

Current Status of Cowlitz River Salmonids

Cowlitz River Annual Program Review
and Science Conference

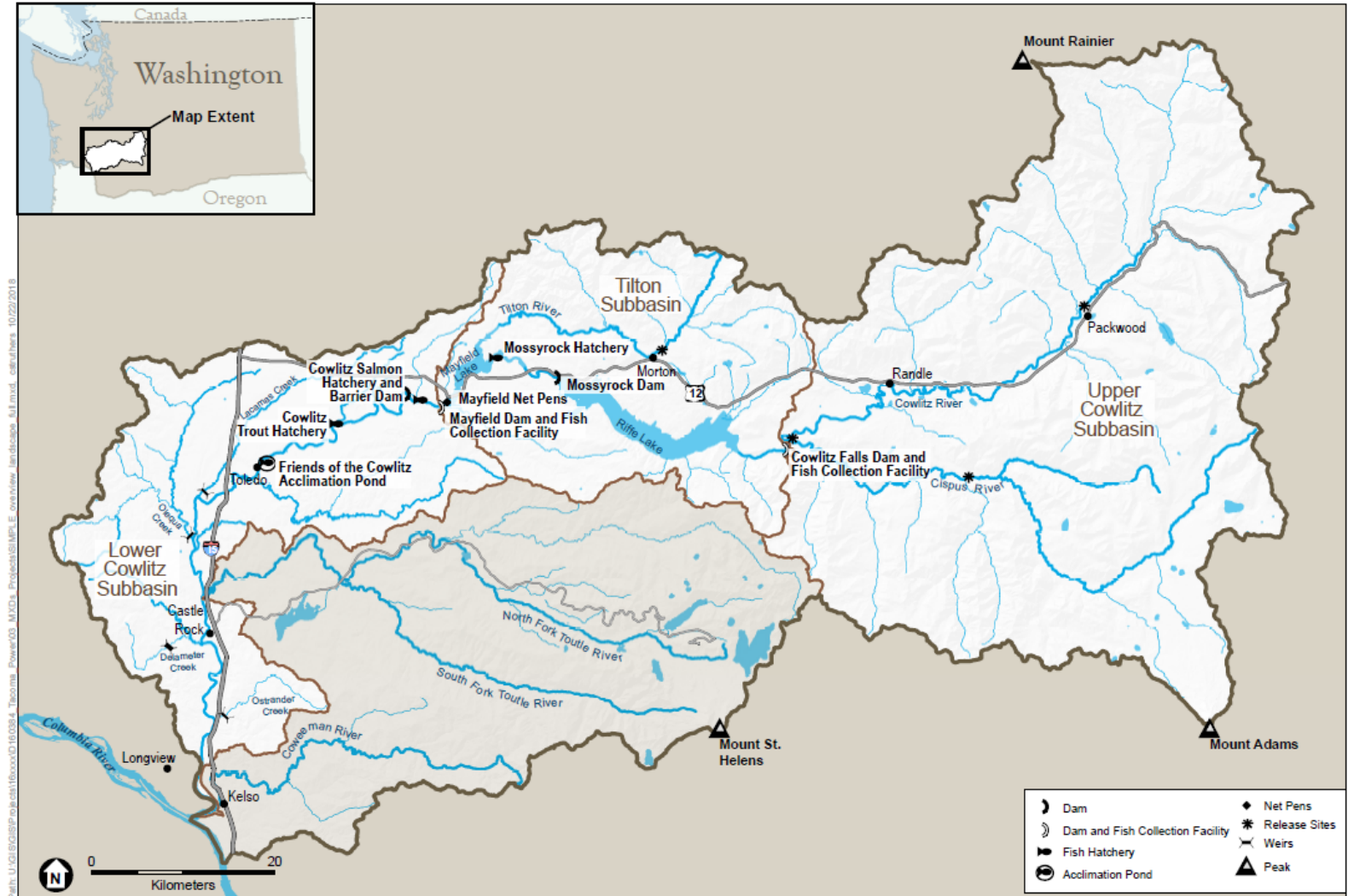
Wednesday, May 19, 2021

Phil Sandstrom
Monitoring & Evaluation Manager
Tacoma Power



Current Status

- Lower Cowlitz Fall Chinook
- Upper Basin Fall Chinook
- Upper Cowlitz Basin Spring Chinook
- Lower Cowlitz Coho
- Tilton River Coho
- Upper Cowlitz Basin Coho
- Lower Cowlitz Steelhead
- Tilton River Steelhead
- Upper Cowlitz Basin Steelhead



SOURCE: SWIFD, 2014; WDNR, 2017

Tacoma Power

Figure 1

What Did 2020 Look Like for the Cowlitz?

- **Flows:** Met refill, supported instream flows, maintained opportunity for recreation and generation.
- **Adult Abundances:**
 - Fall Chinook: 2,455 HOR/2,562 NOR
 - Spring Chinook: 473 HOR/370 NOR
 - Coho: 26,825 HOR/12,222 NOR
 - Winter Steelhead: 4,010 HOR/840 NOR
 - Summer Steelhead: 4,680 HOR/3 NOR
 - Cutthroat: 6,772 HOR/259 NOR
- **Juvenile Production:**
 - Fall Chinook: 2,311,145 Hatchery/7,658 Mayfield
 - Spring Chinook: 1,909,176 Hatchery/7,135 CFFF
 - Coho: 1,103,442+1,003,205 Hatchery/127,544 CFFF/50,716 Mayfield
 - Winter Steelhead: 460,266+ 57,274+104,064 Hatchery/8,287 CFFF/5,881 Mayfield
 - Cutthroat: Hatchery/1,171 CFFF/803 Mayfield

APR Status Data: Upper Basin Coho

Time Period	Adults		Jacks		Fish Spawned	Hatchery Production	Fish Captured	FCE	FPS	Harvest	
	HOR	NOR	HOR	NOR						HOR	NOR
2016	9,757	1,647	3,058	137	526		153,843	87.70		1,986	0
2017	8,177	6,025	1,976	116	579	1,201,922	26,196	50.30	52	1,353	0
2018	6,622	1,025	10,013	162	671	1,127,160	161,529	80.54	82	560	0
2019	6,648	3,883	818	133	566	1,055,449	184,713	90.36	93	TBD	TBD
2020	13,333	9,798	11,313	595	650	1,003,205	127,544	69.22	72	TBD	TBD
5 Year Avg	8,907	4,476	5,436	229	598	1,061,938	130,765	75.57	75	1,300	0

Today's Presentations

10 AM

Introduction and Meeting Objectives/Logistics

Summarize Five-Year Trends

- Intro to Current Status
- Project Operations
- Hatchery Operations
- Habitat
- Passage

10:10 AM

10:25 AM

10:45 AM

11:05 AM

11:25 AM

BREAK – 11:45 AM to 1 PM

- Pre-Terminal/Terminal Harvest
- SARs
- Lower Cowlitz Adult Estimates
- Separator Returns
- What We Know/Don't Know in Our Current State

1 PM

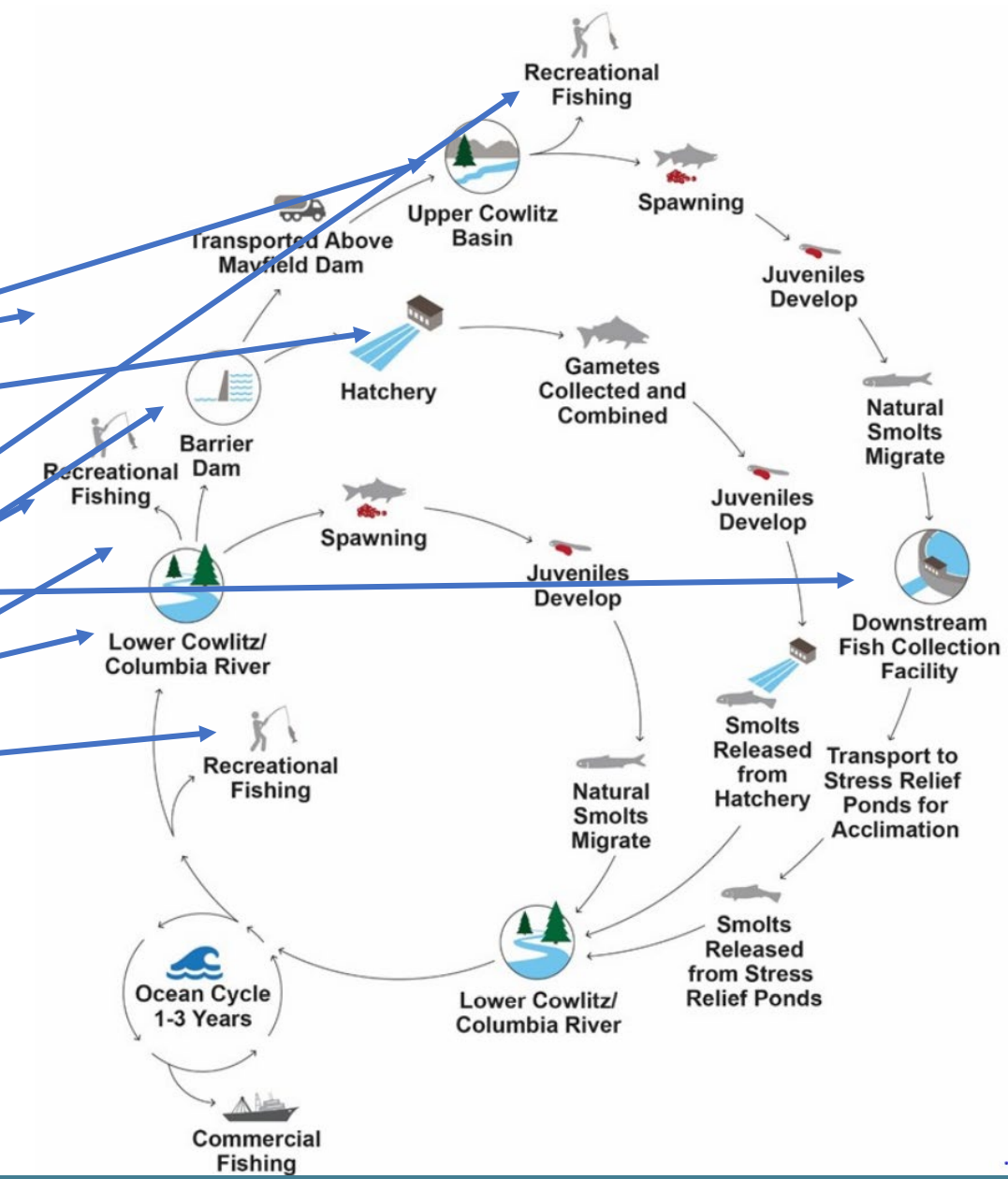
1:20 PM

1:40 PM

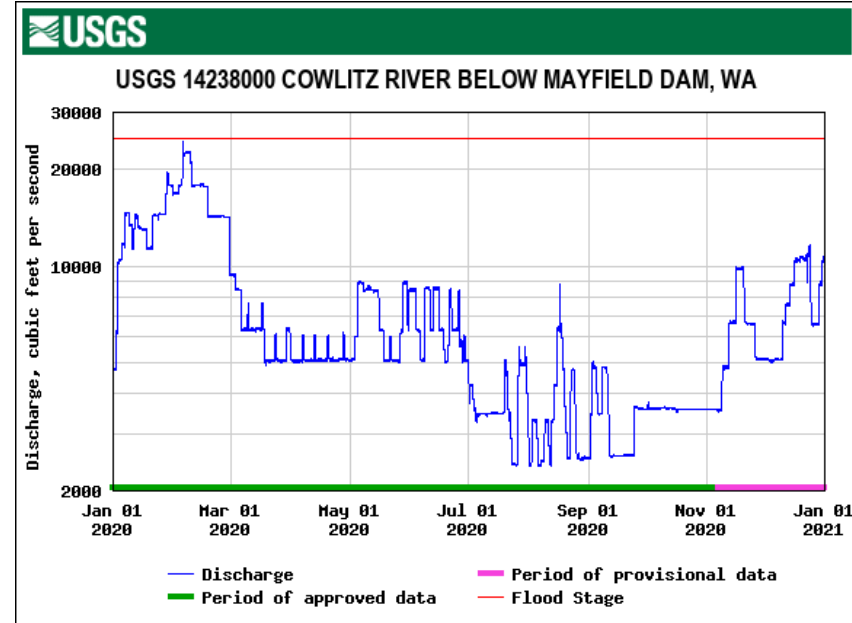
2 PM

2:20 PM

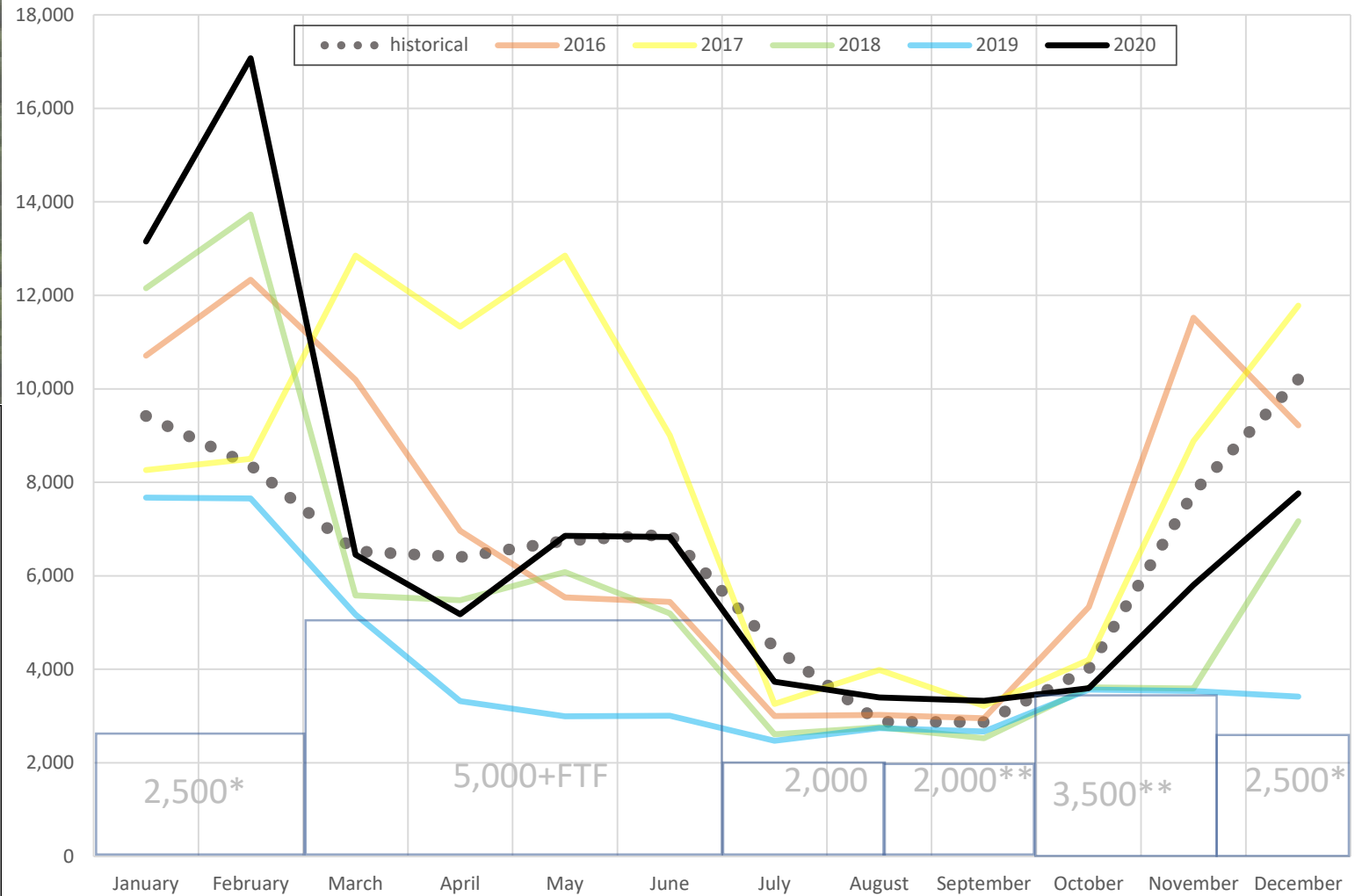
BREAK – 2:40 to 3 PM



Hydro Operations



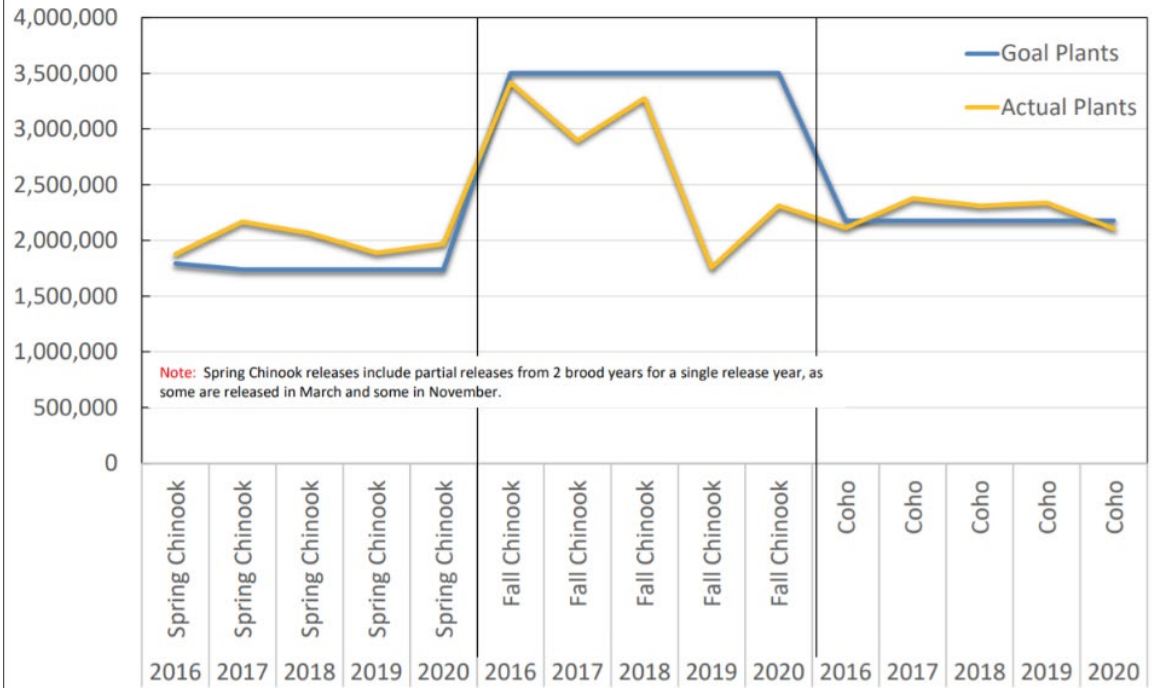
Outflows from Cowlitz Project (USGS): Daily Average by Month (cfs)





Hatchery Programs

Cowlitz Salmon Hatchery Releases (5 years) - Updated

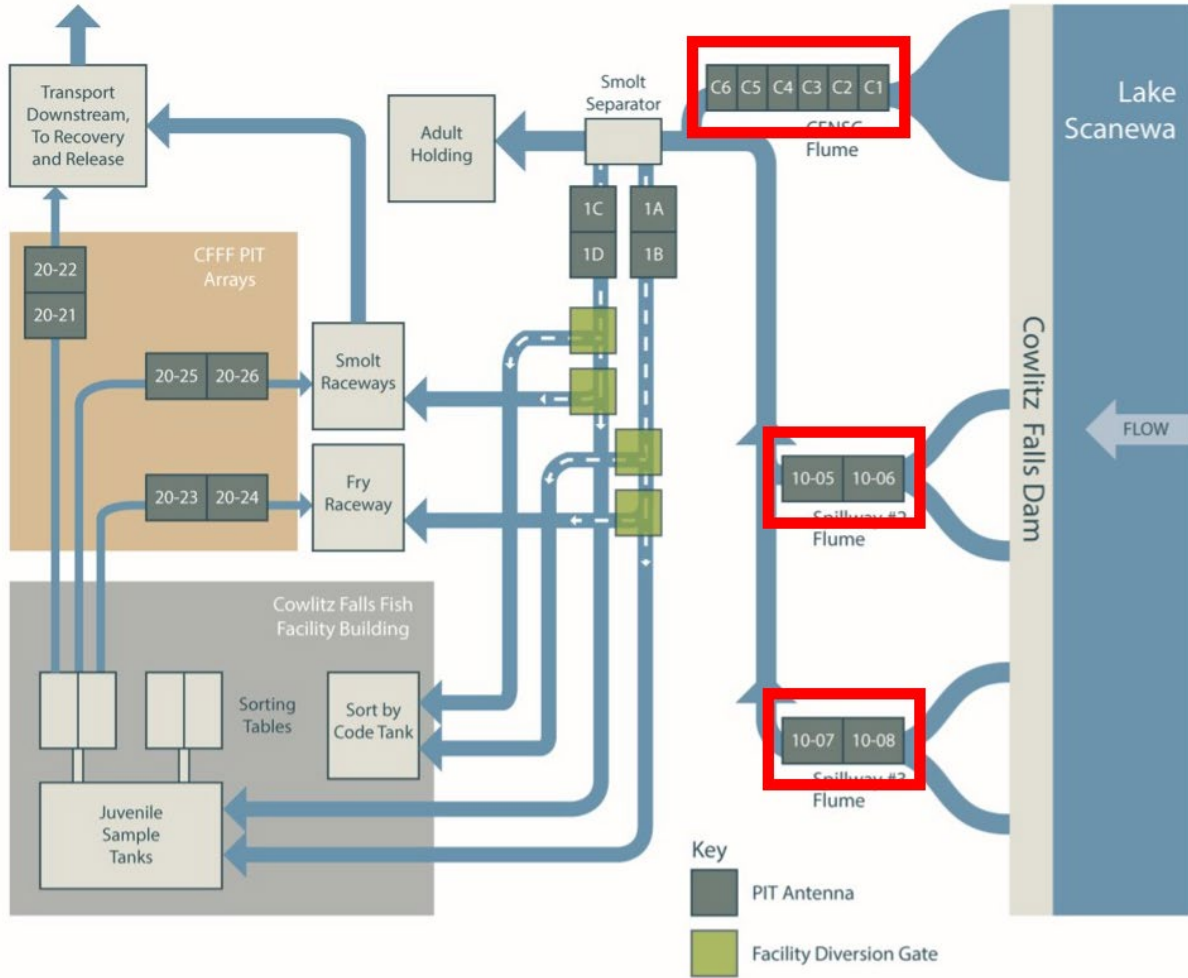




Habitat Program

- Lower Cowlitz, Tilton River, Cispus River, and Upper Cowlitz River
- Gravel Augmentation
 - Short-term: Placement will occur with other operations this year.
 - Long-term: Alternate site and strategies being assessed.
- Cowlitz River Restoration Fund
 - HAB – Working with LCFRB to have funds administered in 2021.
 - HAP – Starting options still on the table – target no later than 2022.

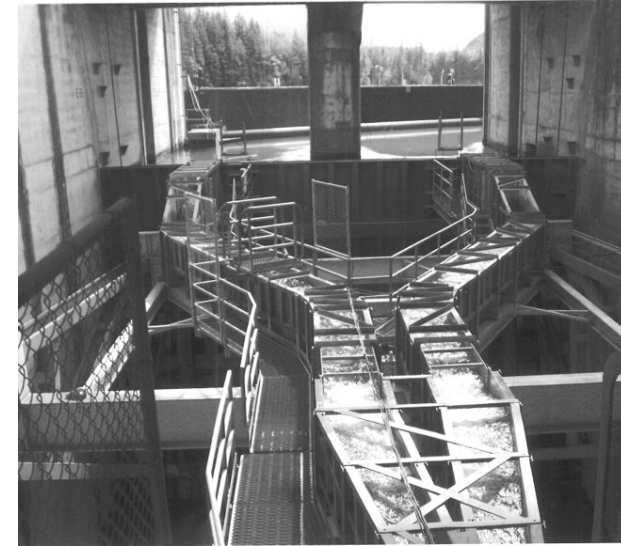
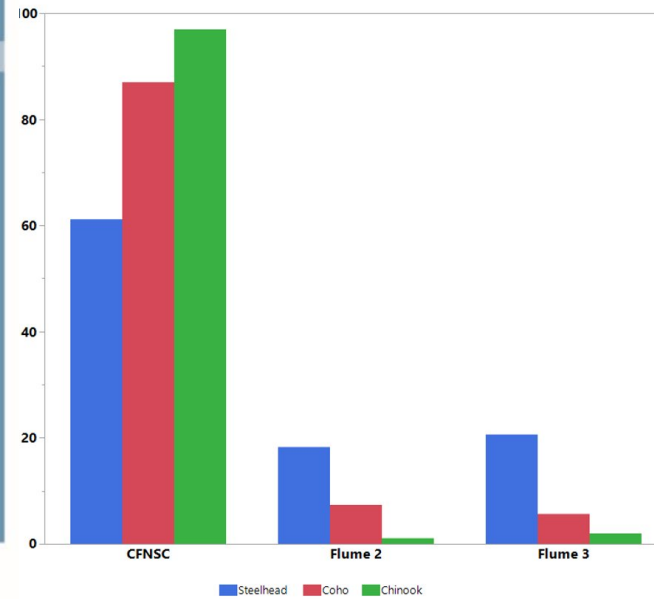
Fish Passage

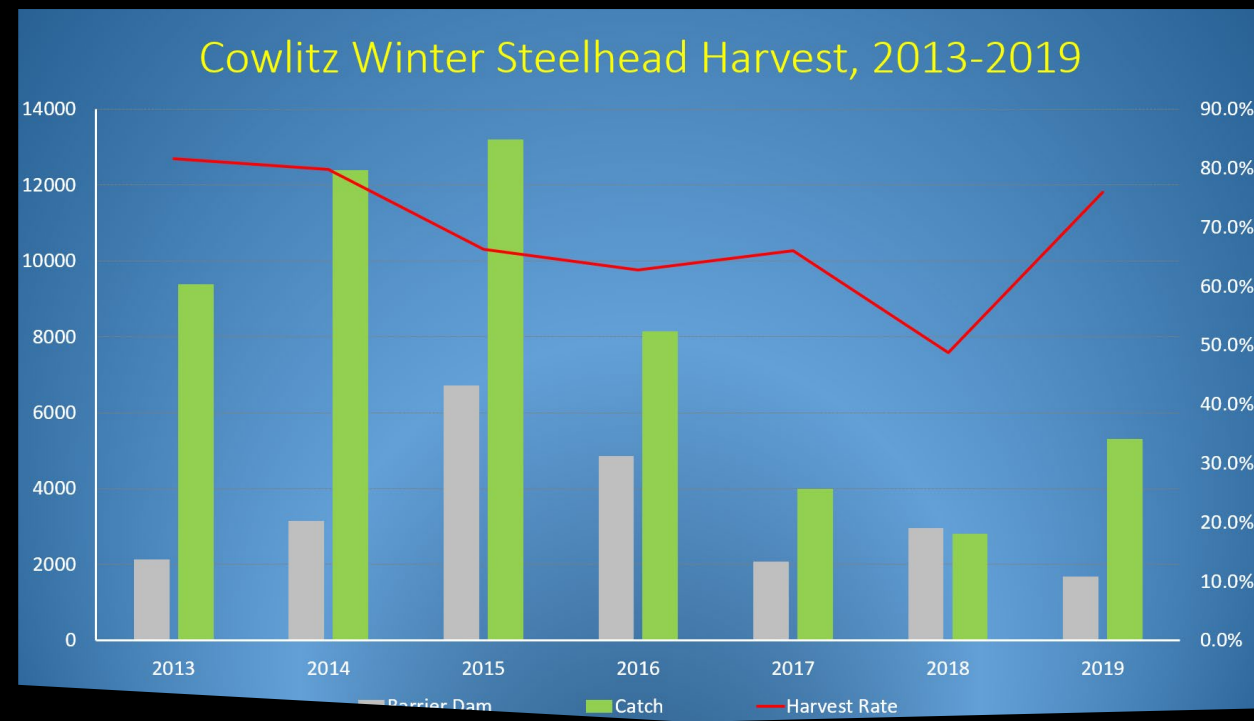


Fish Collection Efficiency

Fish Passage Survival

Species	2017	2018	2019	2020	2017	2018	2019	2020
Steelhead	56%	73%	81%	63%	57%	75%	83%	65%
Coho Salmon	50%	81%	90%	69%	52%	82%	93%	72%
Chinook Salmon	46%	64%	71%	49%	51%	70%	78%	54%





Pre-terminal and Terminal Harvest

Smolt to Adult Return (SAR)

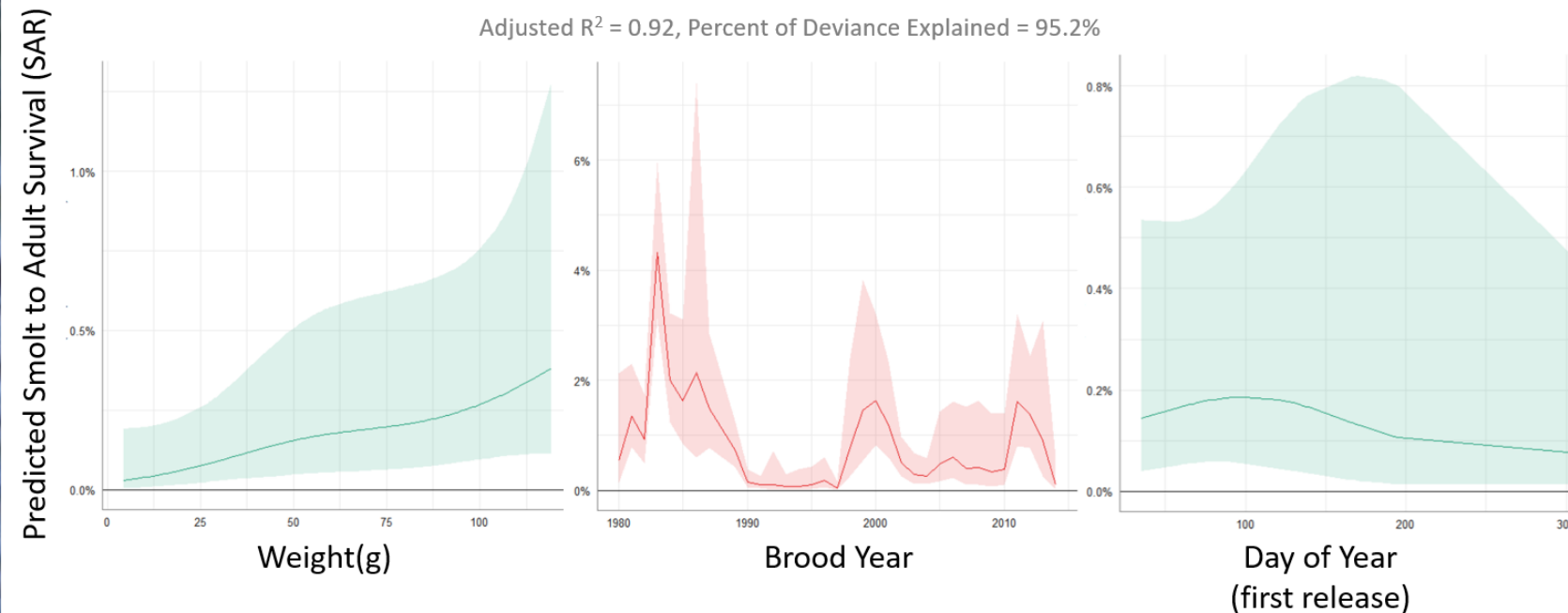
Model Results: Effects of Covariates on SAR

CWT SAR Analysis

Thomas Buehrens & Ben Cox

Model : survival = brood year + weight + day of year of release

Adjusted R² = 0.92, Percent of Deviance Explained = 95.2%



Contents

Purpose

Requirements

Functions

Packages

Downloading And Initial Filter of Data

Checking for missing expansions

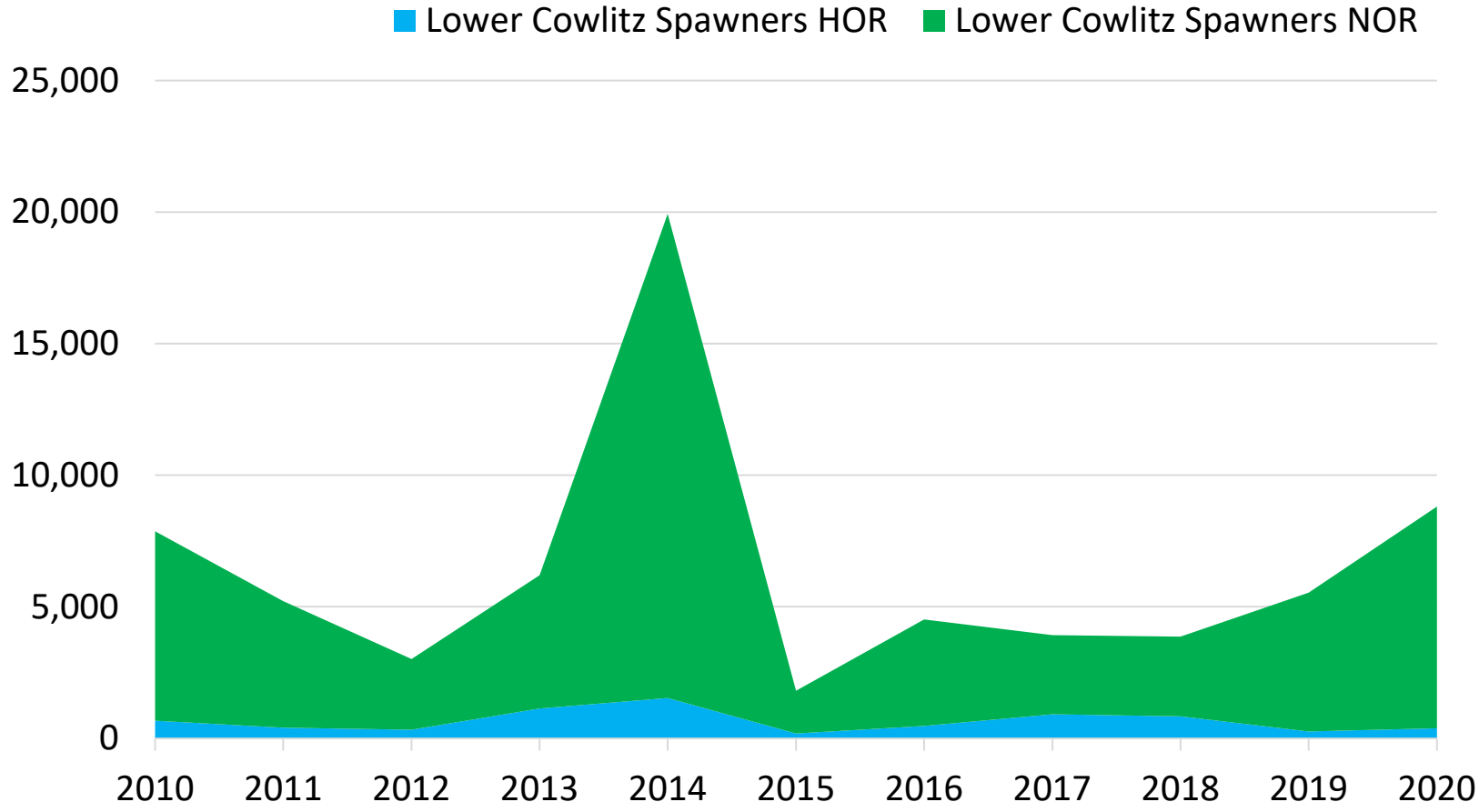
Prepare data for SAR analysis (v1: SAR analysis by individual tag code)

Run analysis (v1: SAR analysis by grouped tag codes)

Prepare data for SAR analysis (v2: SAR analysis by grouped tag codes)

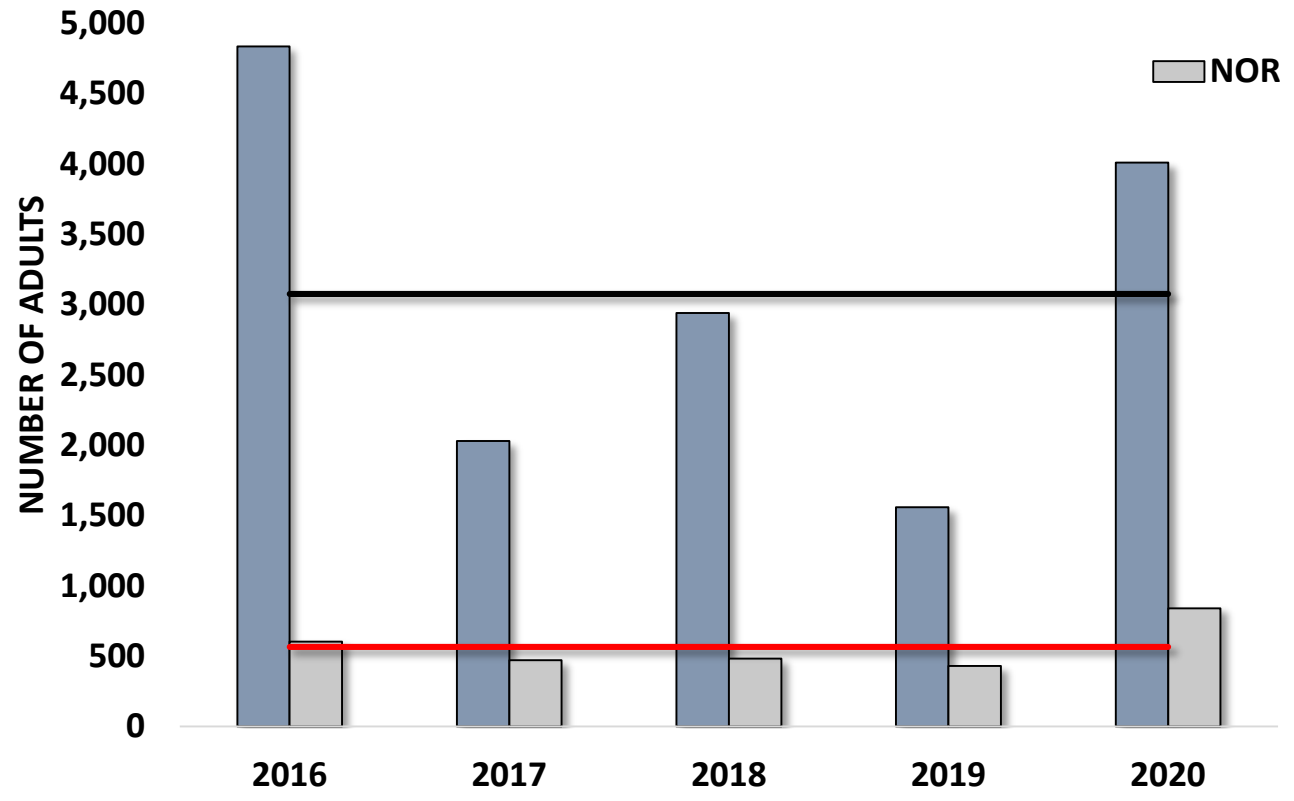
Run analysis (v2: SAR analysis by individual tag code)

Lower Cowlitz Adult Abundance Estimates



Returns to the Separator

WINTER-RUN STEELHEAD



HOR	4,836	2,031	2,942	1,559	4,010
NOR	605	472	484	432	840





Questions?