

Yakima River Hooking Mortality

A wide, shallow river flows through a lush, green forest. The water is a deep blue-grey color, reflecting the sky. The banks are lined with dense trees and shrubs, some showing early autumn colors. The sky is a clear, bright blue with a few wispy white clouds. The overall scene is peaceful and natural.

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Ecological Interactions Team

Washington Department of Fish and Wildlife

Purpose

- Estimate long-term mortality of spring Chinook salmon caught and released in the fishery below Roza Dam
- Standard 10% rate currently used
- Used for NOR estimation in run reconstruction
- Potential for use for take estimates in other fisheries with ESA considerations

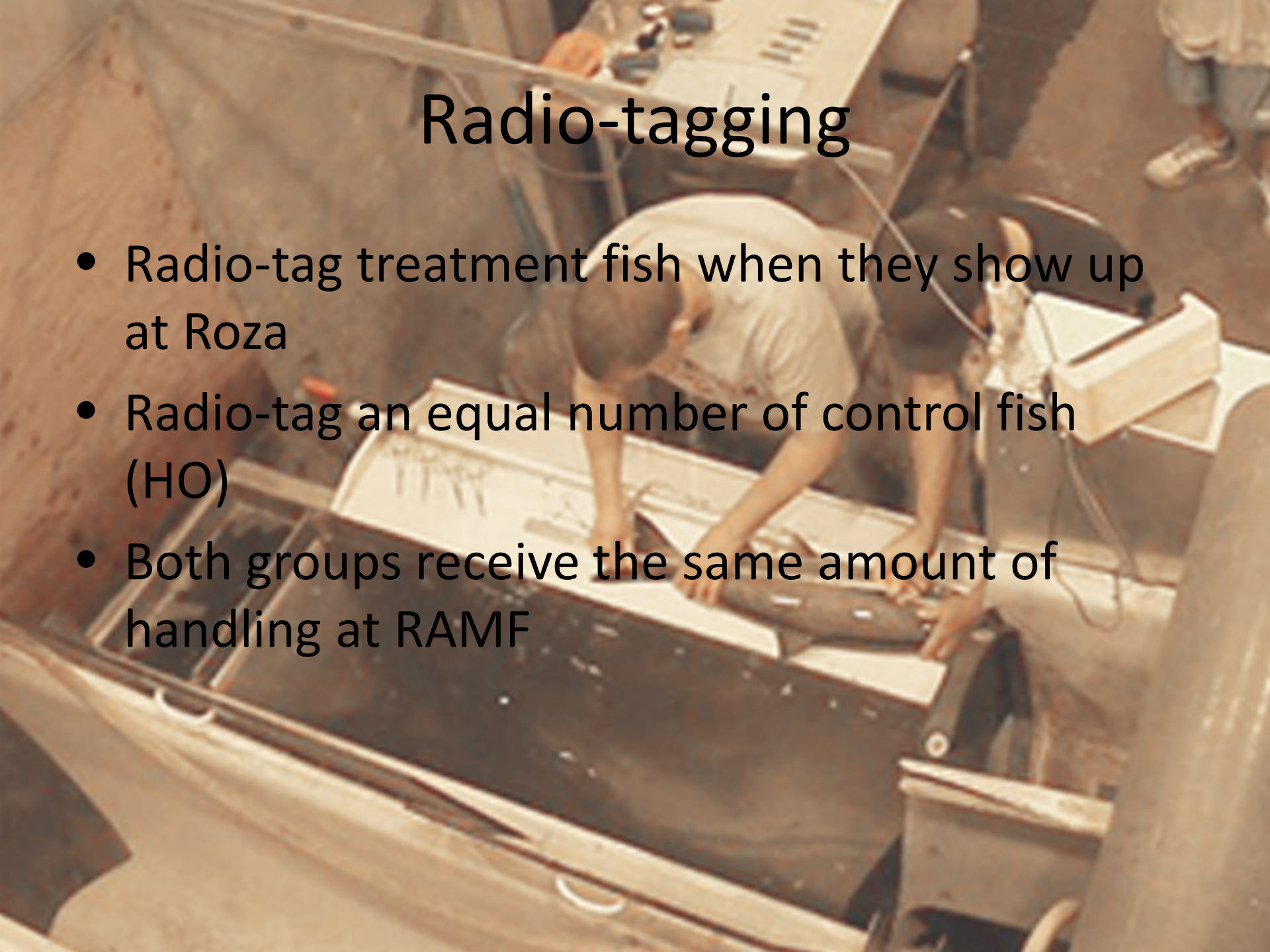
Fishery

An aerial photograph of a river winding through a dry, hilly landscape. A dam is visible in the center, with a bridge crossing the river just below it. The terrain is brown and rocky, with some sparse vegetation. The river is a dark blue color, contrasting with the surrounding land.

- Anchor-tag Chinook salmon in fishery below Roza Dam as they are caught
- Record where fish is hooked, severity of bleeding, gear type, play time

Radio-tagging

- Radio-tag treatment fish when they show up at Roza
- Radio-tag an equal number of control fish (HO)
- Both groups receive the same amount of handling at RAMF



Tracking

- Track tagged fish through spawning to determine ultimate fate
- Snorkel to determine if holding fish are alive

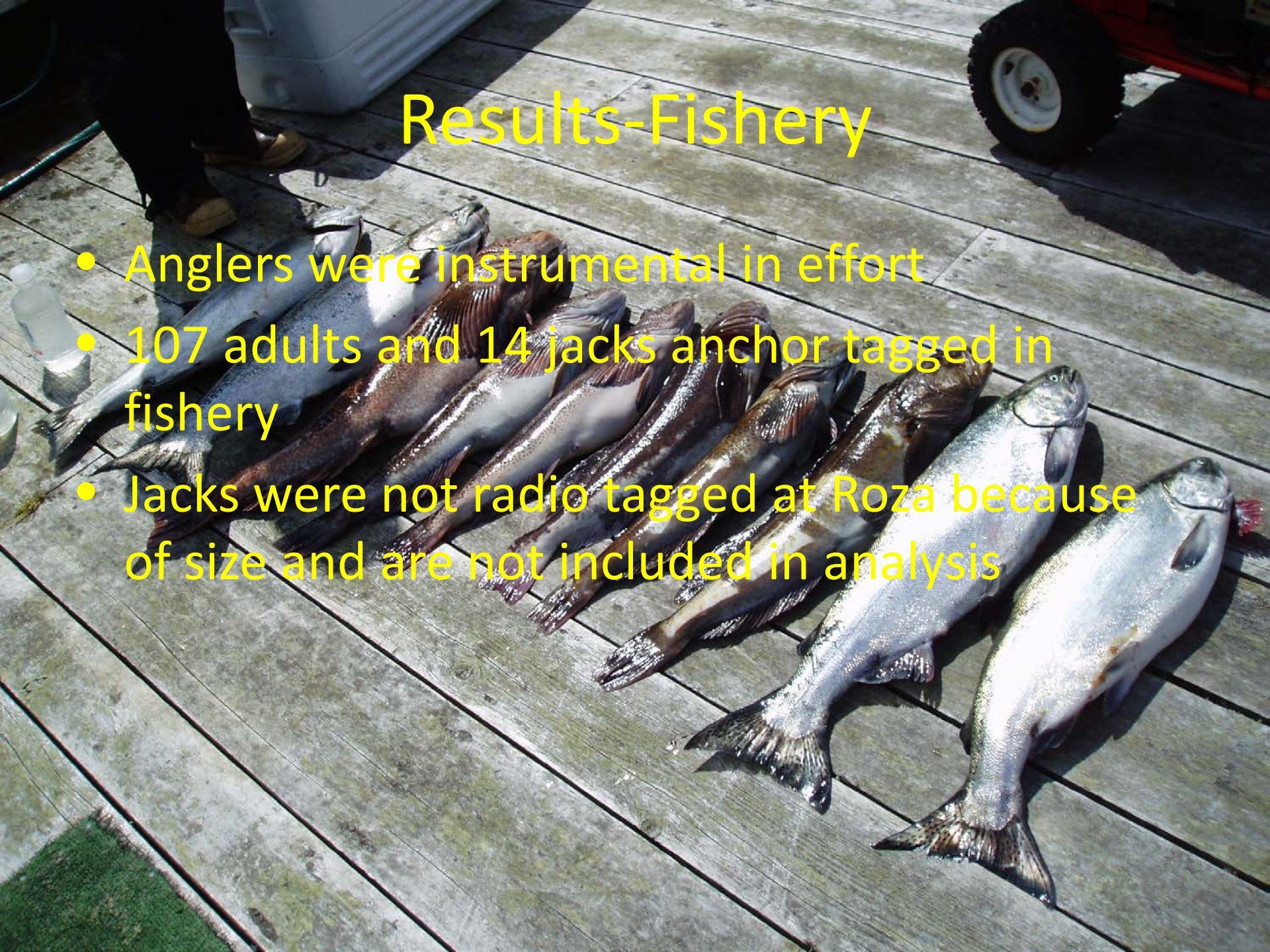


Analysis

- Survival defined as spent carcass on spawning ground or still alive and in spawning area during spawning
- Mortalities were fish that were found dead prior to spawning or unspent females, also any fish that dropped downstream of historic spawning before spawning
- Hooking mortality calculated as $1 - P_{ts} / P_{cs}$

Results-Fishery

- Anglers were instrumental in effort
- 107 adults and 14 jacks anchor tagged in fishery
- Jacks were not radio tagged at Roza because of size and are not included in analysis



Results-Tracking

- Treatment fish averaged 17 (range; 4-38) days to Town Diversion, Control fish averaged 15 (range; 3-40) days
- Distribution of T and C spawners was similar to distribution of all spawners

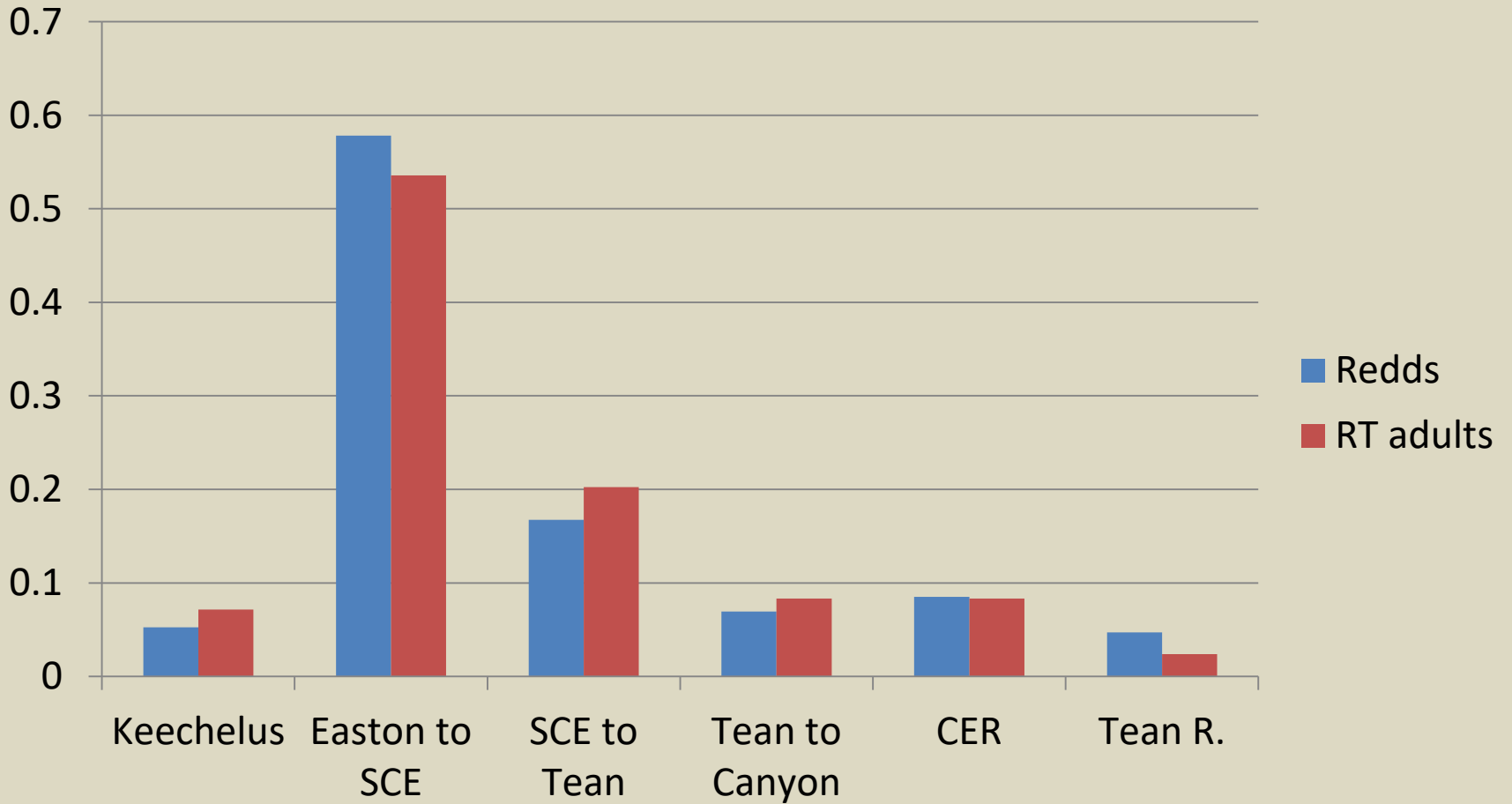
SRX_400 TELEMETRY RECEIVER

LOTEK
WIRELESS

0	1	2	3
CODE	COMM	TIME	SIGNAL
4	5	6	7
STABLE	SPAWN	LOCAL	SEARCH
8	9	•	HELP
SET Δ	SET F	SET G	SHIFT
ESC	↑	↓	

MADE IN NEWMARKET, ONTARIO, CANADA

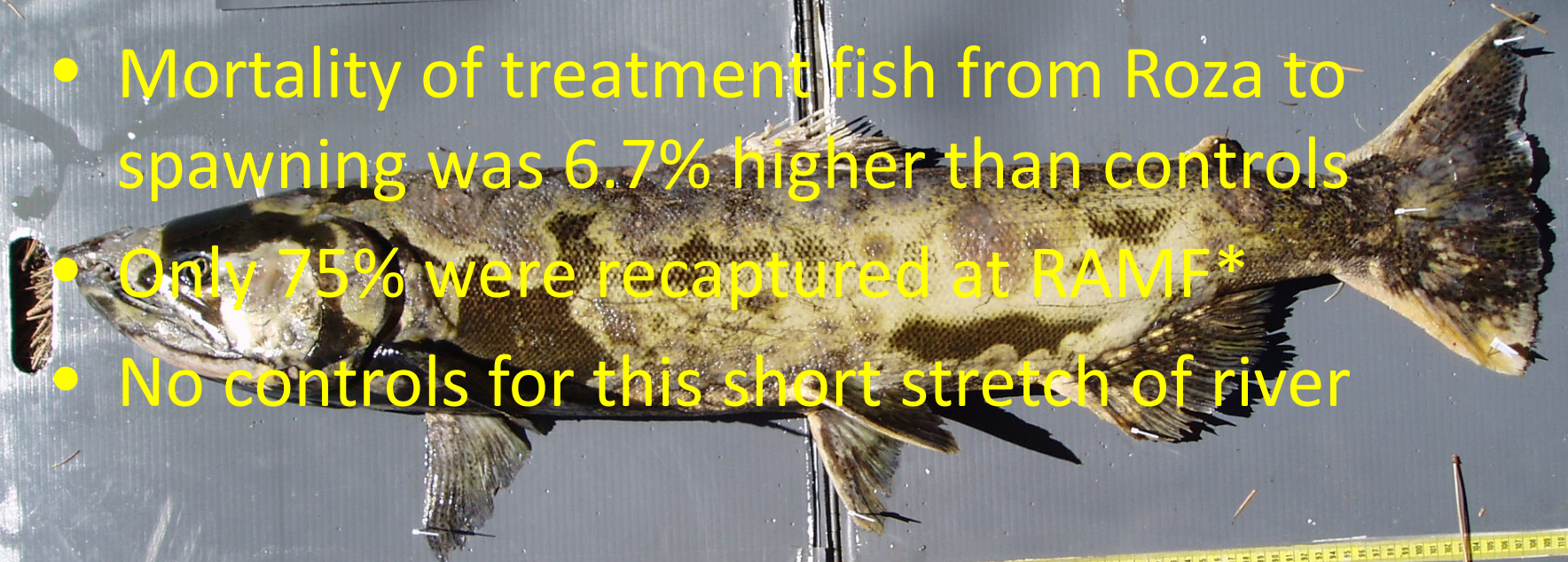
Spawning Distribution



Results-Mortality

- Mortality of treatment fish from Roza to spawning was 6.7% higher than controls
- Only 75% were recaptured at RAMF*
- No controls for this short stretch of river

9/23/03 N M-4 sc 9



What happened?

- Treatment fish took an average of 9 days to enter RAMF (SD; 9, range; 1-40)
- Are they taking so long because of the stress of catch and release or delay from Roza?
- Anchor tag loss?
- Illegal retention?
- Naches “strays”?

Methods 2013

- PIT-tagging and radio tagging fish as soon as they are caught below Roza Dam using portable electronarcosis unit
- Tagging HO controls at Roza using electronarcosis
- Releasing subsample of HO controls below Roza Dam



Initial Results (6/10)

- Have tagged 67 adults below Roza
- Have two fixed sites to help locate fish upstream and are currently mobile tracking from Roza to Naches confluence
- ~70% have been detected in Roza ladder
- Half of those are at or past Ellensburg
- Will continue tagging through the end of the fishery, track the fish through spawning, and estimate mortality

Acknowledgements

- Mark Johnston and his crew (Yakama Nation) at RAMF tagged fish at Roza and provided helpful suggestions to improve the study
- Jeff Bates, Kyle Hatch, Alex Hedrick, Cade Lillquist, Seth Shy, and Tommy Wachholder tagged fish below Roza and tracked to spawning; Scott Coil, Trenton De Boer, Zack Lessig, Nick Mankus, Zack Mays, and Tim Webster assisted with tracking
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