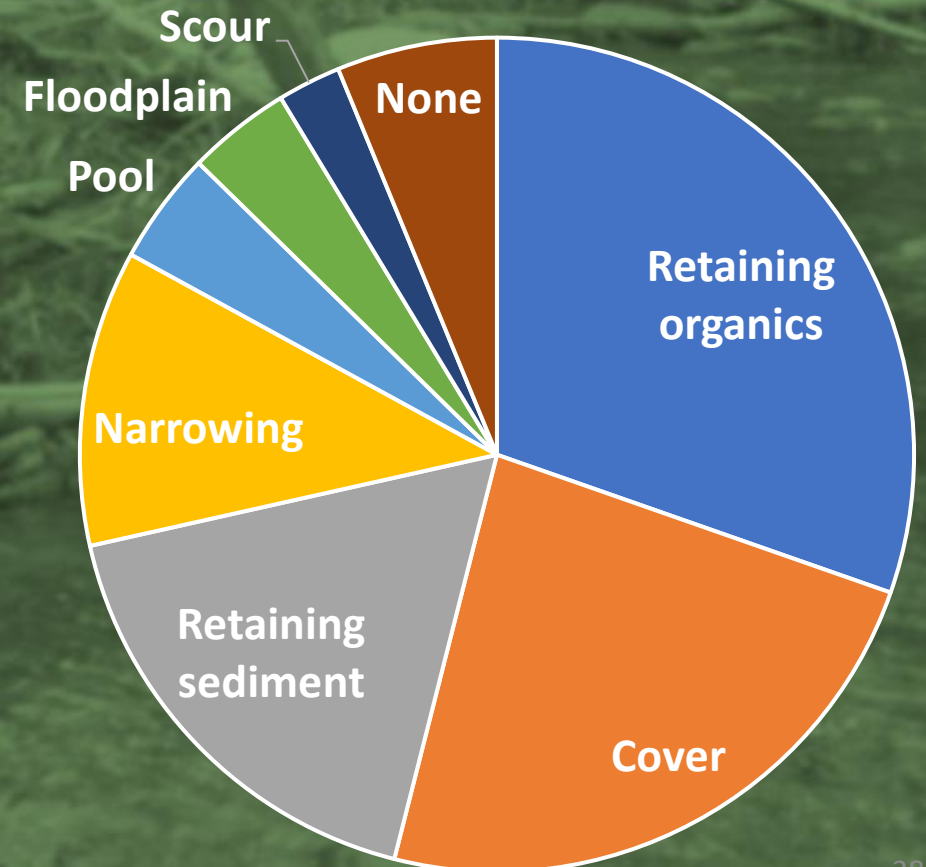


Large wood functions

167 Chop&Drop Sites



764 Chop&Grip Sites



Seasonal functions



a) September 24 – before leaf fall



b) October 24



c) November 7



d) December 12 – high flow event

Apparent functions during floods

- Slow flows
- Capture wood and sediment
- Engage floodplain





Rock Brook, August 2023



Rock Brook, August 2023



Spaulding Brook, August 2023



North Branch Nulhegan, September 2024



North Branch Nulhegan, September 2024



North Branch Nulhegan, September 2024

Waits River, August 2024



Waits River, August 2024

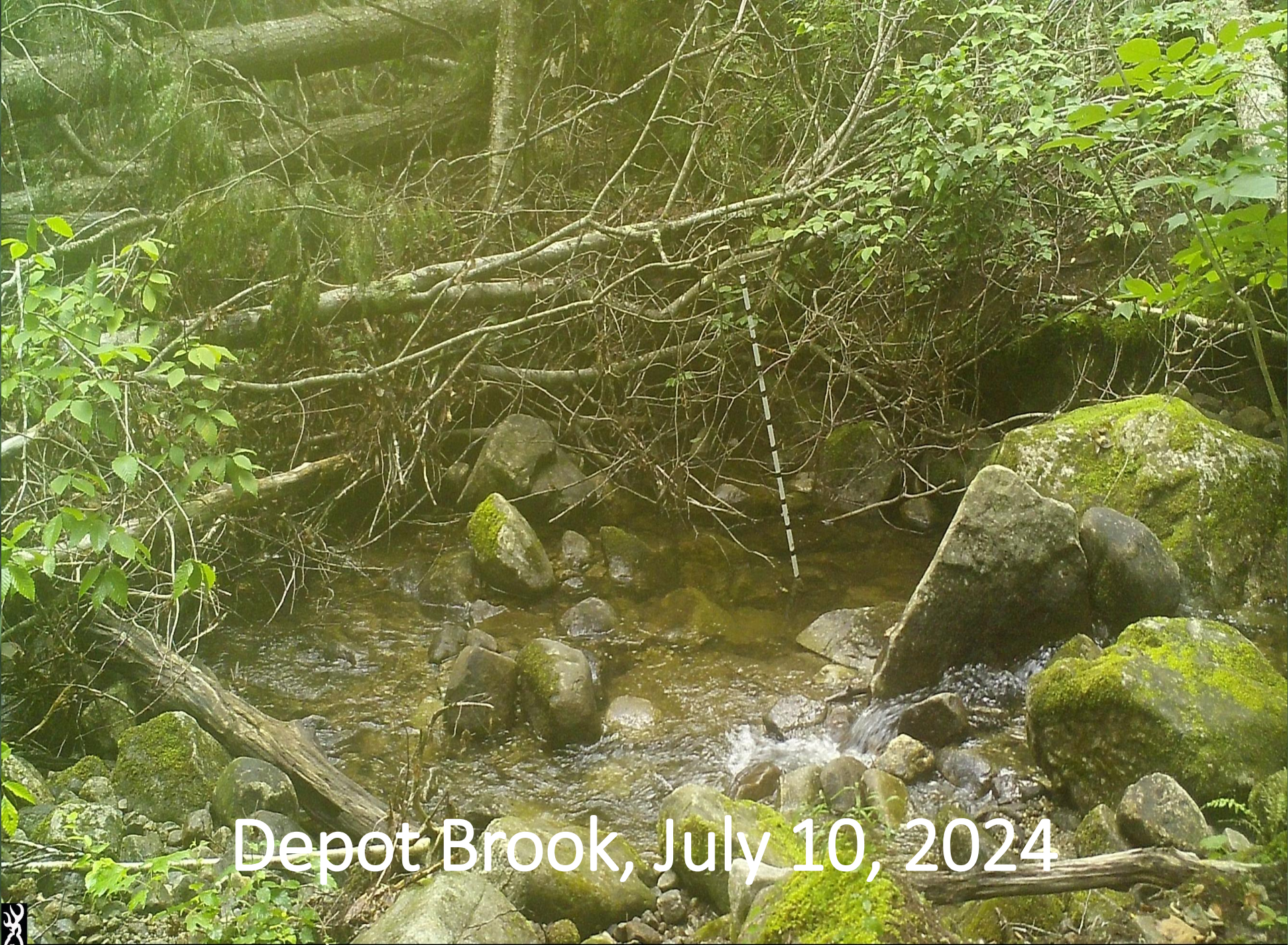


West Branch Moose River, June 2024



West Branch Moose River, August 2024





Depot Brook, July 10, 2024





Depot Brook, July 30, 2024



75F

DEPOT

07/30/2024 06:07:42PM





Murphy Brook, September 2024

Sediment methods



Sediment results (2023)

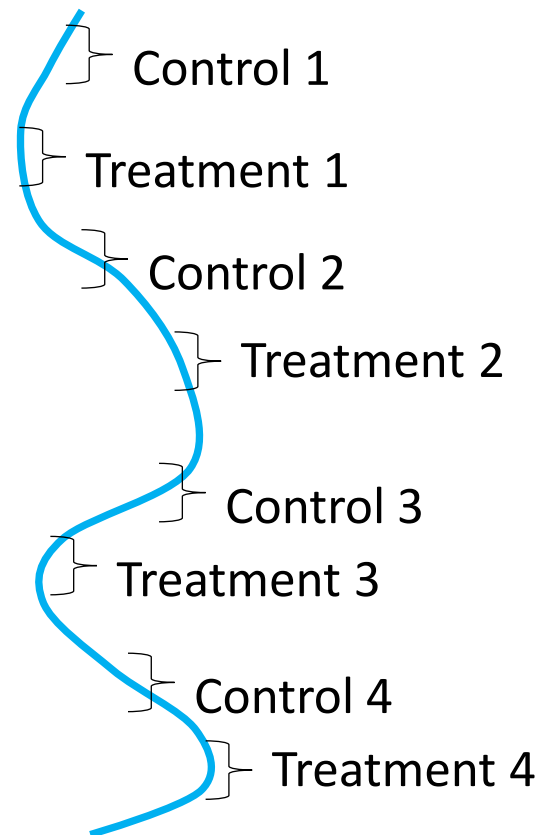
	Chop&Drop	Chop&Grip
Sediment per site (yd ³)	5.8	4.1
Sediment per km (yd ³ /mi)	323	99
Total Sediment (yd ³)	13,387	1,544

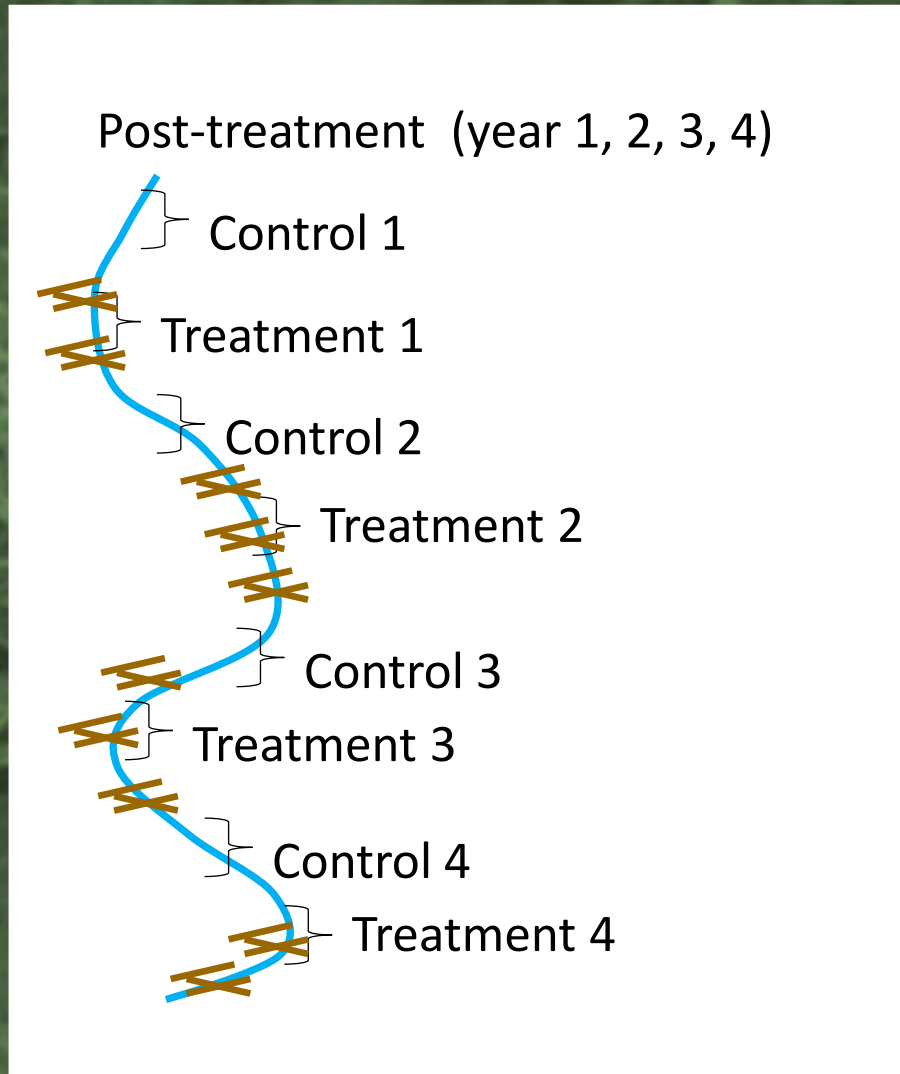
Grand Total = 1,493 dump trucks

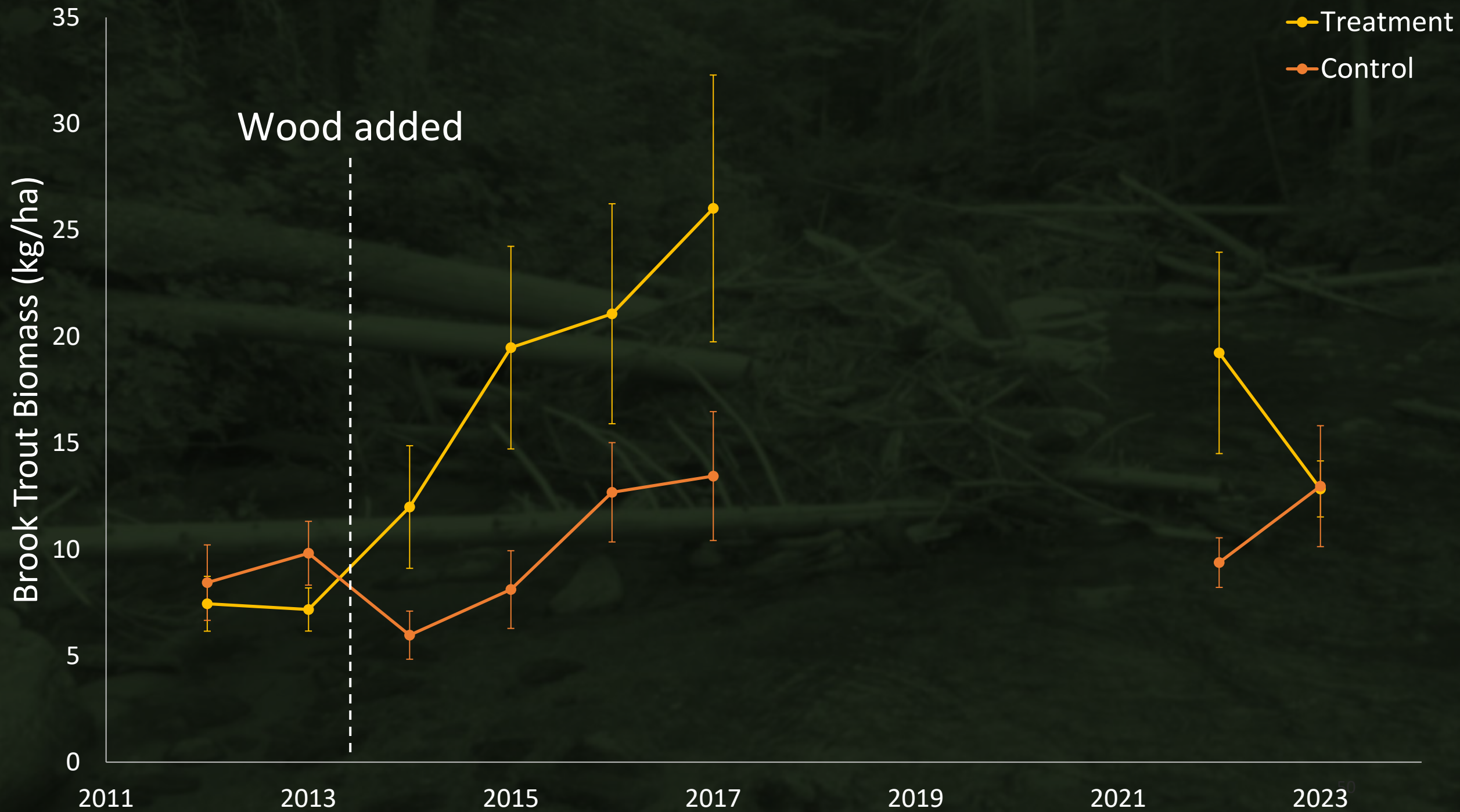


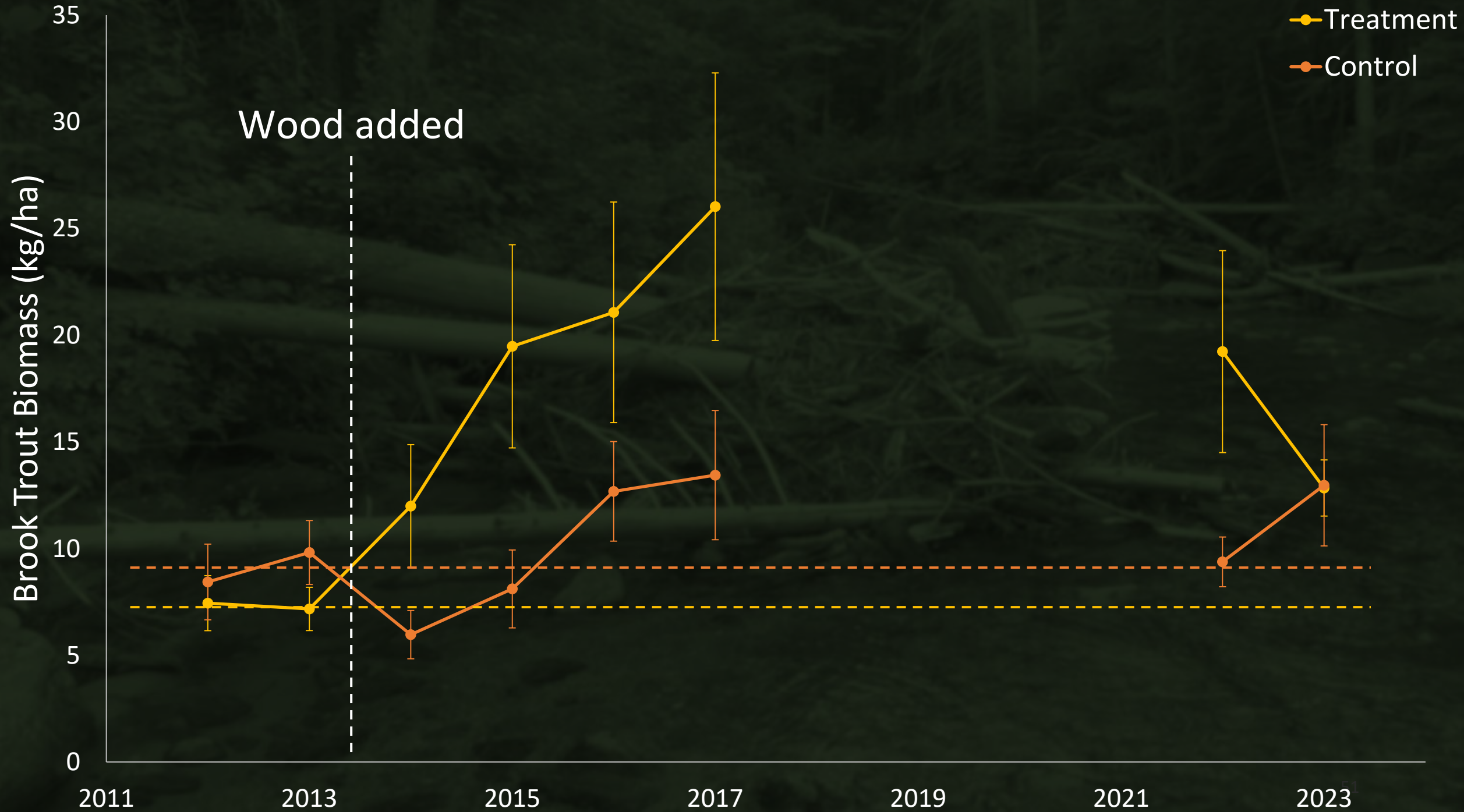


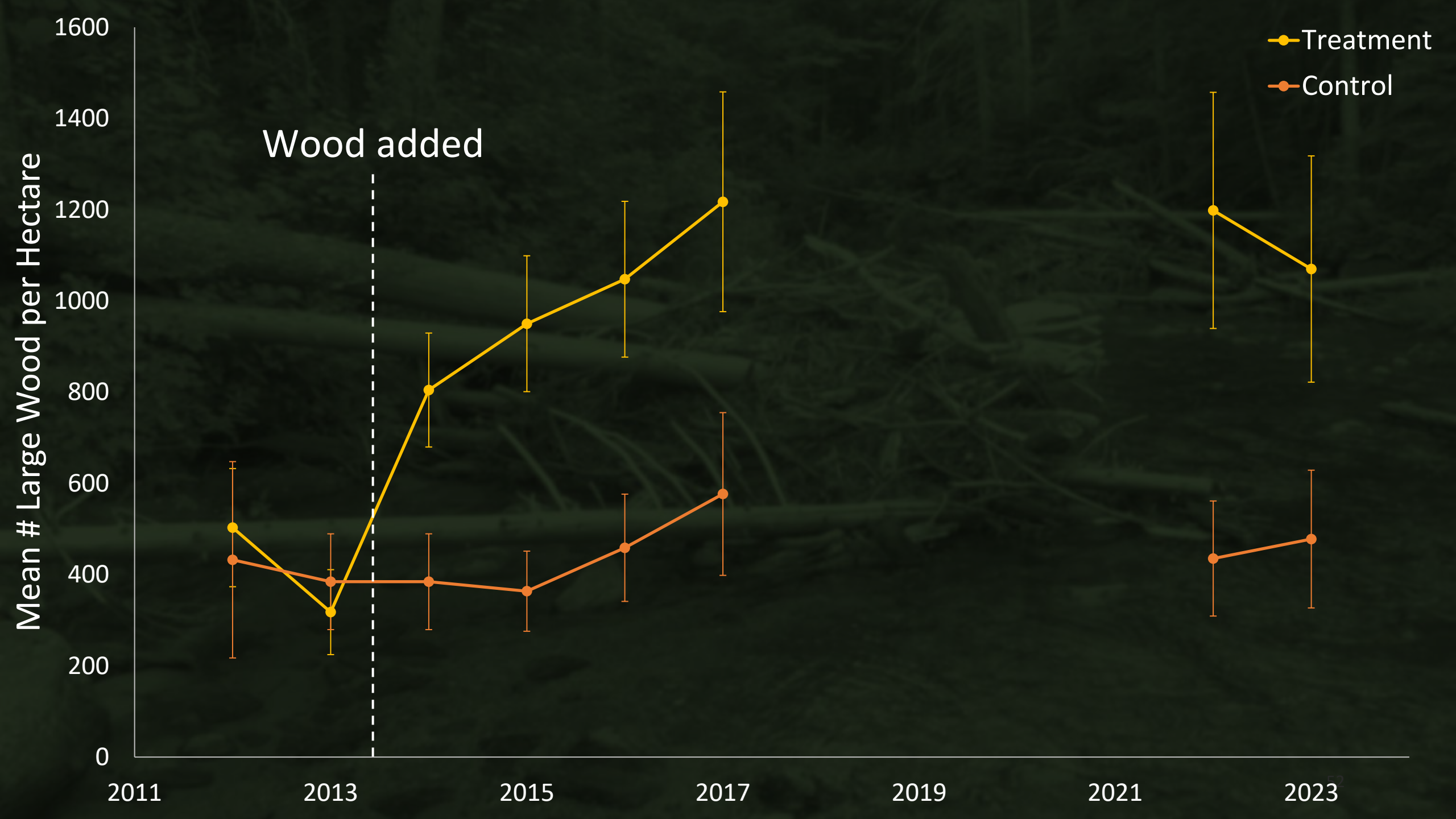
Pre-treatment (year -1, 0)











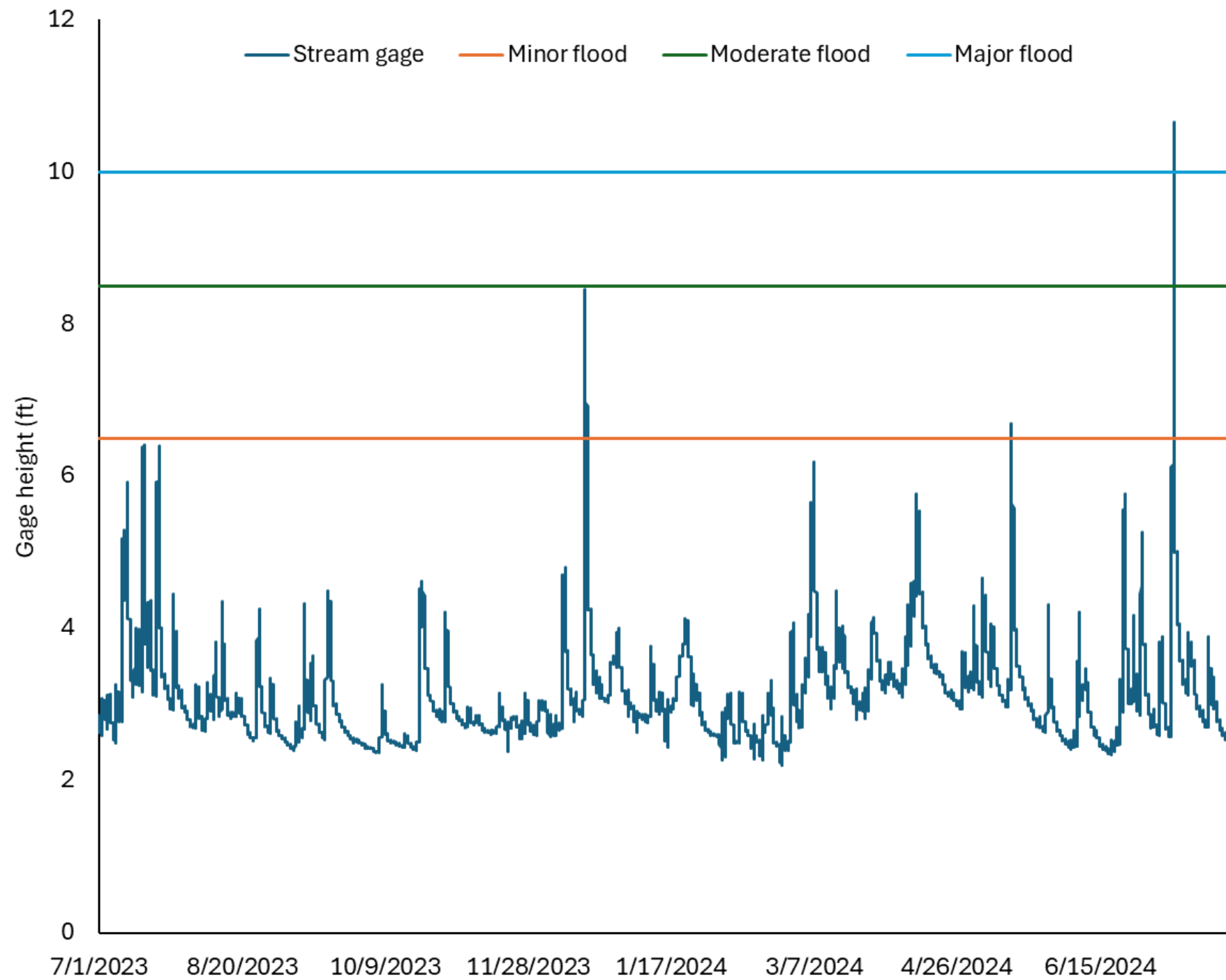




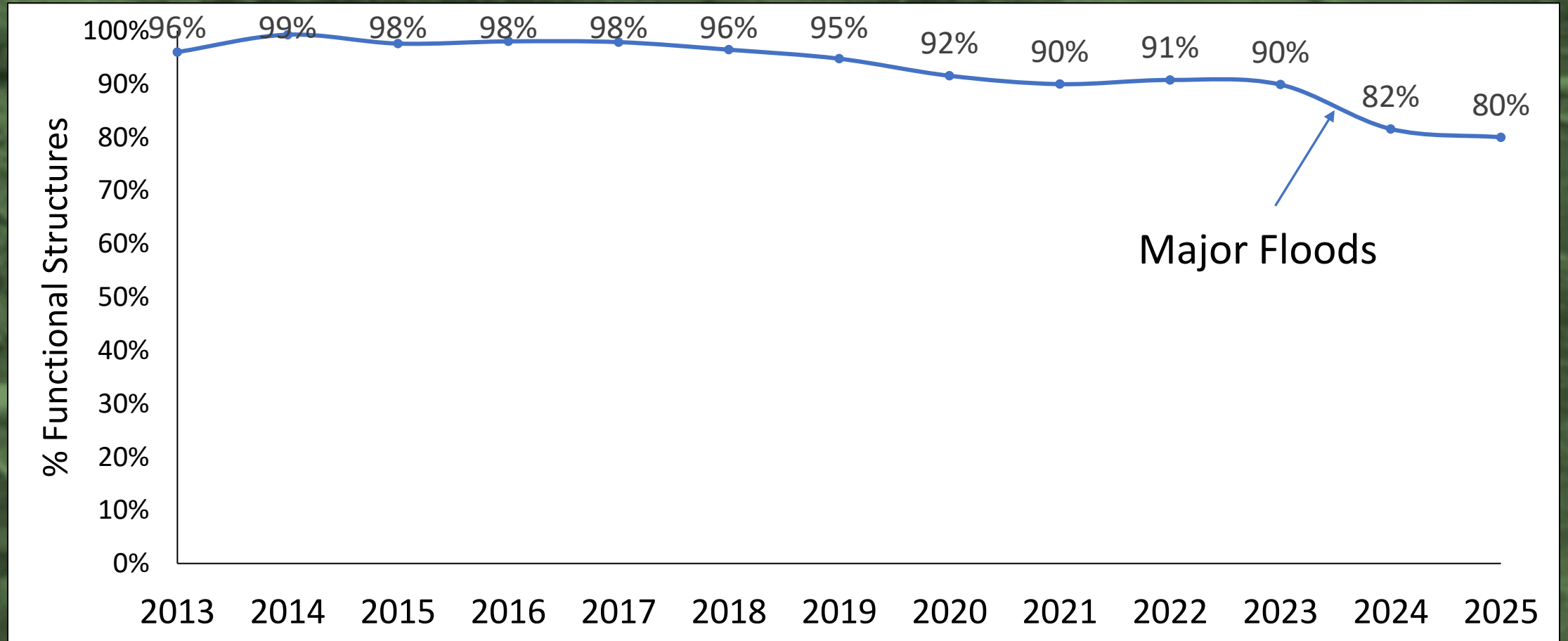


Longevity – Chop-and-Grip





Structure Survival



The big ones that got away





Is SWA the right tool for the job?

1. Will adding large wood improve aquatic habitat?
2. Will large wood benefit fish populations?
3. Can large wood be added safely and effectively?

VERMONT STRATEGIC WOOD ADDITION HANDBOOK

Techniques and tactics for using large woody material to improve stream habitats



Jud Kratzer
Vermont Fish and Wildlife Department
June 2020

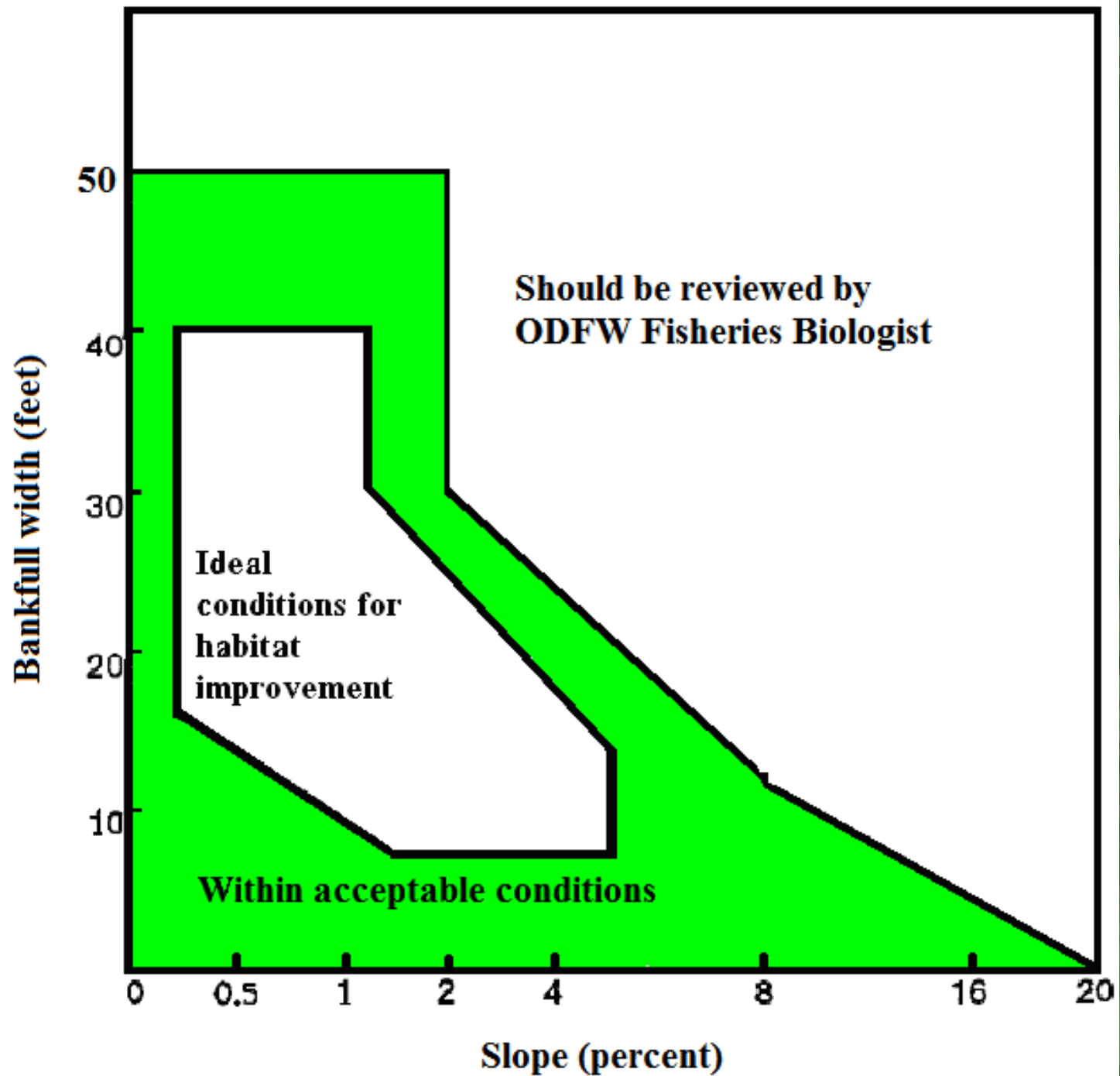


1) Improve aquatic habitat?

- Is large wood loading in the channel substantially less than it should be?
 - 47 pieces per 100 m is maximum observed by Kratzer and Warren (2013)
 - 48.8 pieces per 100 m is maximum observed in mature and old growth forests in NY and NH

1) Improve aquatic habitat?

- Is the slope and width appropriate for large wood addition?



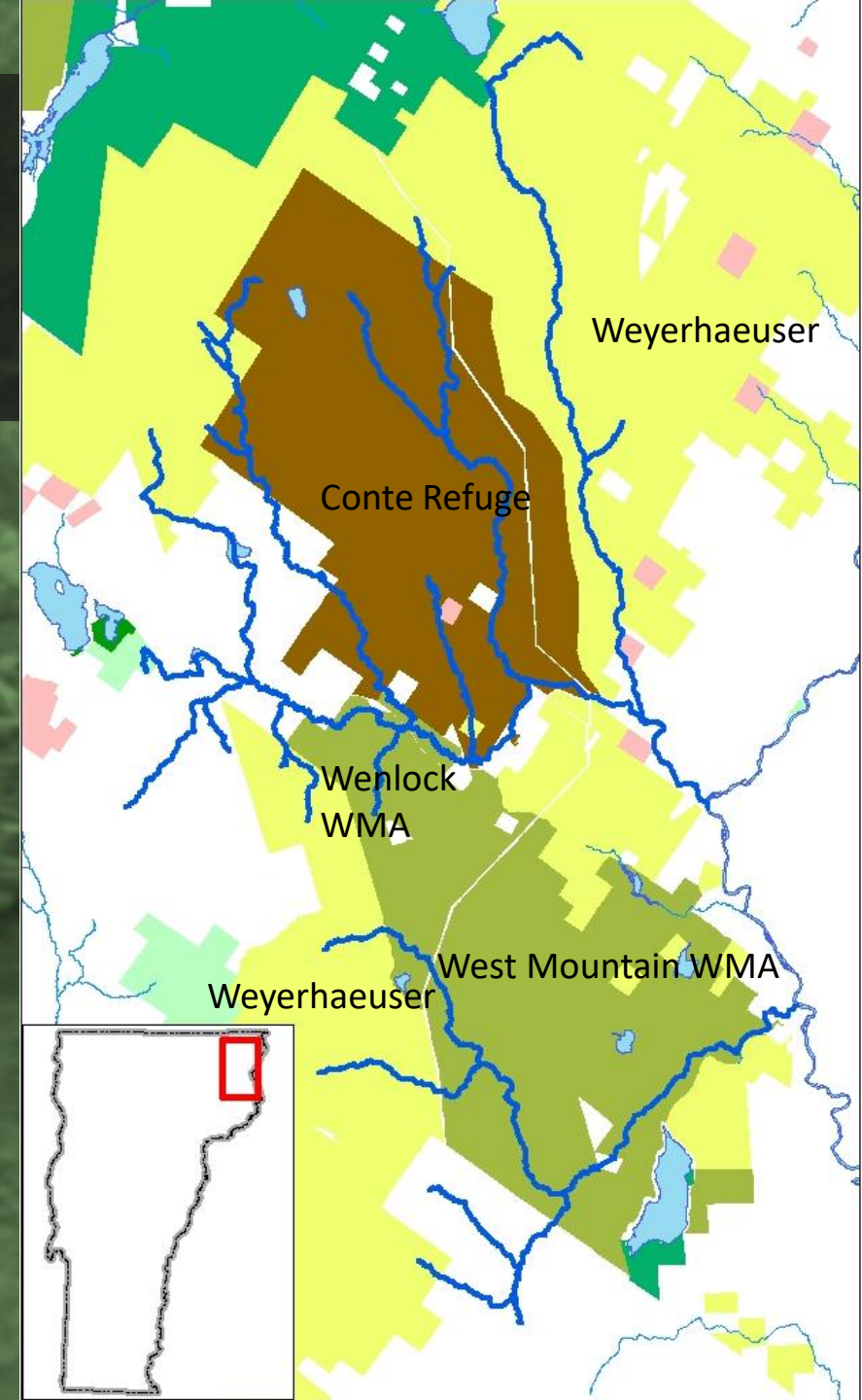
1) Improve aquatic habitat?

- Can the target wood loading be achieved without significant negative effects on riparian zone functions?



1) Improve aquatic habitat?

- Is there a long-term plan for restoration of natural wood recruitment processes?
- e.g., State or conserved lands



2) Will large wood benefit fish?

- Is there evidence that large wood is a limiting factor for the target species?



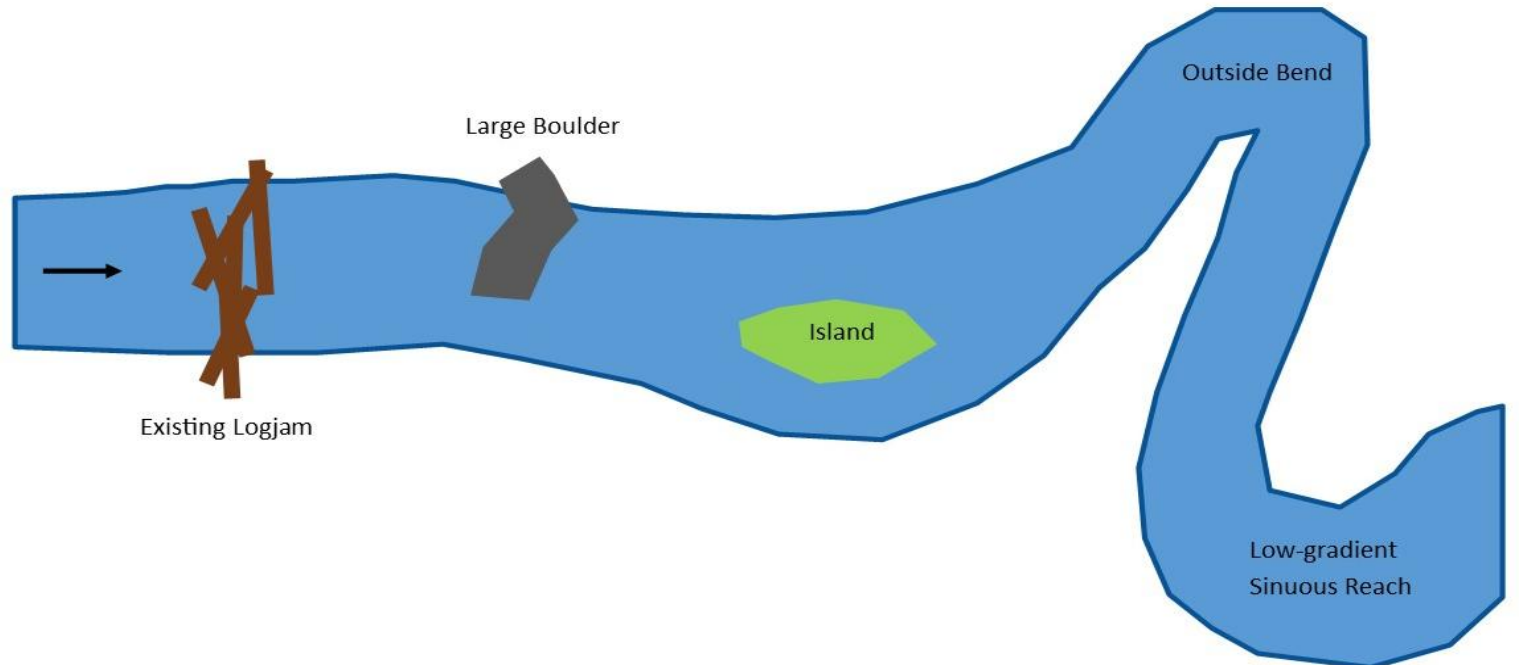
3) Safely and effectively?

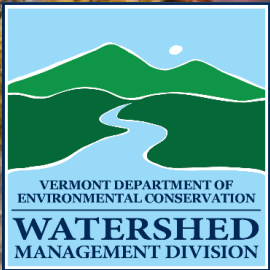
- Will large wood be stable in the stream?



3) Safely and effectively?

- Can large wood be added without risking infrastructure or property?





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72 stream miles
83,000 more brook trout

