

Yakama Nation's Sturgeon Hatchery, Restoration and Enhancement for the Lower-mid and mid-Columbia River Sturgeon Populations

Donella Miller
Yakama Nation

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HONOR. PROTECT. RESTORE.

**Yakama Nation Sturgeon
Hatchery**

Objectives

- **Current Projects**
- **Future Expansion**



Current Projects



- BPA Fish Accord Project
 - Refining Hatchery Techniques
 - No Out-planting until completion of Master Plan

- Mid- Columbia Public Utility Districts (PUDs) Mitigation
 - Grant County
 - Chelan County
 - Douglas County



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Current Hatchery Facilities



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PUD Mitigation Activities



- Wild Brood Collection
- Spawning
- Wild Larvae Collection
- Juvenile Rearing and Tagging





PUD Summary

- Provide Centralized Brood Holding Facility for all PUD Projects
- Co-Operative Spawning Effort
- Distribution of Fertilized Eggs
 - Chelan County PUD
 - Douglas County PUD
- Juvenile Rearing and Tagging
 - Grant County PUD
- Wild Larvae Collection and Rearing
 - Chelan County
 - Grant County

Brood Collection

Various Collection Areas on the Columbia River

Bonneville Reservoir
(YN)

John Day Reservoir
(Chelan PUD)

Wanapum Reservoir
(Grant PUD)

Collection Goal

8 Females

8-12 Males



Brood Holding / Juvenile Rearing Area



(8) 10' Diameter Circular Tanks

Ability to isolate up to 8 females for spawning

(4) 20' Diameter Circular Tanks

Ability to hold up to 20 male brood

Provides juvenile rearing area post spawn





Water Temperature Manipulation Capabilities

- (2) 30 HP Heat Pumps
 - Ability to heat & chill water simultaneously
 - Manipulate temperatures within each individual tank
 - Assist in synchronizing spawn timing
 - Ability to chill males for use in multiple spawning events

Spawning



- Factorial Spawning Matrix
 - Cross Multiple Males x Multiple Females
 - Create Genetic Diversity for Out-planting
- Spawning Goals
 - 6x6 Factorial Matrix
 - 36 Half-sib Families
 - May not be Logistically Feasible
 - (2) 3x3 Matrices



Incubation Room

- (6) 6' Diameter Circular Tanks
 - Ability to isolate 6 maternal family groups
 - Up to 4 Hatching Jars per tank





Juvenile Rearing & Tagging

- (8) 10' Diameter Circular Tanks
 - Ability to isolate maternal families
 - Equalize Family Contribution
- (4) 20' Diameter Circular Tanks
 - Late Rearing & Tagging





PUD Juvenile Release Strategy

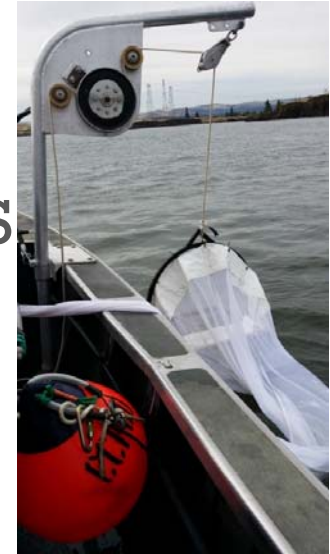
- > Spring Release (April-May)
- > ~10 months
- > ~10"-12" at release
 - 100% Pit Tagged
 - 100% Scute Marked
 - 1% Acoustic Tagged

Since 2010 ~ 83,000 yearling sturgeon produced for release in mid-Columbia reservoirs!



Larval Collection Summary

- Summary of Larval Collection Efforts
- Sampling done by YN, WDFW & USGS
- Very successful for other groups
- 2012-2017 Sampling years
- 667 net sets, 7,778 hours fished, 874 larvae
- Insufficient catch for use as substitute for broodstock





Future Expansion

- BPA Master Plan Facility
 - Project Area
 - Zone 6
 - Lower Snake River
 - Annual Production
 - 20,000+ Fish
 - Specific Reservoirs
 - **John Day**
 - Ice Harbor?
 - Lower Monumental?
 - Little Goose?



Future Expansion Cont.

- Mirror PUD Rearing Facilities
 - Brood Holding
 - Spawning
 - Juvenile Rearing
- BPA Funding Guaranteed in Current Fish Accords
 - Currently in Design Phase



Questions?

Update on White Sturgeon Populations – Bonneville, The Dalles and John Day Reservoirs

**BLAINE L. PARKER
COLUMBIA RIVER INTER-TRIBAL FISH
COMMISSION**

2018 Gorge Fisheries & Watershed Conference

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PRESENTATION OVERVIEW

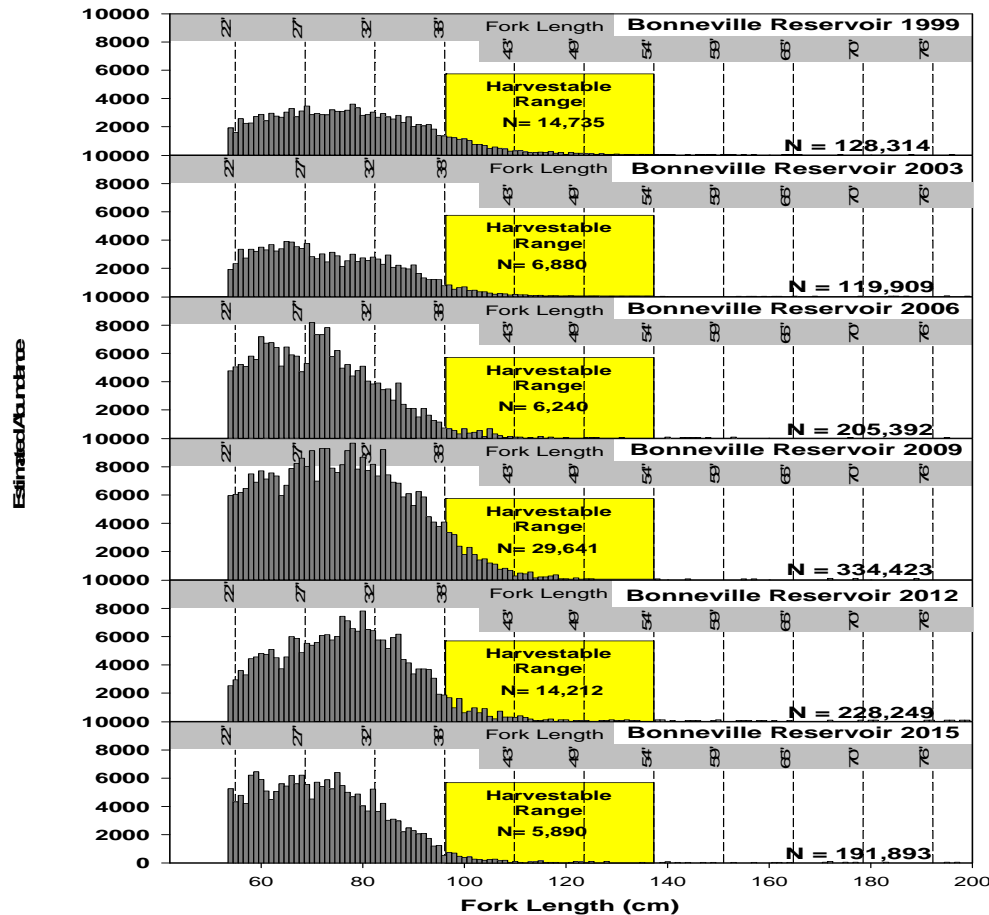


- **DATA PRESENTED TODAY IS A COLLABORATIVE EFFORT BY CRITFC, ODFW AND WDFW – BPA PROJECT 86-50**
- **RESERVOIR POPULATIONS ARE ASSESSED EVERY 3 YEARS**
- **ASSESSMENT IS A 2 PART PROCESS- WINTER TAGGING BY TRIBAL FISHERS AND TECHNICIANS & SUMMER RECAPTURE EFFORT BY JOINT STATE AND TRIBAL STAFF,**
- **YOUNG OF YEAR RECRUITMENT MONITORING BY JOINT CREW IN THE FALL**
- **FISHERIES ARE MONITORED BY TRIBES AND STATES, WDFW PROVIDES FISHERY ANALYSIS, WITH POPULATION ANALYSIS BY ODFW, GENETICS BY CRITFC (HAGERMAN)**



BONNEVILLE RESERVOIR

1999 - 2015

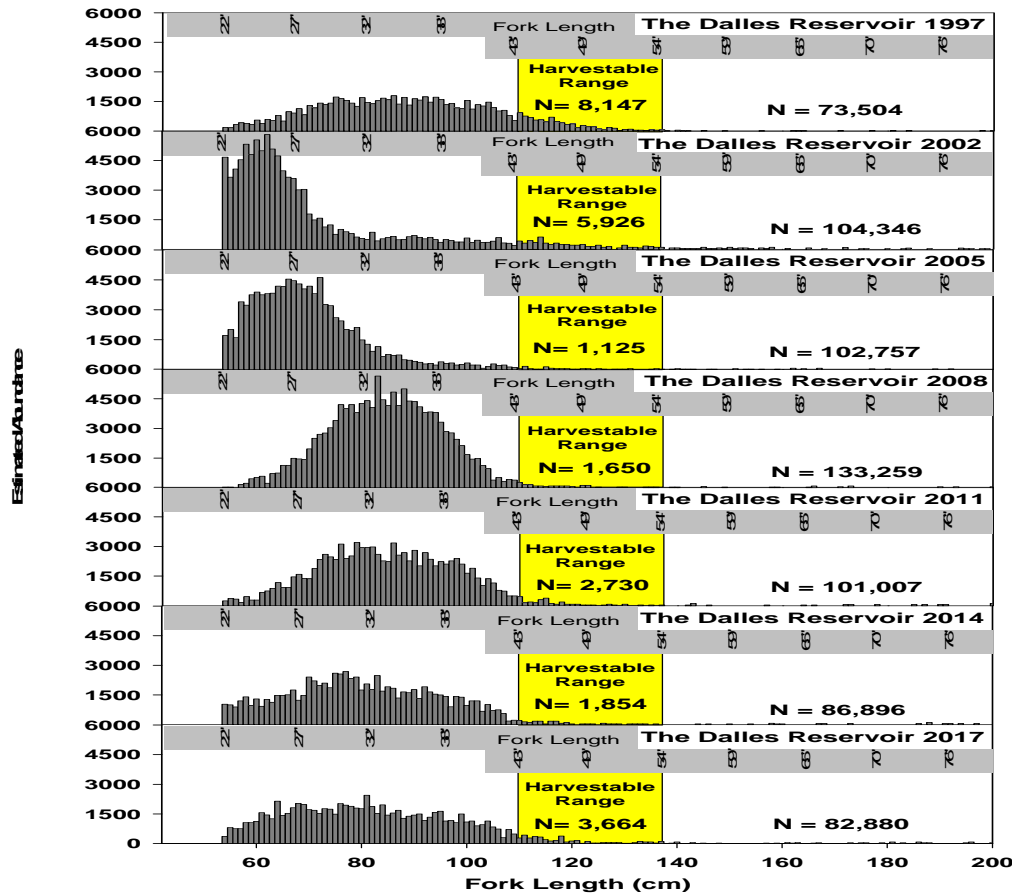


- TREMENDOUS SHIFTS IN POPULATION
- HIGH DENSITIES, POOR CONDITION FACTORS CHARACTERIZE THIS PERIOD
- MOST RECENT SURVEY (2017) MAY SHOW STABILIZATION
- INCREASED SPECIFIC WEIGHTS AND HIGHER CONDITION FACTORS
- INCREASE IN BROODSTOCK #'S



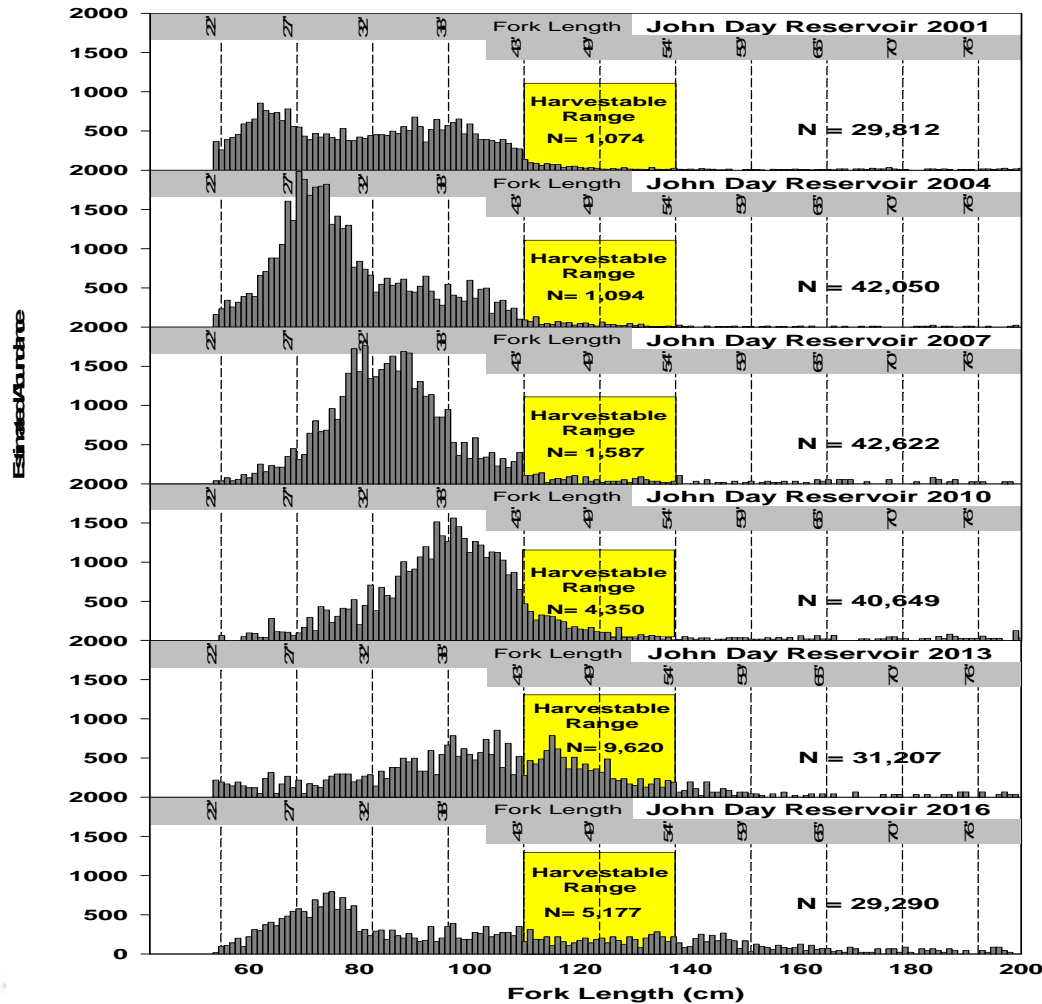
THE DALLES RESERVOIR

1997 – 2017



- POPULATION SURGED UPWARDS IN EARLY 2000'S, SIMILAR TO BN POPULATION
- DOWNSHIFT SIMILAR TO BN POPULATION
- TD FISH SLIGHTLY BETTER CONDITION FACTOR AND GROWTH THAN BN FISH
- POPULATIONS DIFFERENCES BETWEEN 2014 AND 2017 MINOR,
- STABILIZATION ?

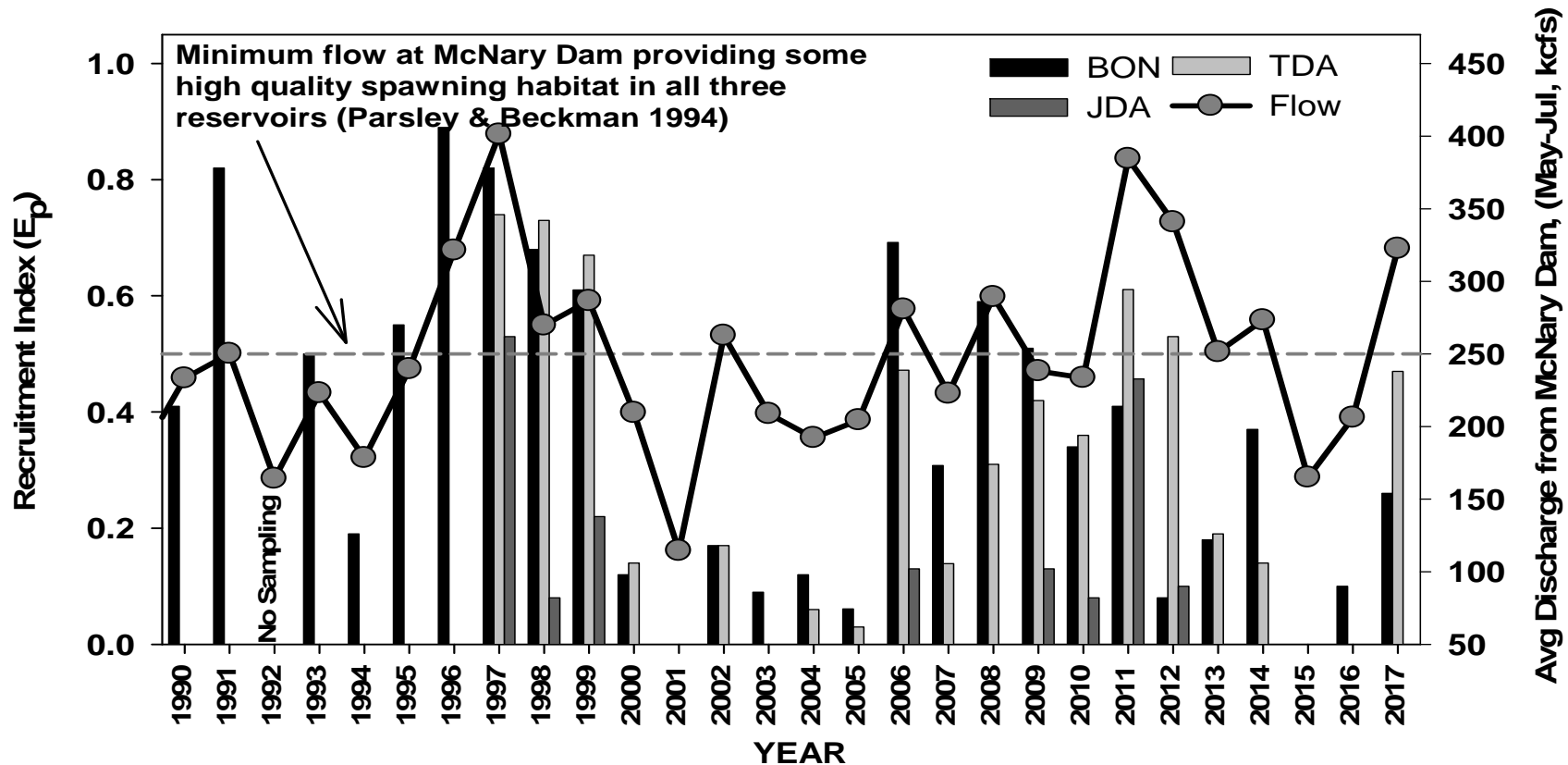
JOHN DAY RESERVOIR 2001 - 2016



- JOHN DAY POPULATION COMES FULL CIRCLE
- JD STURGEON DENSITY AN ORDER OF MAGNITUDE LESS THAN BN & TD RESERVOIRS
- LACK OF RECRUITMENT HAS BEEN ISSUE FOR MANY YEARS
- BROOD STOCK NUMBERS GOOD, RECRUITMENT POOR AS A RULE
- CURRENT LOCATION FOR MOST BROODSTOCK USED BY YN STURGEON HATCHERY



SPRING FLOWS PRODUCE JUVENILE STURGEON, BUT NOT ALWAYS





RECRUITMENT MONITORING - YOY SURVEYS

Year2	LCR	Will. R.	BON ¹	TDA	JDA	MCN	IHA	LGO
1989			0.04					
1990			0.41					
1991			0.82					
1992								
1993			0.50					
1994			0.19					
1995			0.55					
1996			0.89					
1997			0.82	0.74	0.53		0.00	
1998			0.68	0.73	0.08			0.32
1999			0.61	0.67	0.22	0.08	0.03	0.08
2000			0.12	0.14	0.00	0.00	0.00	0.00
2001			0.00	0.00	0.00	0.00	0.00	0.00
2002			0.17	0.17	0.00	0.06	0.00	0.00
2003			0.09	0.00	0.00	0.00	0.00	0.00
2004	0.44		0.12	0.06	0.00	0.00	0.00	0.00
2005	0.49		0.06	0.03	0.00	0.03	0.00	0.00
2006	0.52		0.69	0.47	0.13	0.06		
2007			0.31	0.14	0.00	0.06		
2008	0.45		0.59	0.31	0.00	0.06		
2009	0.78		0.51	0.42	0.13	0.06		
2010	0.18	0.24	0.34	0.36	0.08	0.00		
2011	0.34	0.06	0.41	0.61	0.46	0.26		
2012	0.35	0.22	0.08	0.53	0.10			
2013 ²²	0.12		0.18	0.19	0.00			
2014	0.31	0.38	0.37	0.14	0.00			
2015	0.05	0.26	0.00	0.00	0.00			
2016	0.14	0.50	0.10	0.00	0.00			
2017	0.58	0.46	0.26	0.47	0.00			



CONCLUSIONS

***BONNEVILLE* –MAYBE FINDING EQUILIBRIUM WITH HABITAT**

***THE DALLES* – UNCERTAIN, MAYBE**

***JOHN DAY* – CONTINUES TO DECLINE AND BASED UPON OUR MONITORING IT WILL FOR THE NEAR FUTURE (~ 8-10 YEARS) EVEN IF RECRUITMENT IMPROVES**

***JOHN DAY* IS A STRONG CANDIDATE FOR SUPPLEMENTATION FROM CRITFC STURGEON SUPPLEMENTATION MASTER PLAN (#200715500)**

***FUTURE* – MONITORING, SUPPLEMENTATION, RESEARCH ARE KEY ELEMENTS TO ENSURING WHITE STURGEON THRIVE IN THE COLUMBIA BASIN FOR THE NEXT 7 GENERATIONS**



QUESTIONS