



California Department of Fish and Wildlife

Klamath-Trinity Project

Klamath Basin Fishery Monitoring Overview and current status

Klamath Database Workshop

February 24, 2022

Morgan Knechtle

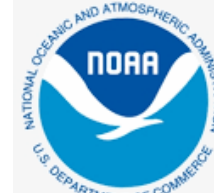
SISKIYOU COUNTY
Office of Education



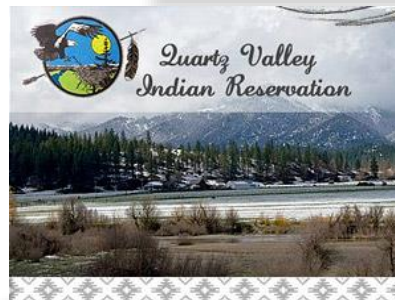
THE YUROK TRIBE



Mid Klamath
Watershed Council



NOAA
FISHERIES



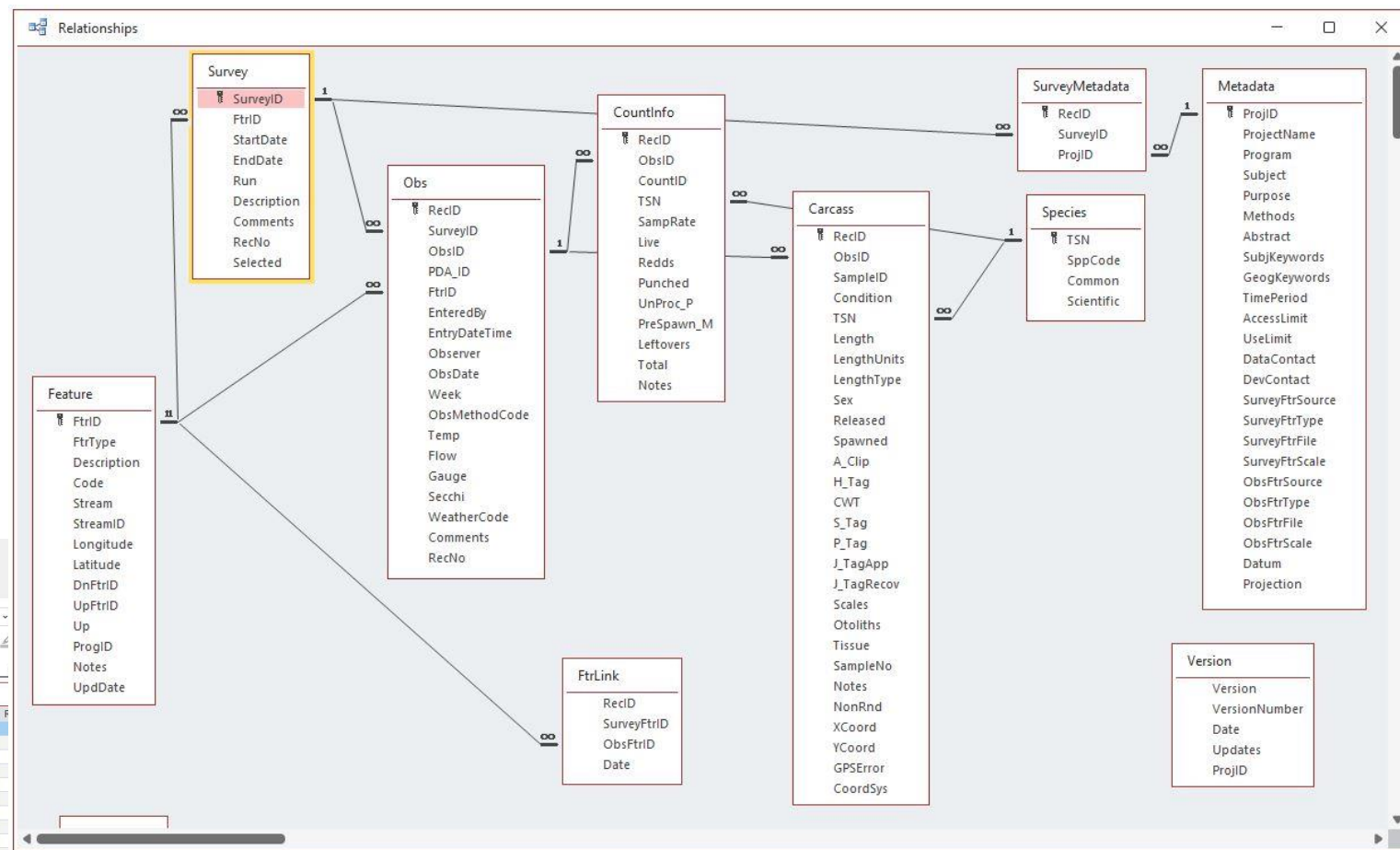
SCOTT RIVER
WATERSHED COUNCIL



AND LANDOWNERS

Database considerations:

- Overview of some of the current monitoring to leverage existing work to maximize benefit of future monitoring



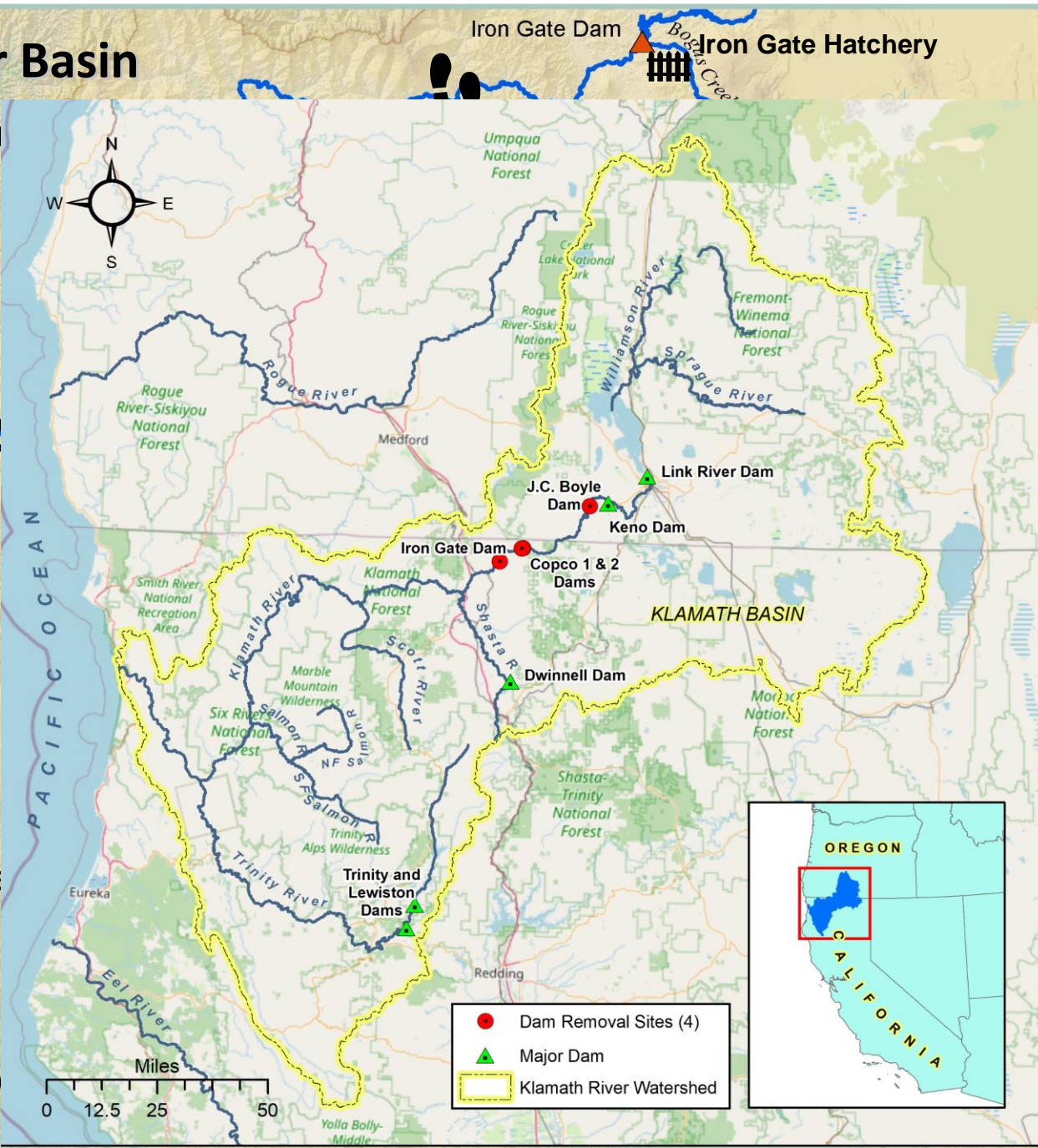
- Lots of co-managers
- Many independent projects
- Large geographic area
- Improve communication
- Information sharing



Klamath River Basin

Pacific Ocean

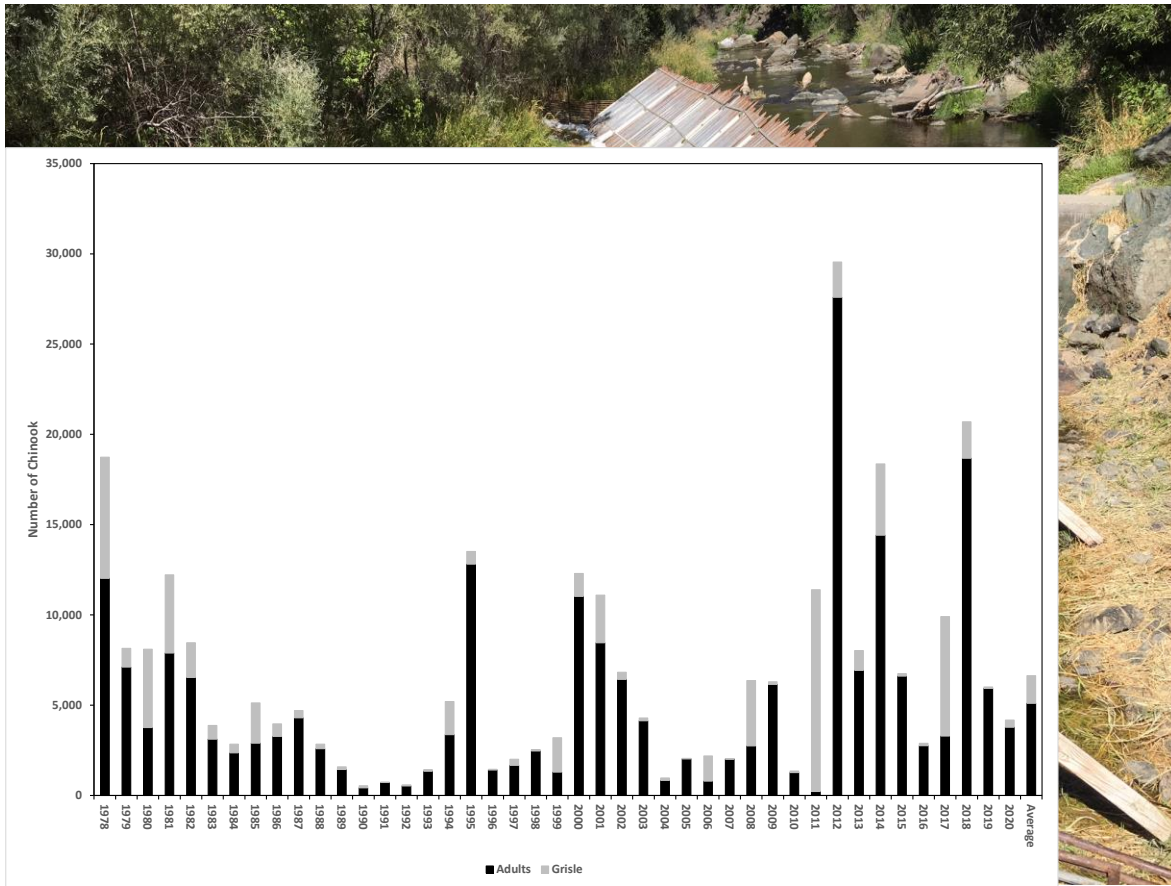
- Crescent
- Eureka
- Carcass/recreational surveys
- CDFW Watershed
- Creel surveys



- Dam Removal Sites (4)
- ▲ Major Dam
- Klamath River Watershed

Video Fish Counting Stations

- Shasta River



- Scott River



SONAR

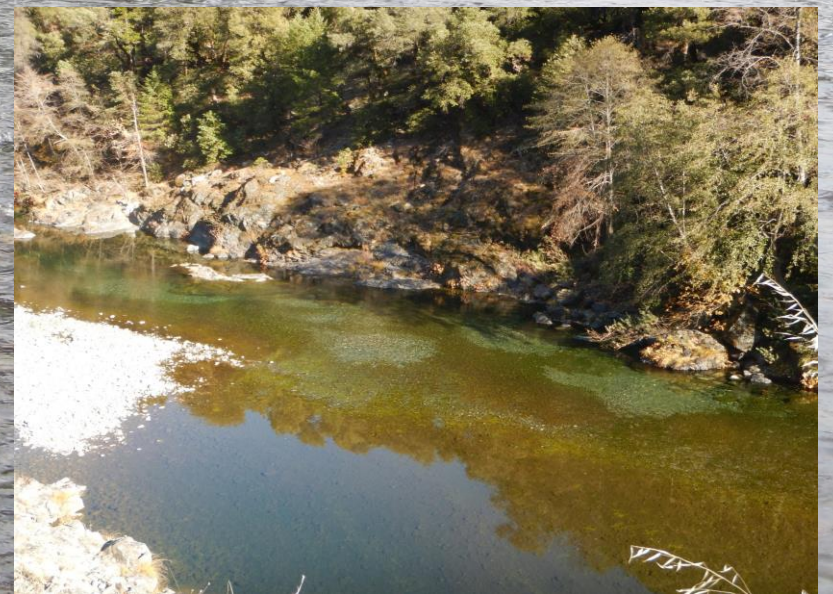
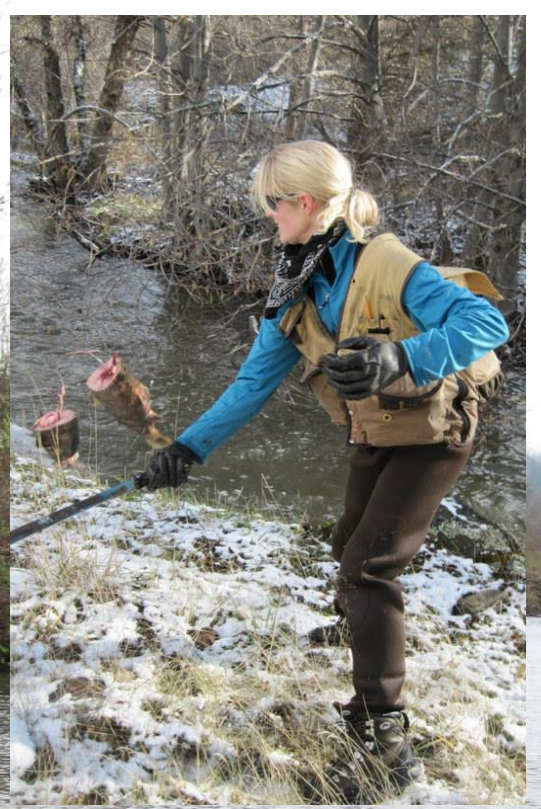


Resistance Board Weirs



Trinity River Marking Weir-Willow Creek





Recreational and Tribal Harvest Monitoring



Mitigation Hatcheries:

Iron Gate Hatchery



Trinity River Hatchery



Total River Return by Age and Sector

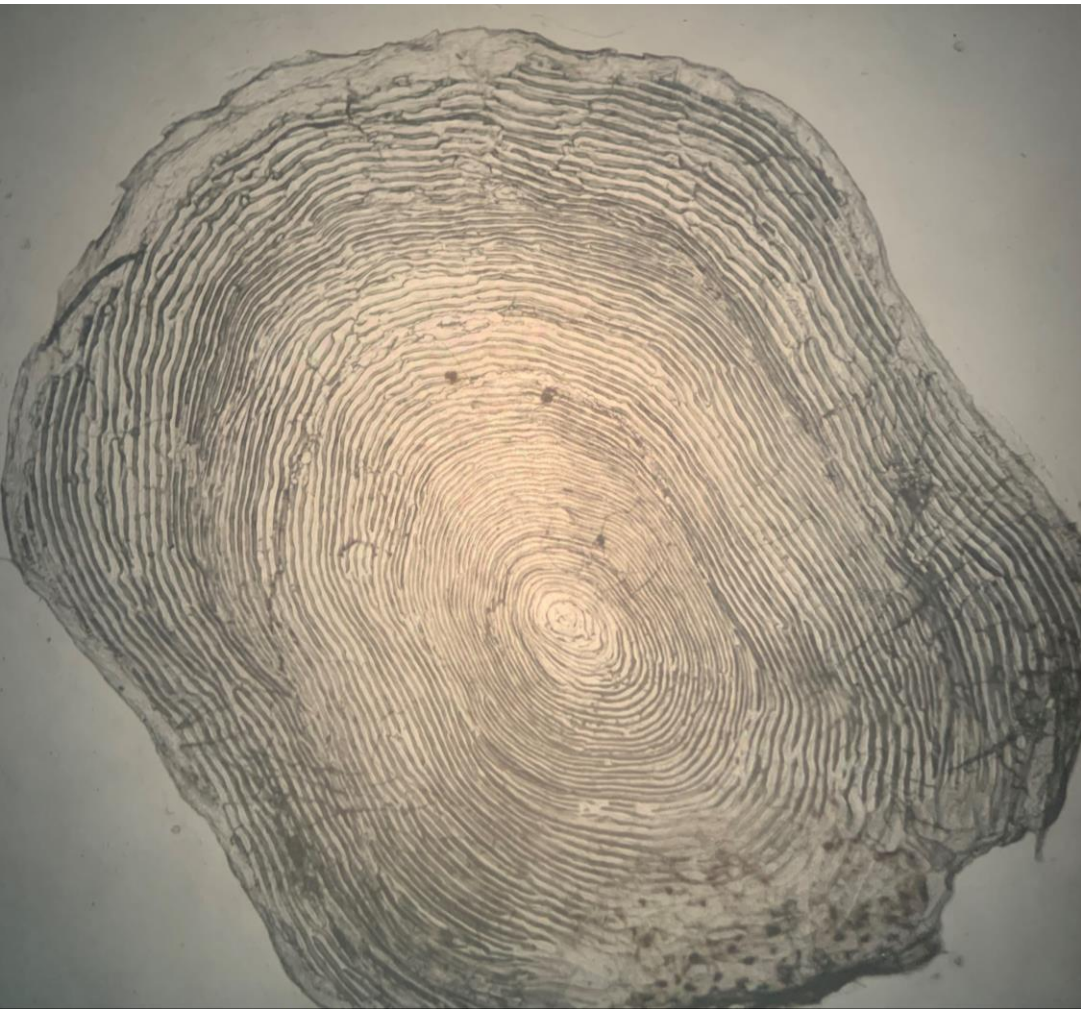
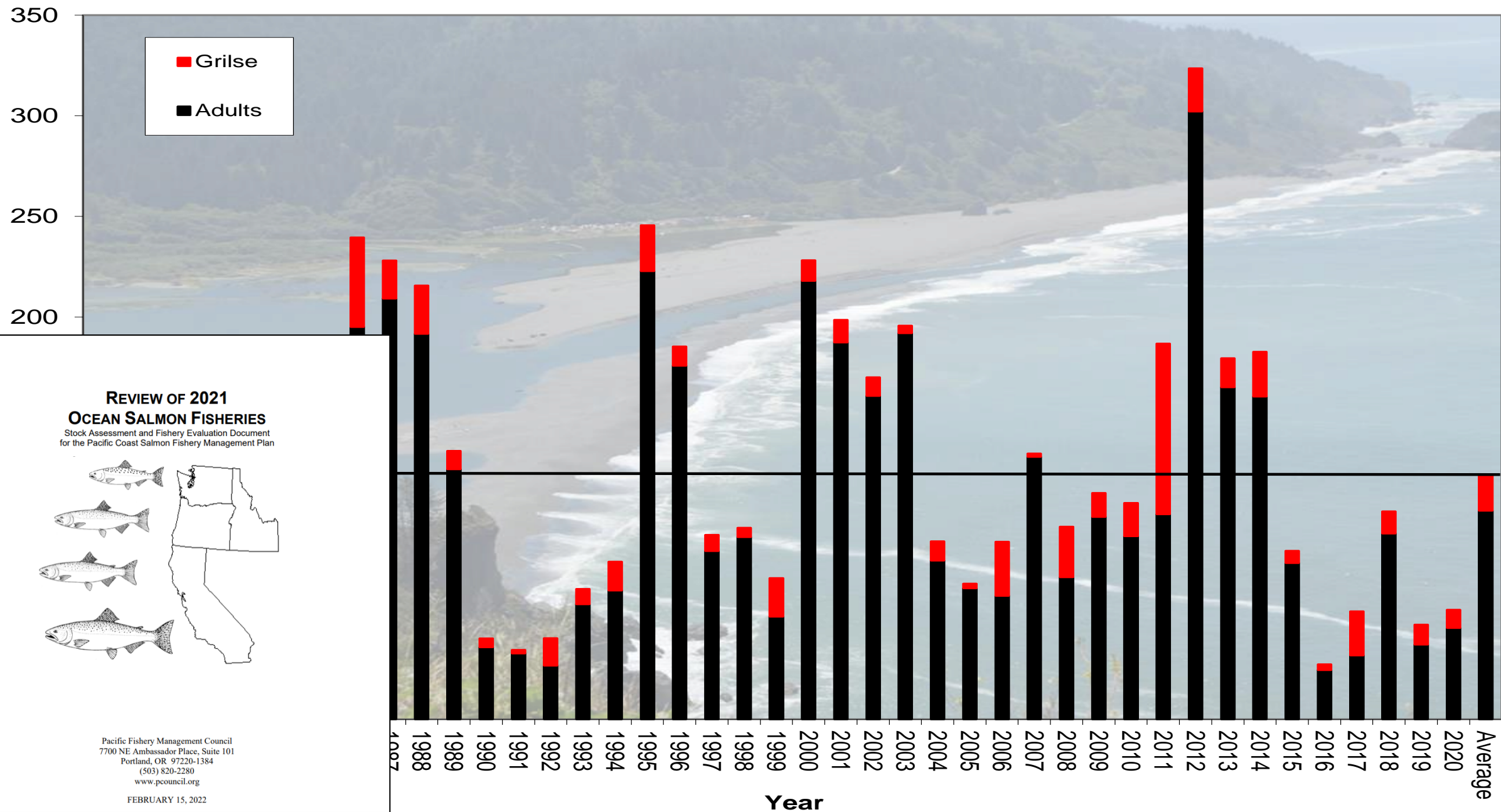


Table 5. Age composition of the 2020 Klamath Basin fall Chinook run.

2/4/2021

Escapement & Harvest	2	3	AGE 4	5	Total Adults	Total Run
Hatchery Spawners						
Iron Gate Hatchery (IGH)	413	3,198	843	1	4,042	4,455
Trinity River Hatchery (TRH)	2,815	4,070	219	0	4,289	7,104
Hatchery Spawner subtotal	3,228	7,268	1,062	1	8,331	11,559
Natural Spawners						
Salmon River Basin	122	862	110	0	972	1,094
Scott River Basin	43	564	248	0	812	855
Shasta River Basin	393	2,948	827	0	3,775	4,168
Bogus Creek Basin	88	1,908	324	0	2,232	2,320
Klamath River mainstem (IGH to Shasta R.)	55	1,087	83	0	1,170	1,225
Klamath River mainstem (Ash Cr. to Wingate Bar)	75	1,474	110	0	1,584	1,659
Klamath River mainstem (Persido Bar to Big Bar)	20	249	25	0	274	294
Klamath tributaries (above Trinity River)	34	836	38	0	874	908
Blue Creek	99	46	78	0	124	223
Klamath Basin subtotal	929	9,974	1,843	0	11,817	12,746
Trinity River Basin (above WCW)	3,792	12,182	1,559	0	13,741	17,533
Trinity River mainstem (below WCW)	93	298	38	0	336	429
Trinity tributaries (above Reservation, below WCW)	97	139	75	0	214	311
Hoopla Reservation tributaries	37	53	29	0	82	119
Trinity Basin subtotal	4,019	12,672	1,701	0	14,373	18,392
Natural Spawners subtotal	4,948	22,646	3,544	0	26,190	31,138
Total Spawner Escapement	8,176	29,914	4,606	1	34,521	42,697
Recreational Harvest						
Klamath River (below Hwy 101)	39	168	38	0	206	245
Klamath River (Hwy 101 to Weitchpec)	343	2,718	228	0	2,946	3,289
Klamath River (Weitchpec to IGH)	134	1,294	294	1	1,589	1,723
Trinity River Basin (above WCW)	0	322	0	0	322	322
Trinity River Basin (below WCW)	17	53	1	0	54	71
Subtotals	533	4,555	561	1	5,117	5,650
Tribal Harvest						
Klamath River (below Hwy 101)	85	915	809	6	1,730	1,815
Klamath River (Hwy 101 to Weitchpec)	156	1,433	1,070	0	2,503	2,659
Trinity River	87	649	330	0	979	1,066
Subtotals	328	2,997	2,209	6	5,212	5,540
Total Harvest	861	7,552	2,770	7	10,329	11,190
Totals						
Harvest and Escapement	9,037	37,466	7,376	8	44,850	53,887
Recreational Angling Dropoff Mortality 2.04%	11	93	11	0	104	115
Tribal Net Dropoff Mortality 8.7%	29	261	192	0	453	482
Total River Run	9,077	37,820	7,579	8	45,407	54,484

Klamath Basin Fall Chinook Run Size



REVIEW OF 2021 OCEAN SALMON FISHERIES

Stock Assessment and Fishery Evaluation Document
for the Pacific Coast Salmon Fishery Management Plan



Coho Mega Table

- California Threatened
- Federal Threatened

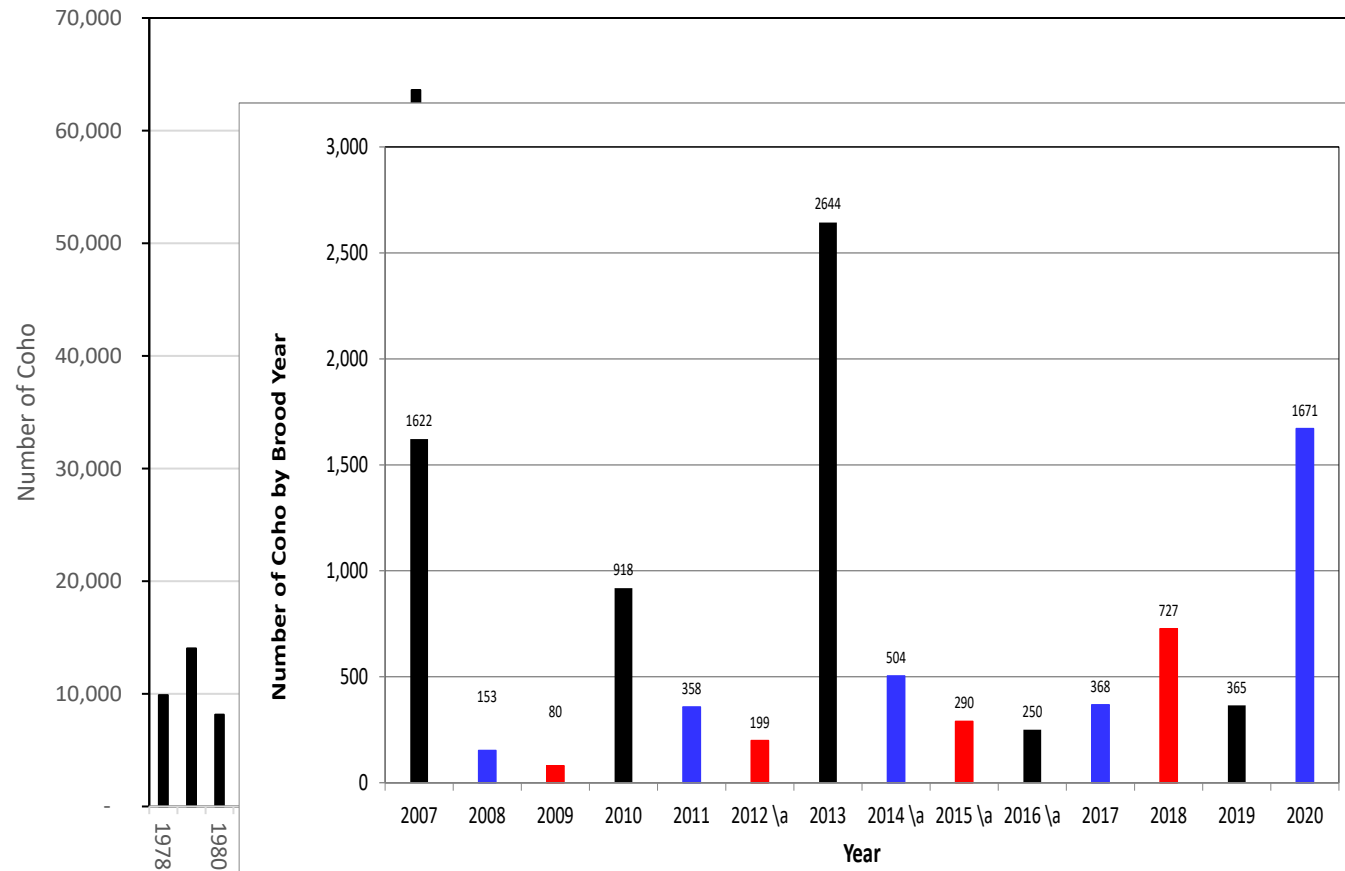


California Department of Fish and Wildlife, Klamath Trinity Program, coho salmon megatable (preliminary)															
PLEASE DO NOT DISTRIBUTE															
COHO SPAWNER ESCAPEMENT															
Hatchery Returns:	2013			2014			2015			2016			2017		
	Grilse	Adults	Totals	Grilse	Adults	Total	Grilse	Adults	Totals	Grilse	Adults	Totals	Grilse	Adults	Totals
Iron Gate Hatchery (IGH)_A	63	1,205	1,268	249	135	384	38	34	72	30	56	86	29	93	122
Trinity River Hatchery (TRH)_B	427	6,204	6,631	937	2,971	3,908	278	3,059	3,337	45	482	527	150	270	420
Hatchery Return Subtotals:	490	7,409	7,899	1,186	3,106	4,292	316	3,093	3,409	75	538	613	179	363	542

Boque C
Shasta R
Scott R
Salmon F
Main Ste
Misc. Kl
Yurok R
Klamath
Trinity
Trinity R
Misc Trii
Hoops R
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Klamath I
Trinity R
Angler
Tribal I
Klamath I
Trinity R
Trinity R
Tribal I

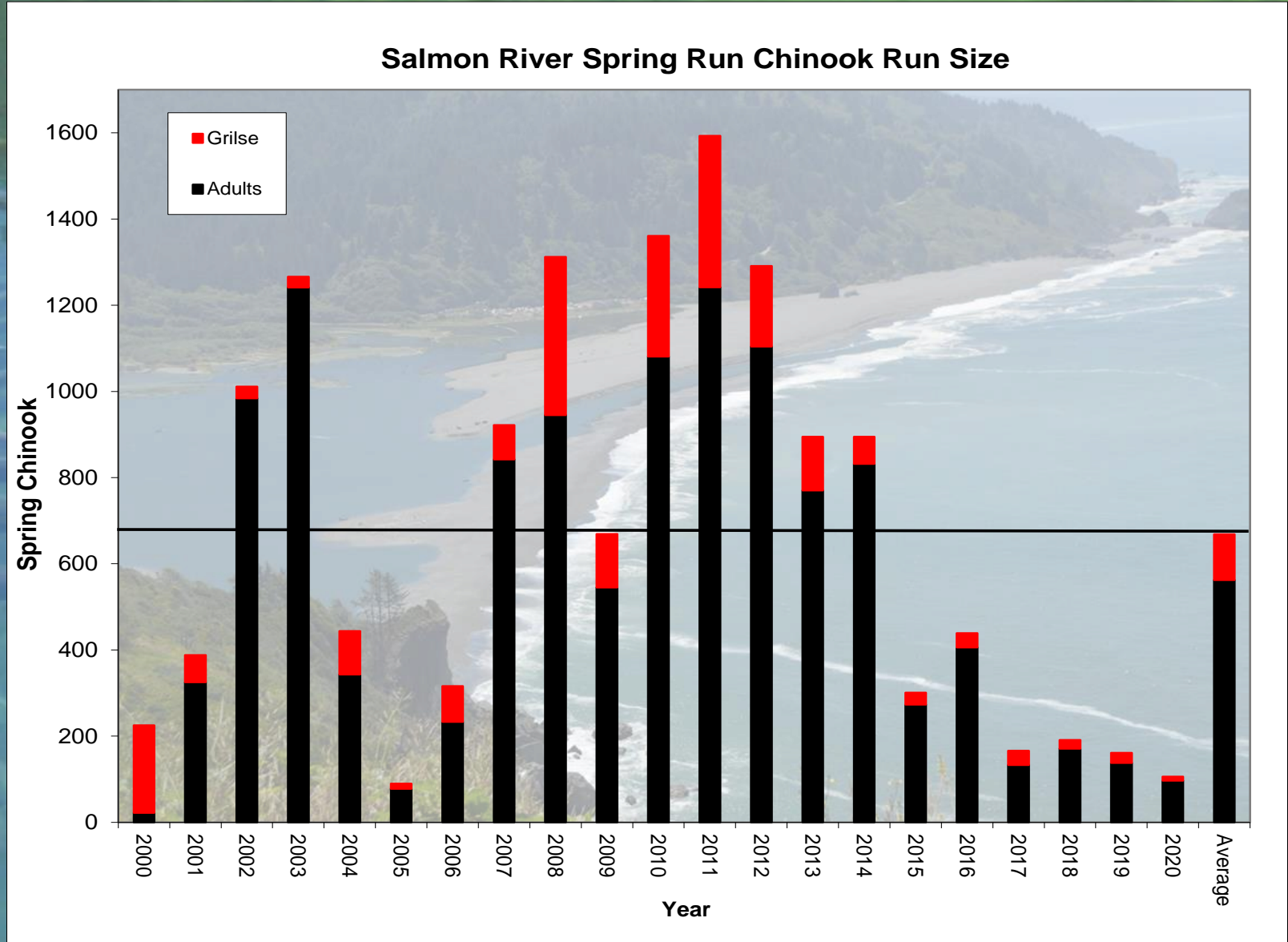
In-river H
Angling
Net Mo
Fish Die

Coho Mega-Table



/a Abundance affected by early removal of the counting station which may have resulted in under counts of coho in footnoted years.

- Spring Chinook (California Threatened)



- O. mykiss* monitoring:

2019 Summer STHD / Spring Chinook Survey Results - Klamath National Forest, Happy Camp and Oak Knoll Ranger Districts			
Stream	Reach Surveyed	Survey Miles	Survey Date
Beaver			
Clear	Slippery RA to mouth	4.2	8/21/2019
Clear	Tenmile Ck to Slippery RA	3.1	8/13/2019
Clear	Bear Pen to Tenmile Ck	4.6	8/14/2019
Clear	Wilderness Falls to Bear Pen	5.2	8/13/2019
Totals		17.1	
Dillon	Mill to mouth	2.0	8/8/2017 **
Dillon	NF Trail to Mill Creek	4.6	9/3/2019
Dillon	Yann Ck to NF Trail	3.9	9/2/2019
Dillon	MS Dillon to NF Confluence	1.8	8/20/2019
Copper	1.4 mi. of Copper Ck to MS Dillon	1.4	8/20/2019
Totals		13.7	
Elk	5 Mile Bridge to Pumping Station	3.2	7/29/2019
Elk	Twins to 5 Mile Bridge	1.8	7/29/2019
Elk	Doolittle to Twins	3.6	7/24/2017
Elk	Bear Ck to Doolittle Ck	4.4	8/1/2019
Elk	Hummingbird Ck to Bear Ck	2.8	8/1/2019
Totals		15.8	
Grider	No Name Ck to mouth	2.9	8/5/2019
Grider	Bark Shanty Ck to No Name	3.1	8/5/2019
Grider	Rancheria Ck to Bark Shanty Ck		
Totals		6.0	
Independence	Mine to mouth	0.7	8/7/2019
Indian	Buchanon Falls to Mouth	4.6	7/31/2019
Indian	SF Bridge to Buchanon Falls	4.0	7/31/2019
Indian	Vestbranch Ck to SF Bridge		
Totals		8.6	
Thompson	2 Mile Trail to mouth	1.7	8/8/2019
Thompson	Upper road access to 2 Mile Trail	3.3	8/8/2019
Totals		5.0	
SF Indian	reen Gate Swimming Hole to Mouth		
Ukonom	Waterfall Barrier to Mouth	0.5	
	Grand total surveyed miles =	67	

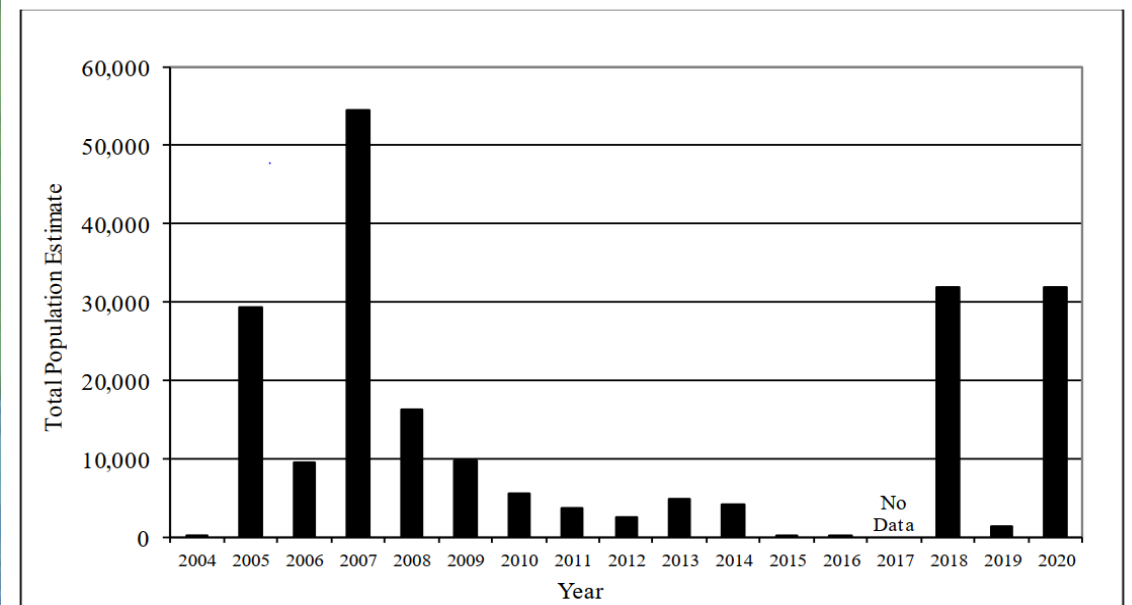


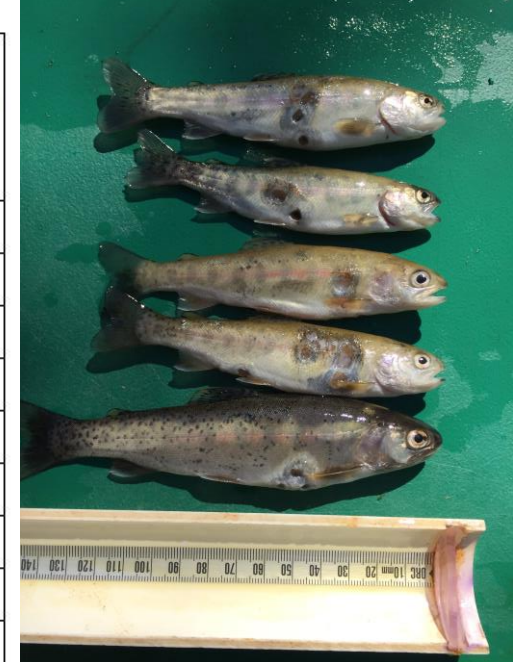
Figure 24. 2004 – 2020 2+ Steelhead population estimates, Scott River. The Scott RST was not in operation in 2017.

Bogus Creek			
Year	Net Upstream <i>O. mykiss</i> >40.6 cm	Last date of Monitoring	
2007	24	12/31	
2008	48	12/22	
2009	54	12/15	
2010	24	12/14	
2011	42	12/23	
2012	59	12/7	
2013 - 2014	103	5/1	
2014	41	12/1	
2015 - 2016	46	1/16	
2016 - 2017	84	5/1	
2017 - 2018	205	6/8	
2018 - 2019	267	5/30	
2019 - 2020	431	5/4	
Average	110		

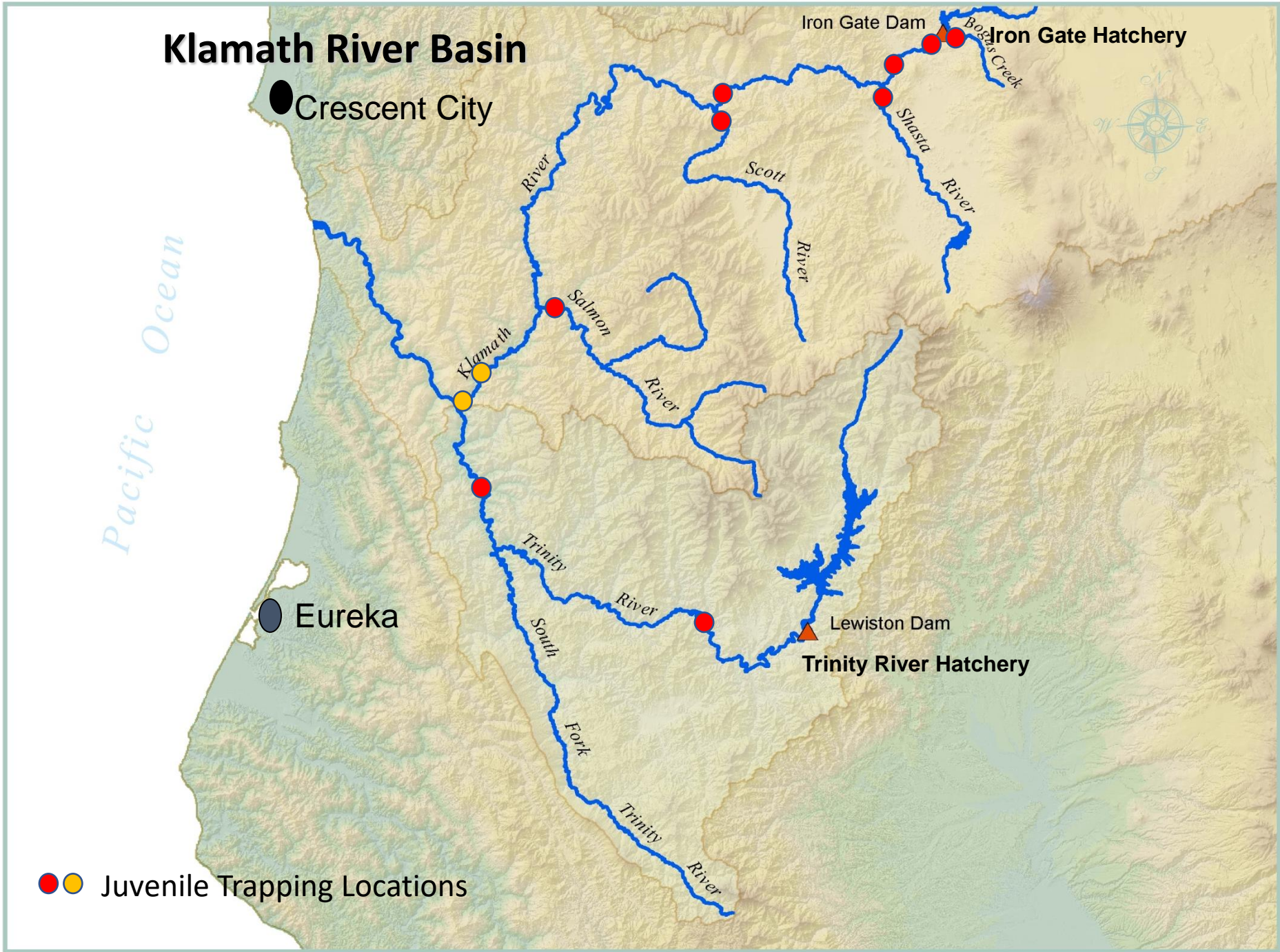
Table 5. Catch Table Chinook Salmon 0+, Snasta River 2019

Juvenile Trapping:

Julian week	Live fish trapped ¹	Mortalities	Adjusted total trapped ²	Volume sampled, MCF	Adjusted marked & released ³	Recaptured	% Trap efficiency ⁴	Weekly population estimate ⁵	Lower 95% CI	Upper 95% CI
5	28,717	115	28,832	19.66	2,496	404	16.19%	207,389	191,451	223,327
6	30,617	214	30,831	20.69	2,500	496	19.84%	181,005	168,710	193,301
7	7,637	200	7,837	8.84	999	131	13.11%	138,533	129,053	148,012
8	30,932	178	31,110	20.24	1,882	143	7.60%	474,608	410,827	538,388
9	14,399	389	14,788	4.66	500	0**	17.30%	299,179*	---	---
10	192,373	788	193,161	25.63	2,496	413	16.55%	1,359,203	1,256,716	1,461,691
11	211,489	743	212,232	14.64	2,497	245	9.81%	2,514,288	2,258,950	2,769,626
12	93,530	508	94,038	16.89	2,493	312	12.52%	874,183	796,550	951,816
13	93,704	725	94,429	18.19	2,493	332	13.32%	825,096	754,369	895,823
14	48,275	883	49,158	17.90	1,890	303	16.03%	428,095	396,560	459,631
15	24,332	1,431	25,763	14.53	1,995	193	9.67%	371,093	335,610	406,576
16	36,377	967	37,344	20.66	1,794	340	18.95%	229,339	210,502	248,175
17	45,655	991	46,646	21.99	1,386	208	15.01%	361,153	322,481	399,825
18	29,436	572	30,008	16.31	1,484	223	15.03%	232,093	208,050	256,136
19	17,120	103	17,223	17.99	898	304	33.85%	59,226	54,562	63,891
20	8,216	13	8,229	12.01	500	282	56.40%	16,996	15,859	18,133
21	6,150	45	6,195	15.95	400	236	59.00%	14,675	13,807	15,542
22	6,416	53	6,469	19.95	498	88	17.67%	42,315	35,476	49,154
23	4,592	49	4,641	14.73	300	140	46.67%	13,870	12,664	15,076
24	4,210	73	4,283	12.90	482	155	32.16%	15,471	13,733	17,209
25	596	6	602	14.54	415	218	52.53%	1,334	1,213	1,456
26	267	4	271	13.14	202	129	63.86%	592	540	645
Totals	935,040	9,050	944,090	362.05	30,600	5,295	17.30%	8,659,737	-	-

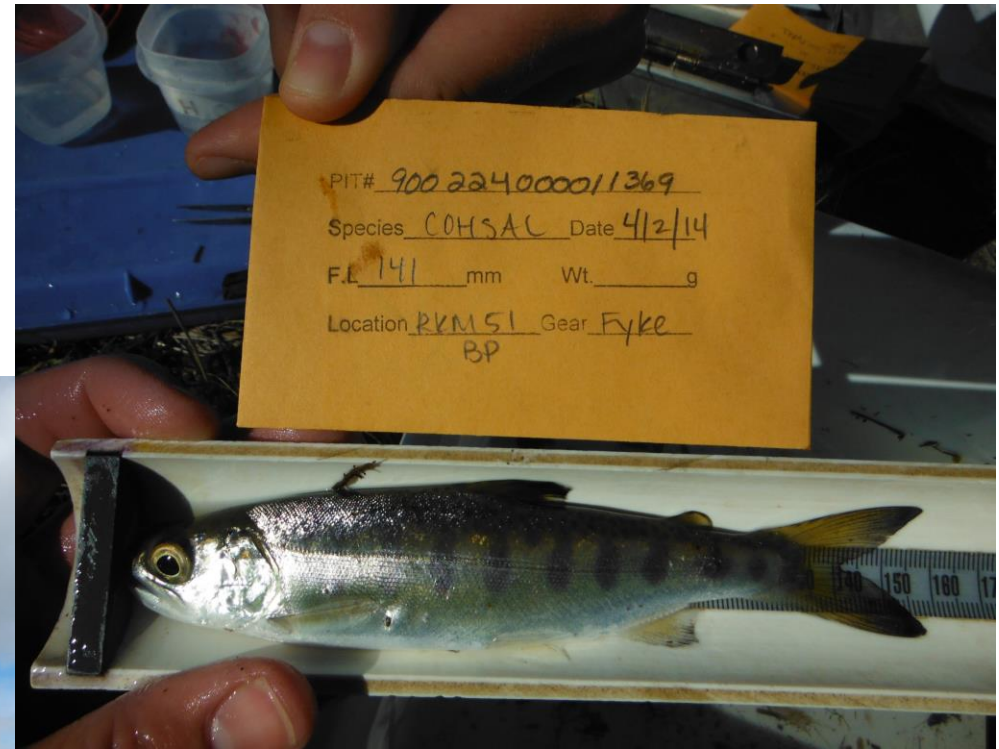


Klamath River Basin



Coho Life History Projects:

- Non-natal Rearing
- PIT tagging studies
- Antenna network increasing
- Collaborative Projects
- Klamath Database



What would we like to know?

- Stray rates of source populations
- Stray rates of hatchery populations
- Contribution of non-natal rearing life history
- Meta population dynamics
- Migration patterns of hatchery and natural juvenile populations
- Increased tag detection probability
- Drought effects
- Disease effects



Future Opportunities for collaboration:

- Increasing landscape with Dam Removal
- Additional Partners
- Spring Run Response
- Coho Response
- Restoration Response (\$162M)





Questions?





Federal Perspective on Klamath Basin Salmonid Recovery and Monitoring

Tommy Williams

Southwest Fisheries Science Center Fisheries Ecology Division – Santa Cruz, California

Klamath Fisheries Collaborative Spring 2022 Meeting

U.S. Department of Commerce | National Oceanic and Atmospheric Administration | National Marine Fisheries Service





Federal **NMFS** Perspective on Klamath Basin Salmonid Recovery
and Monitoring **To Inform Conservation and Management**

Tommy Williams

Southwest Fisheries Science Center Fisheries Ecology Division – Santa Cruz, California

Klamath Fisheries Collaborative Spring 2022 Meeting

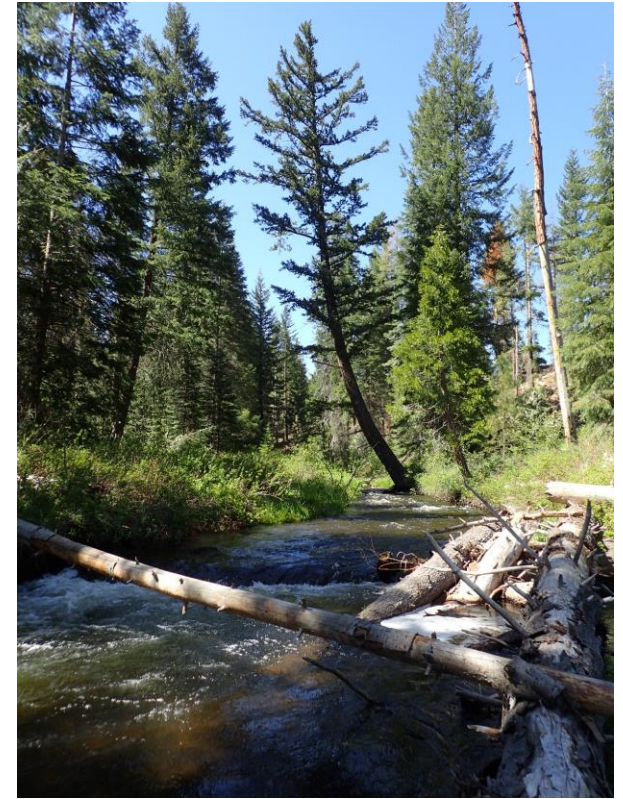
U.S. Department of Commerce | National Oceanic and Atmospheric Administration | National Marine Fisheries Service

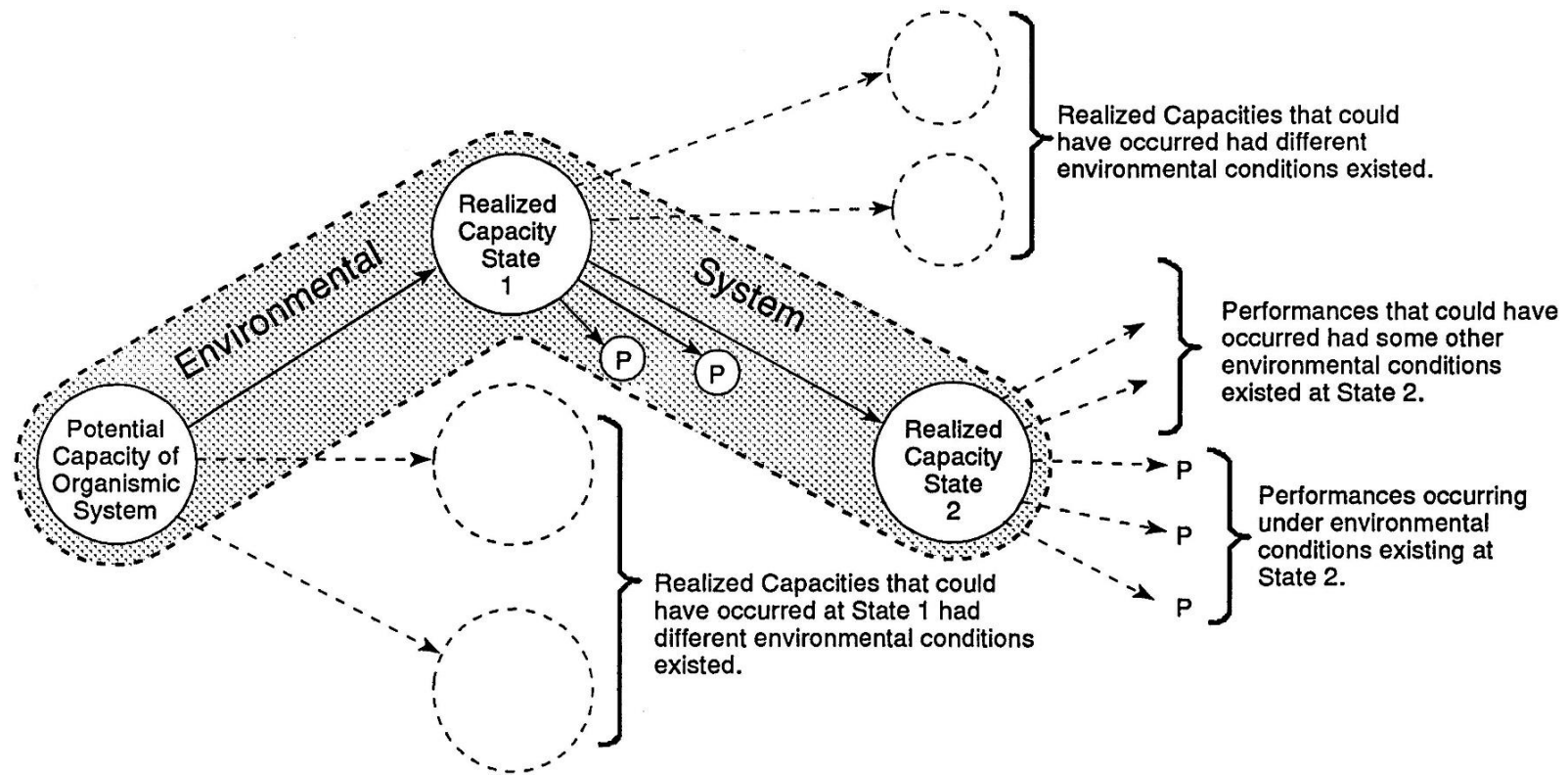


Motivation for presentation:

- Briefly describe an approach to consider how salmonids persist in a dynamic environment
- Constraints on salmon populations
- Tracking movement across the landscape







From Ebersole et al. 1997. *Envir. Mgt.* 21:1-14.

Natural disturbance events that influence salmonid populations throughout their range include:

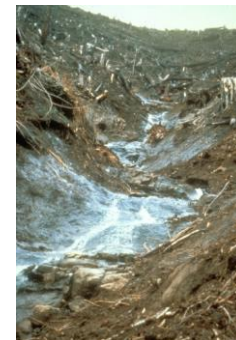


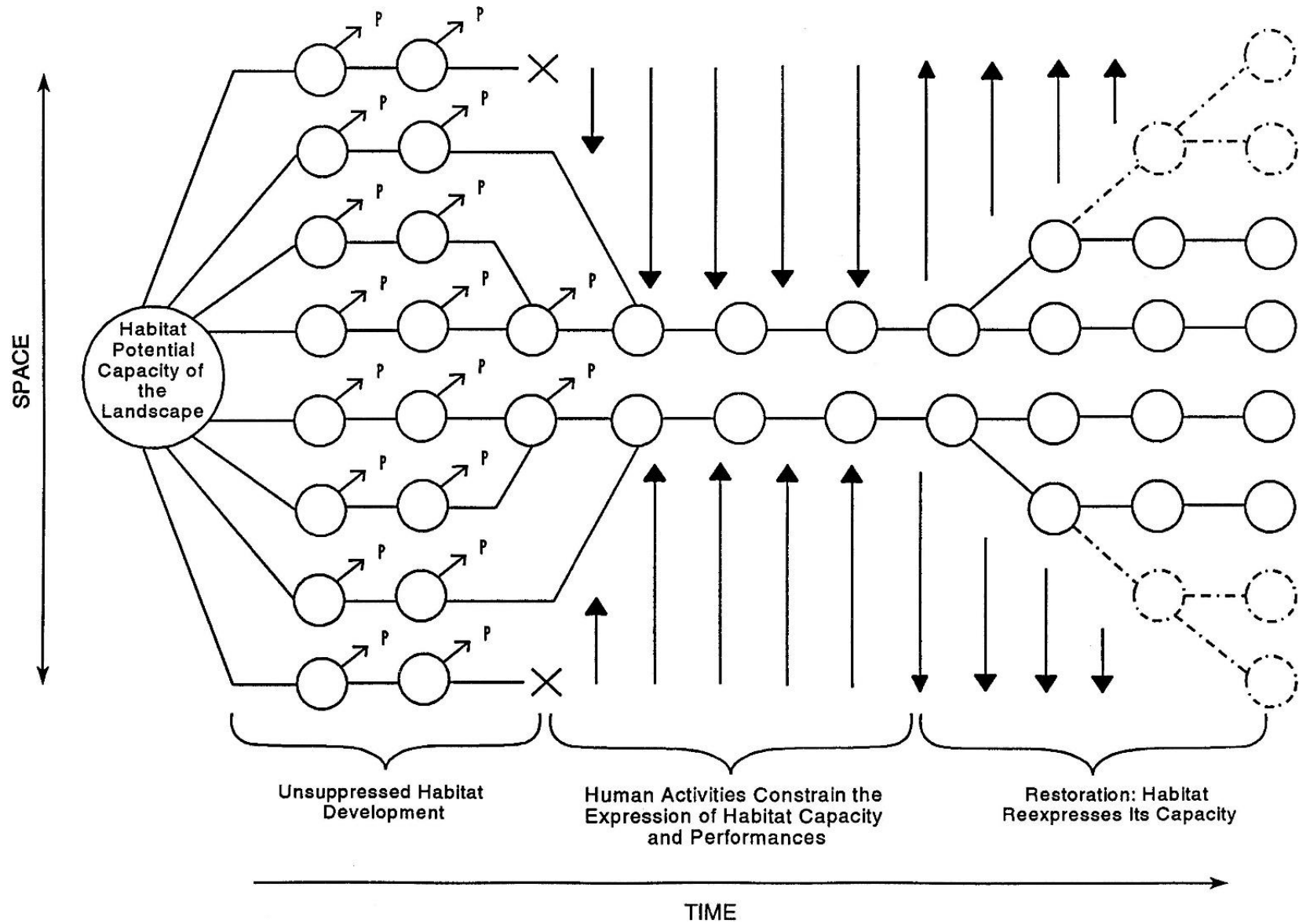
- fires
- landslides
- glaciers
- earthquakes
- volcanic eruptions
- floods



Anthropogenic constraints that can influence the ability of salmonid populations to track changes in environmental conditions include:

- urbanization
- land management activities
- fire (magnitude, frequency, intensity)
- water diversion and withdrawal
- flooding (magnitude, frequency)





To be viable (i.e., persist) – fish need to be able to track changes in environment

- **Individuals (within and between life stages)**
- **Populations**
- **Groups of populations**
- **Species**



Tracking a dynamic and changing environment

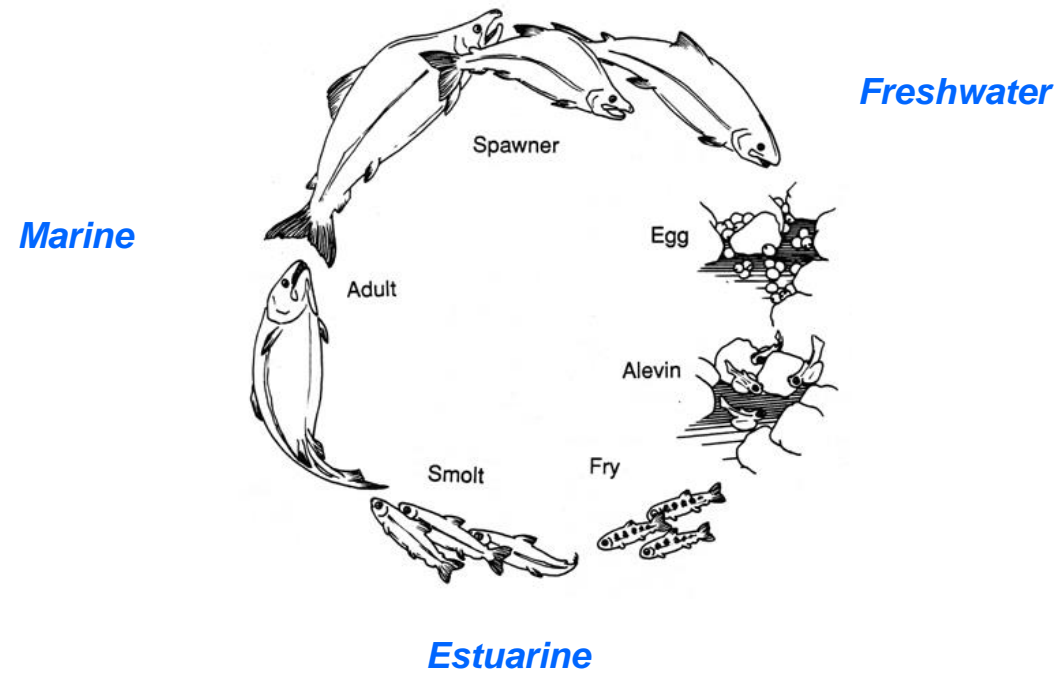
- **animals (and plants, etc.) do it – salmon do it**
- **individuals, populations, groups of populations**
- **movement across the landscape / connectivity**



- **Straying by adults**
- **Relatively high fecundity**
- **Juvenile dispersal**
- **Distribution of run-timing**
- **Distribution of age at ocean entry**
- **Overlapping generations (*Chinook and steelhead, coho to some degree*)**
- **Life-history types / ecotypes**



Salmonid Life Cycle



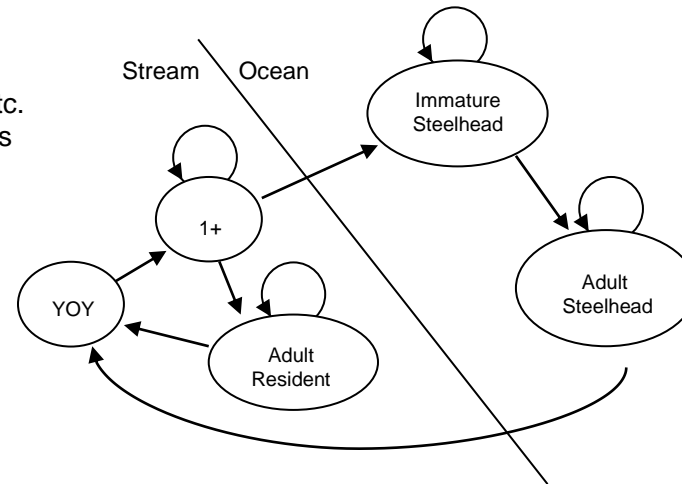
Study design - population dynamics

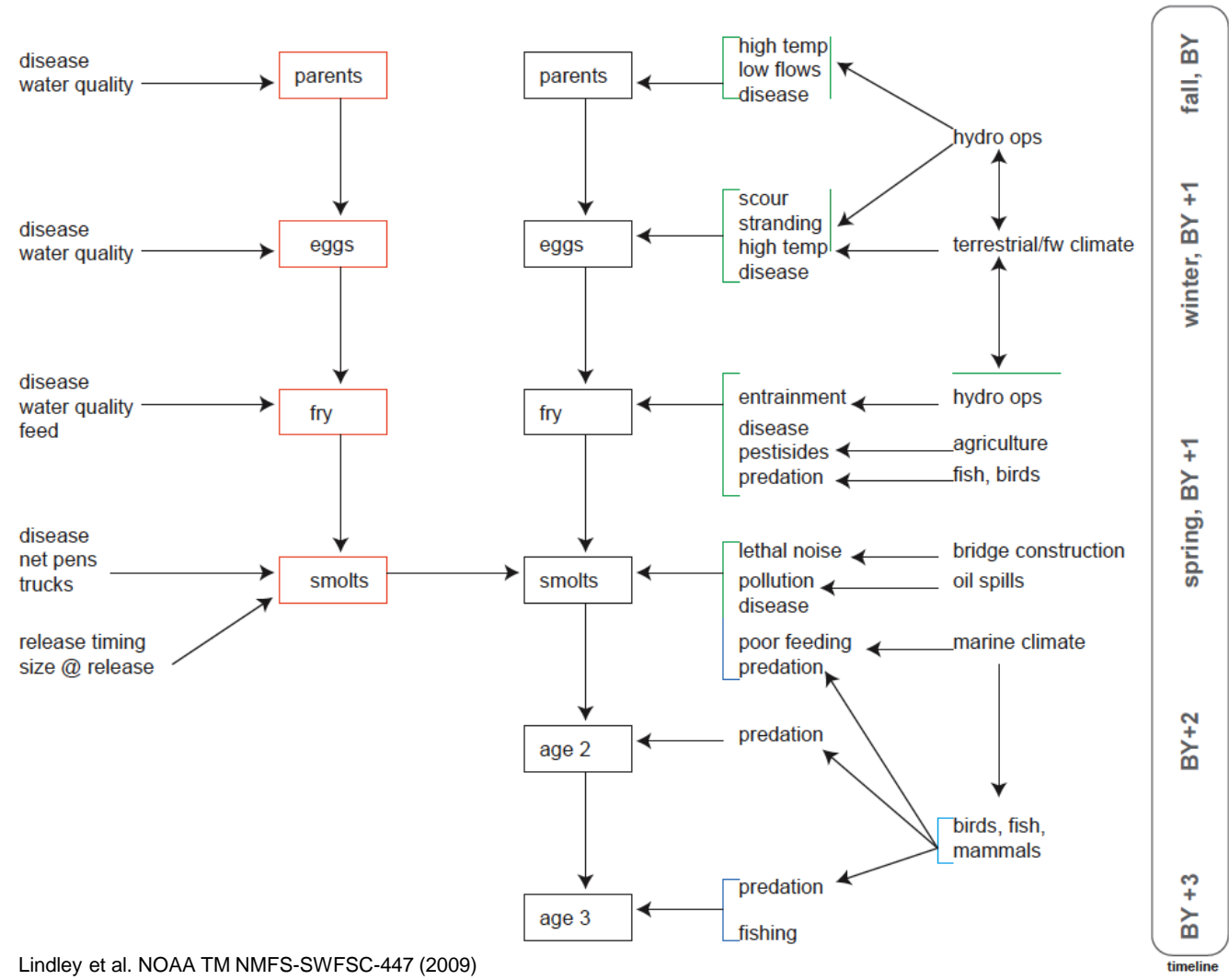
Population modeling:

- Analyze tagging data with capture-recapture models
 - abundance, survival, and transition rates among size/age classes
 - non-anadromous vs. anadromous pathways
 - residence times in stream/ocean

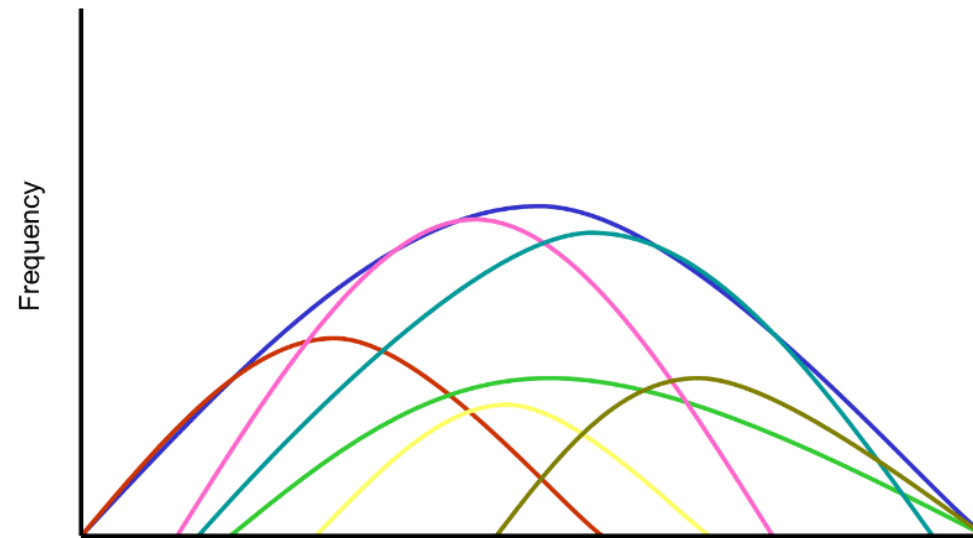
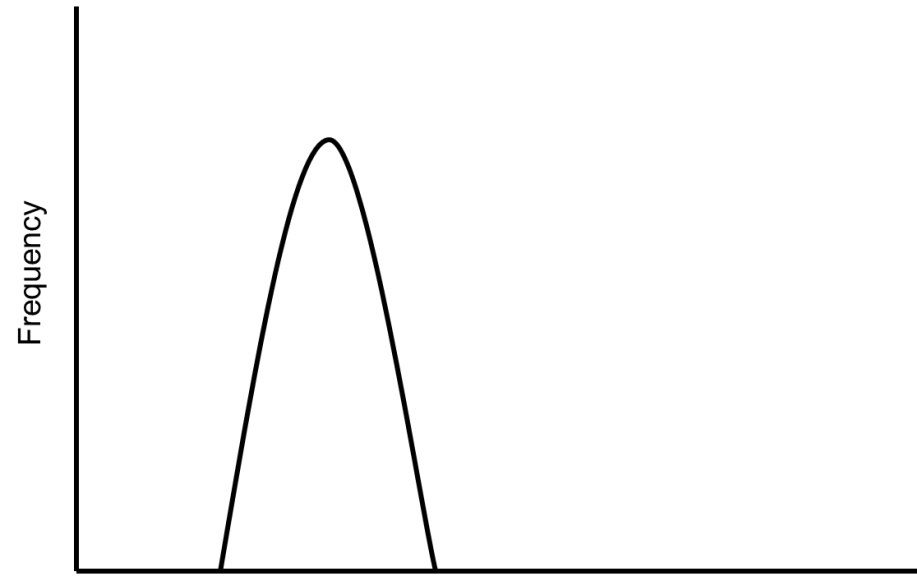


- Life-cycle based population model
 - population growth rate
 - simulate population dynamics
 - longer time frames
 - effects of changes to specific life stages, metapopulations, etc.
 - resilience and critical life stages

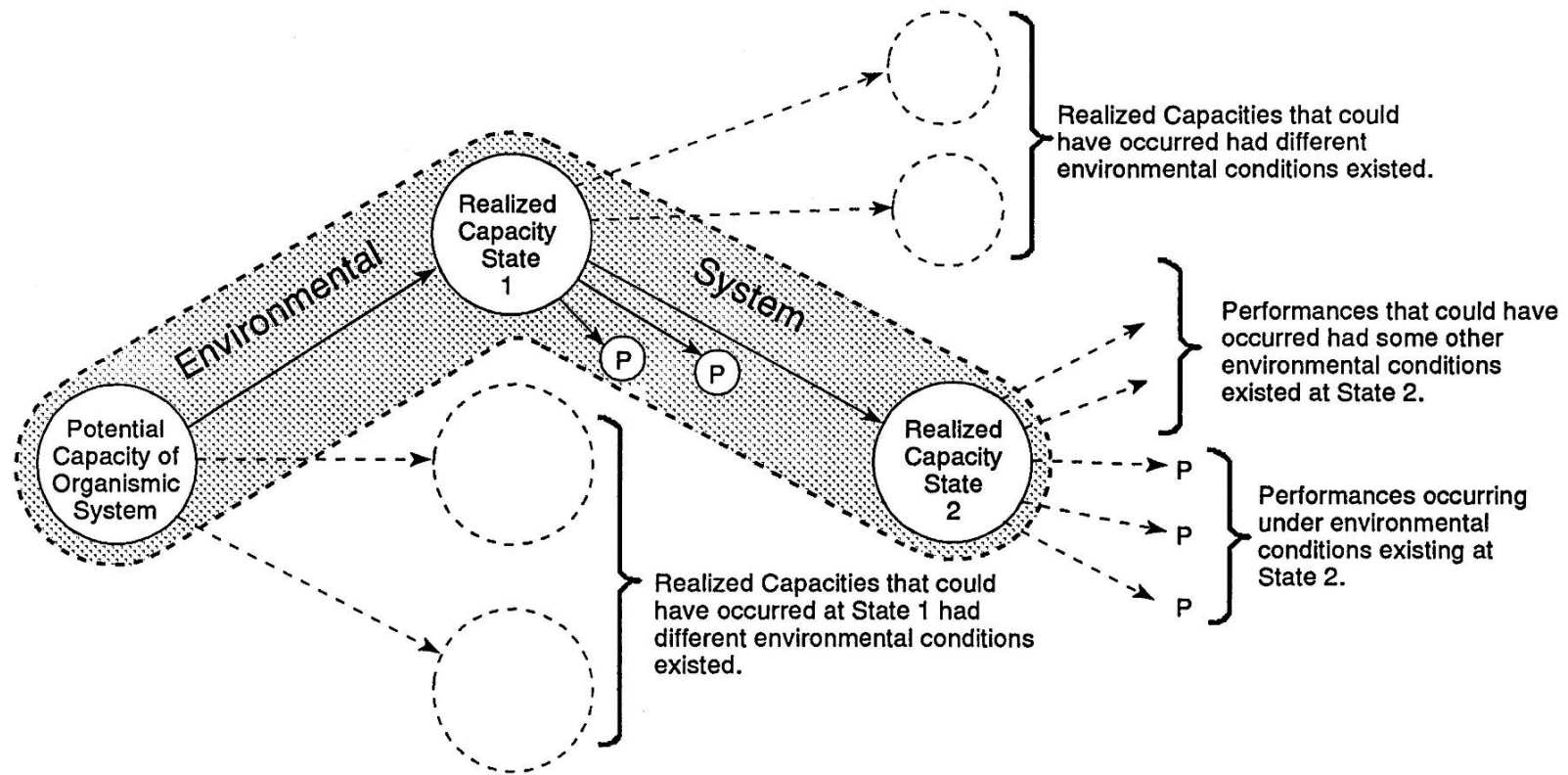




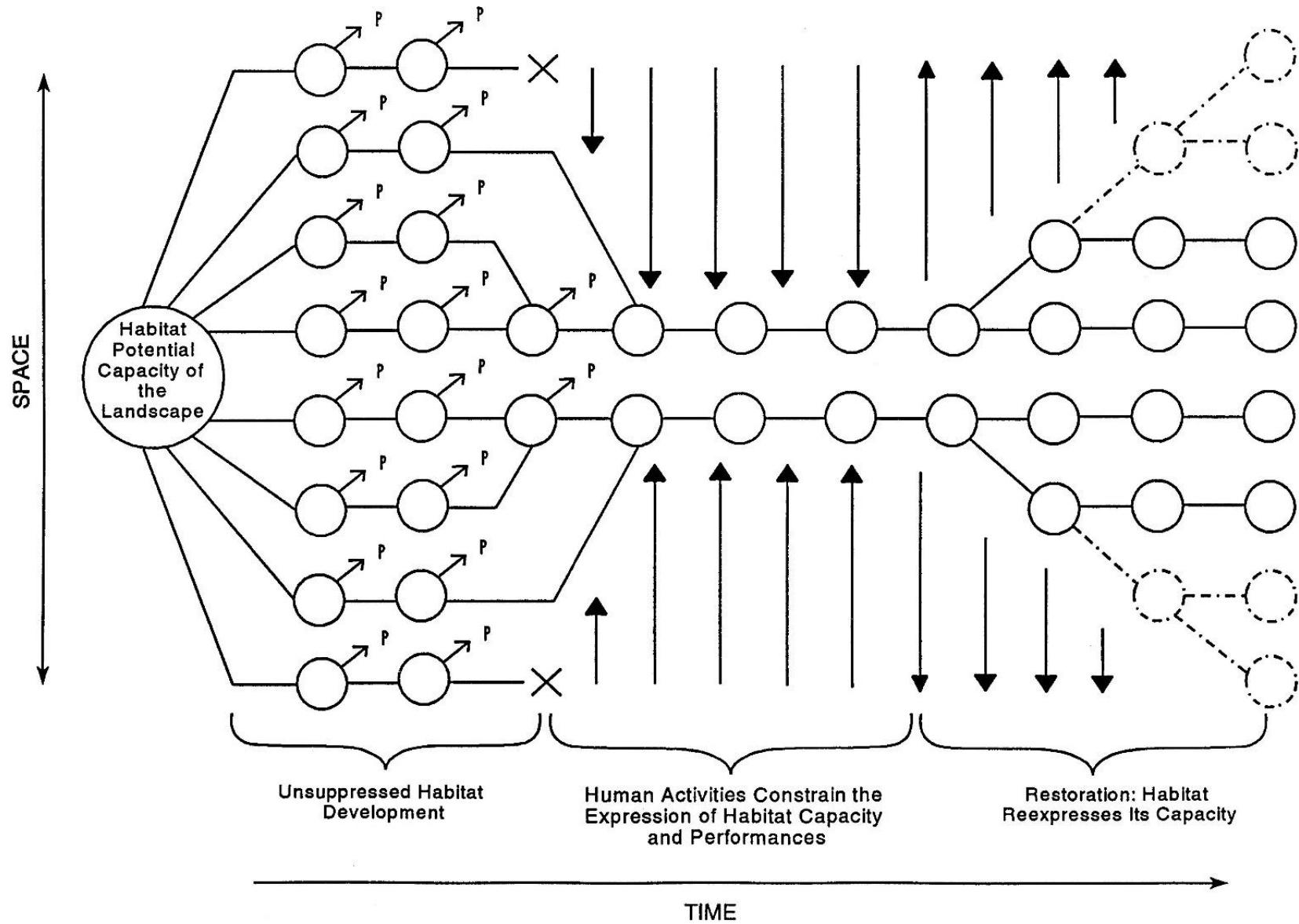
Lindley et al. NOAA TM NMFS-SWFSC-447 (2009)



Life history characteristic, habitat use, etc.



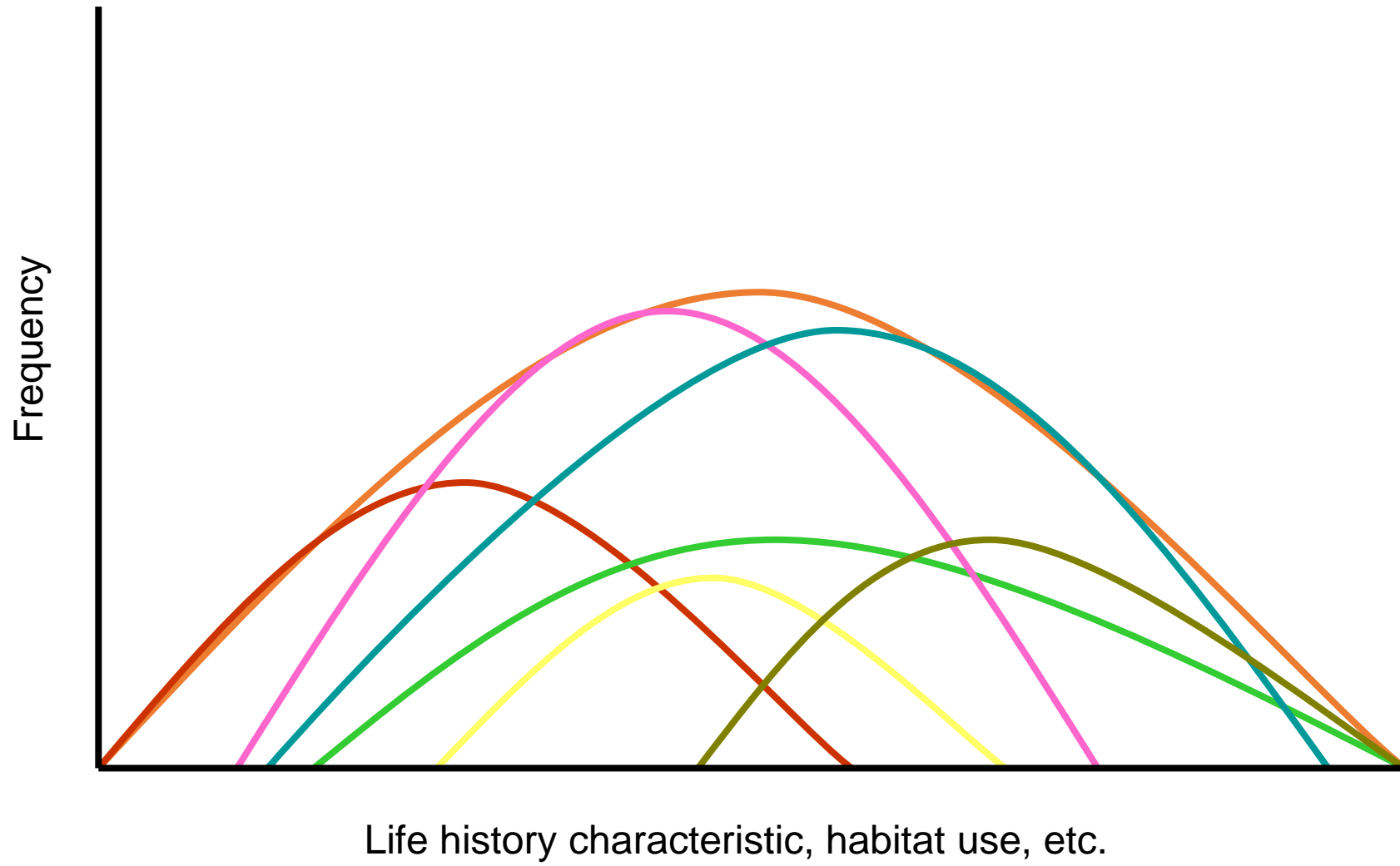
From Ebersole et al. 1997. *Envir. Mgt.* 21:1-14.



To be viable (i.e., persist) – fish need to be able to track changes in environment

- **Individuals (within and between life stages)**
- **Populations**
- **Groups of populations**
- **Species**







Used with permission: Ray Troll

Klamath River Basin PIT Tagging Database

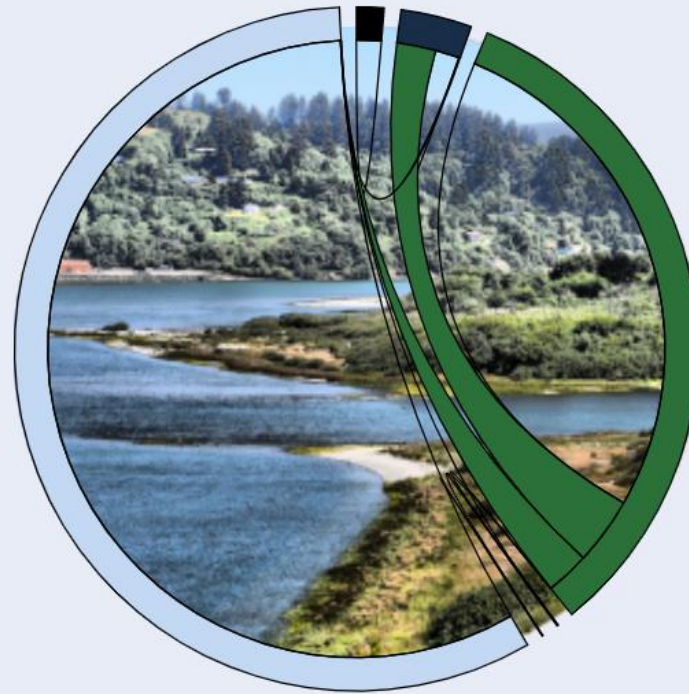
Database Development

Web Interface Tool

Collaboration

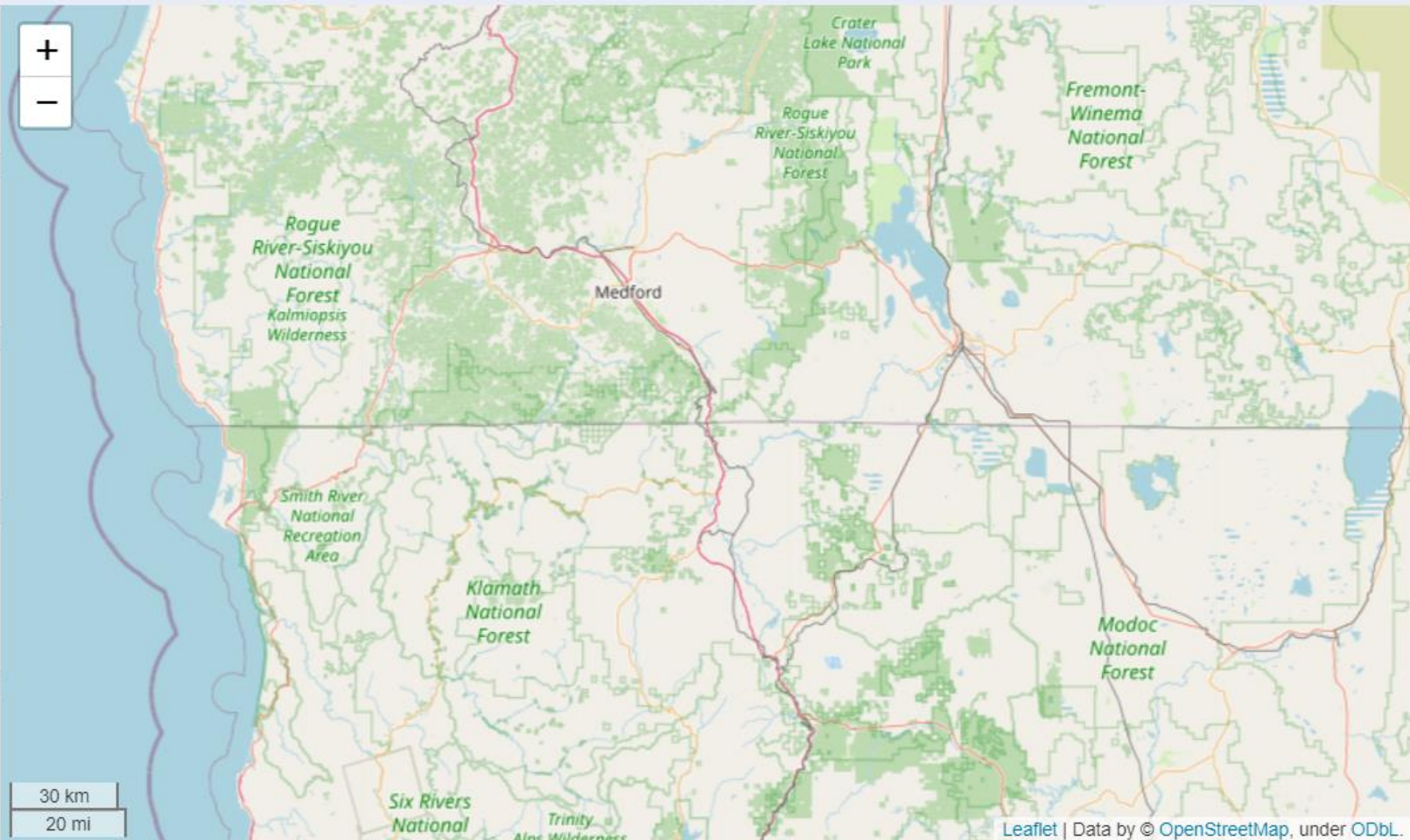
Data Pipeline

Future of the Project

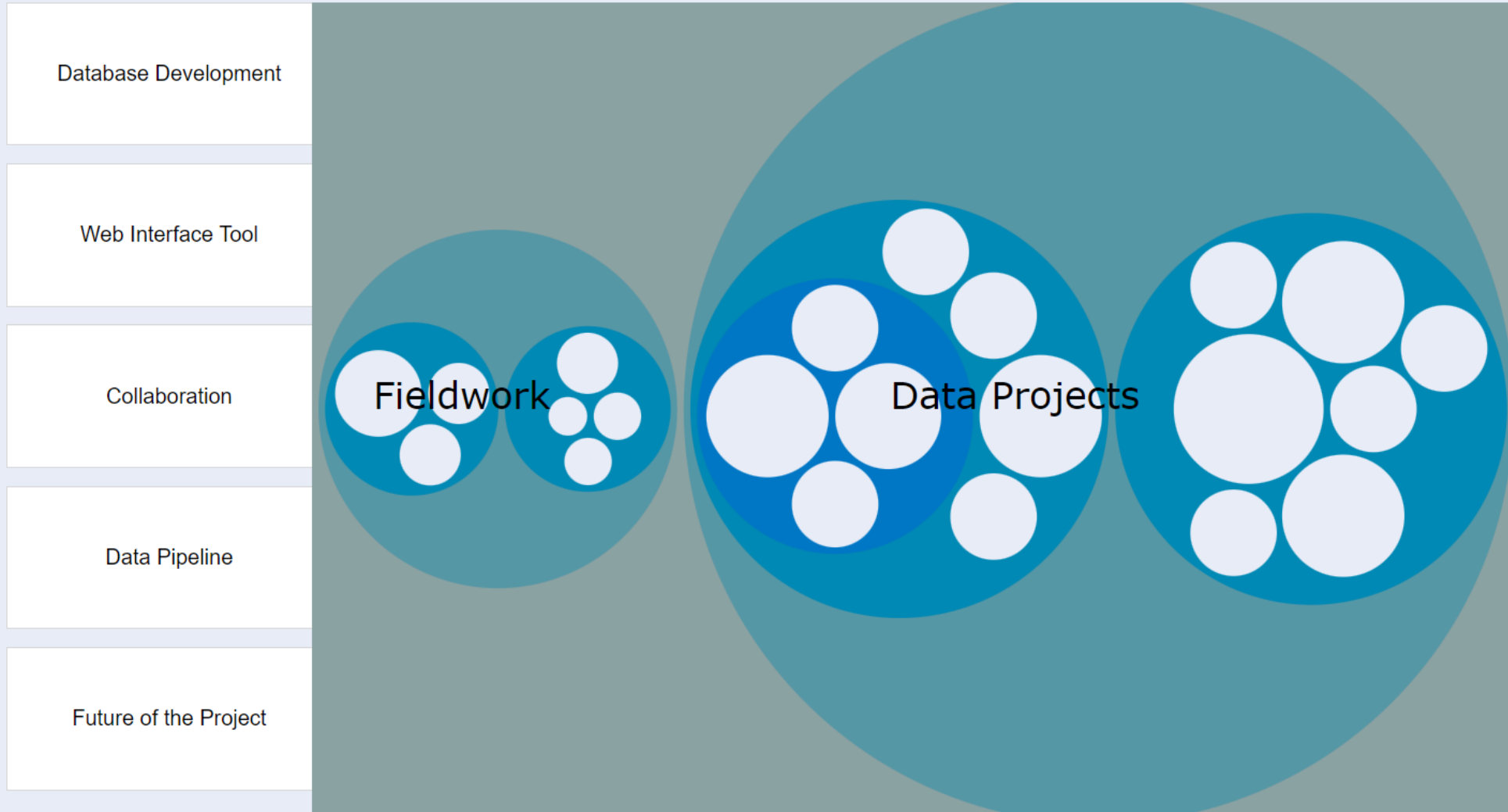


A database application to facilitate the sharing and understanding of PIT tag data in the Klamath River Basin of Southern Oregon and Northern California.

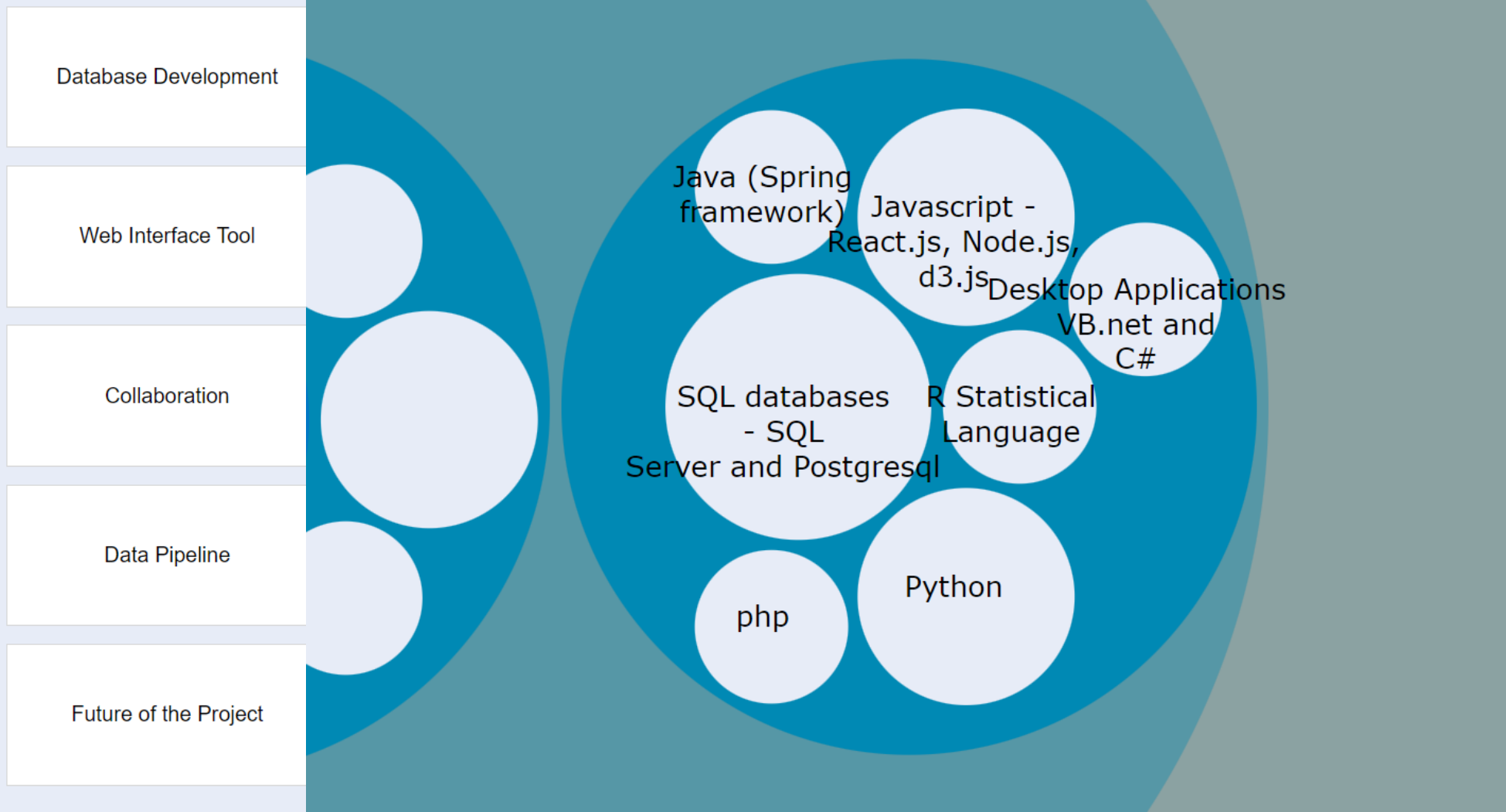
Klamath River Basin PIT Tagging Database

Database Development	 <p>30 km 20 mi</p> <p>Leaflet Data by © OpenStreetMap, under ODbL.</p>
Web Interface Tool	
Collaboration	
Data Pipeline	
Future of the Project	

Klamath River Basin PIT Tagging Database



Klamath River Basin PIT Tagging Database



Klamath River Basin PIT Tagging Database

Database Development

Web Interface Tool

Collaboration

Data Pipeline

Future of the Project

- To curate and disseminate ecological data with the hope that our efforts will aid in the recovery of endangered species.
- To produce novel solutions to data related issues that ensure the quality and accessibility of our data without making things more difficult for the people collecting it.

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Klamath River Basin PIT Tagging Database

Database Development

Web Interface Tool

Collaboration

Data Pipeline

Future of the Project



Klamath River Basin PIT Tagging Database

Database Development

Web Interface Tool

Collaboration

Data Pipeline

Future of the Project



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Klamath River Basin PIT Tagging Database

Database Development

Web Interface Tool

Collaboration

Data Pipeline

Future of the Project

Planning and development of the Klamath River Basin(KRB) PIT tagging database began in 2009.

- Not a software product
- Dataset is the most important asset
- Communication is imperative for success

Klamath River Basin PIT Tagging Database

Database Development

Web Interface Tool

Collaboration

Data Pipeline

Future of the Project

★ Database

★ Data Pipeline

✂ Web Interface

👤+ Database Working Group

👤+ Data Sharing Agreement

👤+ Meetings

Klamath River Basin PIT Tagging Database

Database Development

Web Interface Tool

Collaboration

Data Pipeline

Future of the Project

- Agency Home Page
- Administrator Home Page

1

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Klamath River Basin PIT Tagging Database

Database Development



Web Interface Tool

Collaboration

Data Pipeline

Future of the Project

[Home](#)

[Summary Data](#)

[My Fish Summaries](#)

[Remote Time Series](#)

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[Explore Maps](#)

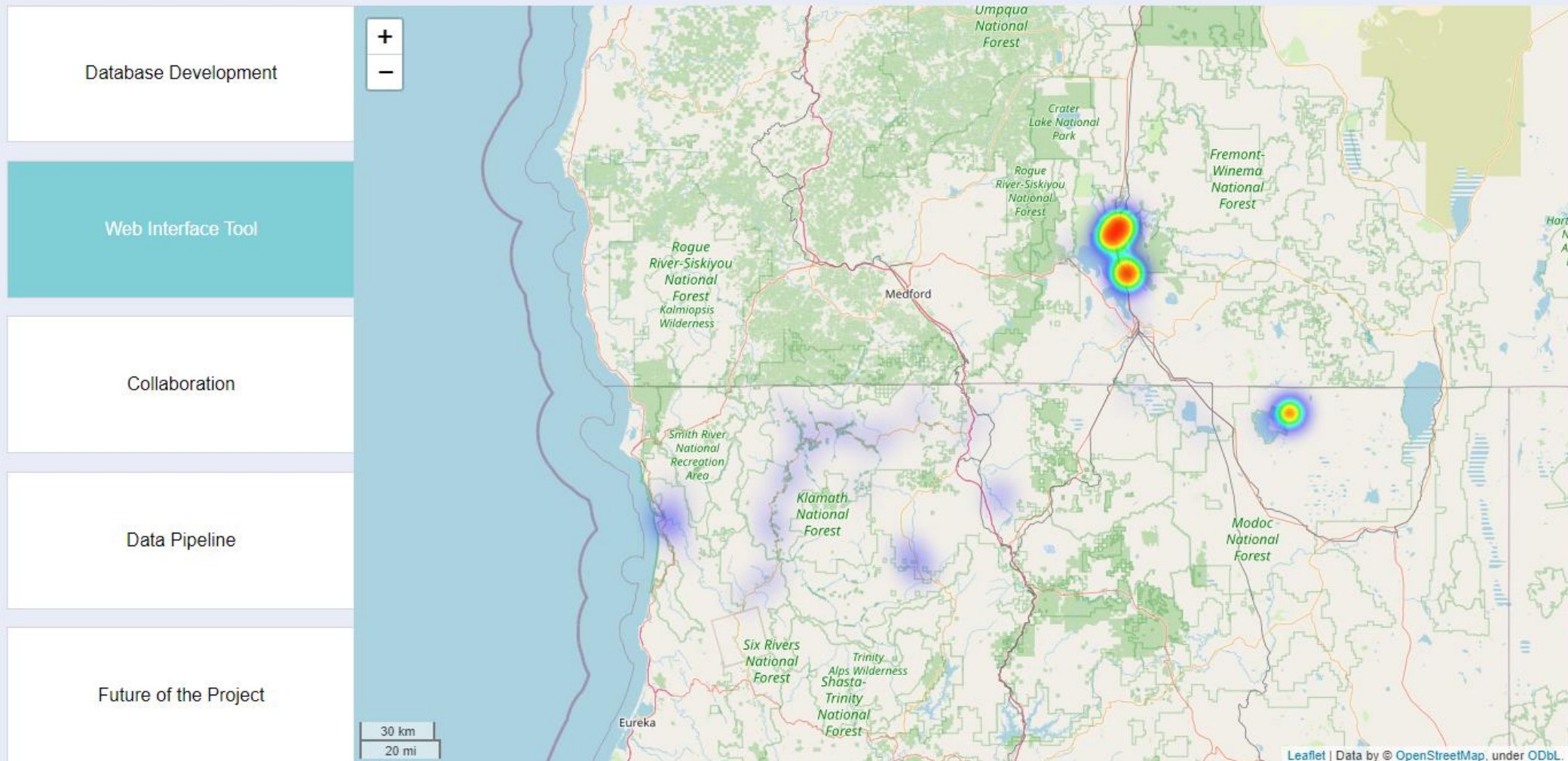
[Submit Data](#)

[Tag Lookup](#)

[Build Query](#)

[Logout](#)

Klamath River Basin PIT Tagging Database



Klamath River Basin PIT Tagging Database

Database Development

Web Interface Tool

Collaboration

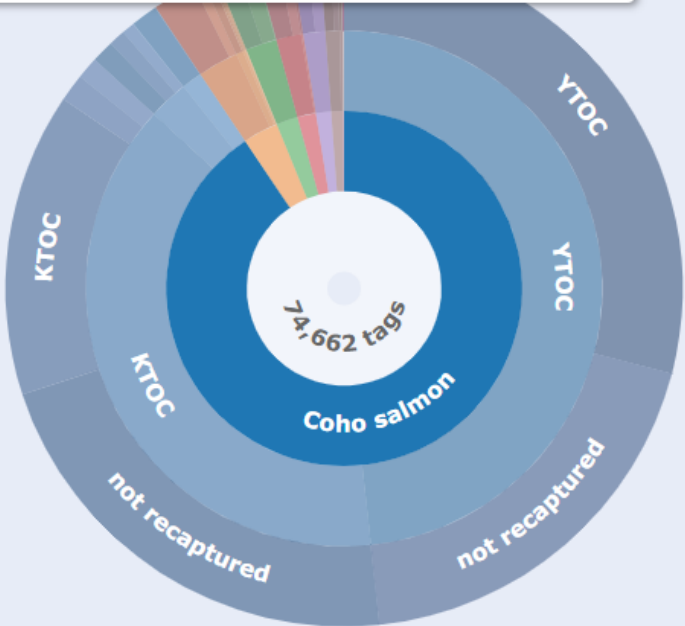
Data Pipeline

Future of the Project

species: 67,646 tags

Coho salmon 90.6%

67,646 Coho salmon tags released
67,646 tags released by Coho salmon
(90.6% of tags)



Klamath River Basin PIT Tagging Database

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Collaboration

Data Pipeline

Future of the Project

Home Summary Data My Fish Summaries Remote Time Series Browse My Data Explore Maps Submit Data Tag Lookup Logout

Process Remote Data

Edit Site Data

Submit New Site Data

Below are sites already submitted to KRB that need attention. These sites will not display correctly on the maps. Please add or correct coordinates and re-submit the corrected data.

	agency	subbasin	waterbody	localname	krbname	mainst	longitude	latitude	site_comments	id	station_ty
filter data...											
×	YTOC	Lower Klamath	Klamath River	KlamathLowerH	LKlamathLowerH		-124.049968	41.53761	Below Hgh 101 bridge; Mar...	98	capture
×	YTOC	Lower Klamath	Klamath River	ResighiniPond1	LResighiniPond1H		-124.014699	41.517239	Pond is located upstream of ...	147	capture
×	YTOC	Lower Klamath	W.F. McGarvey Creek	WFMcGarveyCrkA	LWFMcGarveyCrkA	10.27	41.485618591308594	41.48596954345703	Side channel to WFMcGarve...	69	capture

Export

Trim Table to Edited Rows

1 2 3 4 5

Klamath River Basin PIT Tagging Database

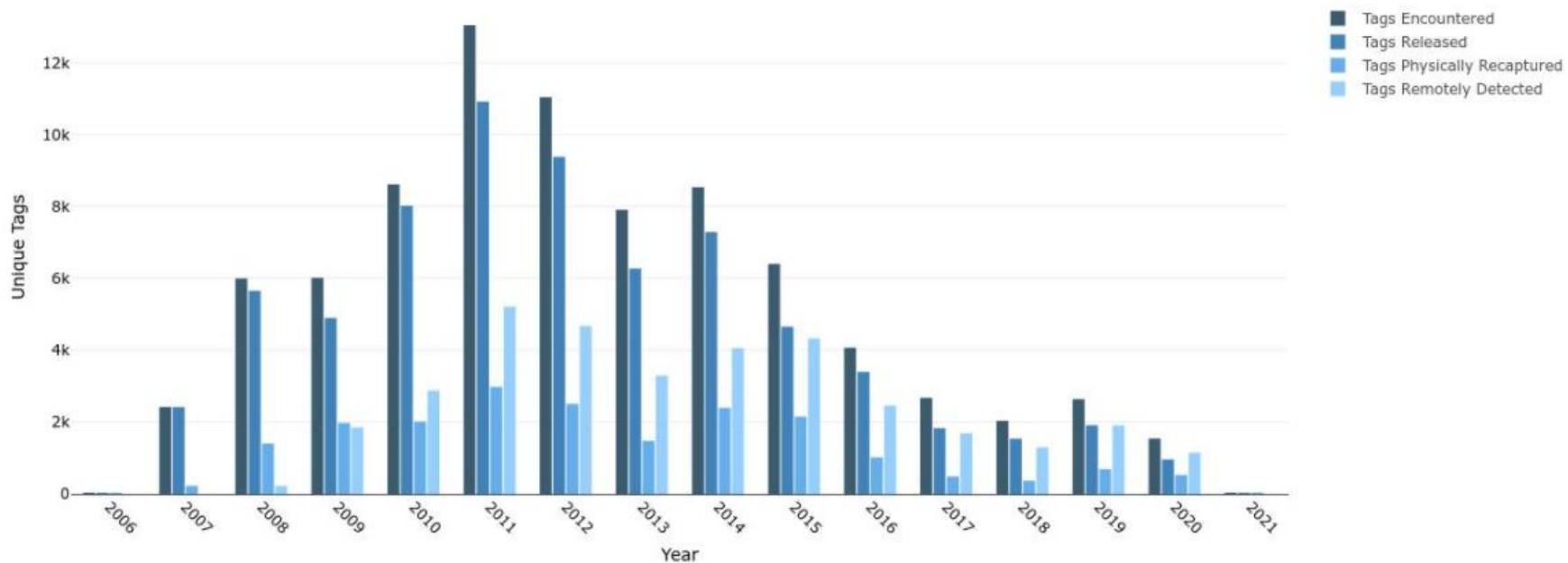
Database Development

Web Interface Tool

Collaboration

Data Pipeline

Future of the Project



Klamath River Basin PIT Tagging Database

Database Development

Web Interface Tool

Collaboration

Data Pipeline

Future of the Project

- Data Sharing Agreement
- Klamath Basin Fisheries Collaborative Spring Meeting
- Project Roadmap
- Electronic Data Entry
- Capture Remote Site and Outage Information
- Array Site Selection

Klamath River Basin PIT Tagging Database

Database Development

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Data Pipeline

Future of the Project



★ Database

Access tools

Backlog

Metadata

Tagging Data

Remote Files

Administrator tools

User Interface

Klamath River Basin PIT Tagging Database

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Data Pipeline

Future of the Project

- Remote Files
- Tagging Data
- Site Information
- Remote Outage Information

1

2

3

4

5

Klamath River Basin PIT Tagging Database

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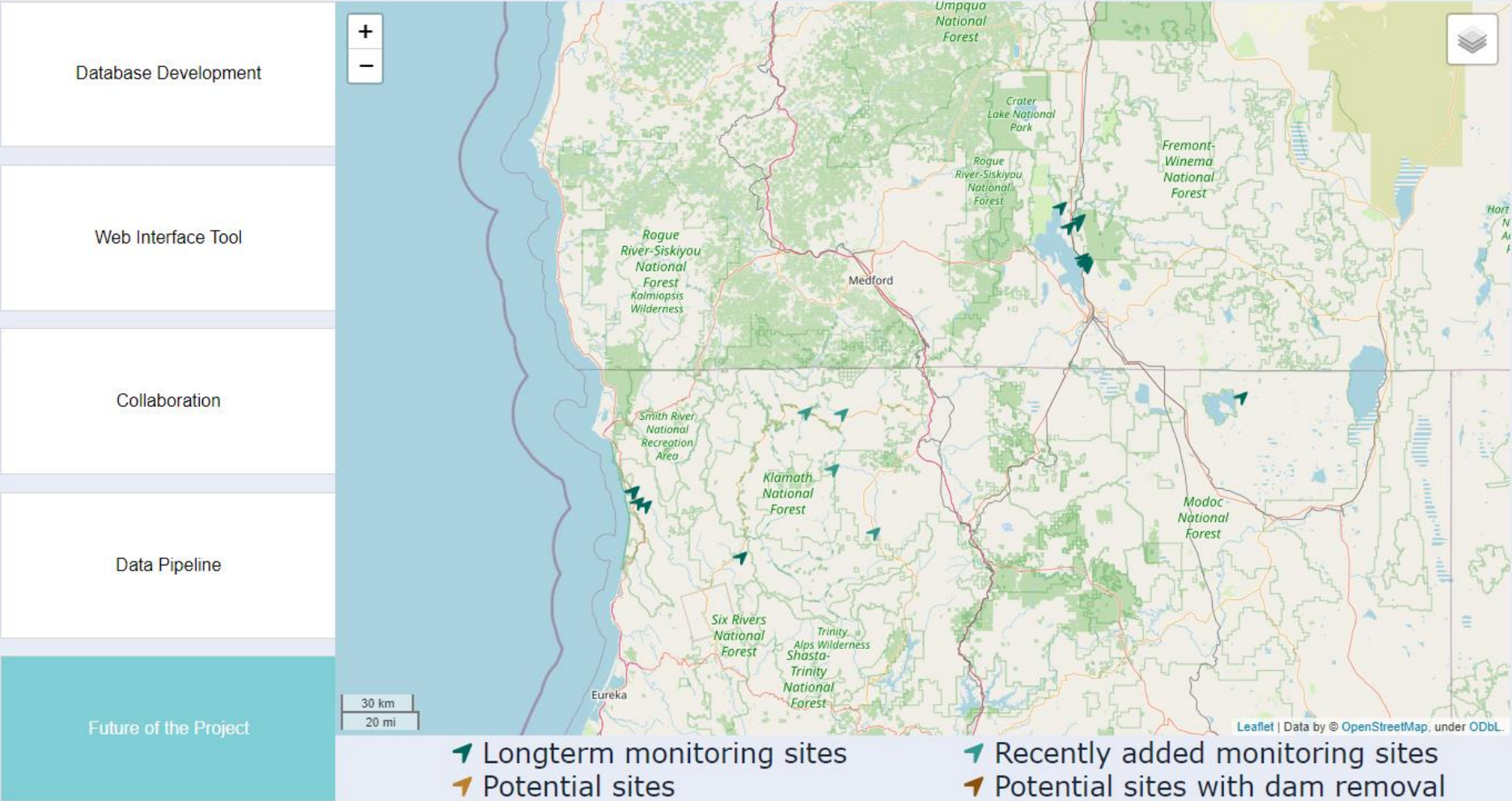
Data Pipeline

Future of the Project

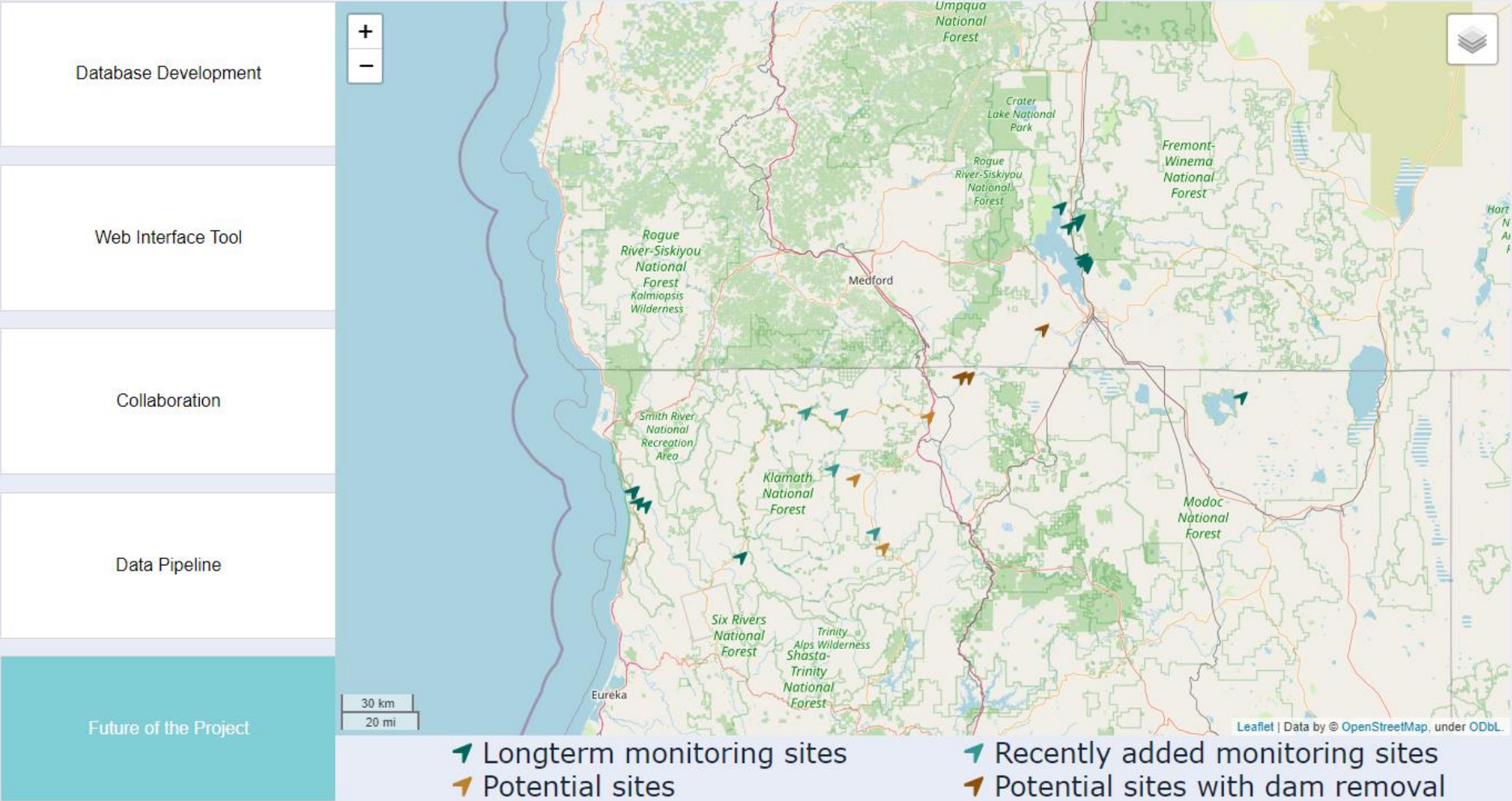
- Administrator Interface
- File Transfer Package
- Electronic Data Collection Application (tagging data)

1 2 3 4 5

Klamath River Basin PIT Tagging Database



Klamath River Basin PIT Tagging Database



Using PIT tags to monitor Coho Salmon restoration effectiveness in the Scott River



Erich Yokel

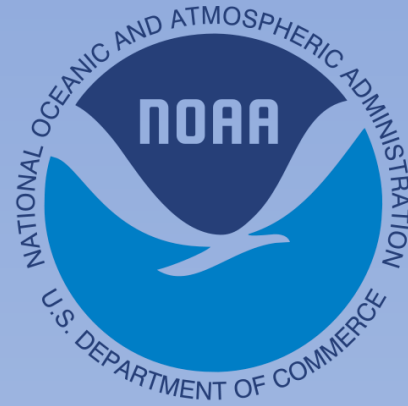
Darrell Mitchell

Charnna Gilmore & Betsy Stapleton

Scott River Watershed Council



The SRWC Gratefully Acknowledges our Funders and Collaborators



Bella Vista
FOUNDATION



Scott Valley Landowners

Sugar Creek BDA Complex

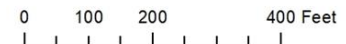
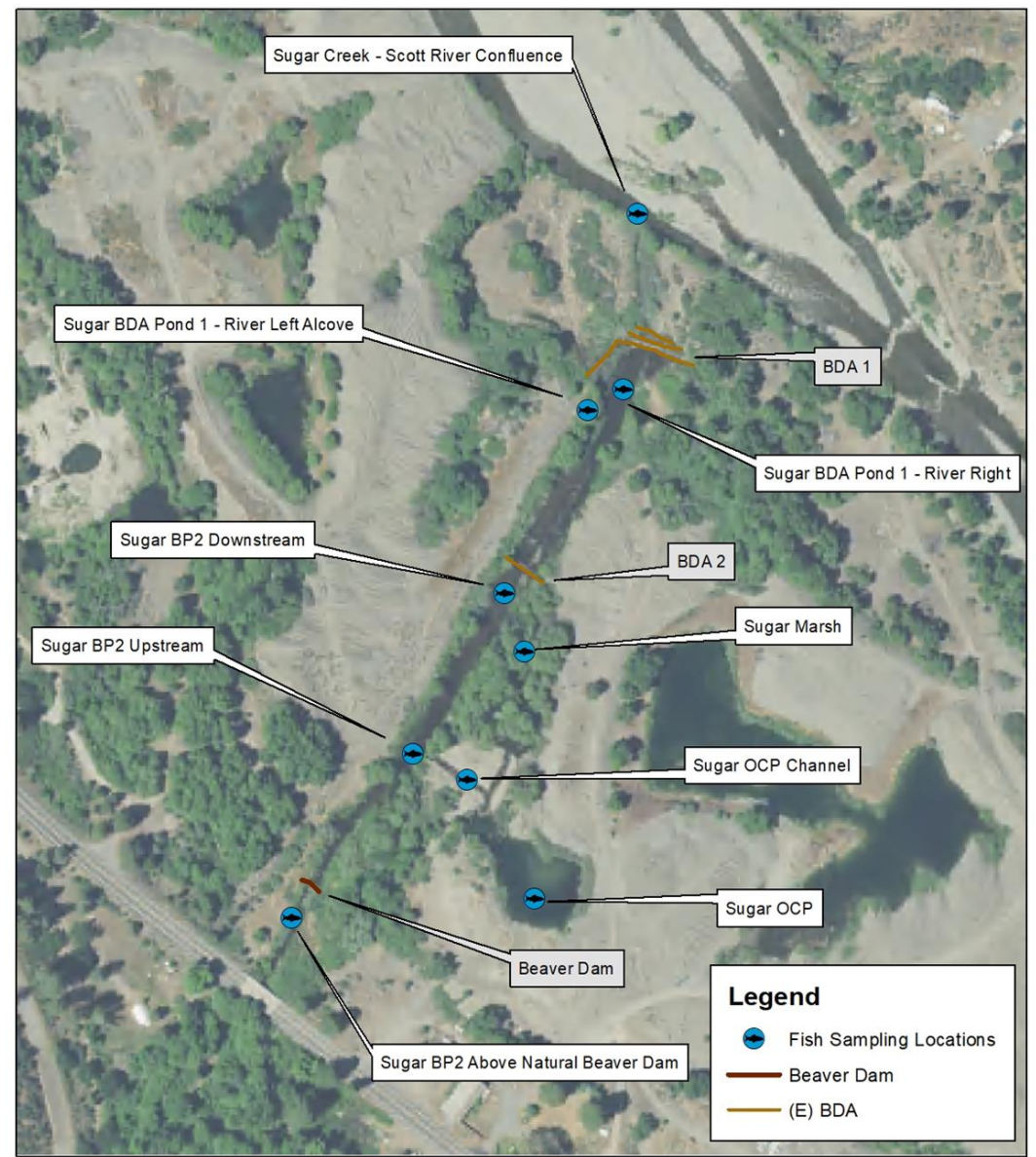


Sugar BDA 1.0 & 1.1
HSU Fish Passage
Experiment - 2019

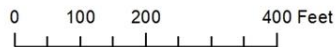
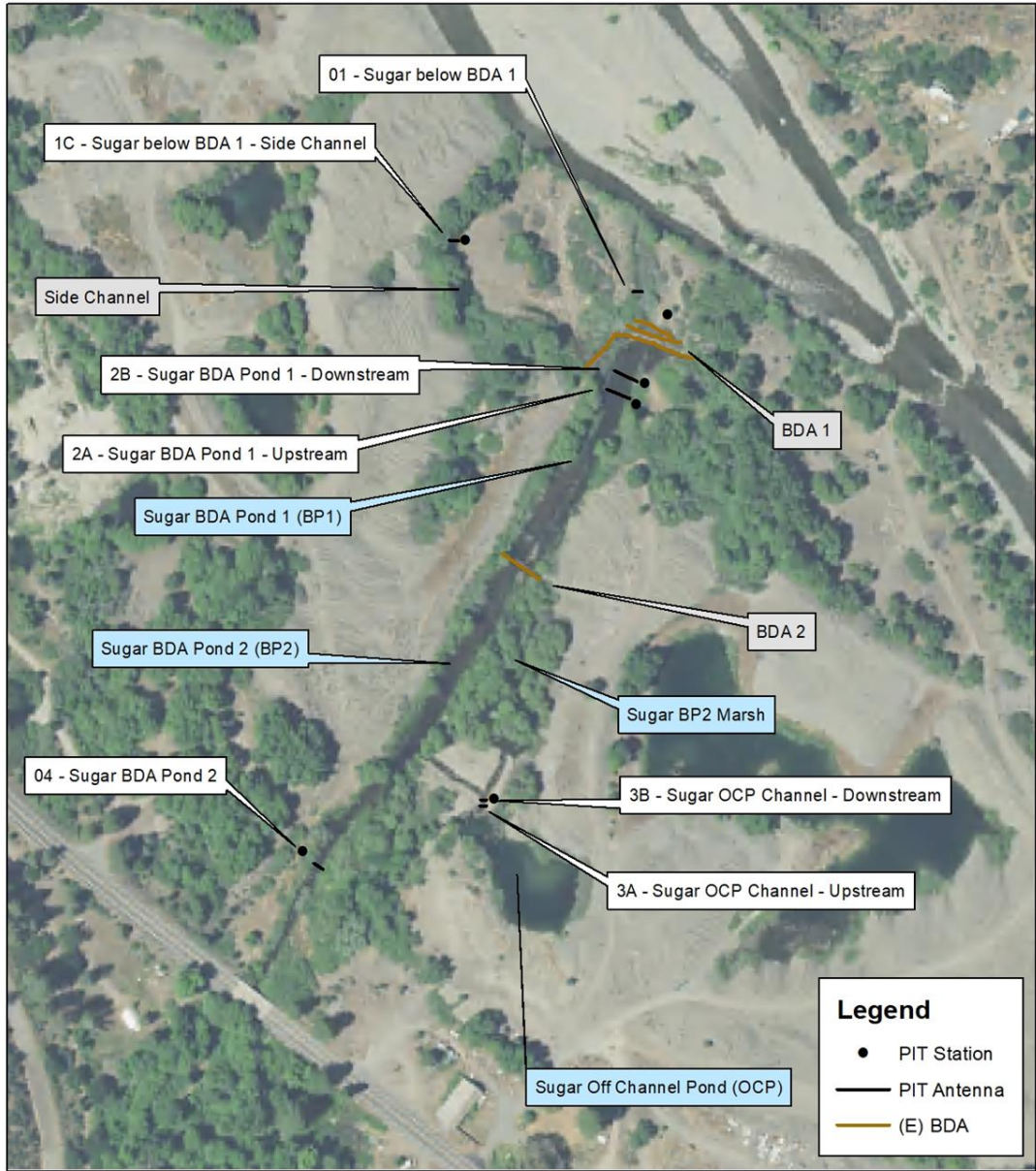


Beaver Dam

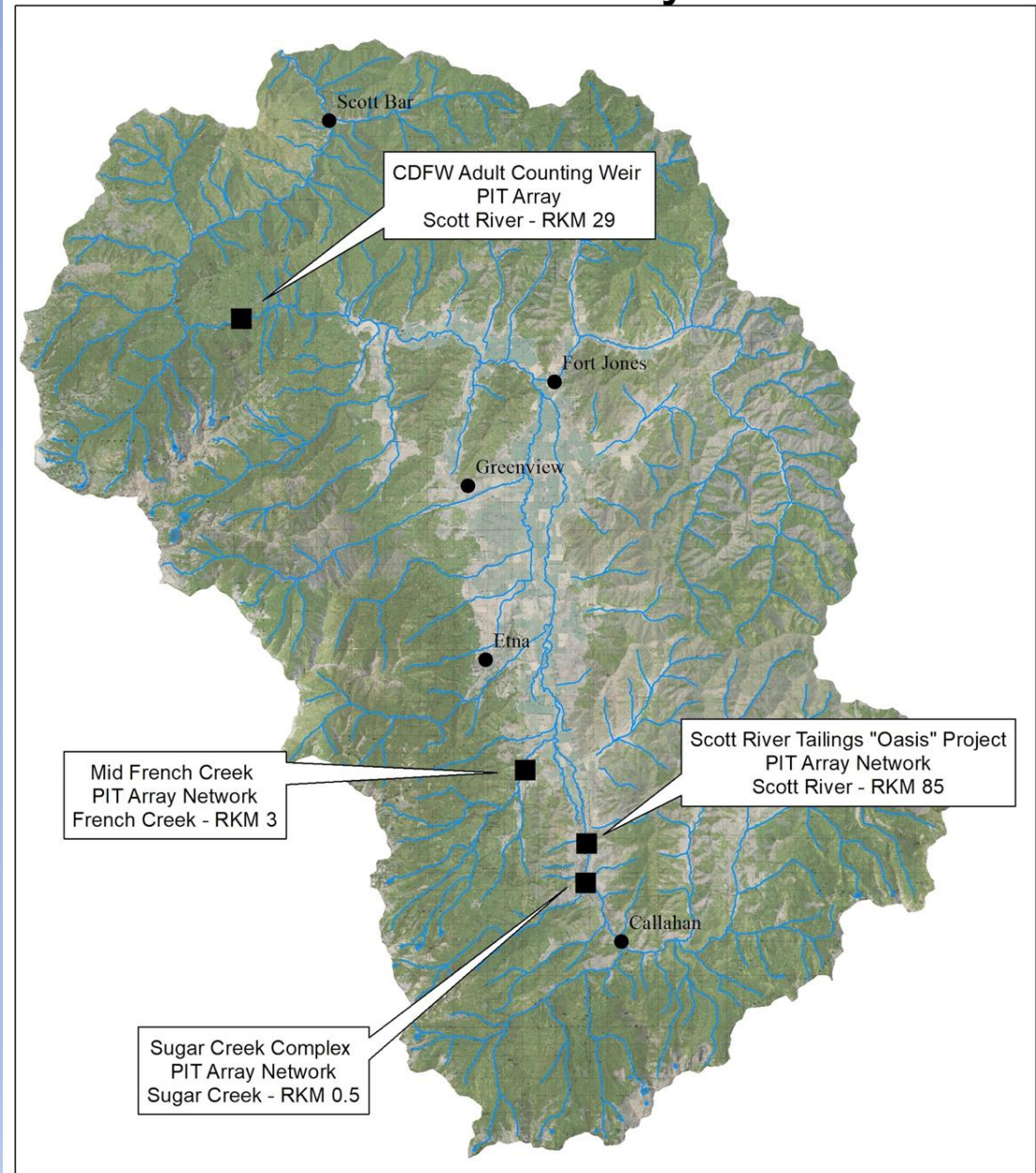
Sugar Creek - Fish Sampling Locations



Sugar Creek - PIT Array Network



Scott River PIT Array Stations



CDFW Adult Escapement Video Weir - Scott River RKM 29.0



CDFW installed PIT array on Scott River adult video weir in 2019

Coalition of the Willing (COW) supports funding for PIT array on adult escapement weirs on Scott River and Shasta River

Installed arrays on Scott and Shasta weirs on 2020-21 & 2021-22

Detected 2 PIT tags on Shasta River weir – 1) Karuk tag & 2)
Currently Unknown

During the adult escapement in 2021-2022, 24 PIT tagged Coho Salmon were detected in the Scott River

20 of the adults (83%) were tagged by the SRWC in the Scott River
4 were tagged by the Karuk Tribe in Mid Klamath restoration projects

Marked 2004 Coho Salmon in Sugar Creek with PIT tags
in 2019 - 2020

Operated 7 PIT arrays in Sugar
100,000s of detections in one cohort

Track juvenile movement of PIT tagged fish on arrays
Detect individual fish on arrays entering and exiting Sugar OCP Outlet



Begin Date	End Date	Movement	Days
1/10/2020 12:00	1/13/2020 17:57	BDA Pond 2 to Downstream Beaver Dam	3
1/13/2020 17:57	1/14/2020 18:29	DS Beaver Dam to Sugar OCP Outlet	1
1/14/2020 18:29	3/14/2020 1:00	Between Sugar OCP and BDA Pond 2	59
3/14/2020 1:00	4/15/2020 19:43	BDA Pond 2	33
4/15/2020 19:43	4/20/2020 19:34	Sugar OCP Outlet to DS Beaver Dam	5
4/21/20 19:58	4/22/2020 20:16	DS Beaver Dam to Downstream BDA 1	1

PIT Tagged Coho Salmon - 989001032565987
Utilization of Sugar Off Channel Pond

Date Enter OCP	Date Exit OCP	Duration in OCP	
		Days	Hours
1/14/2020 22:14	1/15/2020 18:20	0.8	20
1/16/2020 3:00	1/16/2020 17:59	0.6	15
1/17/2020 2:16	1/17/2020 17:30	0.6	15
1/18/2020 2:30	1/18/2020 17:35	0.6	15
1/19/2020 2:50	1/19/2020 17:39	0.6	15
1/23/2020 6:36	1/23/2020 18:35	0.5	12
1/25/2020 4:22	1/25/2020 16:44	0.5	12
1/28/2020 7:08	1/28/2020 17:38	0.4	10
2/6/2020 6:35	2/11/2020 18:14	5.5	132
2/12/2020 18:31	2/13/2020 17:59	1.0	23
3/5/2020 4:13	3/5/2020 18:16	0.6	14
3/5/2020 18:45	3/6/2020 18:36	1.0	24
3/10/2020 3:13	3/10/2020 18:56	0.7	16
3/10/2020 21:20	3/11/2020 5:47	0.4	8
3/11/2020 19:22	3/12/2020 3:56	0.4	9
3/12/2020 4:21	3/12/2020 18:55	0.6	15
3/12/2020 19:22	3/14/2020 0:59	1.2	30

PIT Tagged adult returns – Scott and Shasta CDFW Weirs

PIT_No	Tagged Date	First Array Detection	Sample	Tag Location
989001027743125	7/31/2019	Scott Weir	Sugar - BDA1 - Above	Sugar
989001027743076	7/31/2019	Sugar 1	Sugar - BDA1 - Above	Sugar
989001027743359	7/31/2019	Sugar 1	Sugar - BDA1 - Above	Sugar
989001007222252	8/15/2019	Scott Weir	China Creek - Karuk	Mid Klamath
989001030719028	8/22/2019	French 10	French Control Pool 1 - DS Log Jam	French
989001030719030	8/22/2019	Scott Weir	French Creek - ELJs - DS ELJ 3	French
989001030719206	8/22/2019	Scott Weir	French Control Pool 3	French
989001030719244	8/22/2019	Scott Weir	French Control Pool 2	French
989001030719358	8/26/2019	Oasis Mainstem	Sugar Creek BP2	Sugar
989001030719595	8/27/2019	Sugar 1	Sugar Creek Control - Above Beaver Dam	Sugar
989001028156906	9/24/2019	Sugar 1	French Creek - ELJs - US ELJ1	French
989001028156762	9/27/2019	Sugar 1	Sugar - BP2 above Nat. Beaver Dam	Sugar
989001028156787	9/27/2019	Scott Weir	Sugar - BP2 above Nat. Beaver Dam	Sugar
989001031380909	10/29/2019	Scott Weir	French Control Pool 4	French
989001031380674	10/31/2019	Sugar 1	Sugar BDA1 RR	Sugar
989001031380948	10/31/2019	Scott Weir	Sugar BDA1 RR	Sugar
989001031380824	10/31/2019	Scott Weir	Sugar BDA1 RR	Sugar
989001031380578	11/5/2019	Sugar 1	Sugar - BP2 - Pool at OCP Outlet	Sugar
989001032566025	1/7/2020	French 10	Sugar - BP2 - Pool at OCP Outlet	Sugar
989001032566027	1/8/2020	Scott Weir	Sugar Creek - BP1 RR	Sugar
989001032565987	1/8/2020	Scott Weir	Sugar Marsh DS	Sugar
989001028156354	2/5/2020	Scott Weir	Sandy Bar Pond - Karuk	Mid Klamath
989001028156444	2/25/2020	Scott Weir - 94	May Pond - Karuk	Mid Klamath
989001028155263		Scott Weir - 94		Mid Klamath??
989001001356795		Shasta Weir		Unknown
989001028156713	10/29/2019	Shasta Weir	Little Horse Creek - Karuk	Mid Klamath

Juvenile detections of adult returns

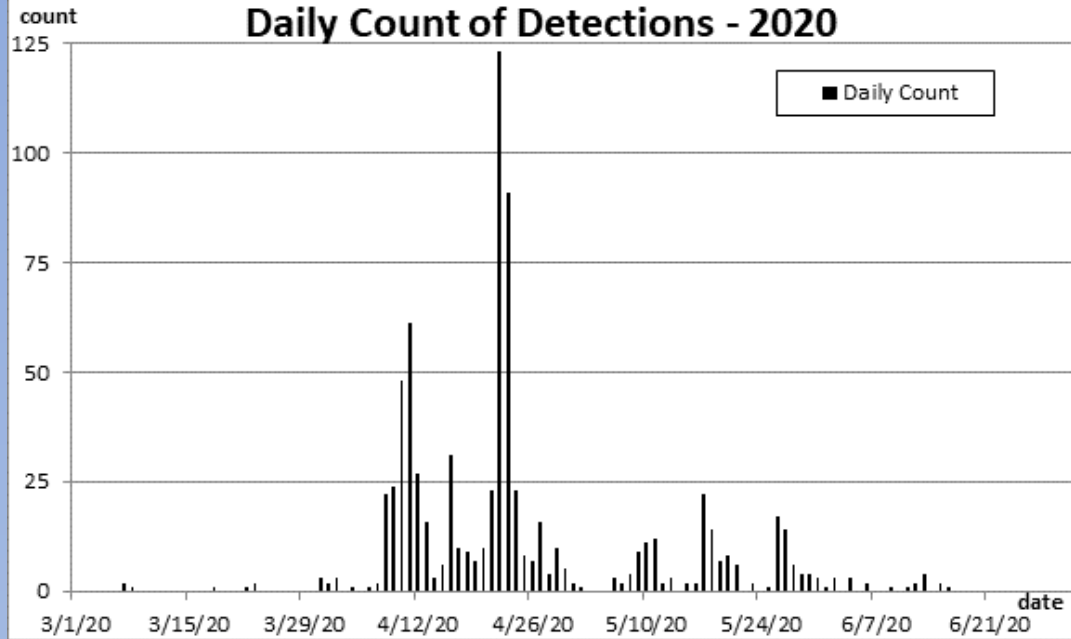
PIT No	Number of Detections	Array Location
989001032565987	3	Sugar BDA 2 - Downstream Beaver Dam
989001032565987	85	Sugar OCP Inlet - Downstream
989001032565987	90	Sugar OCP Inlet - Upstream
989001032565987	0	Sugar BDA Pond 1 - Upstream
989001032565987	0	Sugar BDA Pond 1 - Downstream
989001032565987	1	Sugar Creek - Downstream BDA 1

Last Detection - Sugar	Discharge (cfs) - Sugar
4/9/2020 20:29	8
4/10/2020 18:42	11
4/11/2020 18:04	13
4/21/2020 18:08	17
4/21/2020 23:02	23
4/22/2020 20:16	80
4/22/2020 20:52	79
4/22/2020 22:45	82
4/23/2020 19:34	45
4/29/2020 23:17	60
5/11/2020 2:00	38
5/18/2020 0:10	50
5/18/2020 2:09	47
5/31/2020 2:08	53



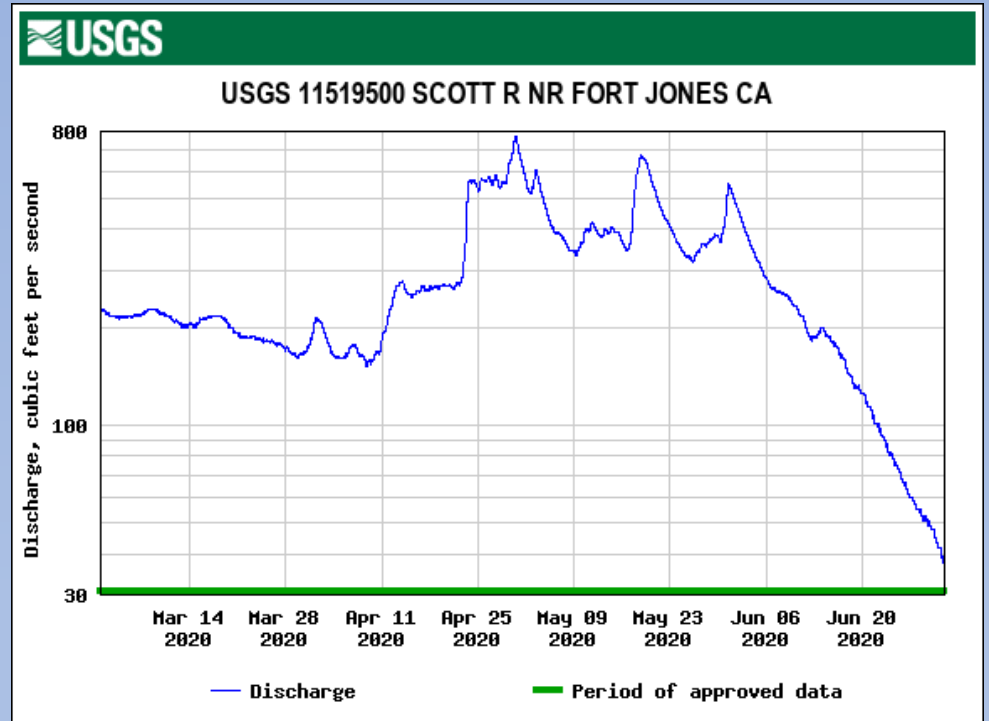
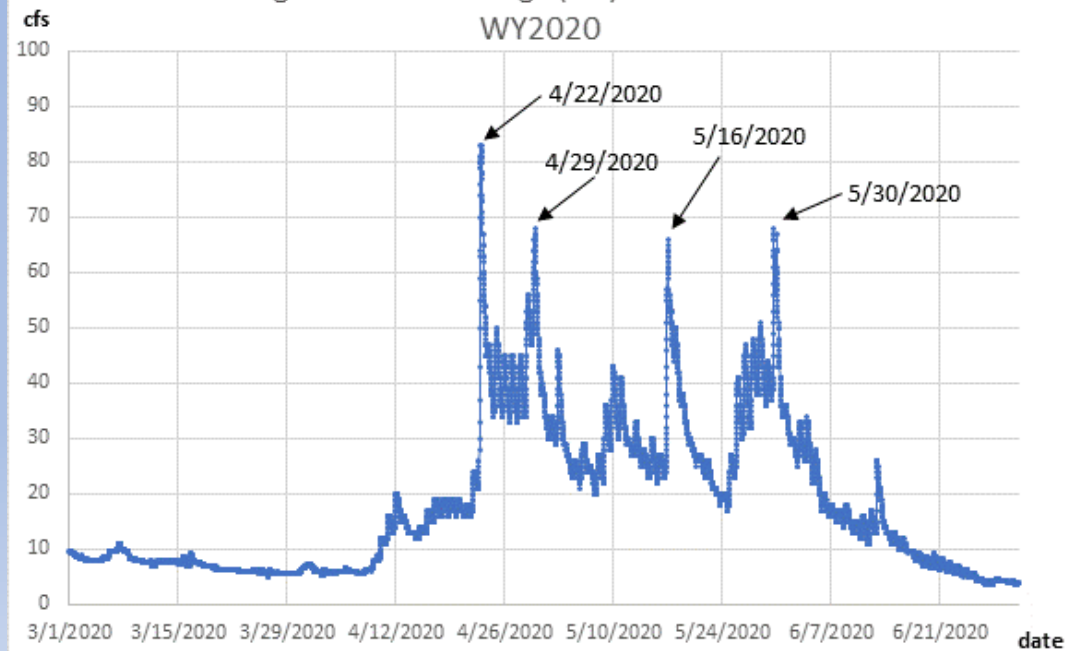
Sugar Creek downstream BDA 1 Array (01)

Daily Count of Detections - 2020



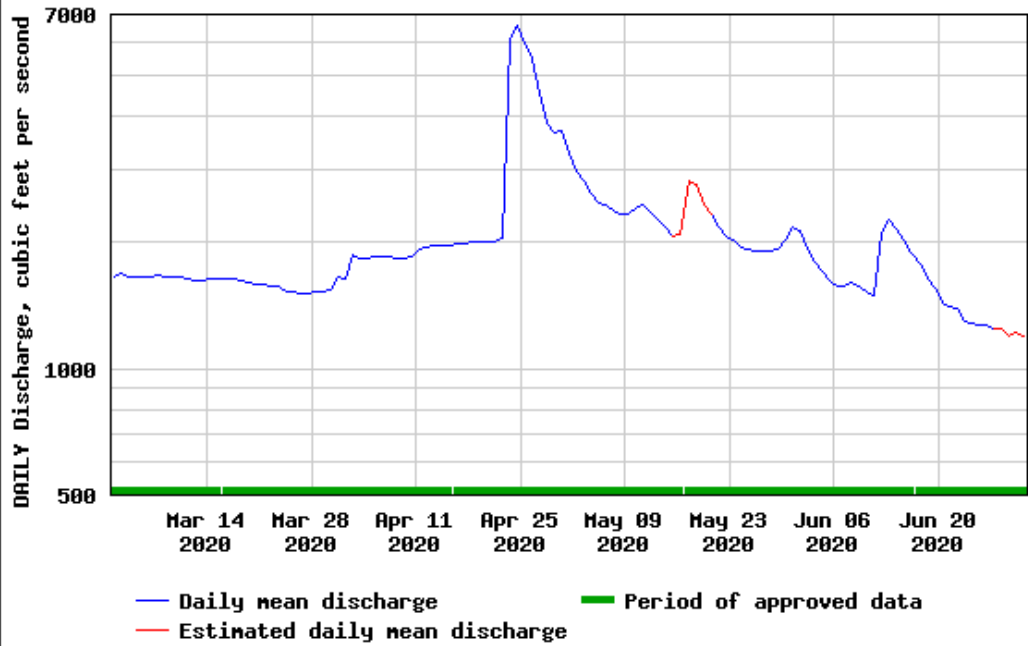
Timing of juvenile out migration and Water Quality Conditions in Scott River and Klamath

Sugar Creek Discharge (cfs) - CDWR F25890 WY2020

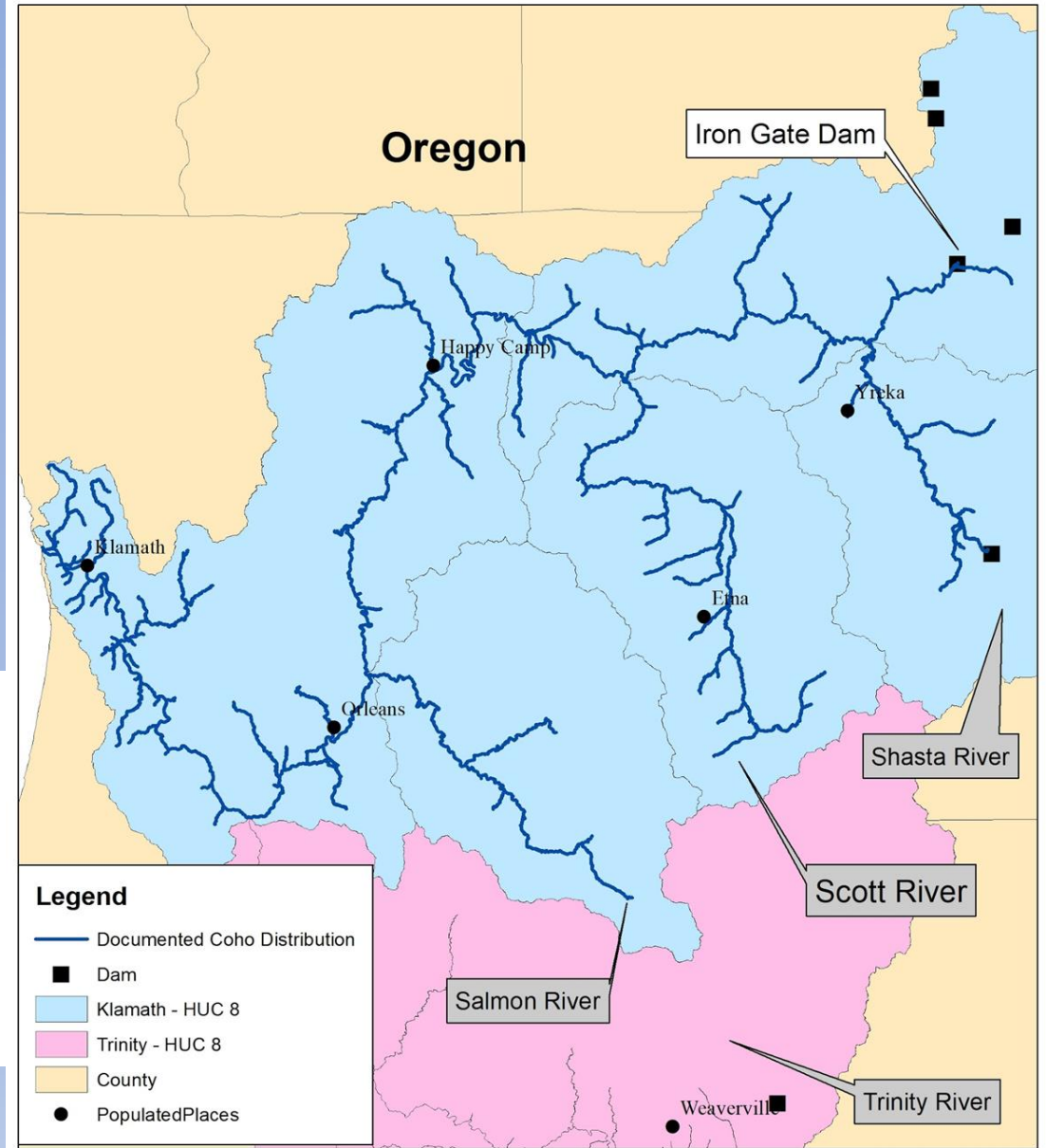




USGS 11520500 KLAMATH R NR SEIAD VALLEY CA



Documented Coho Salmon Distribution - Klamath Basin



Challenging condition during smolt outmigration: poor water quality & high incidence of disease

How long does it take out-migrating Coho smolts from Scott River to Reach Klamath Estuary?

Value of Mid-Klamath refugia: non-natal juvenile rearing



Thank you

Questions?

erich@scottriver.org



PIT Tag Information System

Columbia Basin

PTAGIS Example: Lessons Learned from a Basin Wide Collaborative

John Tenney and Nicole Tancreto, PSMFC

A presentation for the
Klamath Basin PIT Tag Database Collaborative February 2022 Meeting

PTAGIS Program Overview

- **Fisheries Data Project of the PSMFC started in 1991**
- **Regional database of PIT tag data in Columbia River basin**
- **Funded by BPA via *Columbia Basin Fish & Wildlife Program***
- **Data contributed from regional agencies, available to anyone**
- **PTAGIS doesn't perform analysis (RM&E) of the data**
- **PTAGIS O&M large scale interrogation sites**
- **PTAGIS provides technical coordination:**
 - Meetings, newsletters, training, documentation, workshops

Governance

- **PIT Tag Steering Committee**
 - Members from each state agency, NOAA, Tribes, FPC
 - Data standardization and policy
 - Regional coordination and technical guidance
 - Separation of concerns: biology/policy vs technology

The screenshot shows the PTAGIS website's 'About/Ptsc' page. The page features a navigation menu with 'Home', 'About', 'Data', 'Sites', 'Resources', 'Software', and 'Contact'. The main content area is titled 'PIT TAG STEERING COMMITTEE' and includes a description of the committee's goal and purpose. Below the text are two buttons: 'PTSC Meeting Notes' and 'PTSC Charter'. The bottom section, titled 'MEMBERS', lists nine members with their names, affiliations, addresses, phone numbers, and email links.

PIT TAG STEERING COMMITTEE

The goal of the PIT Tag Steering Committee (PTSC) is to coordinate implementation of tagging and interrogation systems and to provide a comprehensive PIT tag database accessible to all interested parties in the Columbia River Basin.

The purpose of the Committee is to:

- Provide technical guidance for the field tagging, interrogation facilities and data management of PTAGIS.
- Provide feedback to the PSMFC Executive Director for annual performance review of PTAGIS.
- Coordinate training for taggers and other field personnel involved with the PIT Tag tagging system as needed. Facilitate implementation of standardized tagging techniques to ensure high quality marking.
- Establish system specifications and update annually to assure integrity and continuity of the data.
- Provide coordinated recommendations to appropriate agencies on activities and programs that further the Committee's goals.
- Identify and forward policy issues to appropriate agencies for resolution.

[PTSC Meeting Notes](#) [PTSC Charter](#)

MEMBERS

<p>Jeff Fryer Columbia River Inter-Tribal Fish Commission 700 NE Multnomah St, Suite 1200 Portland, OR 97232 503-731-1266 Email</p>	<p>Will Simpson U.S. Fish & Wildlife Service 1211 SE Cardinal Ct., Suite 100 Vancouver, WA 98683 360-604-2529 Email</p>	<p>Pat Keniry Oregon Department of Fish & Wildlife 203 Badgley, Eastern Oregon University La Grande, OR 97850 541-962-3026 Email</p>
<p>Scott Putnam Idaho Department of Fish & Game 3316 16th Street Lewiston, ID 83501 208-799-5010 Email</p>	<p>Tiffani Marsh, Co-chair NOAA Fisheries 2725 Montlake Blvd. Seattle, WA 98112 206-860-3235 Email</p>	<p>Brandon Chockley Fish Passage Center 847 NE 19th Avenue, Suite 250 Portland, OR 97232 503-833-3907 Email</p>

PTAGIS Data Overview

Organized around 5 event types linked by unique PIT tag :

MARK

When a tag is first implanted in a captured fish and that fish is released.

RECAPTURE

When a PIT-tagged fish is recaptured, processed, and re-released.

OBSERVATION

When a PIT-tagged fish is detected by automated detection equipment at an established interrogation site.

PASSIVE RECAPTURE

When a PIT-tagged fish is not handled, but is instead detected by an ad-hoc antenna or detection equipment that is not part of an established interrogation site.

RECOVERY

When a PIT-tagged fish is sampled after death or a bare tag that was previously implanted into a fish is recovered after the fish was released.

PTAGIS Data Overview

MRR (Mark Recapture Recovery)

Interrogation

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MRR Event Data

- MRR events captured while fish in hand
- Includes biological and conditional information
- Also *When, Where* and *Who* collected the data
- Collected and submitted in common file format and specs



Contributing MRR Data to PTAGIS

- **MRR Project: identifies individuals ultimately responsible for data**
- **Receive validation alerts from PTAGIS, designate subordinates**
- **Point of contact for questions or request usage of associated data**
- **Contact at project level, not individual (longevity)**

- **Example:**

Project Code: ILR

Name: IDFG Lemhi River Basin Projects

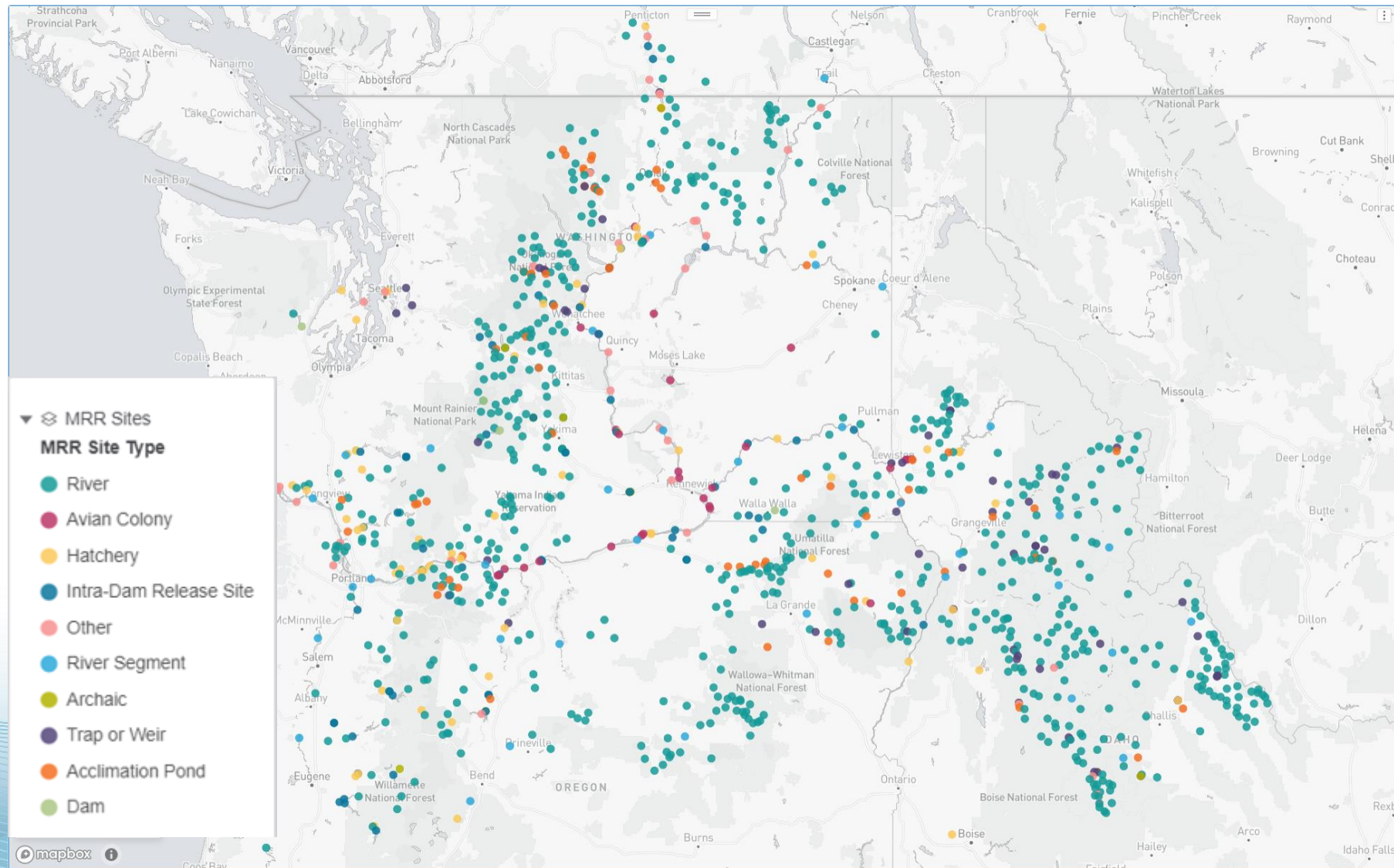
Project Status: Active

Start Year: 2012

End Year: Present

Contact Info: phone, email, address

MRR Sites Registered with PTAGIS



MRR Validation Codes

Validation Codes

PTAGIS uses a set of standardized validation codes to ensure that PIT tag data from across the region is compatible. For more information about Validation Codes and how to request one, see the [Validation Codes](#) section of the [PTAGIS Data Specification](#).

Show entries

Search:

Code ↑	Name ↑↓	Definition ↑↓
>2	Descaled Greater than 20%	Fish has lost mo
<2	Descaled Between 11 and 20%	Fish has lost bet
0	Possible 0-Aged Chinook	Fish is possibly a subyearling or zero-age Chinook.
1>	Descaled Greater than 10 Percent	Fish has lost greater than 10% of its scales on either side.
1<	Descaled Less than 10 Percent	Fish has lost less than 10% of its scales on either side, but generally more than 3%.
1P	Descaled - Patchy	Fish has lost scales in patches.
1S	Descaled - Scattered	Fish has lost scales in areas scattered across the body.
AD	Adipose Fin Clip	Adipose fin clip present or applied during the current PIT tag event.
AF	Adipose Fin Damage	Fish has damage to the adipose fin.
AI	Adipose Intact (not clipped)	Fish has an intact adipose fin; fin has not been removed or clipped.

Showing 1 to 10 of 106 entries

Previous 1 2 3 4 5 ... 11 Next

Download as CSV

P4 Tagging Software: MRR Data Entry and Quality Assurance

PTAGIS P4 v1.33

Record Management

2 | | | ?

Validate Customize... Manage Open Sessions... Export Print + X - A B | Dot Out Layout

SMP-2020-057-001 x

Drag a column header here to group by that column

Event Type	Record#	PIT Tag	Length	SRR Code	Event Date (PST)	Conditional Comments	Text Comments	Tagger
Mark	1	3DD.003D2E2082	97	15H	02/26/2020 15:59:38	CW x		PUTNAM
Mark	2	3DD.003D2E2013	97	15H	02/26/2020 16:02:43	<2 x 1P x AD x PC x		PUTNAM
Mark	3	3DD.003D2E1F9E	101	15H	02/26/2020 16:15:12	AD x CA x		PUTNAM
Mark	4	3DD.003D650E97	96	15W	02/26/2020 16:16:50		2020 SMP/CSS WILD CHINOOOK	PUTNAM
Mark	5	3DD.003D6510F8	111	32W	02/26/2020 16:18:02		2020 SMP/CSS WILD STEELHEAD	PUTNAM
Recapture	6	3DD.003D2E1F17	105	32W	02/26/2020 16:21:24	RE x		PUTNAM
Mark	7	3DD.003D2E203F	210	32H	02/26/2020 16:25:58	AD x		PUTNAM
Mark	8	3DD.003D2E202D	208	15H	02/26/2020 16:26:49	AI x	NO MARK	PUTNAM
Mark	9	3DD.003D650EB2	135	15W	02/26/2020 16:27:58	CA x	2020 SMP/CSS WILD CHINOOOK	PUTNAM
Mark	10	3DD.003D2E2039	122	15H	02/26/2020 16:28:54	AD x CA x		PUTNAM
Recapture	11	3DD.003D650EAA	125	15W	02/26/2020 16:29:55	RE x	2020 SMP/CSS WILD CHINOOOK	PUTNAM
Recapture	12	3DD.003D2E1FAD	136	15W	02/26/2020 16:31:00	RE x		PUTNAM
Mark	13	3DD.003D2E2012	111	32H	02/26/2020 16:31:47	I x		PUTNAM
Mark	14	3DD.003D2E1F2F	155	32H	02/26/2020 16:37:39	AD x		PUTNAM
Mark	15	3DD.003D2E1FAA	211	15H	02/27/2020 09:51:25	<2 x >2 x 1P x 1S x CA x CW x I x		REID D
Recapture	16	3DD.003D2E2078	115	15H	02/27/2020 09:54:33	<2 x 1S x AD x RE x		REID D
Recapture	17	3DD.003D2E2055	198	32H	02/27/2020 09:54:57	>2 x 1S x RE x	NO MARK	REID D
Mark	18	3DD.003D2E1F54	134	15H	02/27/2020 09:55:38	>2 x 1S x AD x		REID D
Mark	19	3DD.003D2E2040	116	32H	02/27/2020 09:56:00	PC x		REID D
Mark	20	3DD.003D2E2098	124	15H	02/27/2020 09:56:18	<2 x 1P x AD x		REID D
Mark	21	3DD.003D2E1F65	288	32H	02/27/2020 09:56:28	AD x		REID D
Mark	22	3DD.003D2E208E	137	15H	02/27/2020 09:57:00	>2 x 1S x AD x		REID D
Mark	23	3DD.003D2E1FF4	155	15H	02/27/2020 09:57:17	<2 x 1S x AD x		REID D
Mark	24	3DD.003D2E1F73	146	15H	02/27/2020 09:57:33	<2 x 1P x		REID D
Mark	25	3DD.003D2E1F43	197	32H	02/27/2020 09:58:07	>2 x 1P x PC x		REID D
Recapture	26	3DD.003D2E1F21	166	32H	02/27/2020 09:58:23	<2 x >2 x 1P x 1S x RE x	NO MARK	REID D
Mark	27	3DD.003D2E1FE3	136	15H	02/27/2020 09:58:47	1P x 1S x AD x		REID D
Recapture	28	3DD.003D2E2049	156	32H	02/27/2020 09:59:01	<2 x >2 x 1S x RE x		REID D
Mark	29	3DD.003D2E1FD4	206	32H	02/27/2020 09:59:14	<2 x >2 x CA x CW x I x PC x		REID D

Record 1 of 29

Session Properties

Session

Session: SMP-2020-057-001

Created: 02/26/2020 15:59:23

Modified: 02/27/2020 11:39:22

Project Code: SMP

Session Message: 2020 FPC/IDFG SMP/CSS SMOLT PIT-TAGGING

Session Note:

Upload

File: SMP-2020-057-001.xml

Legacy File:

Submitted:

Submission Res...:

Submission Me...:

Data Entry & Validation

Profile: 2020 IDFG-SALTRP

Data Entry Layo...: 2020 IDFG-SMP

Repeating Values: 2020 IDFG-SALTRP

PTAGIS Data Overview

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Interrogation

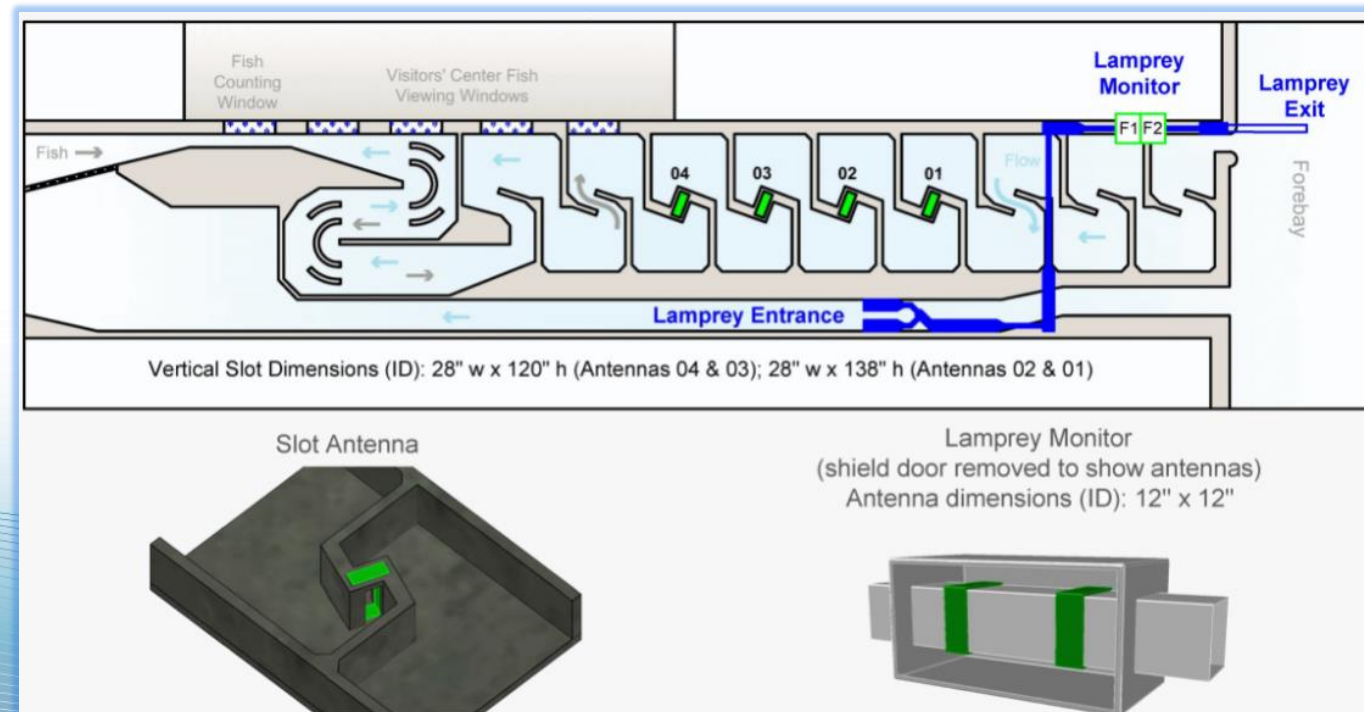
OBSERVATION

When a PIT-tagged fish is detected by automated detection equipment at an established interrogation site.

Interrogation Data

Observation Event: record of PIT-tagged fish passing thru interrogation site

- Includes: unique tag + antenna id + timestamp (PST) + site code
- Site code ties observation events to site metadata: coordinates, antenna arrangement, operational status, event logs



Interrogation Site Metadata

BBA -
Status:

Site Type

General

Start Date

The Big

Potlatch

replaced

2021.

Current

Last File

Date Last

Date Last

Date Last

Last Ob

Last Ob

Detection

Configuration

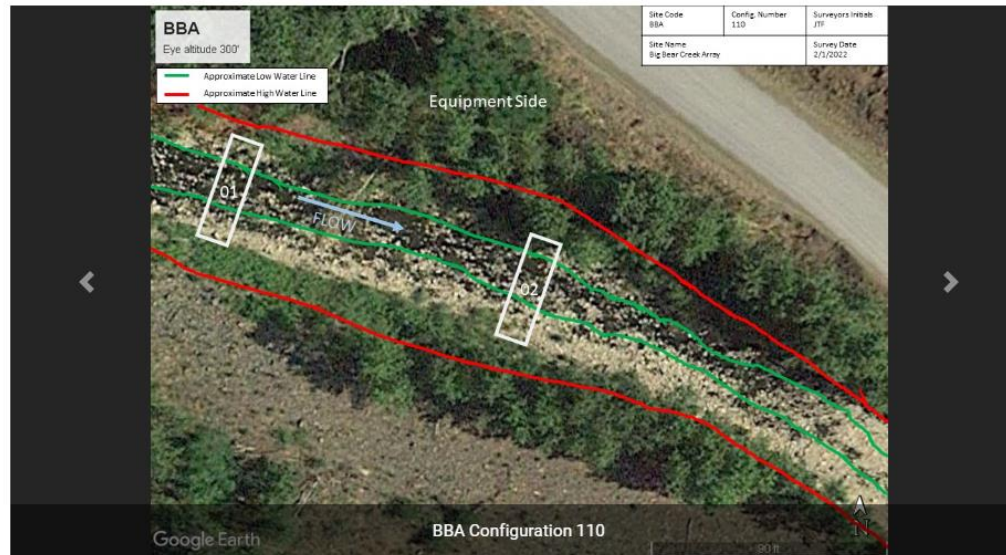
Configuration metadata includes details about the equipment used at the site to detect and record PIT tags. A new configuration sequence record is created when equipment is added or removed from the site and the period of time it was active. A configuration sequence without an End Date is currently active.

Select Configuration Number:

Start Date: 2/1/2021 End Date: ---

Antenna Group	Transceiver ID	Antenna ID
Upstream Antenna	01	01
Downstream Antenna	02	02

Site Configuration Diagrams:



SCROLL TO:

[Contacts](#)

[Location](#)

[Operational History](#)

[Configuration](#)


[Equipment History](#)

[Photos](#)

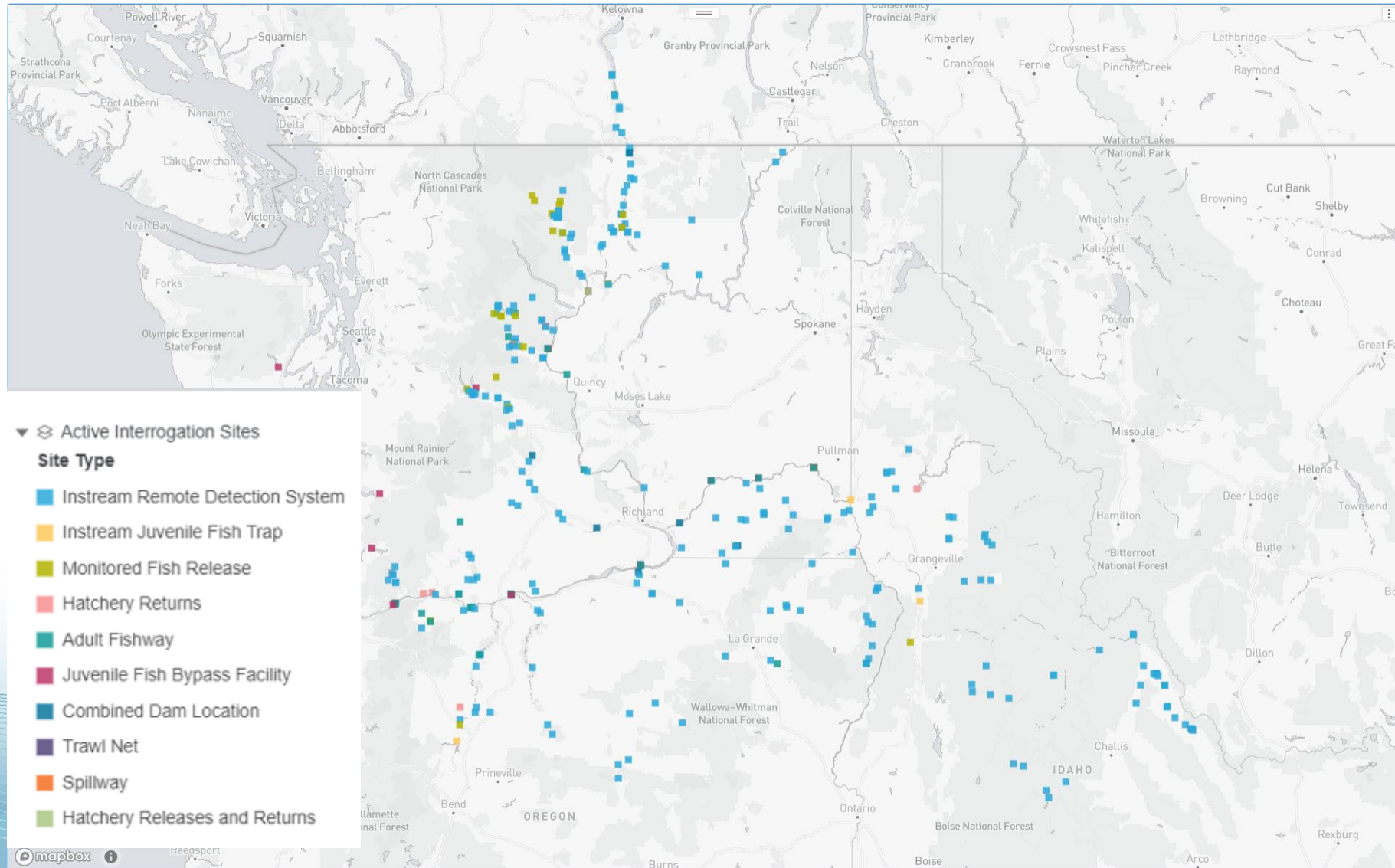
[Event Log Summary](#)

[Archived Event Logs](#)

Interrogation Site Stewardship

- **Point of contact about data, site operations and maintenance**
 - **Responsible for updating site metadata**
 - **Register new sites with PTAGIS with PTSC approval**
 - **Interrogations sites and contacts can retire**
- 

Interrogation Sites Registered with PTAGIS



Interrogation Software: M5

Captures and submits:

- Observations
- Transceiver Diagnostics

M5 Control Panel

Operations Data Tools Help

Site Monitor: Site monitor started at 2/16/2022 11:26 AM.
Configuration: Configuration last updated 1/18/2022 10:29 AM

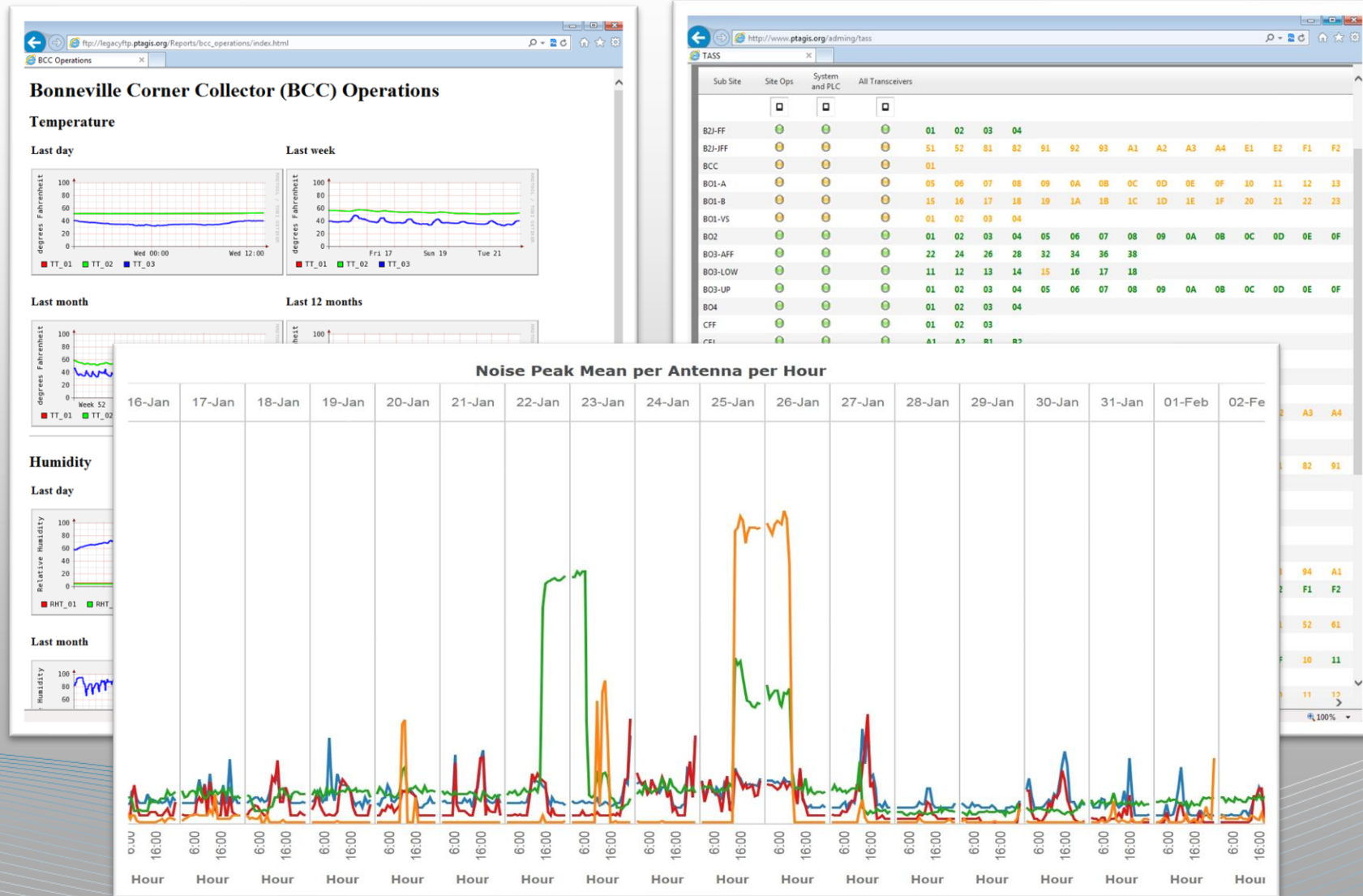
Data Logging: Current file TST-2022-047-P-001.json opened at 2/16/2022 11:26 AM.
Configuration: Create new Primary file every 60 minutes

File Submission: Archived 1 files on 2/16/2022 11:26 AM
Configuration: Archive data files every 15 minutes

Time	Source ID	Field Data
02/16/2022 11:26:51	03	Alarms for 03:
02/16/2022 11:26:51	01	Alarms for 01:
02/16/2022 11:26:51	02	Alarms for 02:
02/16/2022 11:26:51	03	None
02/16/2022 11:26:51	01	None
02/16/2022 11:26:51	02	Test Tag Failed
02/16/2022 11:27:12	03	Sending DTS command to transceiver 03...
02/16/2022 11:27:12	02	Sending DTS command to transceiver 02...
02/16/2022 11:27:12	01	Sending DTS command to transceiver 01...
02/16/2022 11:27:12	01	MESSAGE: Single-shot test with Test Tag.
02/16/2022 11:27:12	03	MESSAGE: Single-shot test with Test Tag.
02/16/2022 11:27:12	03	03 3E7.0000001D03
02/16/2022 11:27:12	02	MESSAGE: Single-shot test with Test Tag.
02/16/2022 11:27:12	01	01 3E7.0000001D01
02/16/2022 11:27:12	03	MESSAGE: Test Tag Found.
02/16/2022 11:27:12	01	MESSAGE: Test Tag Found.
02/16/2022 11:27:12	02	PROBLEM: Test Tag Failed
02/16/2022 11:27:39	02	Sending DRS command to transceiver 02...
02/16/2022 11:27:40	02	Reader info: Version: FS1001L 5.0
02/16/2022 11:27:40	02	Active: On Unique: On
02/16/2022 11:27:40	02	Reader ID#: 02 Master: Off
02/16/2022 11:27:40	02	Communication (N,8,1)
02/16/2022 11:27:40	02	COM1 baud rate: 9600 COM2 baud rate: 115200
02/16/2022 11:27:40	02	Buffer: Active On Tag Count: 1
02/16/2022 11:27:40	02	Local: COM1 tag codes: Off
02/16/2022 11:27:40	02	Diagnostics for 02:
02/16/2022 11:27:40	02	System power: 12.1V Exciter power: 13.9V
02/16/2022 11:27:40	02	Exciter current: 2.0A Signal level: 8%
02/16/2022 11:27:41	02	Exciter phase: 32% Sync input: YES
02/16/2022 11:27:41	02	Battery: OK Status: Slave
02/16/2022 11:27:41	02	TestTag delay: 60 min Report delay: 30 min
02/16/2022 11:27:41	02	Current gain: 100% Current alarm: 1200mA
02/16/2022 11:27:41	02	Bit counters
02/16/2022 11:27:41	02	Preambles: 14 Bad CRC: 0
02/16/2022 11:27:41	02	Good reads: 2 Overruns: 0
02/16/2022 11:27:41	02	Alarms for 02:
02/16/2022 11:27:41	02	Test Tag Failed

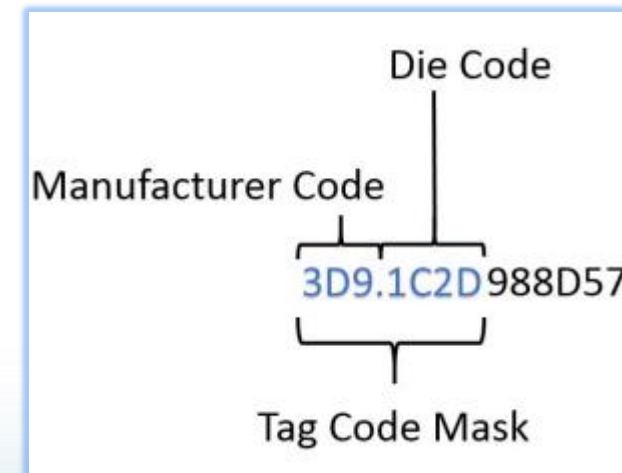
Connected to M5 Monitor Service 1.8.5 on localhost. Scroll Lock: Off Submitting Test Data Only

O&M Remote Monitoring



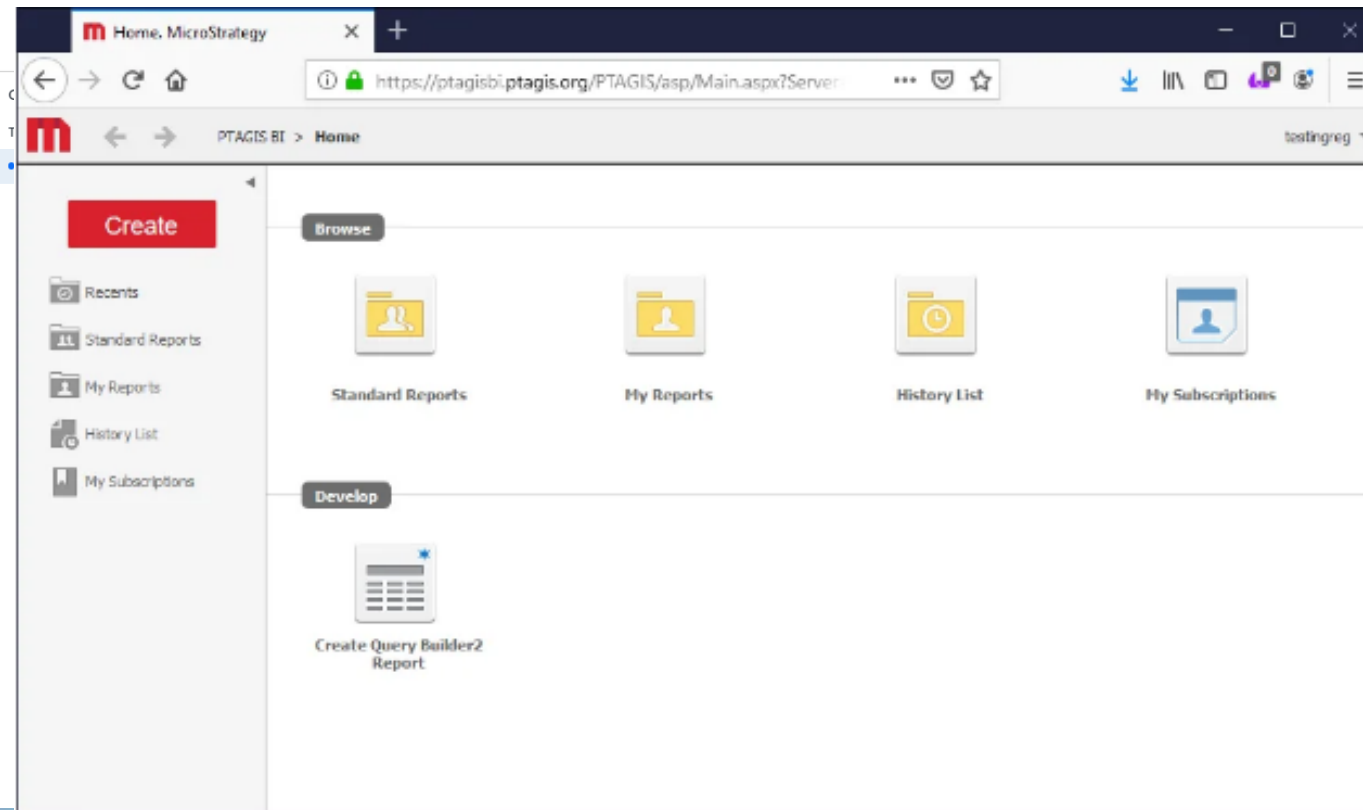
Data Submission and Validation

- **Data contained in structured files (JSON, XML)**
- **Support for Corrections and Deletions of files**
- **Submitted via Web API (HTTPS)**
 - Requires authorization (API Key, JWT)
 - Discontinue FTP and Email submissions
- **Validation and Alerting:**
 - File format and conventions
 - Duplicate files/records
 - Validation codes
 - Interrogation site configuration
 - Tag mask validation
- **Confirmation when MRR data loaded**
- **Alert when interrogation site fails to submit data**



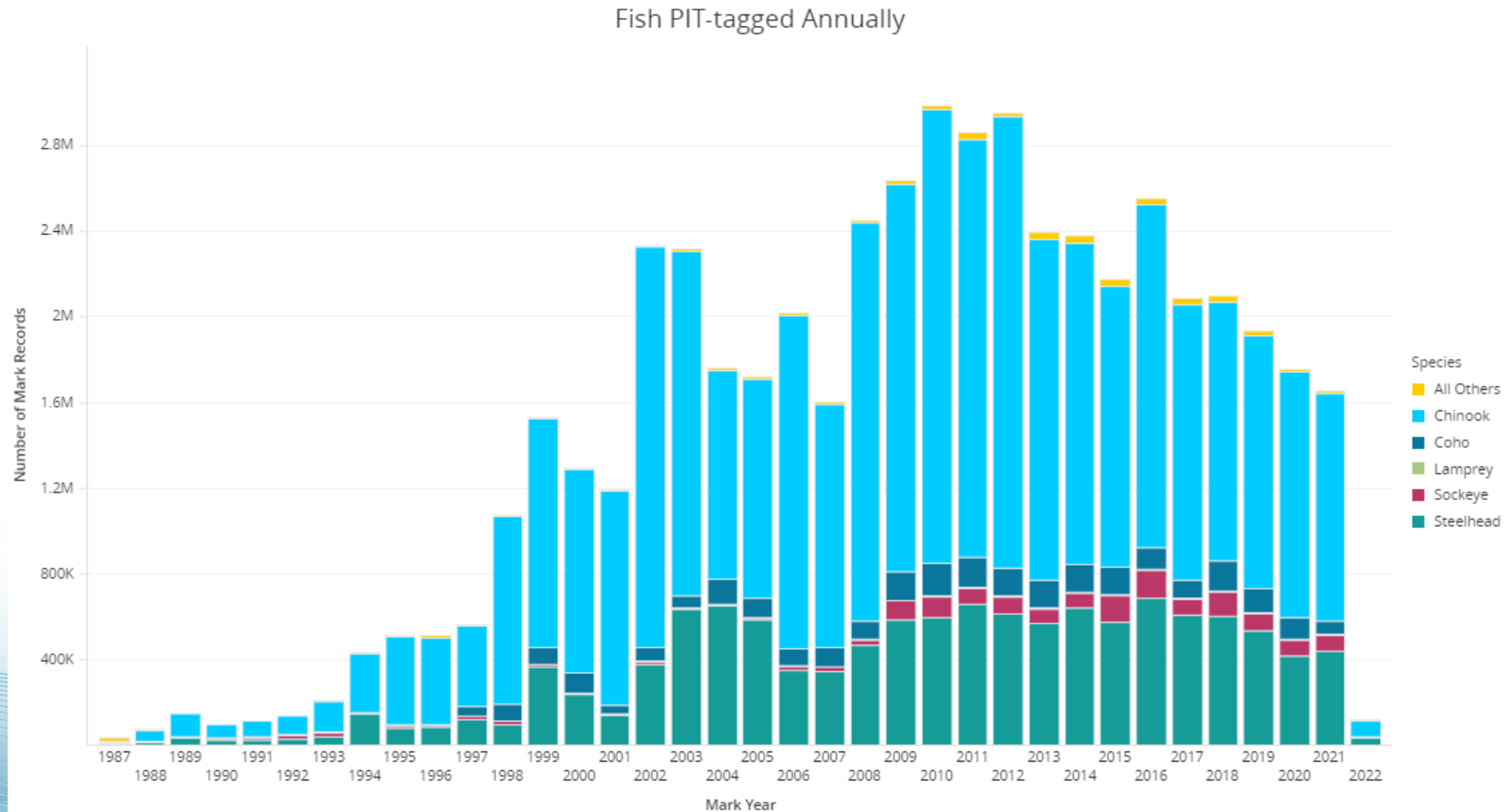
Querying Data out of Database

- **Website www.ptagis.org:**
 - Quick reports (no login)
 - Advanced Reporting (requires login)



Plan for Growth!

52,698,019 fish PIT-tagged by 51 different organizations since 1987



Electronic Data Collection, Options and Experiences

Alta Harris

Electronic Data Collection Benefits

- Error checking in the field
- Reduces tag transcription errors
- Reduces data entry time
- Machine readable files

Uniform Solution

- Database community support
- Improve data pipeline
- May not meet individual needs
- Already have a working solution
- Costly to implement

Requirements

- Flexibility for different project requirements
- Adherence to PIT tagging database standards
- Not difficult to maintain
- Tech support available
- Connects to PIT reader
- Forms are easy to navigate
- Customizable
- Changes are logged
- Backups available without an internet connection
- Persistent

USGS Custom Solution



Klamath River Basin PIT Tagging Database

Database Development

Web Interface Tool

Collaboration

Data Pipeline

Future of the Project

USGS Application

The screenshot shows a web application interface titled "KFFS Data Link - Curlew". At the top right, there are two buttons: "Kill Download" and "View PIT Files". Below the title is a section labeled "Transceiver Manager" containing three input fields: "Transceiver" with a dropdown menu showing "Cheeseblock", "Site Name" with a dropdown menu showing "Weir", and "Initials" with an empty text input field. At the bottom right of the form area, there are two buttons: a green "Start Download" button and a red "Complete Download" button.

1

2

3

4

5

Klamath River Basin PIT Tagging Database

Database Development

Web Interface Tool

Collaboration

Data Pipeline

Future of the Project

USGS Application

The screenshot displays the 'KFFS Data Link - Curlew' application interface. The main content area is titled 'Data Link' and features a timestamp '2022-02-10 11:40' in the top right corner. A central menu consists of five green buttons with white text: 'Adult', 'Nevada Sampling', 'Juvenile', 'Fish Kill', and 'PIT DL'. At the bottom of the interface, there are two blue buttons with white text: 'Catalog Juvenile Samples' and 'DataLink Manager'.

Klamath River Basin PIT Tagging Database

Database Development

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Future of the Project

USGS Application

The screenshot shows the 'KFPS Data Link - Curlew' web application interface. At the top right is a 'Return to Effort Without Saving' button. Below is the 'Adult Monitoring' section with a 'No Crew entered' warning and an 'Adult Effort Saved' field. A row of green buttons includes 'Efforts', 'Edit Effort', 'View Effort Fish', and 'Add Fish'. A red warning bar states 'No PIT Reader Connected!'. The main form is titled 'Fish 1 of 1 in Effort' and contains several sections: 'Species' (a list with radio buttons for Lost River sucker, shortnose sucker, Klamath largescale sucker, unidentified sucker, and redband/rainbow trout); 'Tagger' (dropdown menu set to 'NA'); 'Forklength' (input field with 'est' checkbox); 'Data Recorder' (dropdown menu set to 'NA'); 'PIT tag' (input field with 'Edit PIT Tags' button); 'Sex' (radio buttons for Male, Female, and Unknown); 'Afflictions' (checkboxes for Scale Loss, Split Caudal, and Hybrid Sucker); 'Lernaea' (input field); 'Lamprey - Fresh Wound' (input field); 'Lamprey - Old Scar' (input field); 'Pictures Taken' (checkbox); 'Mortality Type' (dropdown menu set to 'NA'); 'Radiotag Type' (dropdown menu set to 'NA'); 'Tubercles' (checkbox); 'Recapture' (checkbox); 'Spawning Condition' (radio buttons for ripe, Prespawn, Not Apparent, Spont, and No Observation); and 'Play Tag' (input field with 'Save' button). A 'Comments' text area is at the bottom. A footer row contains 'Delete Fish', 'Parasites', and 'Operies' buttons.

USGS Solution

- Customizable
- Changes are recorded
- Backups to external system
- SQLITE database
- Can reference exiting information
- Prototype
- Nontypical file system
- File transfers

Klamath River Basin PIT Tagging Database

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Future of the Project

ESRI Survey 123

The screenshot shows the ESRI Survey 123 mobile application interface. At the top, the title bar reads "7:26 Practice Survey 1 - RWV (11/05/2020)". Below the title bar, there is a "Site Location:" field with a blue location pin icon and a "221" label. The "Geo Location:" section includes a note: "Location can be selected on the map or determined using your current GPS location." Below this, there is a coordinate field showing "42°13'N 121°44'W + 3.9 m" with a map icon to its right. A small map snippet shows a blue location pin on a street grid. Below the map, there is a "Decimal Degrees" field containing "42.216708°N 121.728109°W". The "Net Number:" field is empty. The "Fish Captured:" section has a note: "Did we capture any suckers? If 'Yes' a process fish tabs will pop open. If 'No' please submit form and start a new survey for an alternative site." At the bottom, there is a progress bar and a checkmark icon.

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Klamath River Basin PIT Tagging Database

Database Development

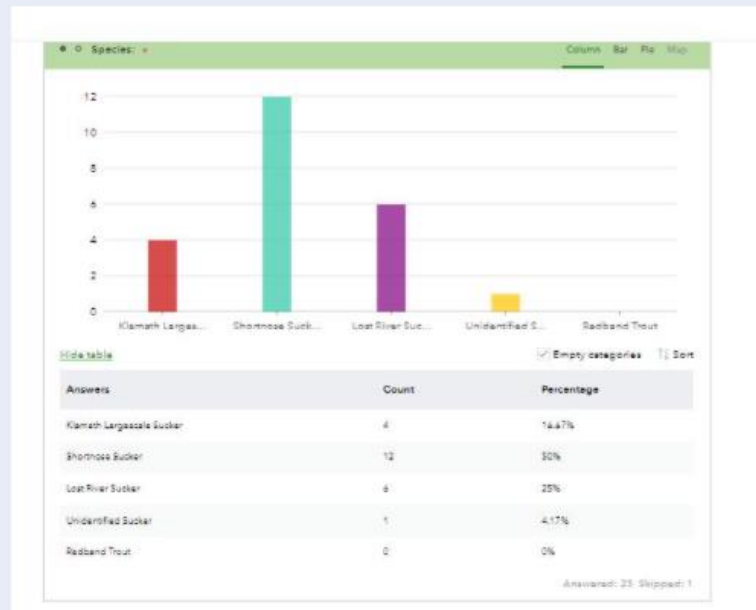
Web Interface Tool

Collaboration

Data Pipeline

Future of the Project

ESRI Survey 123



1

2

3

4

5

Klamath River Basin PIT Tagging Database

Database Development

Web Interface Tool

Collaboration

Data Pipeline

Future of the Project

ESRI Survey 123

The screenshot displays the ESRI Survey 123 web interface. At the top, there is a green navigation bar with the title 'Draft1-KFFS-Survey123' and several menu items: Overview, Design, Collaborate, Analyze, Data (highlighted), and Settings. Below the navigation bar, there is a toolbar with icons for home, refresh, and filter, along with a date range '2/1/22 - 2/2/22' and a 'Form view' toggle. The main area is split into a map on the left and a data table on the right. The map shows a world view with a red dot in North America and a blue dot in Africa. The data table has the following columns: Sample Time, Species, Sex, Standard Length (SL), Fork Length (FL), Recapture, Lethal, Lamprey (Old Scar), Lamprey (New Wound), Val ID, Samples Taken, Preservation Type, Mortality Type, and Comments. The table contains five rows of data, with the last row selected.

Sample Time	Species	Sex	Standard Length (SL)	Fork Length (FL)	Recapture	Lethal	Lamprey (Old Scar)	Lamprey (New Wound)	Val ID	Samples Taken	Preservation Type	Mortality Type	Comments
Feb 2, 2022, 7:16 AM	Shortnose Sucker	Female	354	374	No				CD0000-22	finray(l).finclip(caudal)			
Feb 2, 2022, 7:17 AM	Lost River Sucker	Male	235	253	No	1		2	CD0020-22	finray(r).finclip(caudal)			
Feb 2, 2022, 6:21 AM	Shortnose Sucker	Female	234	264	No								
Feb 1, 2022, 12:49 PM	Shortnose Sucker	Female	435	465	Yes								
Feb 1, 2022, 12:49 PM	Lost River Sucker	Female	300	320	No			1	CD1002-22	finray(l).finclip(caudal)			

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ESRI Survey 123

- Individual Databases
- Cloud Storage
- Customizable Forms
- Georeferencing
- Accessible
- ESRI support
- ESRI License
- PIT reader connection

Klamath River Basin PIT Tagging Database

Database Development

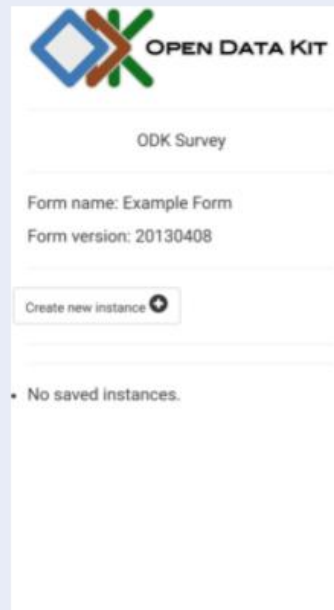
Web Interface Tool

Collaboration

Data Pipeline

Future of the Project

Open Data Kit



The screenshot displays the Open Data Kit (ODK) interface for a survey form. At the top left is the ODK logo, which consists of a blue diamond and a green 'X' shape. To the right of the logo, the text 'OPEN DATA KIT' is displayed. Below the logo, the text 'ODK Survey' is centered. Underneath, the form name 'Example Form' and version '20130408' are listed. A button labeled 'Create new instance' with a plus icon is visible. At the bottom, a message states 'No saved instances.'

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Options

- Do not adopt a uniform solution
- Find a custom solution based on USGS model
- ESRI Survey 123
- ODK forms with our own server
- Custom application
- Find another product