The influence of 25 years of catch and release fishing regulations on hook-scarring, size, and abundance of Yakima River rainbow trout

> Presented By: Gabriel M. Temple<sup>1</sup> John A. Long<sup>1</sup>, Todd N. Pearsons<sup>2</sup>, and Geoffrey A. McMichael<sup>3</sup>

> > Yakima Basin Science and Management Conference Central Washington University June 18, 2015

> > > <sup>1</sup>WDFW <sup>2</sup>Grant County PUD <sup>3</sup>Mainstem Fish Research





# Project Updates-

#### ℵ NTTOC Monitoring

http://orafs.org/hatchery-vs-wild-salmonid symposium-research-management-and-reform in-the-pacific-northwest/



- Resident/Anadromous O. mykiss interactions study
  - <u>http://www.ptagis.org/resources/pit-tag-</u>
    <u>workshops/2015-workshop</u>



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## Hook-scarring / hooking injury

FIGURE 3.1. Lateral view of the skull of the dogtooth tuna (Gymnosarda unicolor).

AN SEAL PRE



Ray Pelland releasing a Yakima Canyon rainbow.



Probasco, 1994: Yakima River Journal



# Catch-and-Release

- Is First documented as a management tool in the mid-1950's − 'Fishing for Fun' in the Smoky Mountains
- Recycling of fish to provide a 'quality experience' for many anglers
- Schill et al. 1986: Yellowstone Cutthroat caught on average 9.7 times in a 3 month period in 1981
- Vincent 1984: document increased fish abundance and size following implementation



# **Fishing Regulations - Recent**

Region 3 Wild	Trout Manage	ment - Rule Chai	nge Milesto	ones				
Waterbody	Last Hatchery Stocking	Selective Gear Rules Adopted	Trout C&R	Year-round Season		Tieton R. to Rattlesnake Creek		
			<b>-</b>					
Naches River	1993 /	1998	2003	NA		Also, 2 trout daily		
	/					limit; 12" min. size fo	r	
Rattlesnake Cr.	NA /	1990	1990	NA		entire river		
	/							
Yakima R. above	11					C&R from Roz	a Dam -	ì
Roza Dam	1984 / /	1981	1990	1990	$\backslash$	Easton Dam.		
	( /	1986	2002	1994	1			
8K catchables last		1990 🖊		$ \rangle >   $		Dam: 8 trout limit. min.		
TCICUSC	/	1994 /			N	8", no more th	nan 2 over	
		//			$\square$	<mark>12</mark> "		
	/	///						
Approx 25K		Lake Easton - Keechelus				Wilson Cree	k to	
catchables stocked		Dam: C&R all trout,				Teanaway	River only	
annually in early		except no min. size, no daily limit on eastern				(possibly ea	rlier?but	
1980's.		brook trout		custern		not in 1975); no bait or		)r
					\ \	or below		·
SGR r	einstated (Roza	. /						_
bait prohibited above					l			
Easton Dam, no hook Dam to Keechelus Dam, but					1	Entire Yakima R. open year-round in 1975; in		
restrictions Darbed, multi-point nooks								
			incu		1	round below Roz	a	
			]	Year-round season		Damnot restored above Roza until 1990.		
Faston to Keer			e a		aston			
	Dam reach		L					
	-							



# **Fishing Regulations - Historical**











# Yakima River-Current









# Yakima Rainbow Trout Abundance





# Yakima RBT Hook-scarring

25

20

66

Percent



# Kittitas County Guide License Sales – annual 1994 to 2014





# Yakima RBT Hook-scarring







# Hook-scarring by Section

### Welcome to Ganyon River Ranch<br>

Canyon River Ranch Video



0

CELUM

Snoqualmie







Kittitas





# Hook-scarring by Section





# **Bank Orientation**



# Size Trend







### Covariate means: loglen: 2.373172

#### Current effect: F(1, 53464)=3.8682, p=.04921

(Computed for covariates at their means) Vertical bars denote 0.95 confidence intervals



Note the scale- the difference is like 1.5g





# What Drives Recruitment?





# **Effort Correlations**







# Summary

- ℵ Yakima Trout population appears to be gradually increasing
- $\otimes$  Fishing effort appears greater now then in the 1990's
- & Number of fish exhibiting hooking injuries is fairly constant
- ${\scriptstyle \&}\,$  Higher injury rates with decreased elevation
- & Average size of individual trout decreasing slightly
- ℵ Hooking injuries reduce trout "condition", although difference is small
- ℵ Hooking injuries are somewhat related to bank orientation (probably resulting from water management)
- Index of fishing effort appears to have less influence on variation in recruitment than other factors