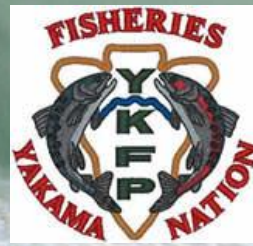


Yakima River Summer / Fall Chinook Program 2022-23

Melinda Goudy
Yakima Klickitat Fisheries Project (YKFP)



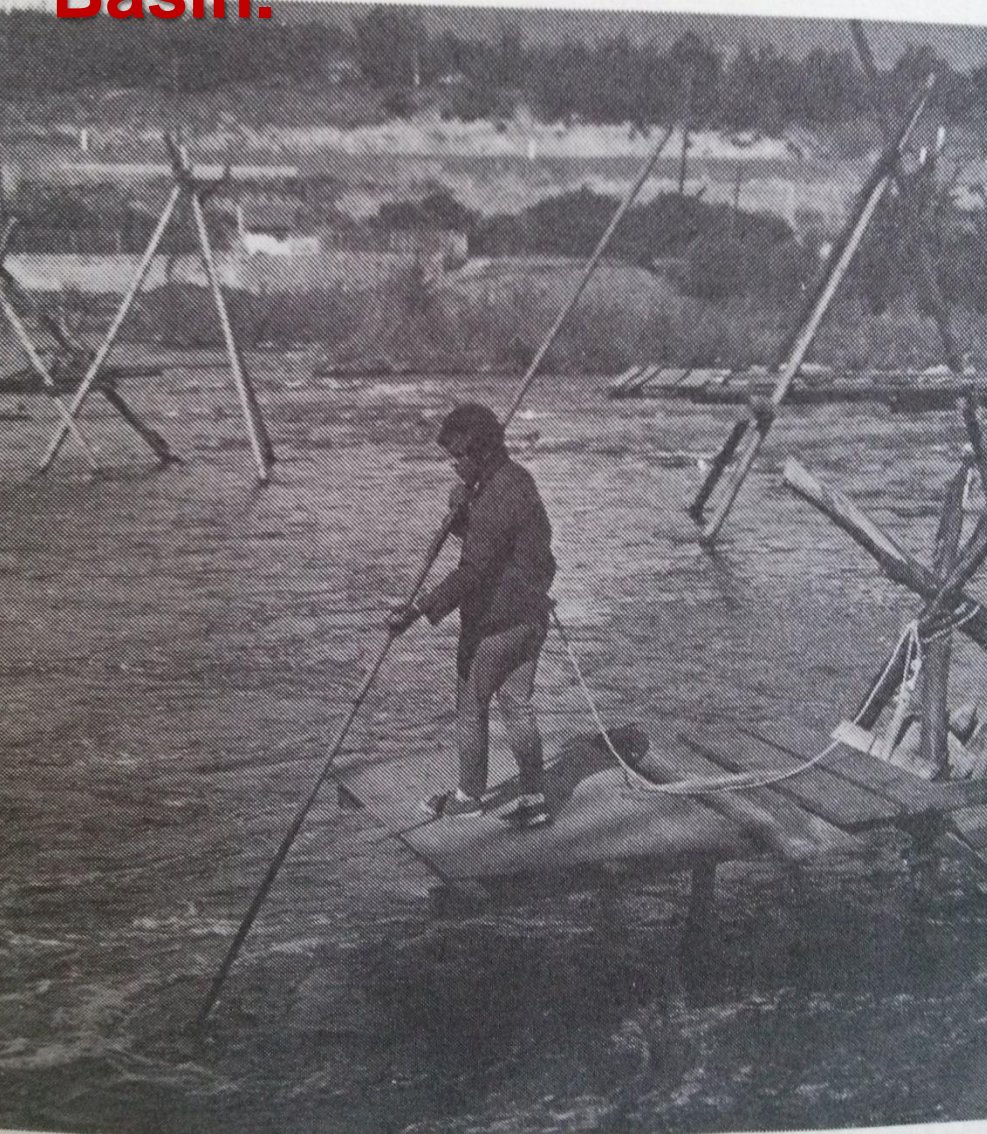


Thank You

Daily Field Activities Teams-

- Fall Chinook: Brady Carl, Dirk Spencer Jr and Gene Sutterlic Jr.
- Coho crew: Denny Nagle and Quincy Wallahee
- YKFP: Shubha Pandit, Dave Lind, Bill Bosch, Chris Frederiksen, Michael H Fiander
- Prosser and Marion Drain Hatchery Crews
- Roza Crew
- YKFP Administration: Rubi Rodriguez, Carol Sue Speedis, Alana Jim, Alena Wallahee and Martel Grant

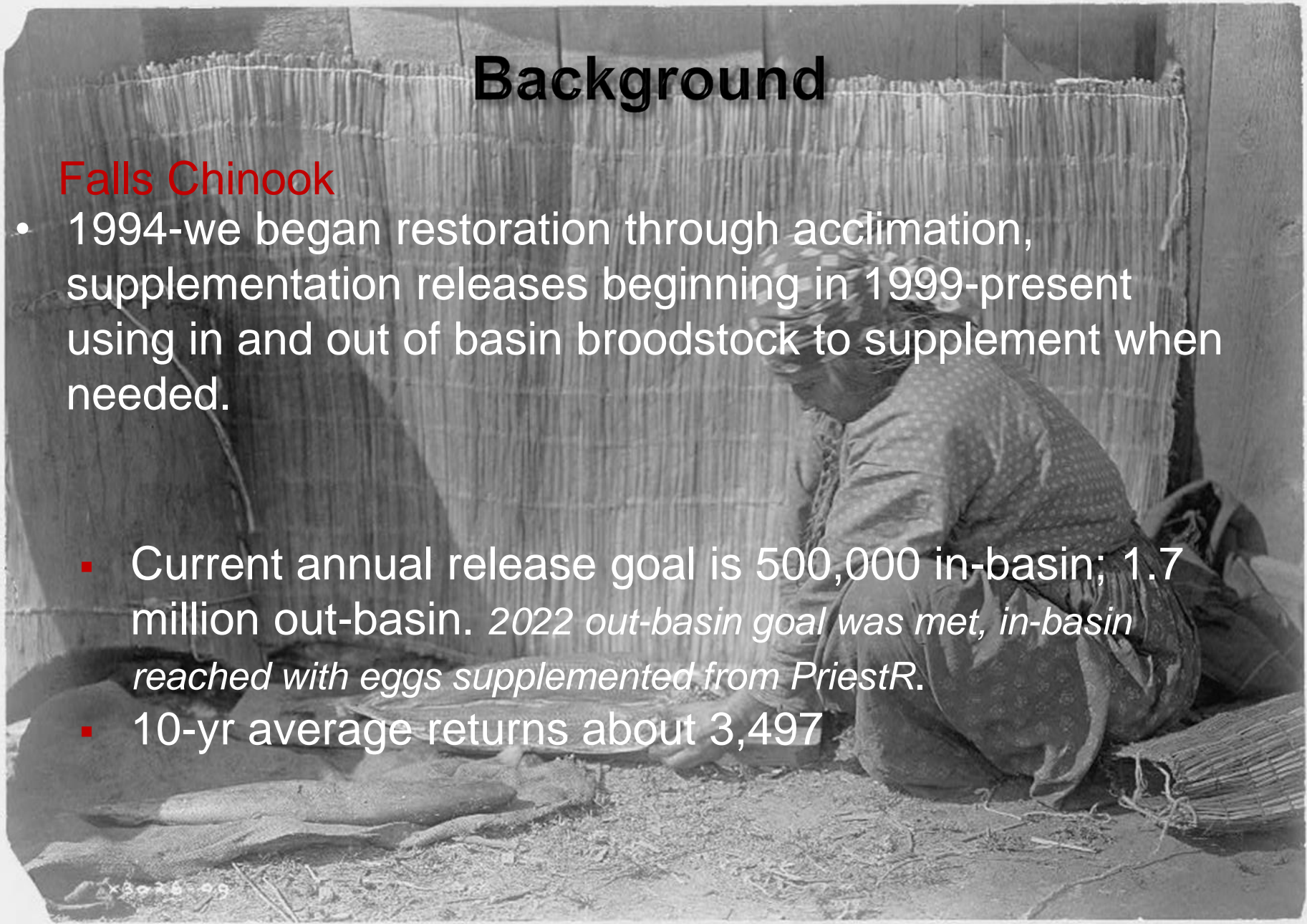
**The vision of the Yakama Nation is to bring back
all species previously present in the Yakama
Basin.**



Background

Falls Chinook

- 1994-we began restoration through acclimation, supplementation releases beginning in 1999-present using in and out of basin broodstock to supplement when needed.
 - Current annual release goal is 500,000 in-basin; 1.7 million out-basin. *2022 out-basin goal was met, in-basin reached with eggs supplemented from PriestR.*
 - 10-yr average returns about 3,497



Background

Summers

From 2008-present, we've collected Summer Chinook broodstock with the program-goal to reestablish a local adapted population. Broodstock for this program is collected out of basin.

- Current annual release goal is 1 million (BY18).
- *900k Subyearlings and 100k Yearlings (BY21)*
- Goal met 105k Y (started BY21)
- 10-yr average returns about 880

Summer Chinook

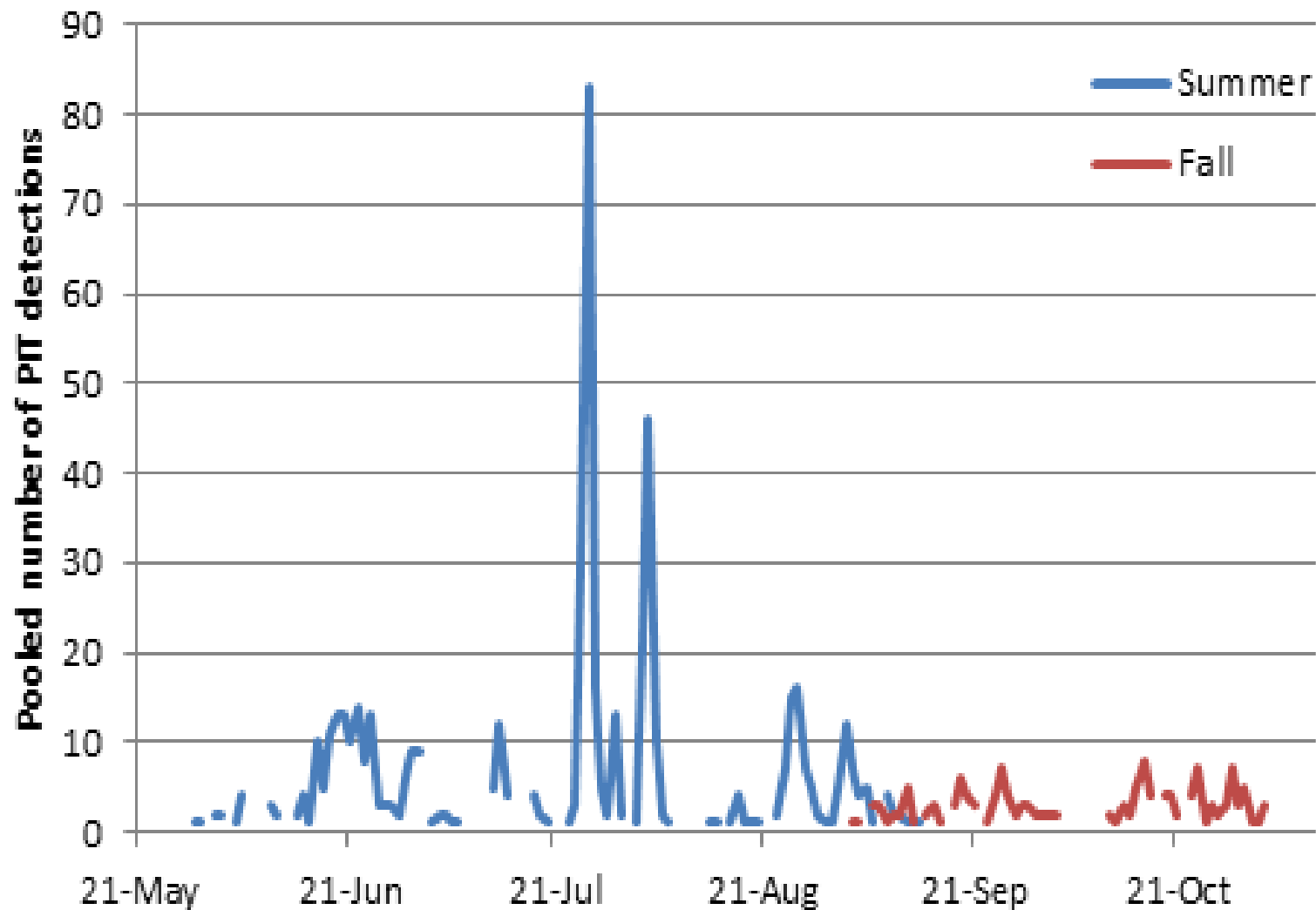
Objective: To re-establish a locally adapted summer Chinook population in the Yakima River, with the goals being to:

- Develop a naturally spawning adult population in the Yakima River between Sunnyside Dam and Roza Dam, and in the lower Naches River from the mouth to the Tieton River, and,
- Increase the number of natural-origin returning summer-run adults in the lower Columbia, Zone 6, and the lower Yakima River contributing to harvest opportunity both temporally and spatially

- Brood collection started at the Douglas County PUD Wells Hatchery in 2008-2017, Entiat National Fish H 2018-2020 and currently WDFW Eastbank H 2020-22.
- First PIT tagged adult came over PRO on 7/16/11
- 10yr avg has been 880 High 1,823 and Low 258

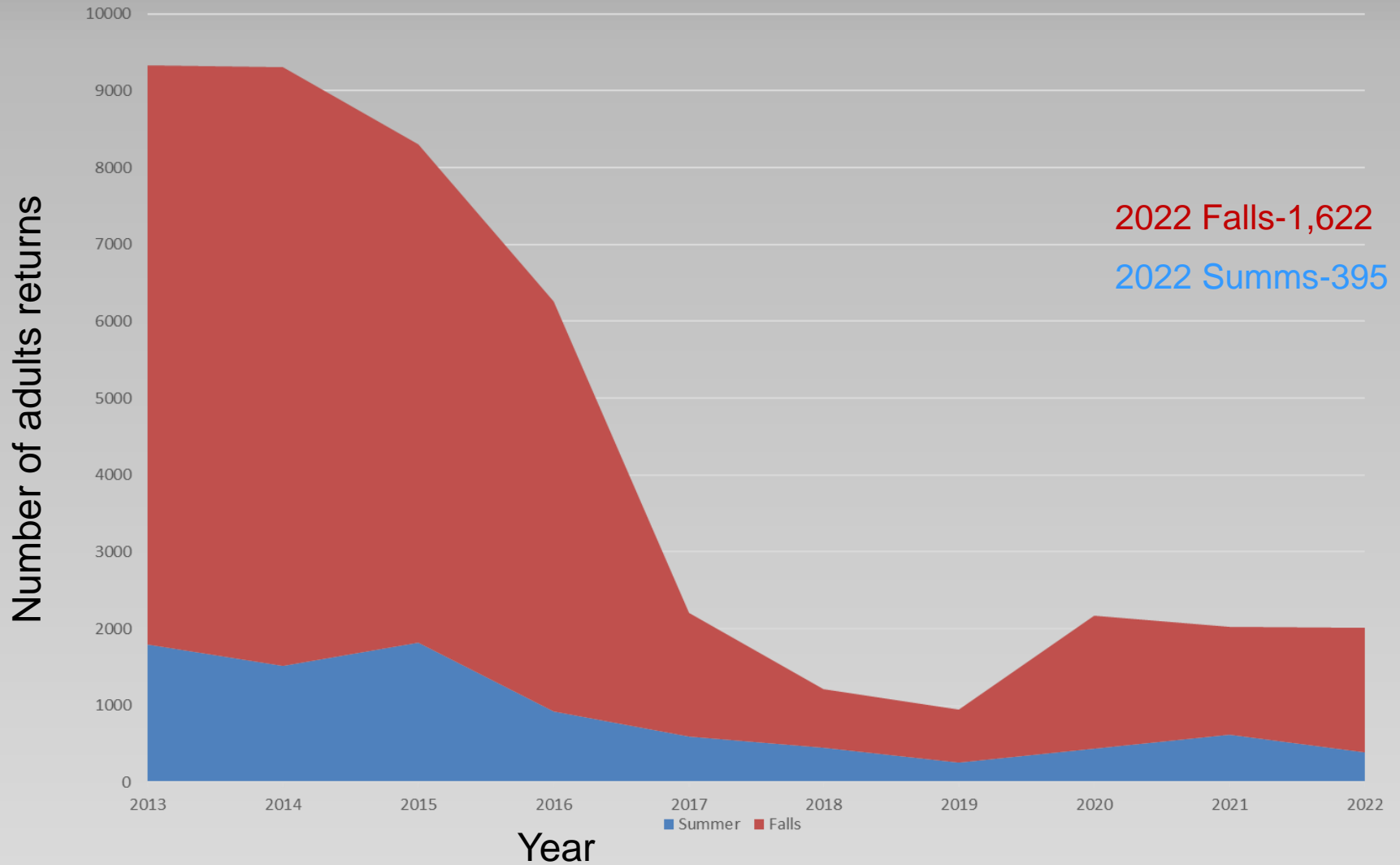
*BY2008 Stiles release observed
at Prosser 7/16/11*

Detection timing: Summer vs. Fall



Returning Adults

Returning Adults



2022 Redd Surveys above Prosser

Adults over Prosser Dam

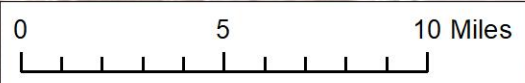
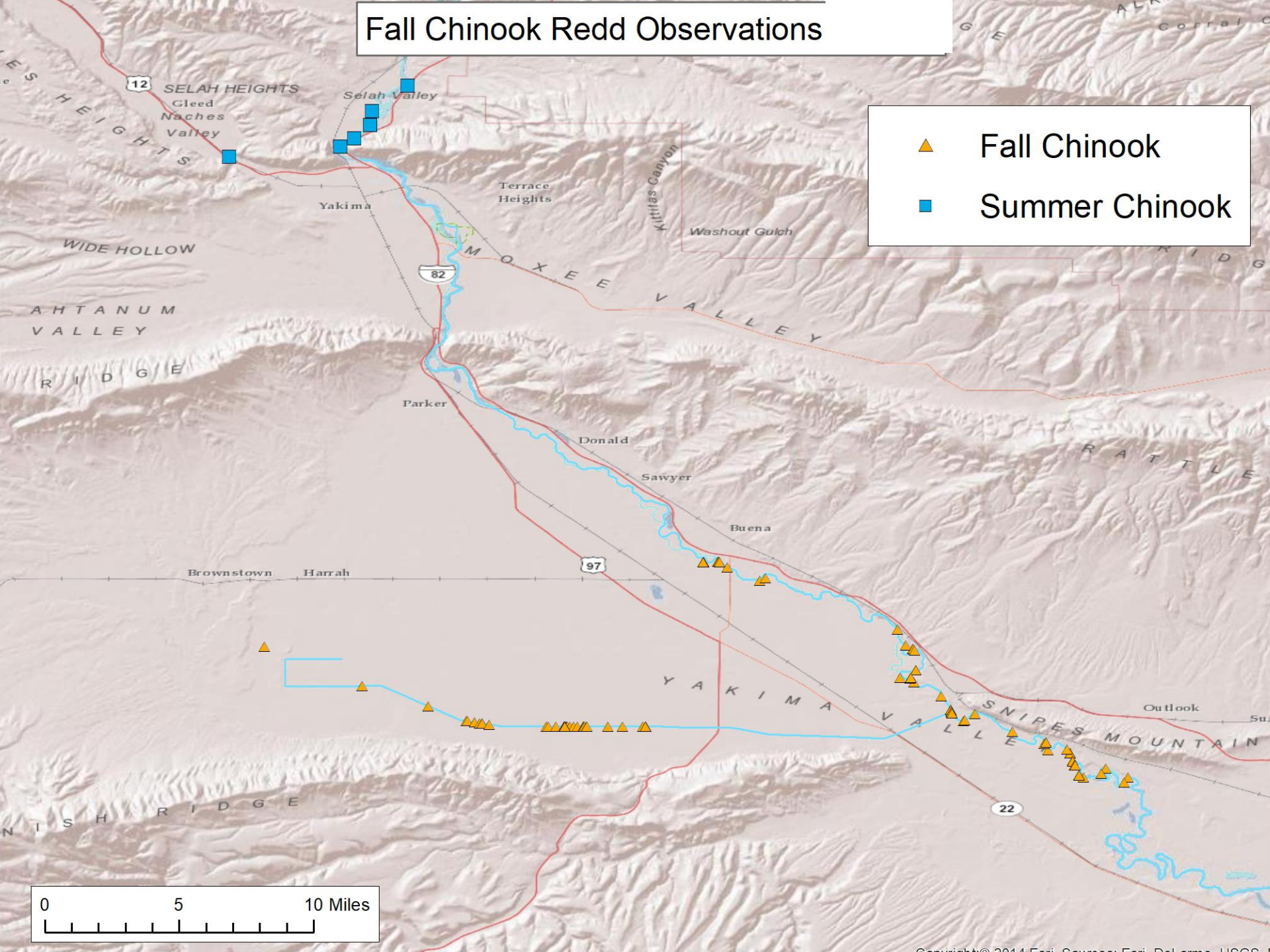
FALLS 1,622 SUMMERS 395

Yakima River FALLS 149 SUMMERS 12

Naches River FALLS 0 SUMMERS 2

Fall Chinook Redd Observations

- ▲ Fall Chinook
- Summer Chinook

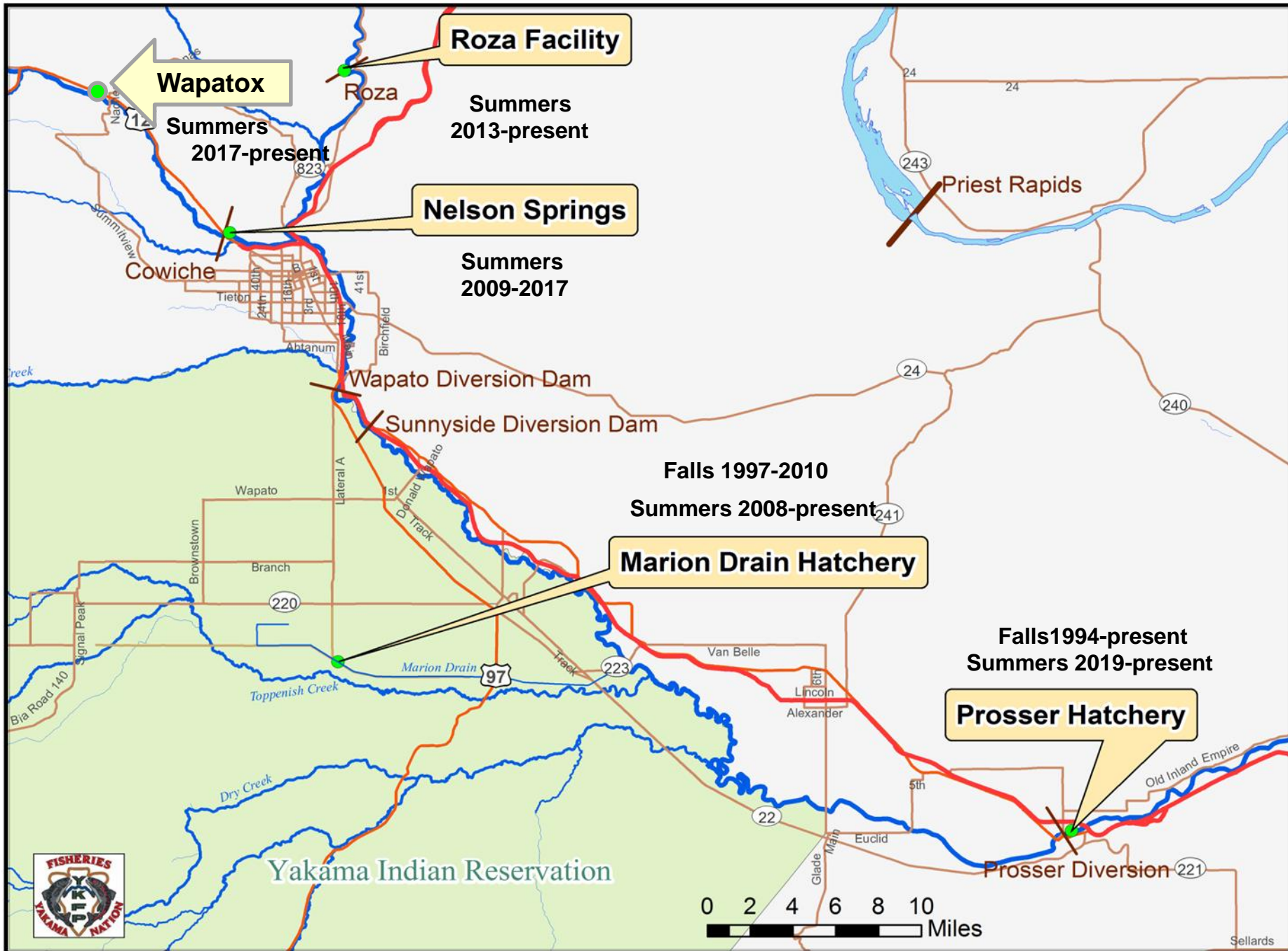


Eastbank 2022-
Collect 620 pairs



YN Marion Drain Hatchery





Comparisons

- Comparative study of **fall chinook** with 9mm and 12mm pit tags
- Traditional raceways vs. circular raceways **summer chinook**
- Sub-yearling vs yearling **summer chinook**

Background

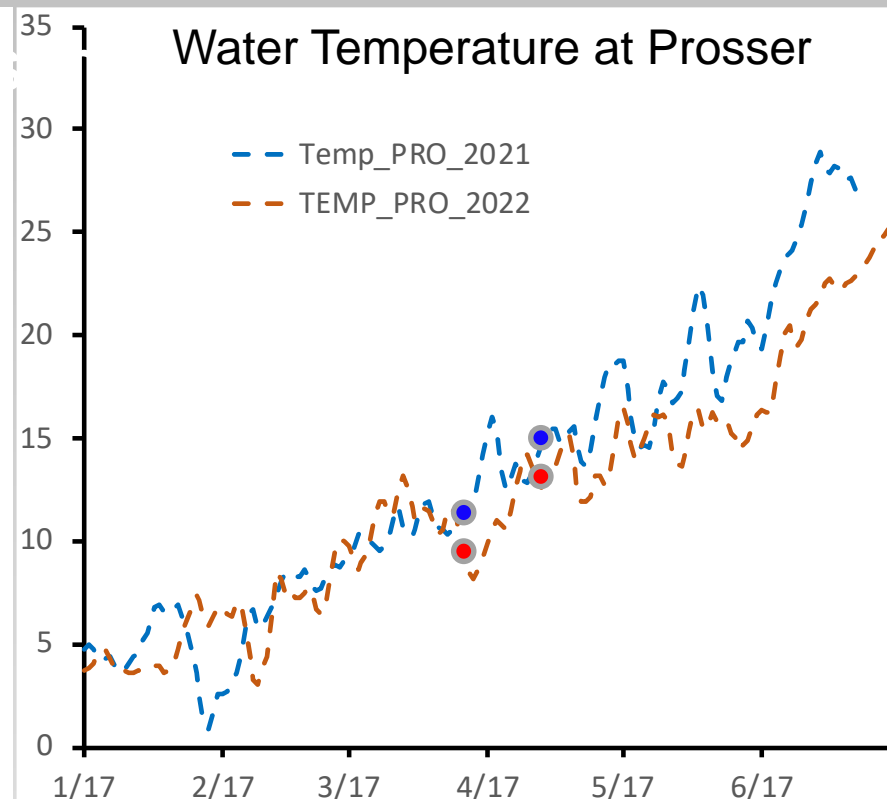
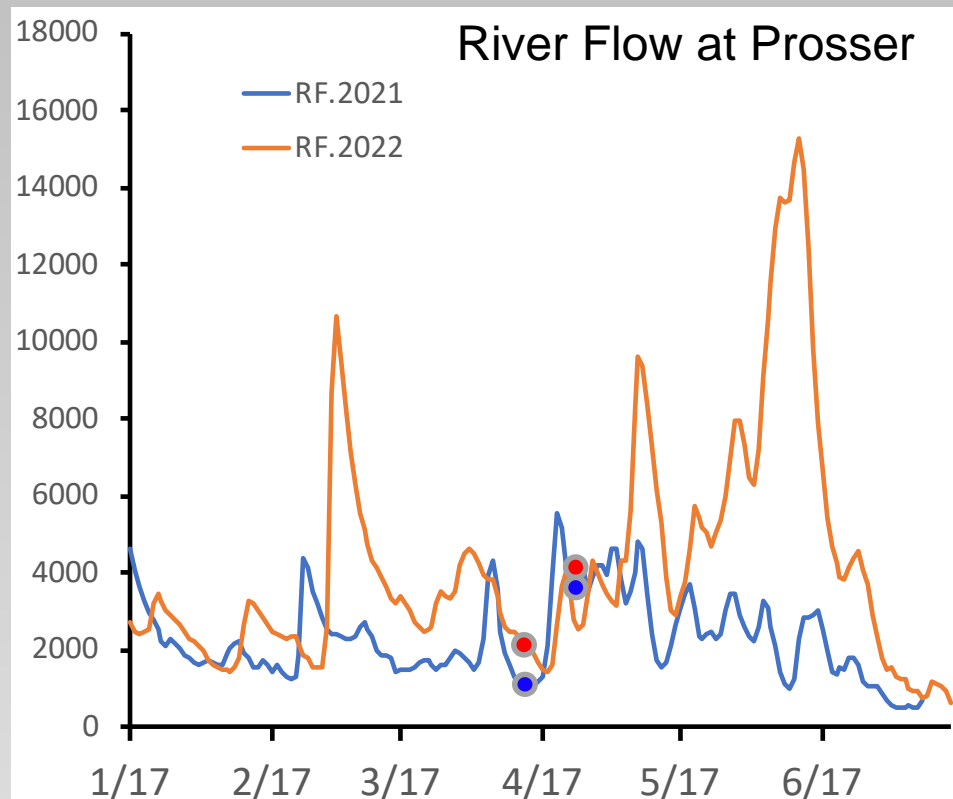
- Fall Chinook out-migrated in the months of April-June but the Lower Yakima river in the late migration period might have less preferable water temperature or higher predation
- Juvenile mortality could be higher in the late release group as water temperature and avian predation may increase
- Early releases would be small in the sizes (FL) to put 12 mm> so we might have tagging issues
- Higher mortality in small fish due to large PIT tags

Our questions:

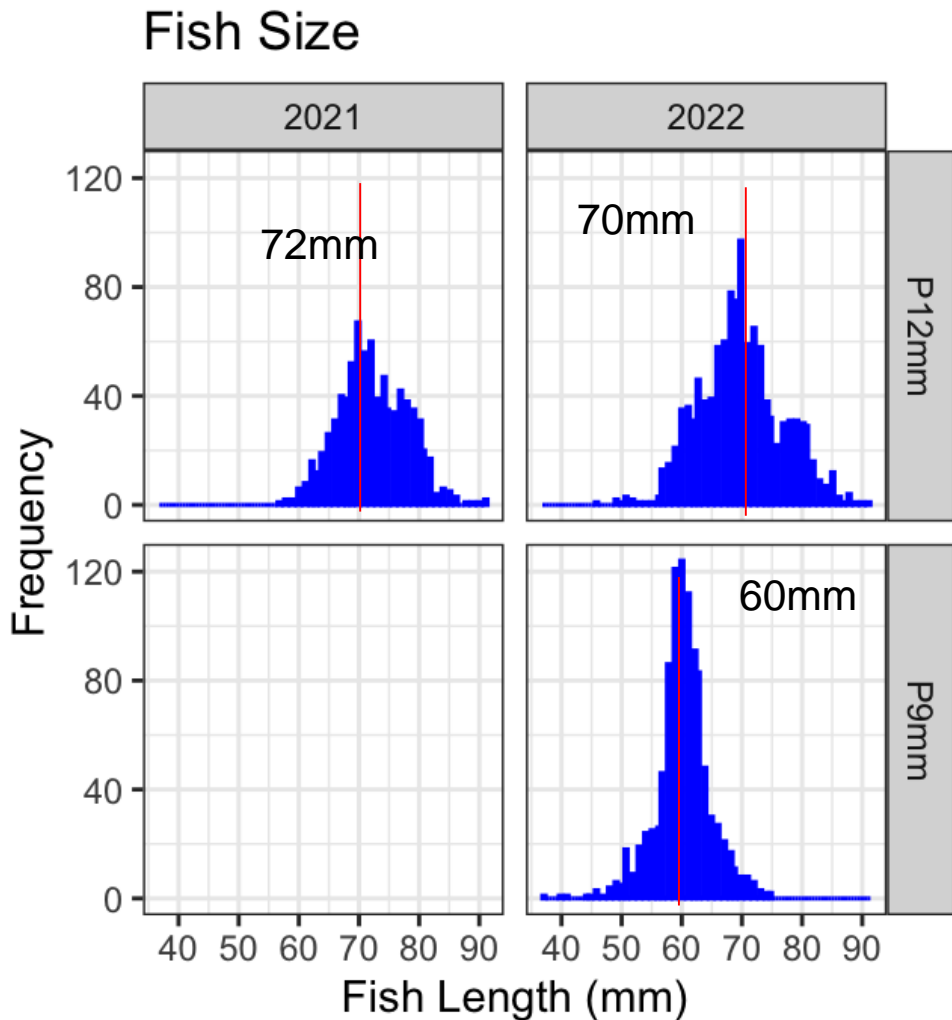
- Can we release the fish with small PIT tags early?
- What are the juvenile downstream survival and adults returns of those groups?

Sample size & River flow and water temperature

Group	Year	N	ReleaseDate
EARLY FALL CHINOOK SUBS 9 MM	2021	9757	15-Apr
LATE FALL 12 mm	2021	9809	29-Apr
FALL CHINOOK SMOLTS 9 mm	2022	9717	13-Apr
FALL CHINOOK SMOLTS 12 mm	2022	9514	28-Apr



Fish sizes



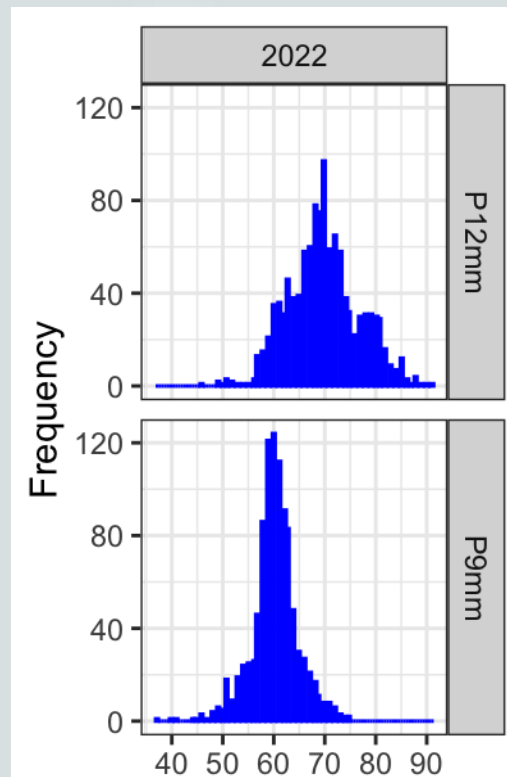
Fish size (mm)

Year	PIT Size	N	Median	Mean	Sd	se	min	max
2021	P12mm	798	72	72.31	5.73	0.20	57	91
2022	P12mm	1137	70	69.81	6.87	0.20	46	91
2022	P9mm	991	60	60.29	4.57	0.15	37	75

PIT TAG SHEDDING

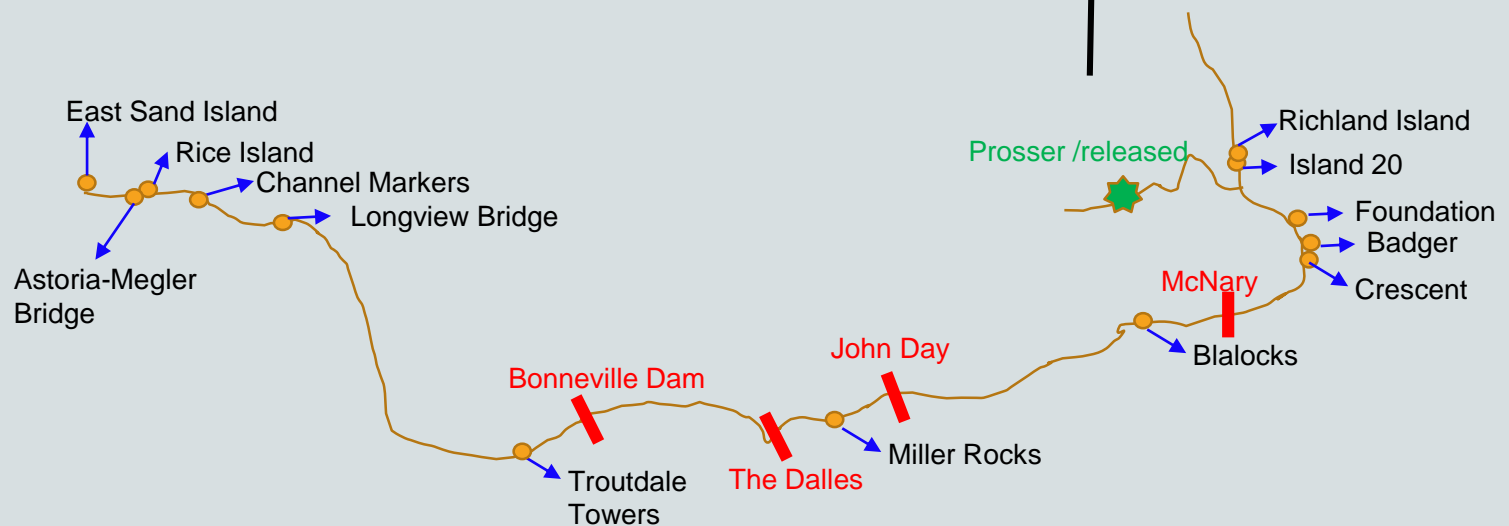
PIT tags size	Marked	Release d	period in tank	Number of PIT Tags	Number of shedding	Shedding %
9mm	5-Apr	13-Apr	8	9757	130	1.33
12mm	19-Apr	28-Apr	9	9809	371	3.78

2022

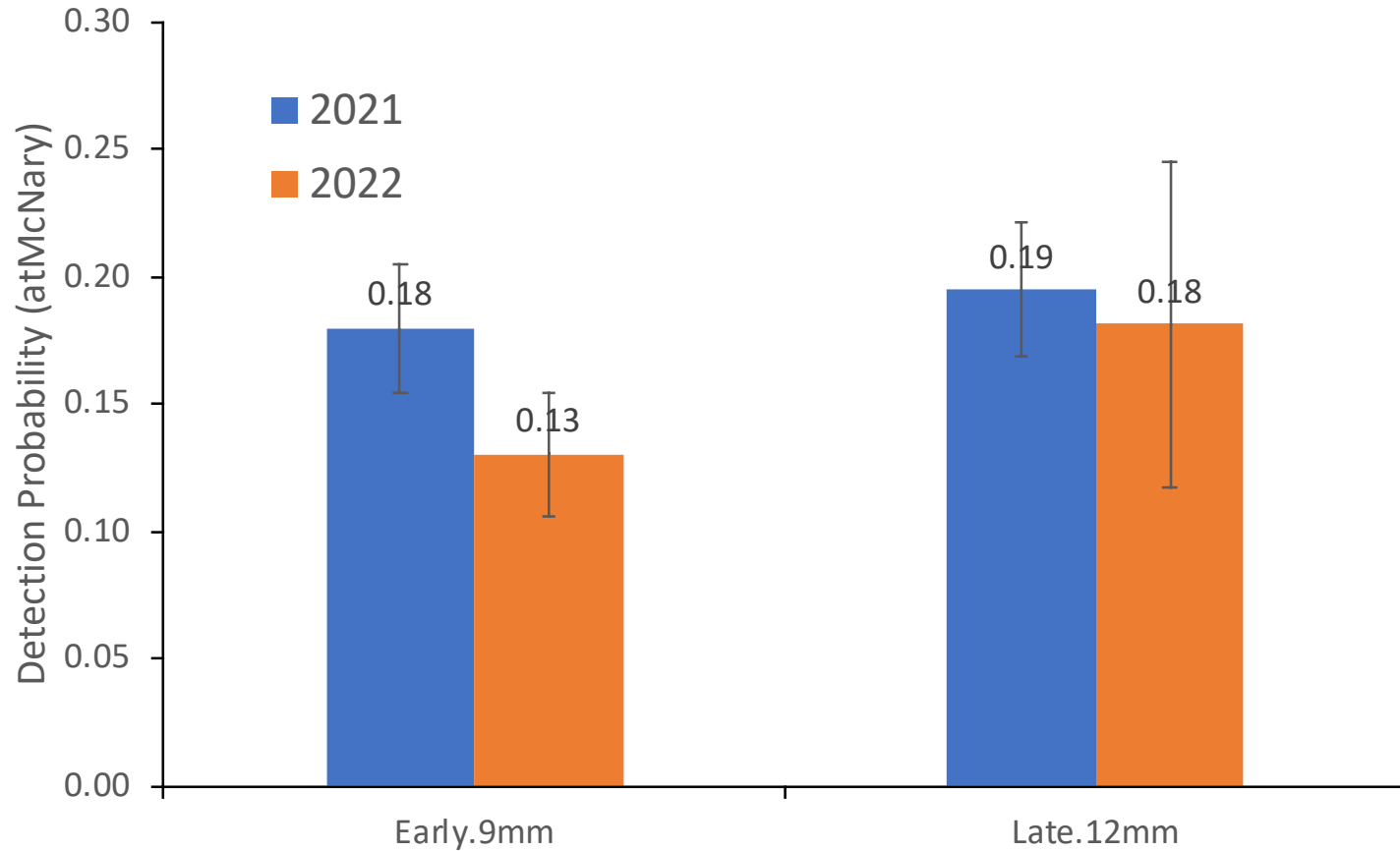


DETECTION

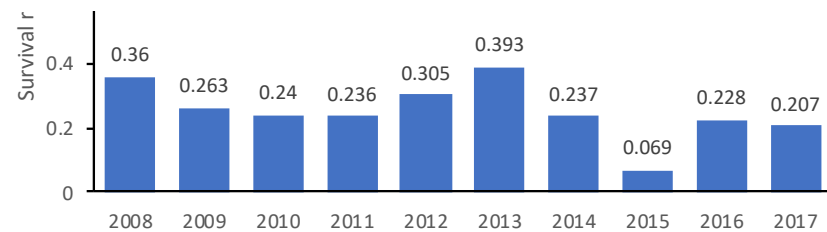
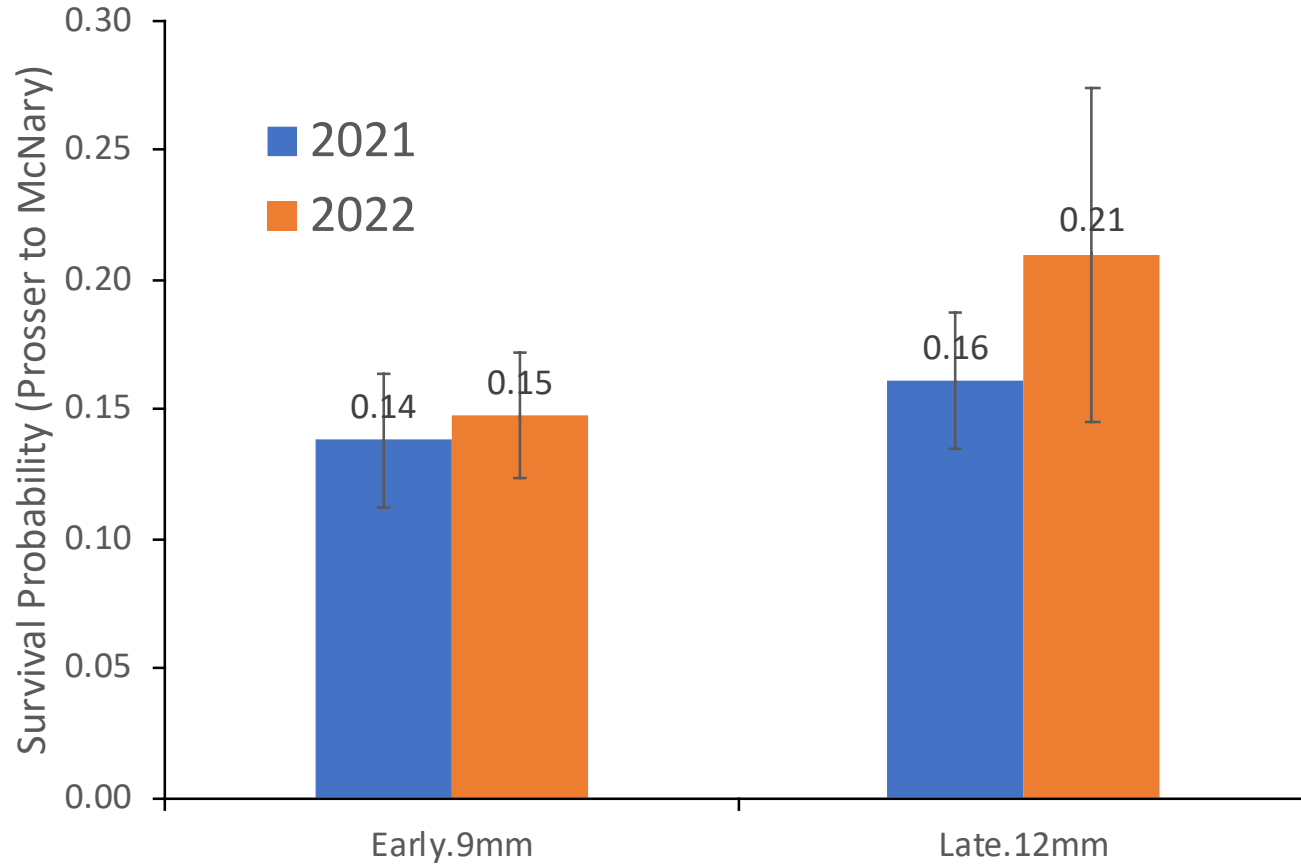
Group	Year	N	Release Date	MCJ	JDJ	BON	TWX	FOUNDI	BADGEI	CRESIS	LMILIS	ASMEBR	ESANIS	TotalPred
Early Fall SUBS 9 mm (PIT tag)	2021	9757	15-Apr	98	170	96	11	5	54	0	11	0	7	88
Late Fall 12 mm (Pit tag)	2021	9809	29-Apr	131	162	139	12	36	118	0	6	2	5	179
Early Fall SUBS 9 mm (PIT tag)	2022	9717	13-Apr	110	123	48	3	4	84	2	1	0	3	97
Late Fall 12 mm (Pit tag)	2022	9514	28-Apr	124	153	63	4	27	120	3	3	1	2	160



DETECTION RATE



SURVIVAL RATE



TRAVEL TIME

Year	PIT tag	Release date	Release date	Prosser to McNary	McNary to JDJ	JDJ to BON
2021	9mm	Early 8mm	15-Apr	48	6.00	2
2022	9mm	Early 9mm	13-Apr	56	5.50	2
2021	12mm	Late 12mm	29-Apr	36	4.50	2
2022	12mm	Late 12mm	28-Apr	41	5.50	2

SUMMARY

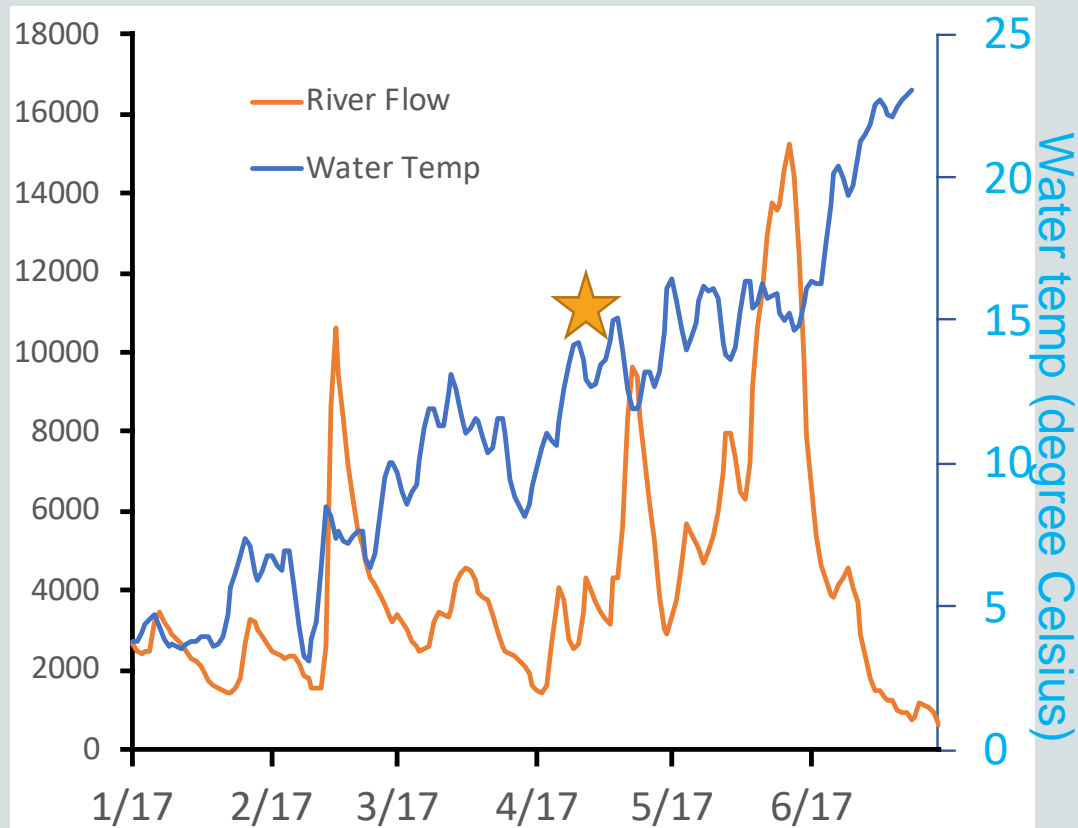
- Predation seems to be higher for the bigger fish (or maybe less detection of small PIT tags).
- Predation is found to be very high in the Badger Island.
- Fish with 9mm PIT tags release spent more time in the Yakima river (or in Columbia river upstream of McNary Dam) than the fish with 12 mm PIT tags, but the travel times form McNary Dam to Bonneville were similar.
- In general detection the rate of the group with small PIT tags (9mm) had low compared to the group with large PIT tags (12mm).

Comparisons

- Comparative study of **fall chinook** with 9mm and 12mm pit tags
- **Traditional raceways vs. circular raceways summer chinook**
- Sub-yearling vs yearling **summer chinook**

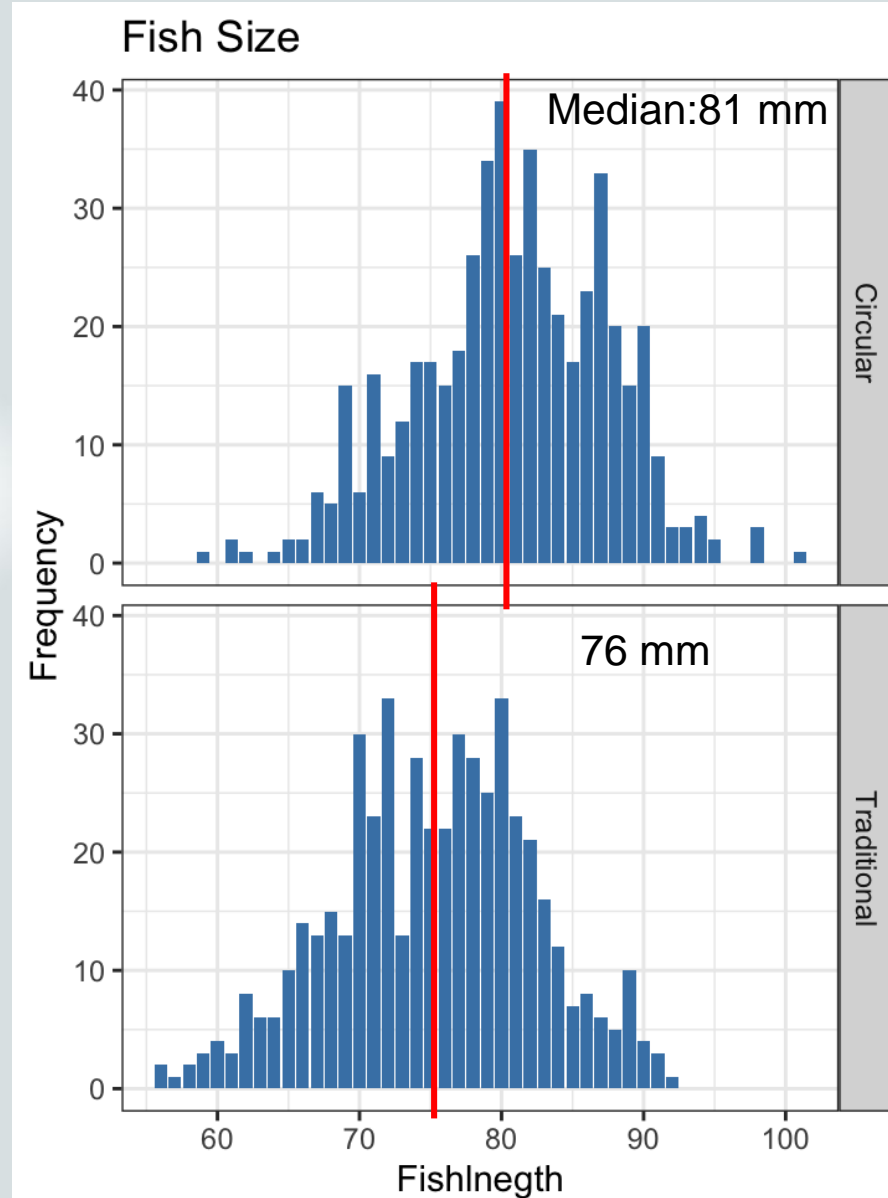
RELEASE PIT TAGS AND DATE

Release.Site	Release.date	N	Total N
Prosser Raceways	4/26/22	5240	5240
Prosser Circular	4/27/22	5206	5206



FISH SIZE CIRCULAR VS. TRADITIONAL

Type	N	Median	Mean	SE	min	max
Circular	504	81	80.67	0.30	59	101
Traditional	512	76	75.24	0.31	56	92

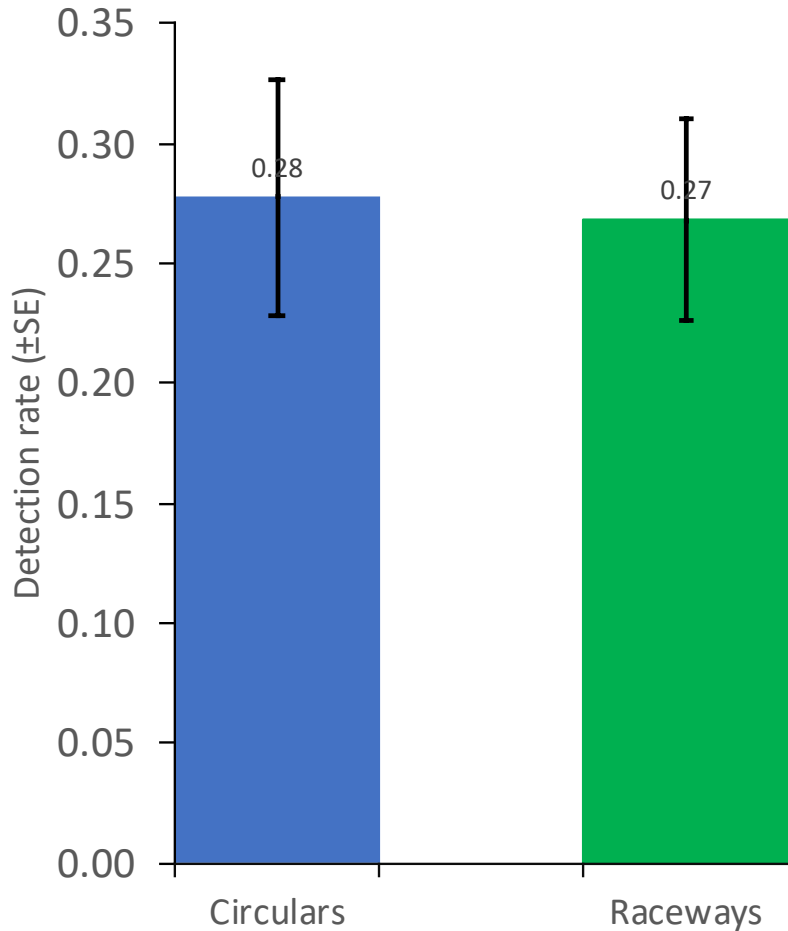


TRAVEL TIME [CIRCULAR VS. TRADITIONAL]

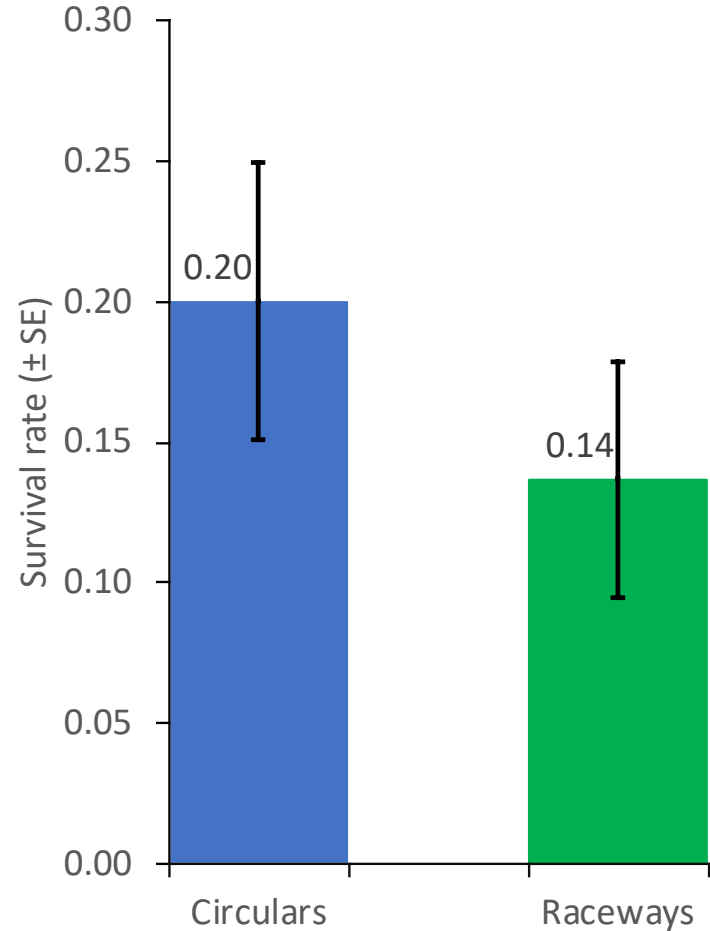
Group	Release date	Release to Pro	Pro-McN	McN-Bon
Prosser Circular	27-Apr		39	9
Prosser Raceway	26-Apr		44	7

DETECTION AND SURVIVAL RATE

Detection at McN



Survival rate Prosser- McN



SUMMARY

- Circular seems to be better for juvenile survival
- Faster downstream travel times for circular reared summer chinook
- Use less water
- In general, releases from the circulars appeared to have higher survival rates to McNary Dam and faster travel times. Large-size fish from the circulars appeared to have the highest survival rates and fastest travel time

Comparisons

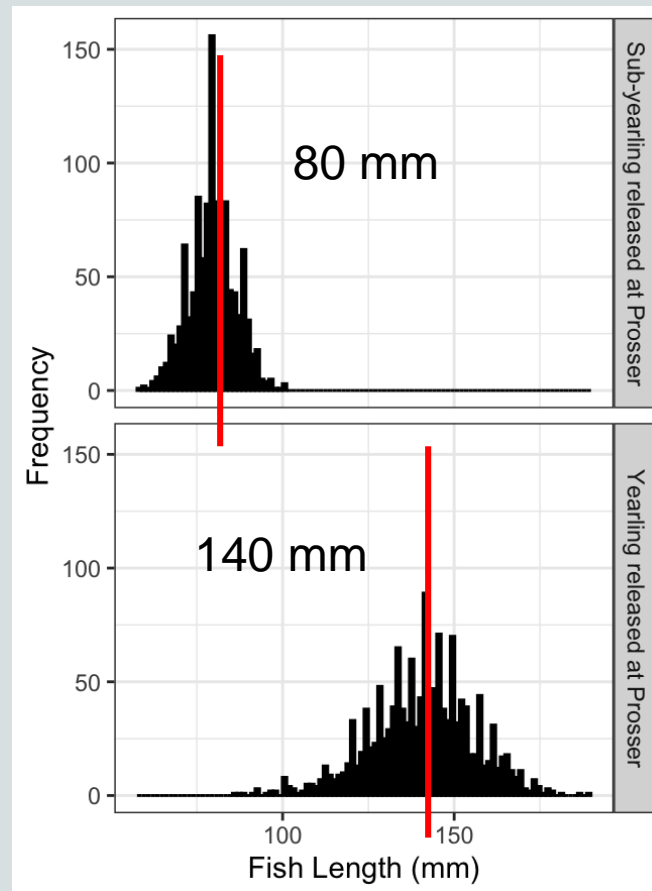
- Comparative study of **fall chinook** with 9mm and 12mm pit tags
- Traditional raceways vs. circular raceways **summer chinook**
- **Sub-yearling vs yearling summer chinook**

RELEASE GROUPS: 2021

Session.Message.Value	Release.Date.MMDDYYYY		
	2021-04-24	2021-04-30	2021-05-07
SUB YEARLING SUMMER CHINOOK RELEASED AT PROSSER	0	0	15012
YEARLING SUMMER CHINOOK RELEASED AT PROSSER	20640	0	0
YEARLING SUMMER CHINOOK RELEASED IN RIVER BY WAPATOX	0	15815	0
YEARLING SUMMER CHINOOK RELEASED IN WAPATOX PIPE	0	14766	0

FISH LENGTH

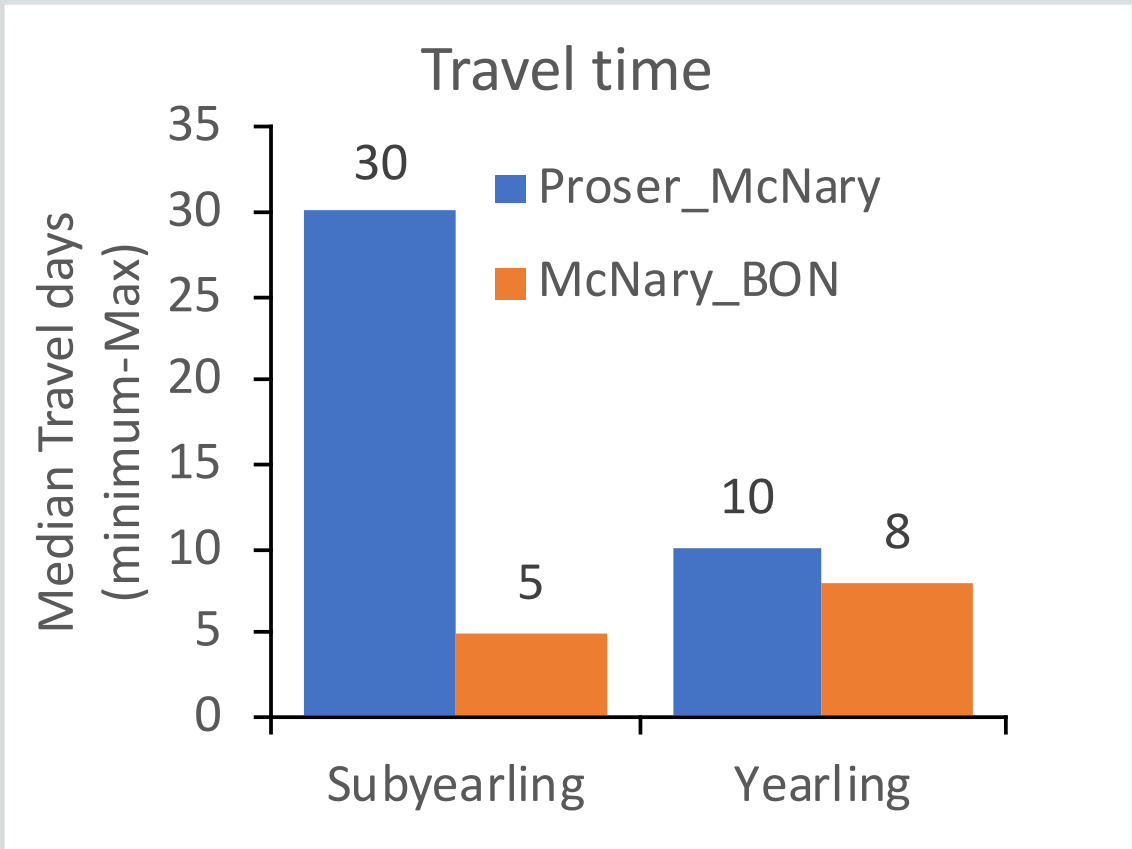
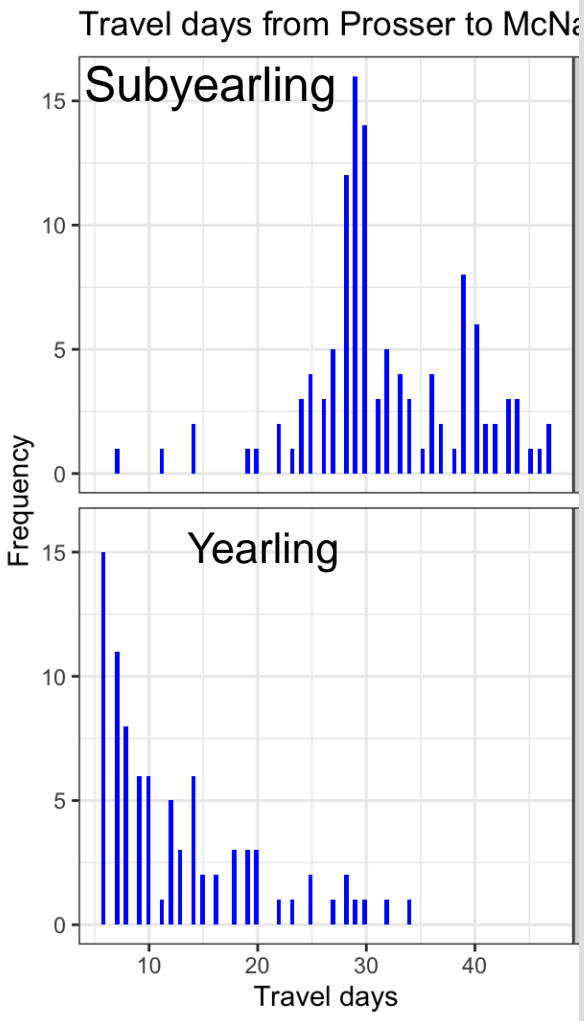
Type	N	Median	Mean	se	min	max
Subyearling PRO	1117	80	79.61	0.20	58	100
Yearling PRO	1418	141	140.55	0.40	86	189



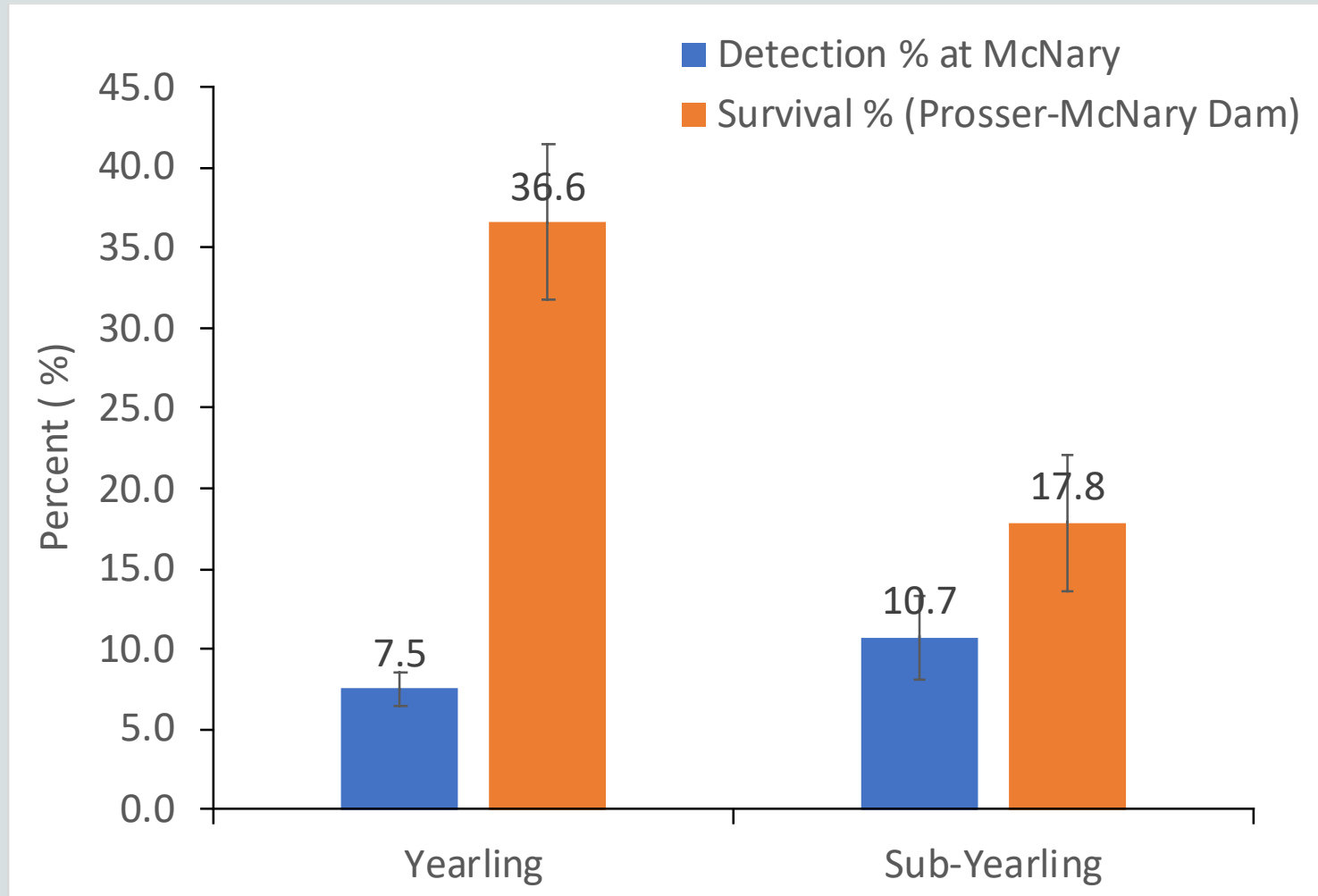
TRAVEL TIME

Median Travel days (minimum-maximum)

Type	Group	Release date	Pro-McN	McN-Bon
Subyearling	Subyearling	27-May-21	30 (7-47)	5 (4-8)
Yearling	Yearling	24-Apr-21	10 (6-34)	8 (6-14)



DETECTION RATE/SURVIVAL



SUMMARY

- Travel times to arrive at McNary Dam were slowest for subyearling than yearling.
- However the travel time from McNary to Bonneville Dam for subyearling and yearling are same.
- Survival rate of yearling release group had better survival rate than the subyearling

2022-2023 Plans

- Conclude 9mm vs 12mm study.
- Traditional vs Circular comparison.
- Subyearling vs Yearling comparison.
- Redd surveys of returning adults.
- Summer Brood collection Eastbank H

???

