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High Head Bypass Study – Radio Telemetry – Green Peter

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Objectives

- Provide biological information after fish pass through a high head bypass system
  - Yearling Chinook Salmon
  - Age-2 Steelhead
- Survival
  - Green Peter Tailwaters to Foster Reservoir
- Travel Time
  - Green Peter Dam to Willamette Falls Dam

Fish Acquisition and Bypass Releases

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OSU Oregon State University

Wild Surrogate Program

South Santiam Fish Hatchery

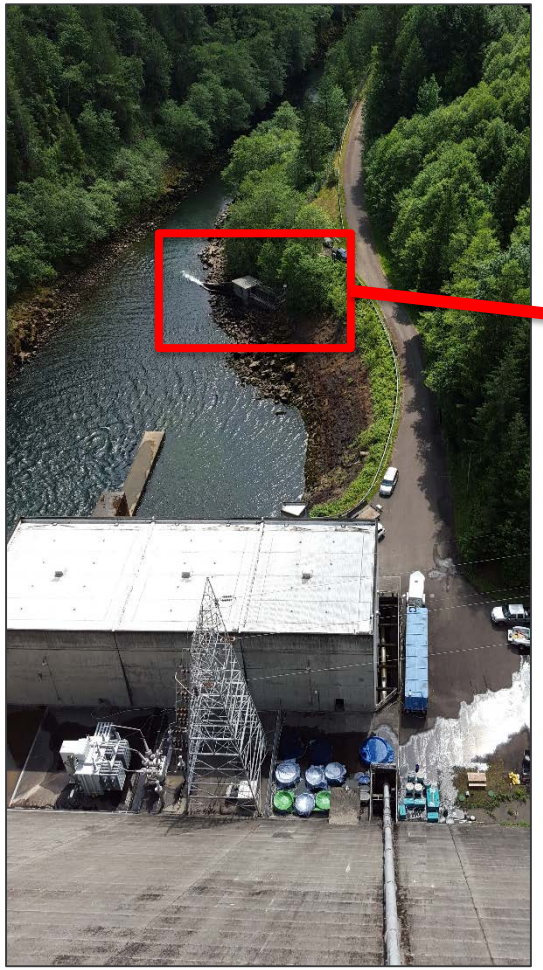
Holding Tanks

Bypass Release Tank

Bypass Releases

Valve Opening	Pipe Elevation	Species
100%	910 ft	CH1
75%		
50%	935 ft	STH-2
40%		

Fish Collection



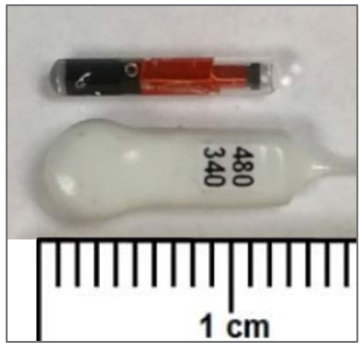
Fish Passage

Fish Collector

Holding Tanks

Fish Surgeries and Point Releases

Surgical Implantation

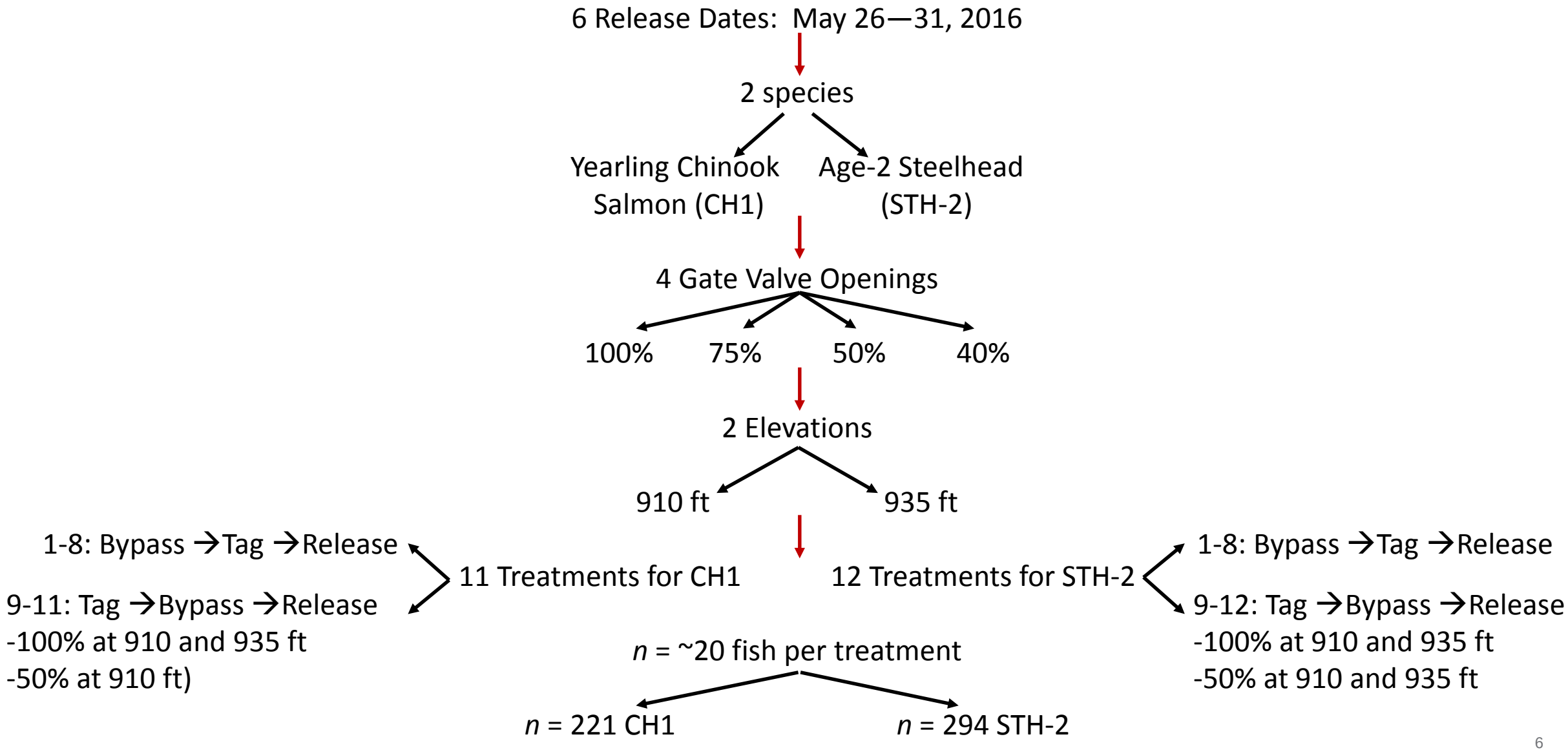


39.2 ± 3.0 days tag life

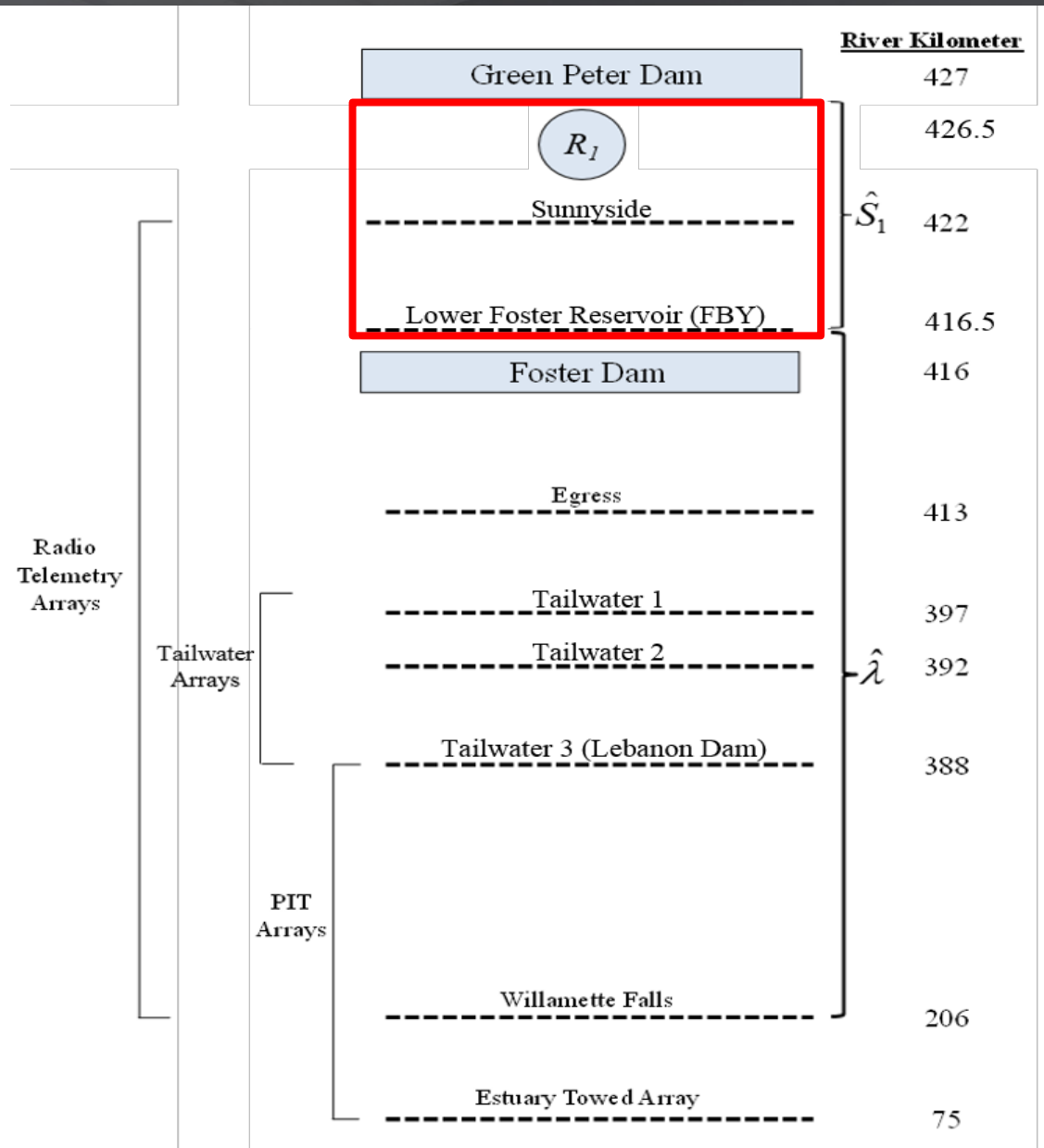
Holding Tanks

Point Releases into Green Peter Tailwaters

Number of Treatments and Different Release Method



Survival and Joint Probability of Detection and Survival



Chinook Survival to Lower Foster Reservoir by Treatment

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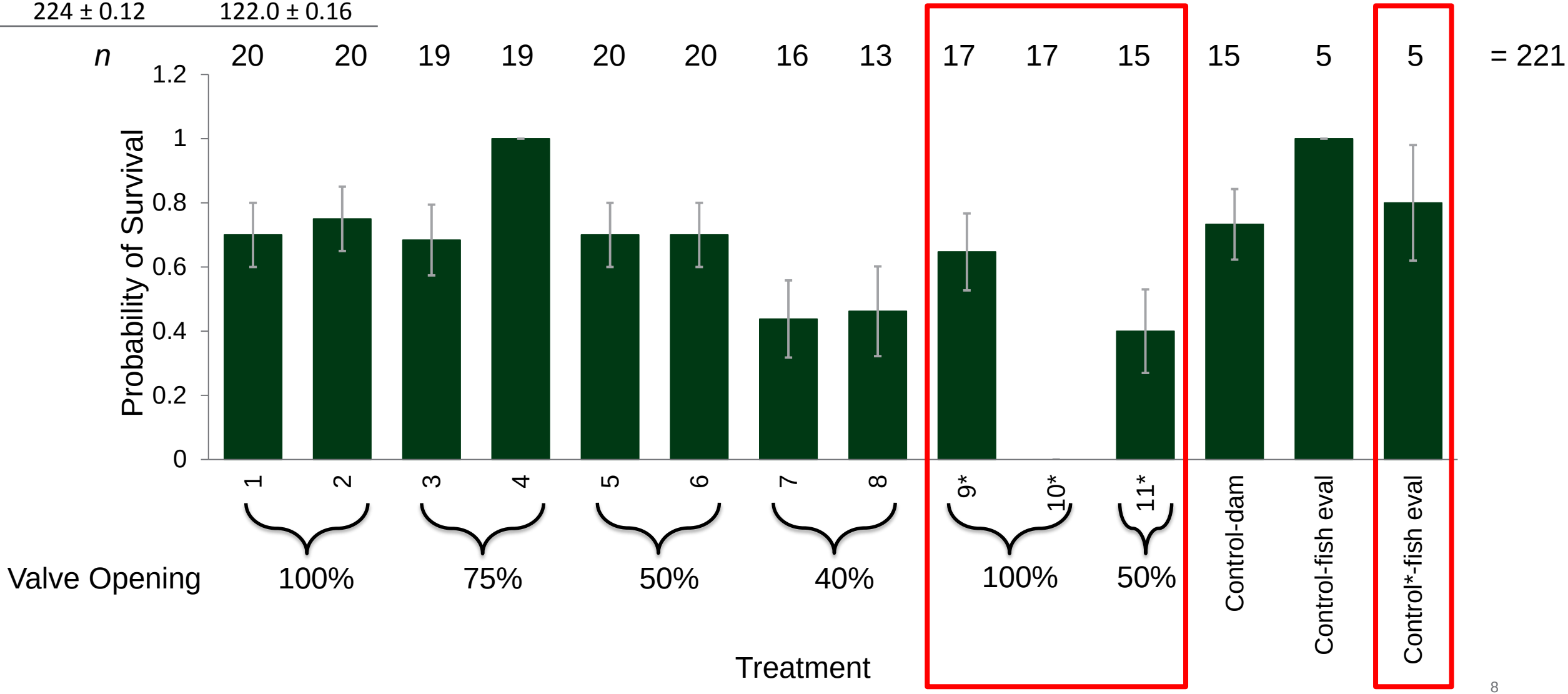
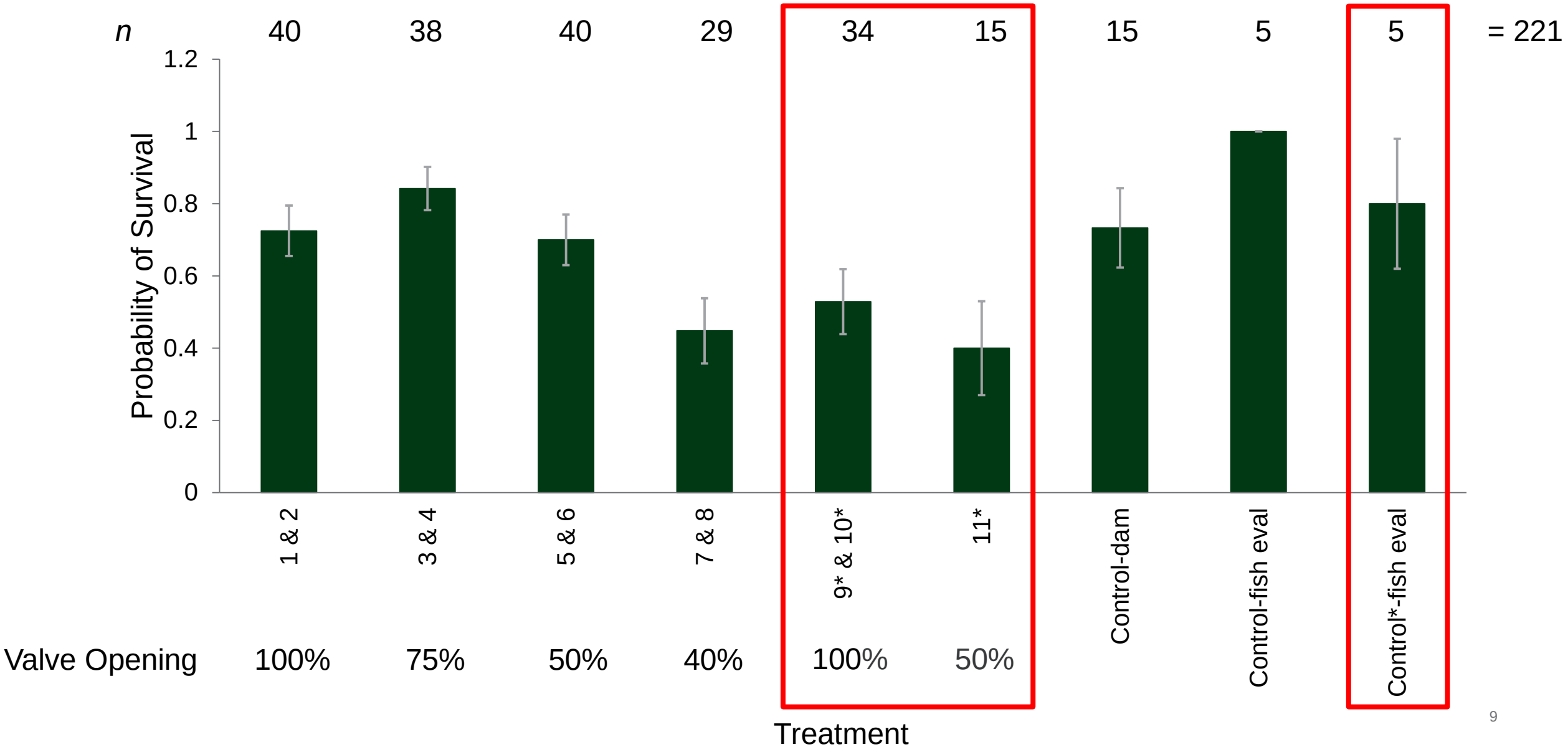
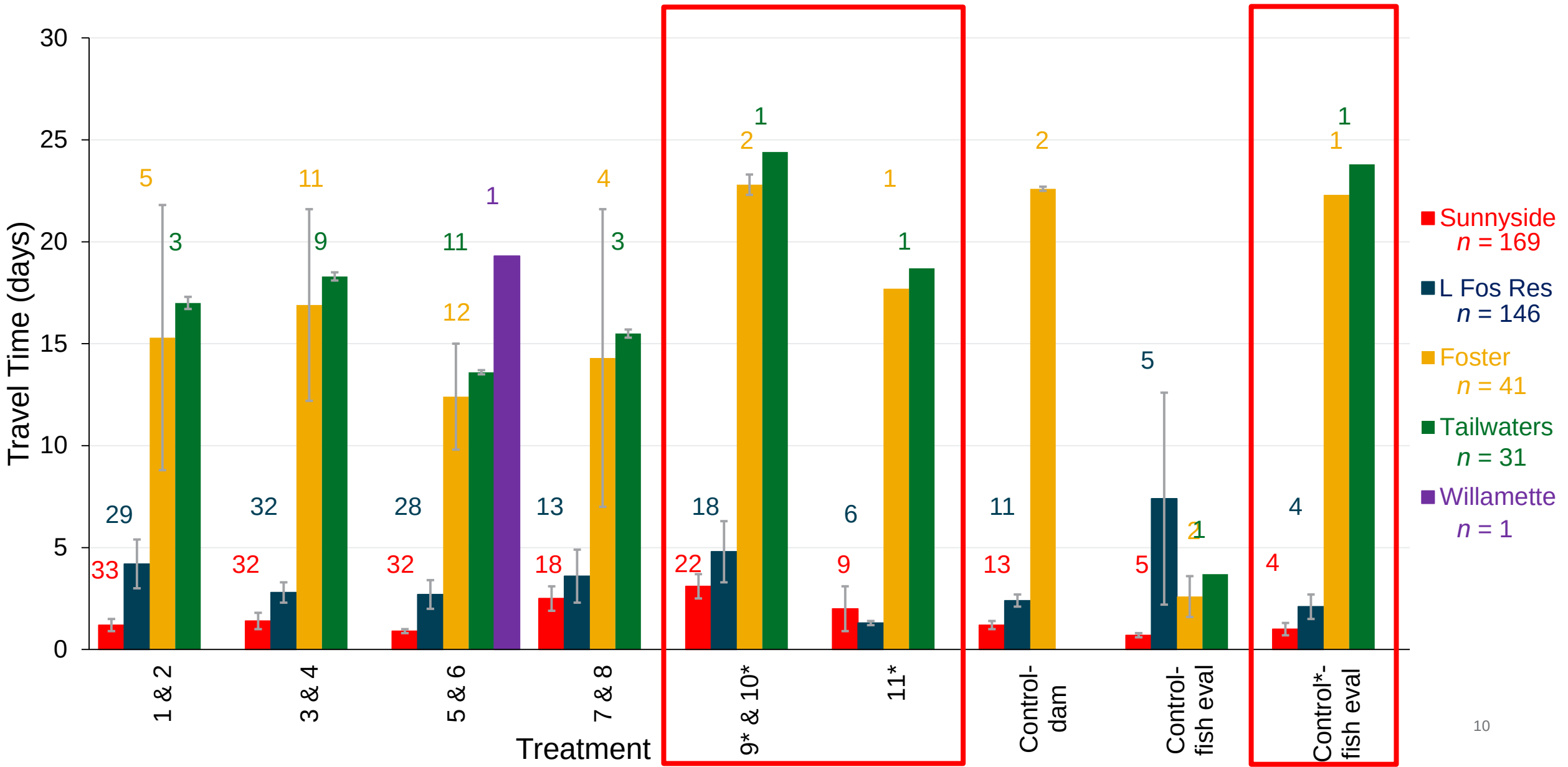
Length ± SE (mm)	Weight ± SE (g)
224 ± 0.12	122.0 ± 0.16



Chinook Survival to Lower Foster Reservoir by Valve Opening



Chinook Mean Travel Times from Release at Green Peter by Valve Opening



Chinook Mobile Tracking

Treatment	Detected Once	Detected Twice
1 & 2	2	0
3 & 4	3	0
5 & 6	1	0
7 & 8	2	0
9* & 10*	2	0
11*	0	0
Control – dam release	1	0
Control – fish evaluator	0	0
Control* – fish evaluator	0	0
Totals	11	0

*Denotes study fish that were tagged first, subjected to the treatment, then released into the Green Peter tailwaters. All other study fish were subject to the treatment, tagged, then released into the Green Peter tailwaters.

Age-2 Steelhead Detection Rates to Lower Foster Reservoir by Treatment

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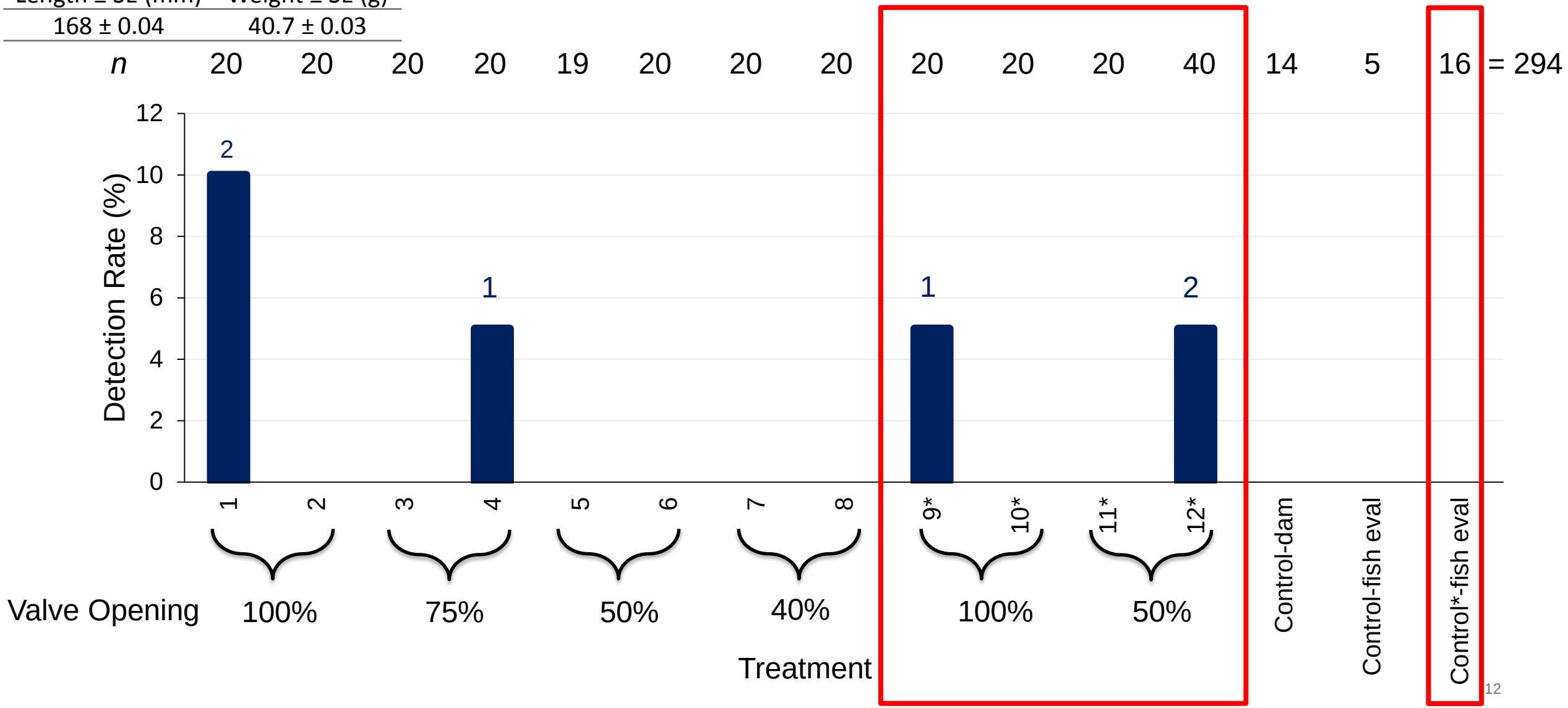
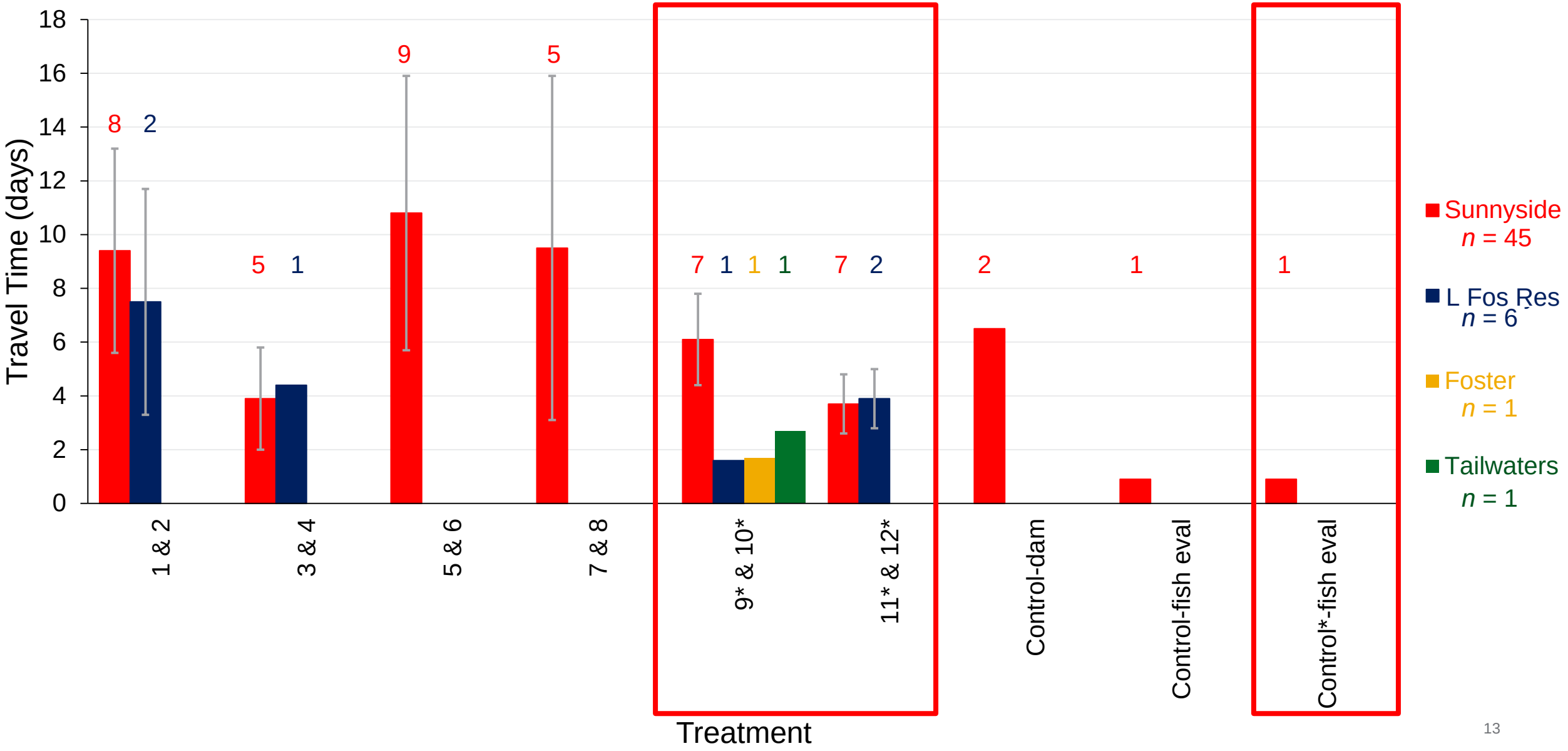
Length ± SE (mm)	Weight ± SE (g)
168 ± 0.04	40.7 ± 0.03



Age-2 Steelhead Mean Travel Times from Release at Green Peter by Valve Opening



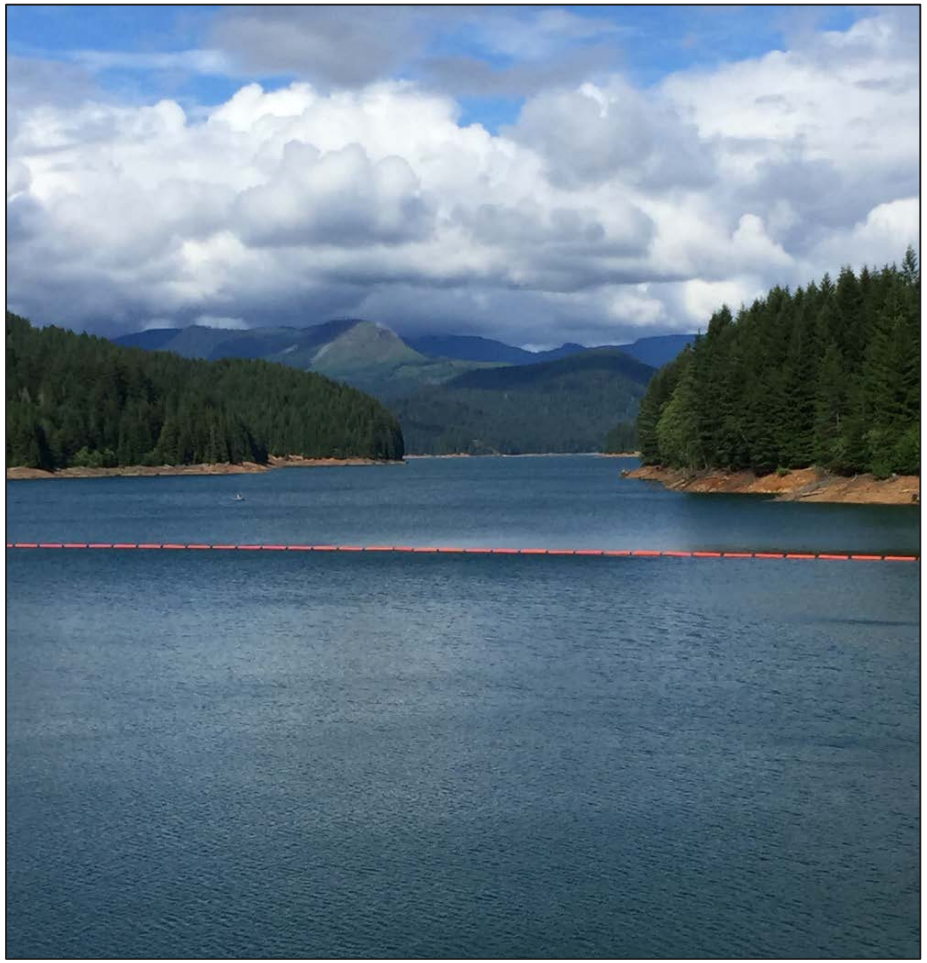
Age-2 Steelhead Mobile Tracking

Treatment	Detected Once	Detected Twice
1 & 2	2	4
3 & 4	4	0
5 & 6	3	1
7 & 8	1	1
9* & 10*	7	3
11* & 12*	2	3
Control – dam release	0	1
Control – fish evaluator	0	0
Control* – fish evaluator	1	0
Totals	20	13

*Denotes study fish that were tagged first, subjected to the treatment, then released into the Green Peter tailwaters. All other study fish were subject to the treatment, tagged, then released into the Green Peter tailwaters.

Summary and Recommendations

- Chinook Salmon
  - 146 of 221 (66%) were detected at the lower Foster Reservoir
    - 3.5 ± 1.3 days
  - 31 passed Foster Dam
  - Overall probability of survival was 0.661 (0.03)
- Age-2 Steelhead
  - 6 of 294 (2%) were detected at the lower Foster Reservoir
    - 4.3 ± 2.7 days
  - 1 passed Foster Dam
- Negative effect on survival as gate valve opening decreased
  - ≥ 50% open is optimal
- Preferred Method
  - Release through the bypass → tag → release into tailwaters



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