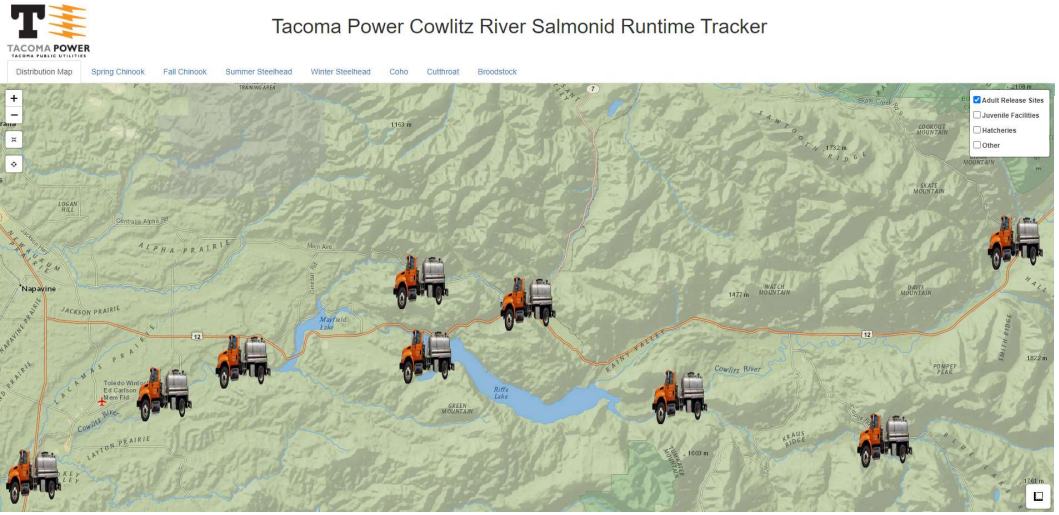
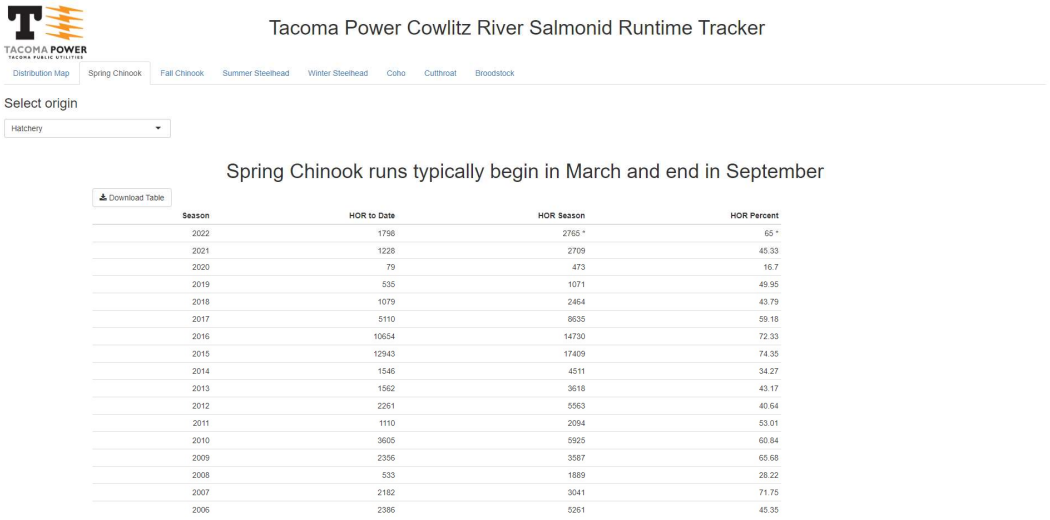
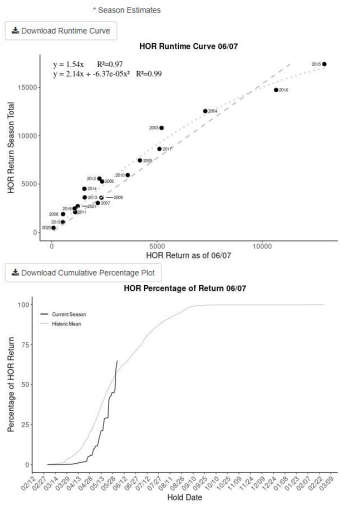
Cowlitz River Salmonid Runtime Tracker

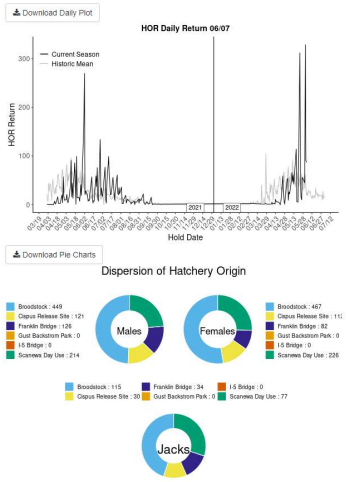
- In-depth Rshiny application
- Advanced Statistical Analysis and Modeling
- Time Series Visualizations
- Live data pipeline constructed using Access, FME, Databricks, AWS, Snowflake and Shiny
- https://tacoma.shinyapps.io/cowlitz_runtime_app/





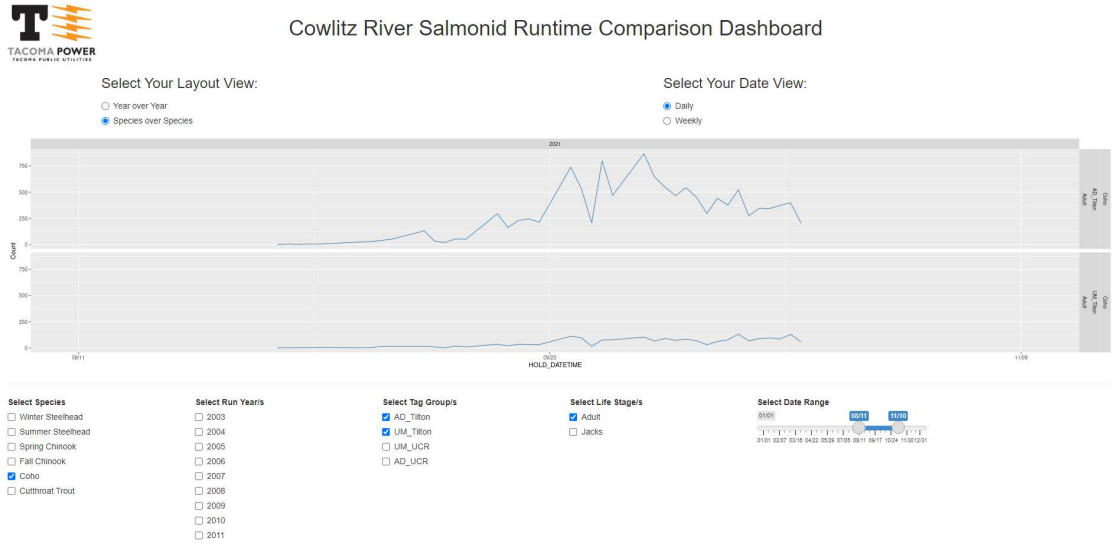
Season	HOR to Date	HOR Season	HOR Percent
2022	1798	2765 *	65 *
2021	1228	2709	45.33
2020	79	473	16.7
2019	535	1071	49.95
2018	1079	2464	43.79
2017	5110	8635	59.18
2016	10654	14730	72.33
2015	12943	17409	74.35
2014	1546	4511	34.27
2013	1562	3618	43.17
2012	2261	5563	40.64
2011	1110	2094	53.01
2010	3605	5925	60.84
2009	2356	3587	65.68
2008	533	1889	28.22
2007	2182	3041	71.75
2006	2386	5261	45.35

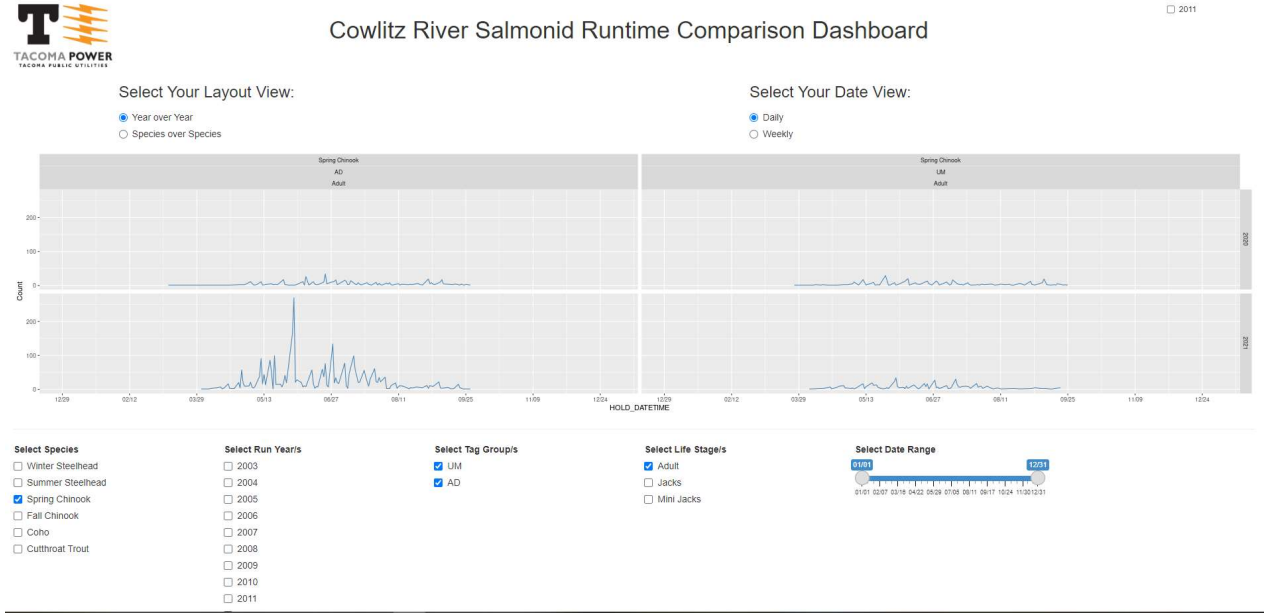




Cowlitz River Salmonid Runtime Tracker Comparison Dashboard

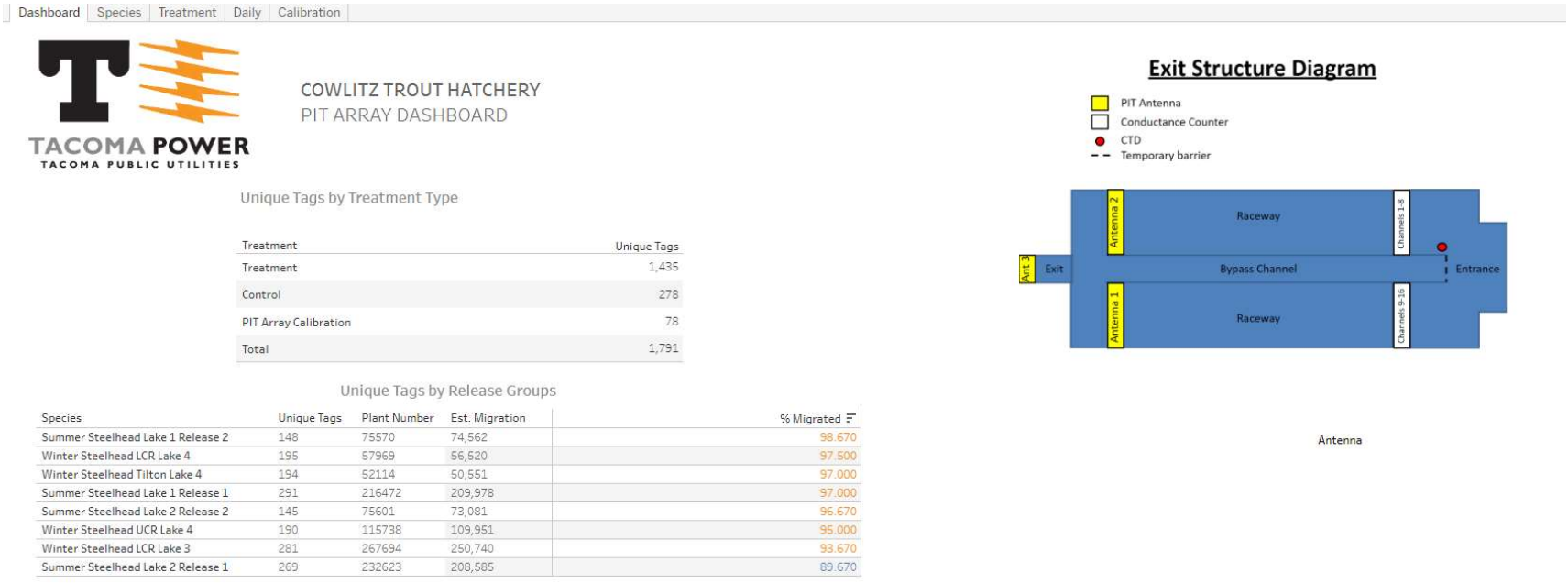
- Rshiny reactive dashboard
- Time Series Visualizations
- Advanced display of reactive ggplots
- Live data pipeline constructed using Access, FME, Databricks, AWS, Snowflake and Shiny
- https://tacoma.shinyapps.io/testing_reactive_graphs/





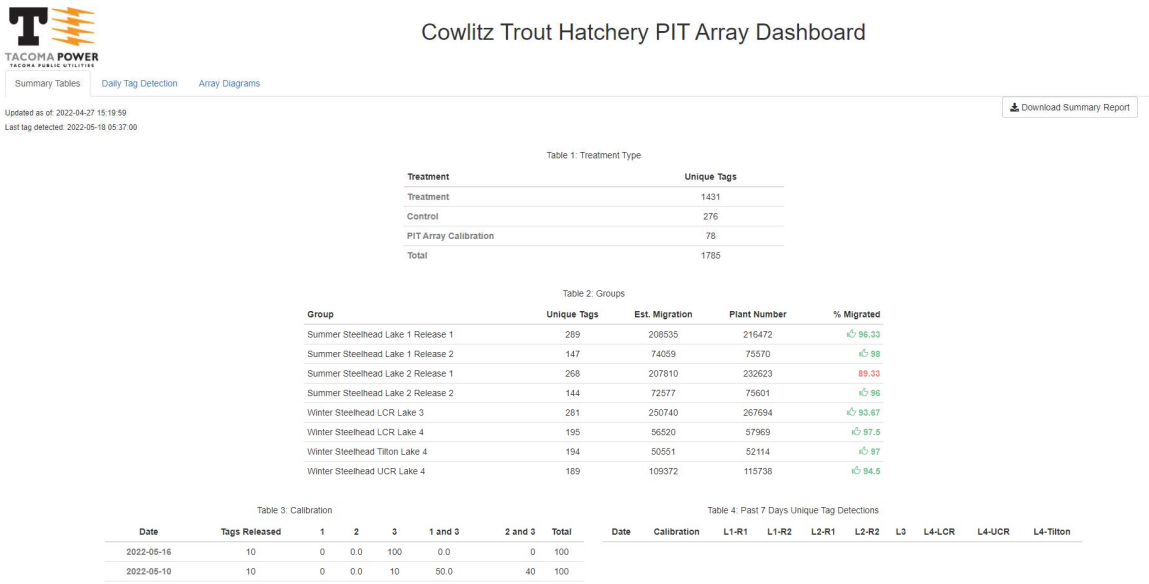
Cowlitz Trout Hatchery PIT Array Dashboard - Tableau

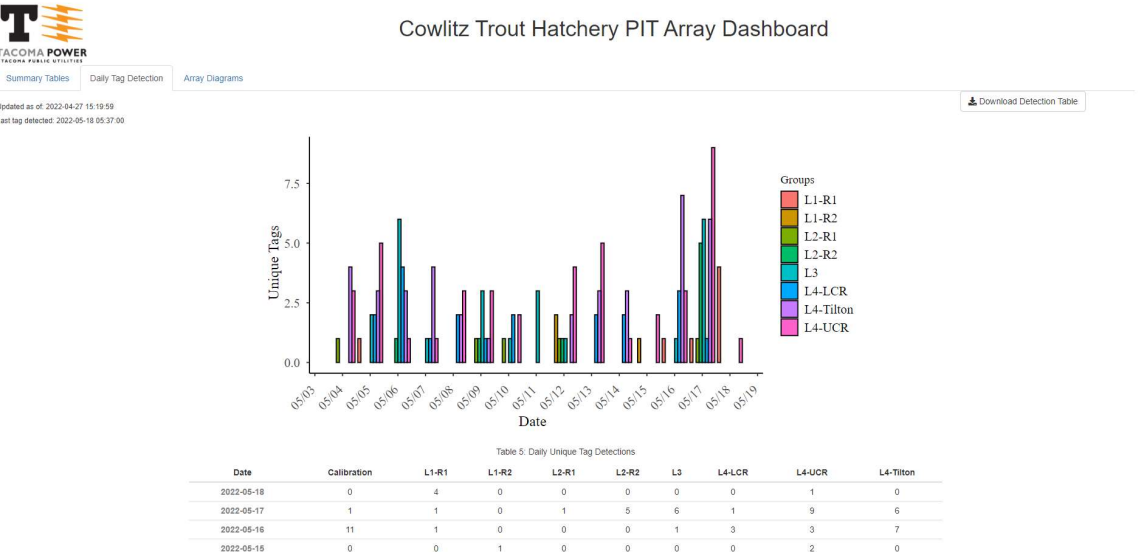
- Tableau Dashboard
- Daily data pipeline constructed using Excel, FME, AWS, Snowflake and Tableau
- Designed as a tool for monitoring by City of Tacoma Employees
- https://analytics.tacoma.lcl/#/views/COWLITZ_TROUT_PIT_ARRAY/Dashboard1

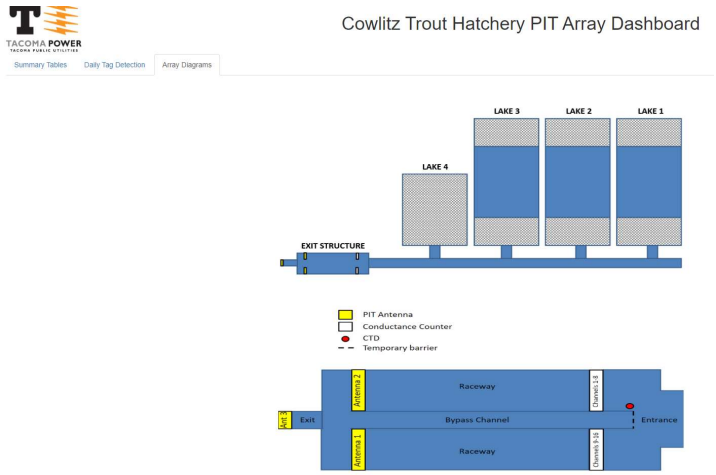


Cowlitz Trout Hatchery PIT Array Dashboard

- Rshiny application
- Static report production from within the application
- Daily data pipeline constructed using Excel, FME, AWS, Snowflake and Shiny
- Designed as a duplicate of the Tableau dashboard to allow for monitoring by contracted parties outside the City of Tacoma
- https://tacoma.shinyapps.io/CTH_PIT_ARRAY/?_ga=2.202115601.10456577.1641499143-898210803.1635523745

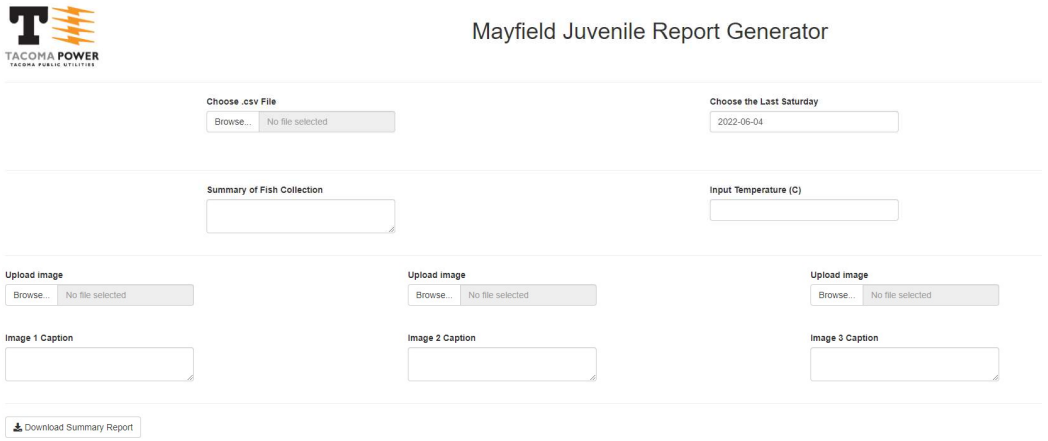






Mayfield Juvenile Report Generator

- Rshiny form submitter
- Designed to construct weekly project reports using user data inputs
- Allows for custom reports that
- Eliminates potential reporting errors
- Saves staff 2-3 hours weekly
- https://tacoma.shinyapps.io/cowlitz_mayfield_report_generator/



TACOMA POWER

Mayfield Juvenile Collection Facility

Report for 05/29/2022 to 06/04/2022.

Date: 06/07/2022

From: Missy Baier - NR Tech 1 and Jamie Murphy - NR Specialist 1

Operations:

As required, we run the trap from April 1 to December 31. In the off season, the facility is put in bypass mode and periodically ran (2-3 times). This week, the facility was operated 4 days (5/31, 6/1, 6/2, 6/3).

Flows and Water Temperature:

Discharge through the Mayfield Dam averaged 7254.75 cfs throughout the week with a minimum discharge of 5200 cfs on Wednesday and a maximum discharge of 9680 cfs on Saturday. The lake temperature was 8 °C.

Fish Collection:

Fish collection was at a season high this week. We saw an uptick in coho smolts on Monday with the daily totals trending down as the week progressed.

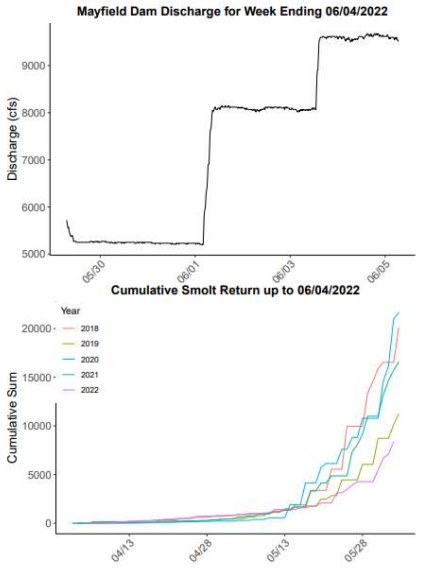


Table 1: Target Species

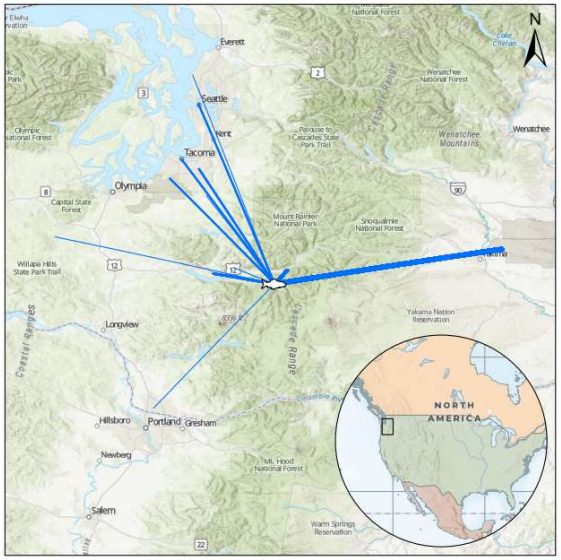
	Chinook				Coho				Steelhead					Cutthroat Trout				
Week Ending	Fry	Parr	0+	1+	Fry	Parr	Smolt	2+	Fry	Parr	Smolt	Fallbacks	Kelts	Fry	Parr	Smolt	Adults	Kelts
04/08/2022	58	1	3	1	14	11	11	2	0	0	26	4	2	0	2	5	0	0
04/15/2022	52	0	1	2	43	0	169	3	0	0	50	1	7	0	0	11	1	1
04/22/2022	13	0	4	2	14	2	159	7	0	1	47	0	6	0	1	14	0	0
04/29/2022	55	2	5	10	24	0	98	9	0	0	94	2	14	0	0	17	0	1
05/06/2022	39	0	4	10	50	0	76	4	0	2	206	0	34	0	0	9	0	0
05/13/2022	52	0	6	8	51	7	42	3	0	4	325	0	37	0	1	31	0	10
05/20/2022	29	1	0	6	44	0	182	17	0	0	487	0	36	0	1	22	0	0
05/27/2022	12	11	4	15	27	19	839	20	0	0	1254	0	29	0	0	91	0	4
06/03/2022	31	45	4	25	41	17	2255	16	0	0	1661	0	21	0	0	134	6	0
Total	341	60	31	79	308	56	3831	81	0	7	4150	7	186	0	5	334	7	16

Table 2: Bycatch

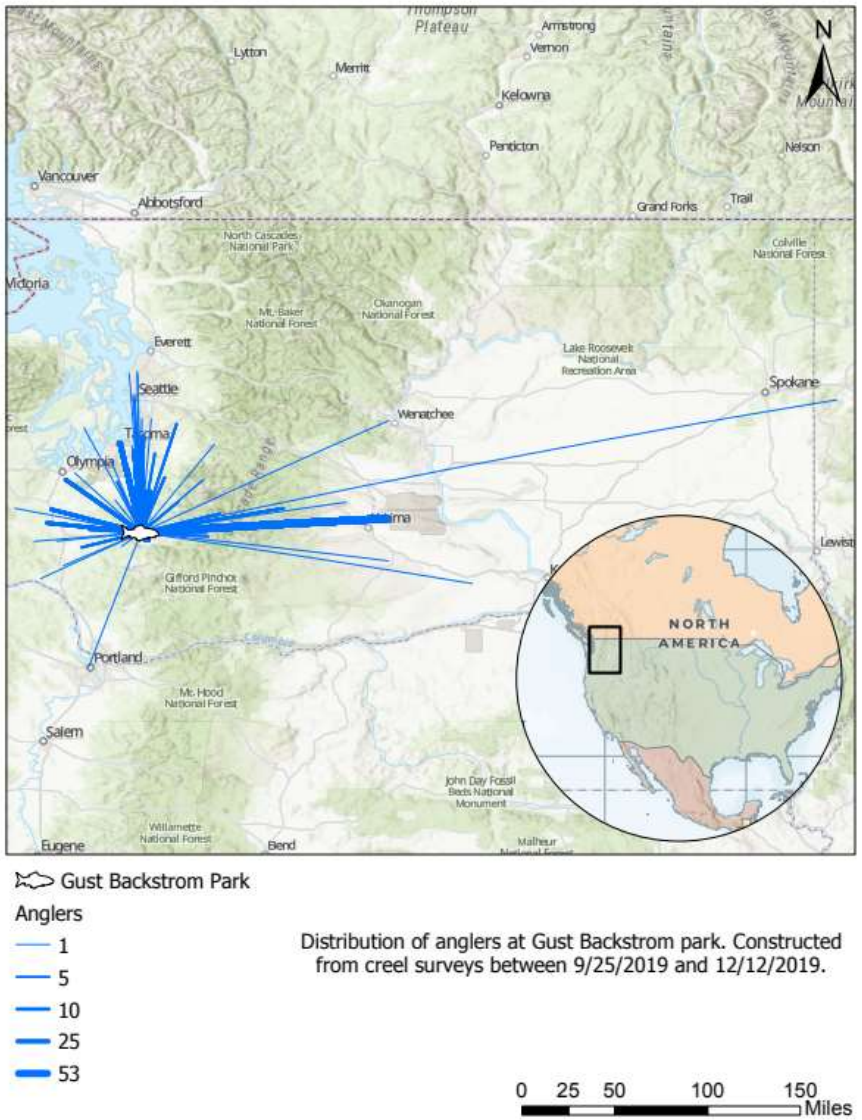
	Rainbow Trout								
Week Ending	UM	AD	Triploid	Blue Gill	Sculpin	Shiner	Sucker	Tiger Muskie	Yellow Perch
04/08/2022	1	40	7	0	0	2	6	5	0
04/15/2022	0	73	2	1	0	18	2	11	0
04/22/2022	0	74	0	0	3	17	0	11	0
04/29/2022	0	74	0	1	4	2	3	8	0
05/06/2022	0	126	1	0	4	0	2	18	2
05/13/2022	0	84	14	0	1	3	2	20	0
05/20/2022	0	101	6	0	4	0	0	15	0
05/27/2022	0	267	3	0	14	0	3	2	0
06/03/2022	0	237	0	0	2	0	1	0	0
Total	1	1076	33	2	32	42	19	90	2

Creel Flow Map – ESRI ArcGIS Pro

- ArcGIS Pro Flow Map
- Depicts the density of anglers traveling to popular locations from their cities of residence
- Created after extensive in person angler interviews



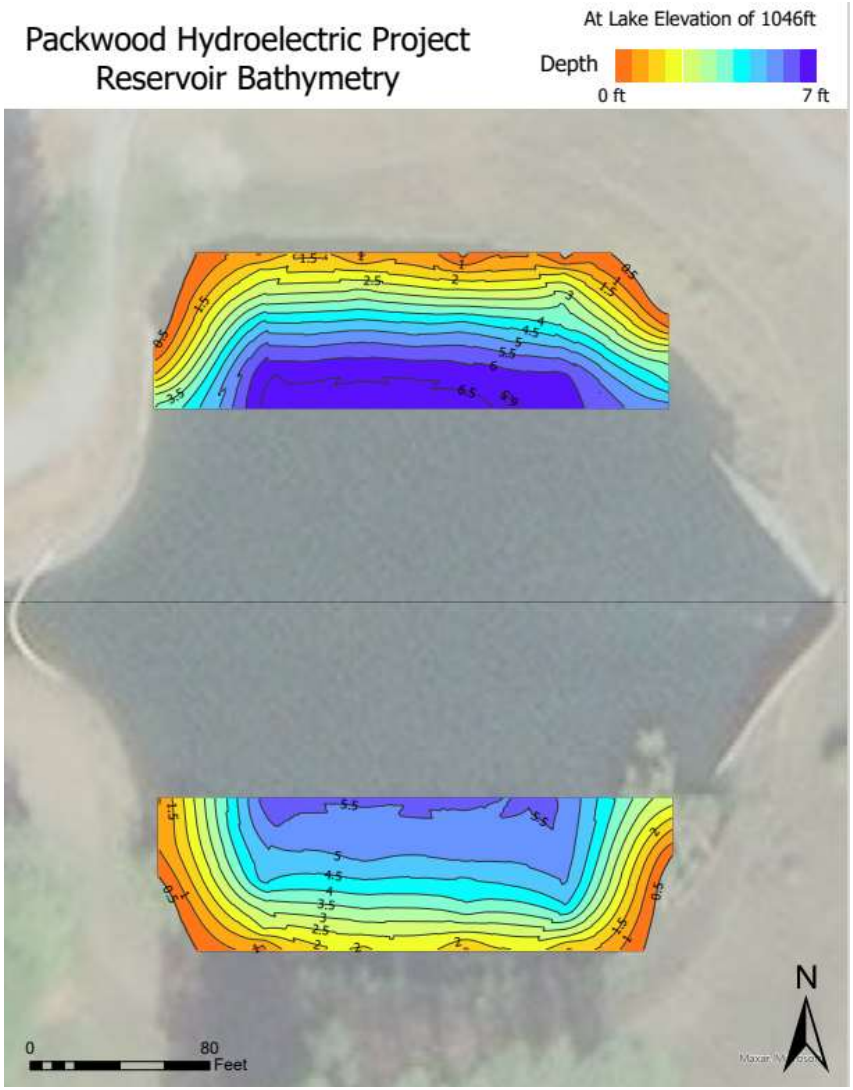
Distribution of anglers at the Cispus release site. Constructed from creel surveys between 9/25/2019 and 12/12/2019.



Distribution of anglers at Gust Backstrom park. Constructed from creel surveys between 9/25/2019 and 12/12/2019.

Bathymetry Map – ESRI ArcGIS Pro

- ArcGIS Pro Bathymetry Map
- Constructed from depth measurements collected in the field
- Displays the bathymetry of the reservoir for the banks of concern
- This project was a last minute project to meet an objective that we were not aware of. My team was not prepared for this project and we had to use equipment that was not optimal for the job. Even with these potential setbacks we were able to gather meaningful data. From that data, I constructed this figure which exceeded managements' expectations.



Data Visualizations - M.Sc. Thesis

- ArcGIS Pro (right) and ggplot – R (below) visualizations from my Graduate Thesis
- Extensive data collection, database management, data visualization and data analysis
- https://researchrepository.wvu.edu/cgi/viewcontent.cgi?article=4946&context=etd