#### Sturgeon Lake/Dairy Creek Restoration Project – 2021 Update













Columbia River Estuary Study Taskforce (CREST) Tom Josephson, Habitat Restoration Program Manager tjosephson@columbiaestuary.org

## **Project Completed in Summer/Fall 2018**

- Removed two failing culverts, installed 96' bridge
- Increased flood capacity in the channel
- Full fish passage





- Removed debris plug
- Excavated ½ mile of new channel
- Removed 20,000cy of material from channel



Over 15,000 native riparian and upland plants installed





Post-project



Pre-project

## **Post Project Monitoring**

- Water Level & Temperature
- Vegetation Monitoring
- Aerial Imagery
- Channel Cross Sections
- Fish Monitoring

### Water Surface Elevations & Temp





- Higher flows year round
- Lower water temperatures in channel
- Full tidal signal and daily flushing

# **Vegetation Monitoring**





- Site is meeting vegetation goals
- Herbicide treatment/removal of invasive false indigo bush continuing
- Some plant mortality due to drought conditions, but overall good coverage



# **Aerial Imagery**

- Using Aerial Drones to track changes to the channel morphology in Dairy Creek and portions of Sturgeon Lake
- Yearly flights at low water (typically in late September)
- Long term dataset to be replicated
- No discernable changes in main lake, notable changes near confluence of Dairy Creek and Sturgeon Lake





Pre-project















# **Beaver Activity in the Channel**







- Beaver are most active at the confluence of **Dairy Creek and** Sturgeon Lake
- Channel • morphology changing with new dams, new side channels diverting flow

## **Channel Cross Sections**







- Channel adjusted after construction, stabilized after two years
- No major erosion or sedimentation issues
- Minimal Springtime Freshets since project completed





# Fish Data

- PIT Tag Array installed in November 2020
- Able to detect tagged fish using Dairy Creek
- Partnership between USACE, ODFW, WMSWCD, and CREST
- Attempt to answer how juvenile salmonids use freshwater lakes
- Data available at <u>https://www.ptagis.org/Data/Observations?s</u> <u>iteCode=SID&timePeriod=C45364294F2EA99</u> D02F1428A6865DCC1



Passover Antennae



Fin Style Antennae



- White Sturgeon (3)
- Hatchery Summer Chinook (1)
- Wild Steelhead (1)

- Hatchery Summer Steelhead (9)
- Hatchery Fall Chinook (6)
- Wild Summer Steelhead (1)
- 21 salmonids and Sturgeon detected
- Greatest use from April to June
- Mostly hatchery stock
- Upriver stock utilizing Dairy Creek
- No Coho detected yet
- Sturgeon are in Sturgeon Lake!



	Vancouver Island Nanamo Surrey	d swaath BANGE		
	Stratt of Juan de Fu <sup>os</sup> Everett Se Tacoma	Victoria Van de Tu <sup>ca</sup> Everett Se attle Tacona		otane
1.5	Olympia			
1 A A				
	Columbia Rivero#1 Columbia Rivero#2			Lewisto haClearwater River - #2
L N N N	a Canyon Bon R	Mt St Helena	umbla Rive	nount airsuit
	Columbia Ri	ver-#3Hood River		Imnaha River
	Columbia V			
	Portland			AL STATE
100	The state of the s	Mt Hood	UNI	"How we
1.12	Salem	UE	A	THE MOUNT IS TO BE
1.15		A BE	Contraction of the	The second second
	Intra	MOUNTAINS AL	RICH T	IDAHO o A
Location	Mark Site	Stock	Count	A Martin San San San
Columbia River #1	Mouth to Three Tree Point	White Sturgeon	2	BOISE MOUNTAINS
Columbia River #2	Three Tree Point to Lewis	White Sturgeon	1	•Boise
	River			
Columbia River #3	Spring Creek Hatchery	Hatchery Fall Chinook	6	
Columbia River #4	Irrigon Hatchery	Hatchery Summer Steelhead	2	Snake River-#2
Columbia River #5	Chief Joseph Hatchery	Hatchery Summer Chinook	1	PSE A Twin Falls
Hood River	Hood River	Wild Steelhead (unknown run)	1	P P P P P P P P P P P P P P P P P P P
Wenatchee River	Chiwawa Rearing Pond	Hatchery Summer Steelhead	2	
Imnaha River	Imnaha River Trap	Wild Summer Steelhead	1	The second se
Clearwater River #1	Clearwater Hatchery	Hatchery Summer Steelhead	1	「「「「「「「「」」」「「」」」
Clearwater River #2	Dworshak National Fish	Hatchery Summer Steelhead	1	·····································
	Hatchery		2	Des
Shake River #1	Lower Granite Dam	Hatchery Summer Steelhead	2	Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA,
Shake River #2	Niagara Springs Hatchery	Hatchery Summer Steelhead	1	CO, NOAA, Incienteitur Corp.

### Discussion

