Yakima River Summer Chinook Program 2022-23

Melinda Goudy and Shubha Pandit
Yakima Klickitat Fisheries Project (YKFP)

Thank You

Daily Field Activities Teams-

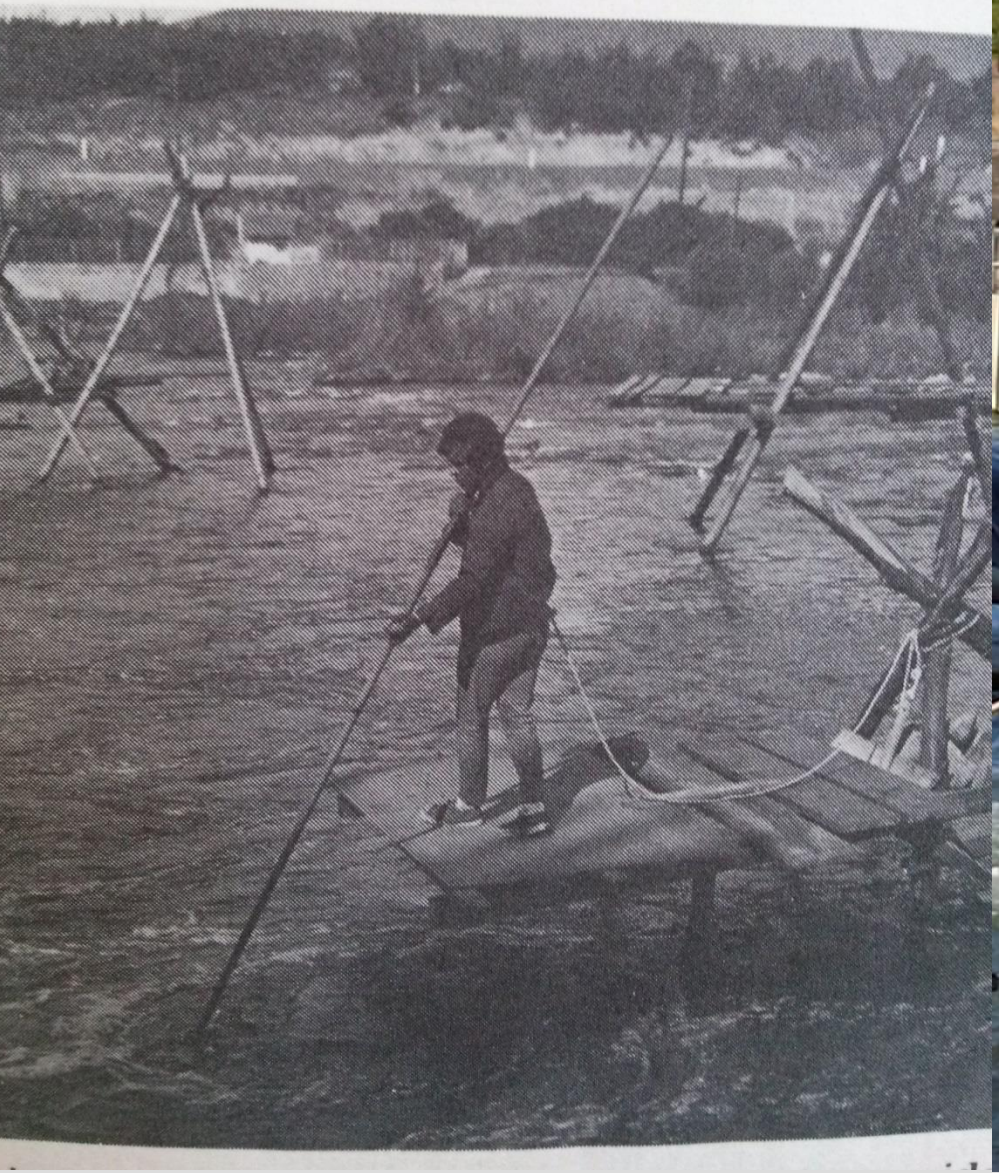
- **Fall Chinook:** Brady Carl, Dirk Spencer Jr, Robert Haggerty Jr and Gene Sutterlict Jr.
- **Coho** : Quincy Wallahee, Denny Nagle and Talon Hull

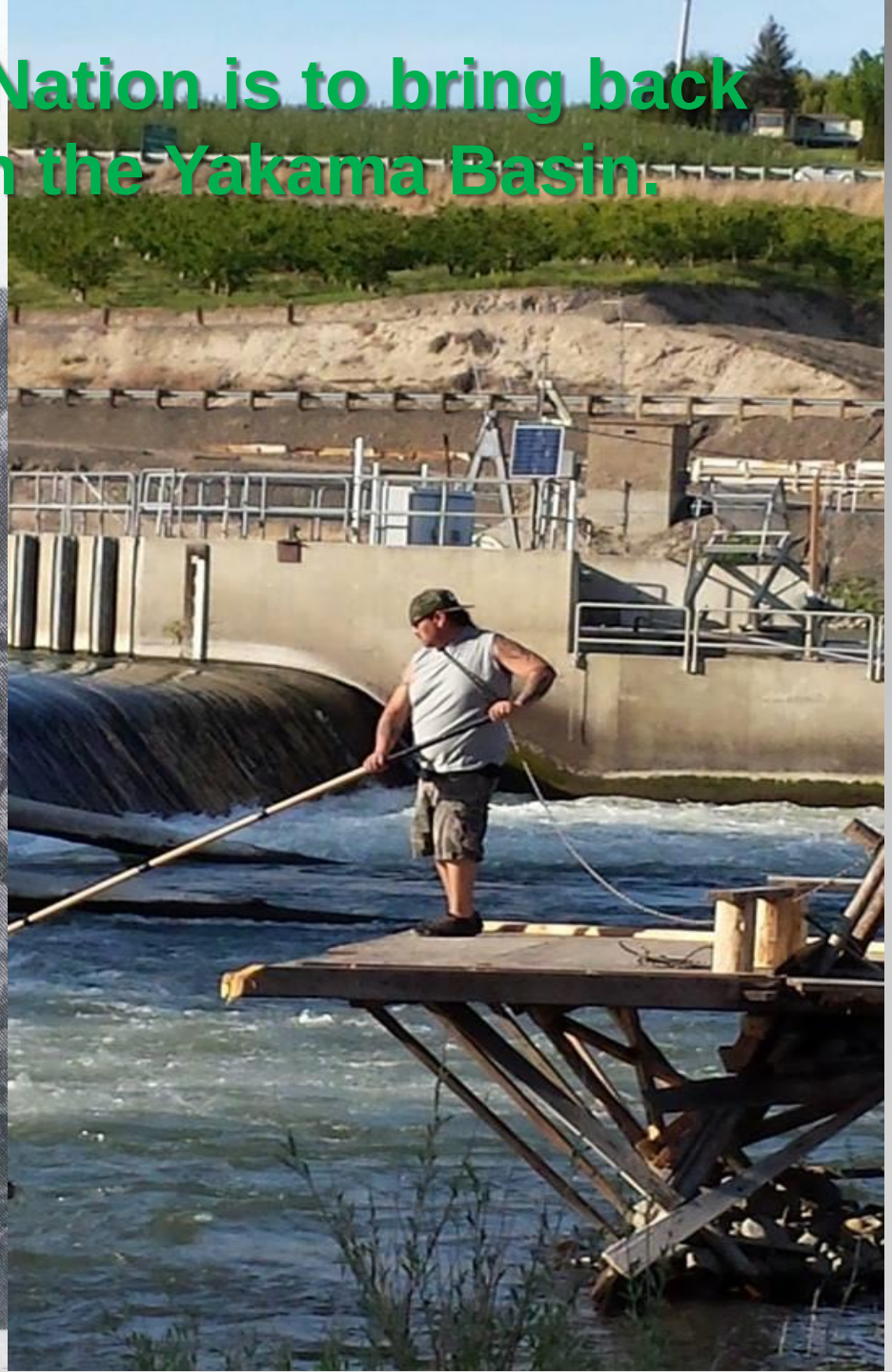
- **YKFP**: Michael H Fiander, Justin Onley, Chuck Carl, Dave Lind, Daylen Isaac and Bill Bosch

- **Fish Culture and Technician Crews from**: Prosser, Marion Drain and Cle Elum Hatcheries, Roza and Predation Crews

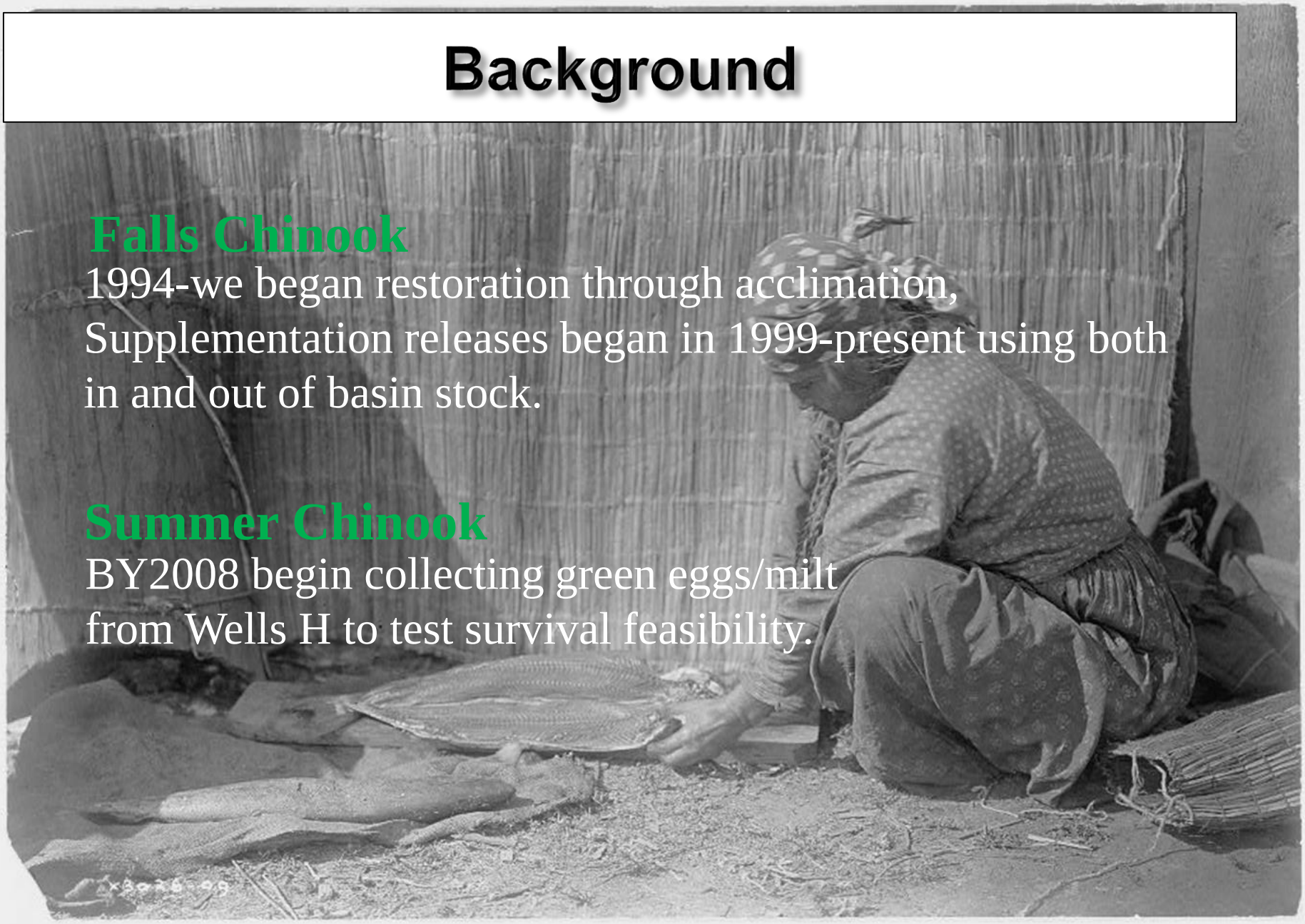
- **YKFP Administration:** Rubi Rodriquez, Adrienne Wilson, Carol Sue Speedis, Alena Wallahee and Martel Grant

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





Background



Falls Chinook

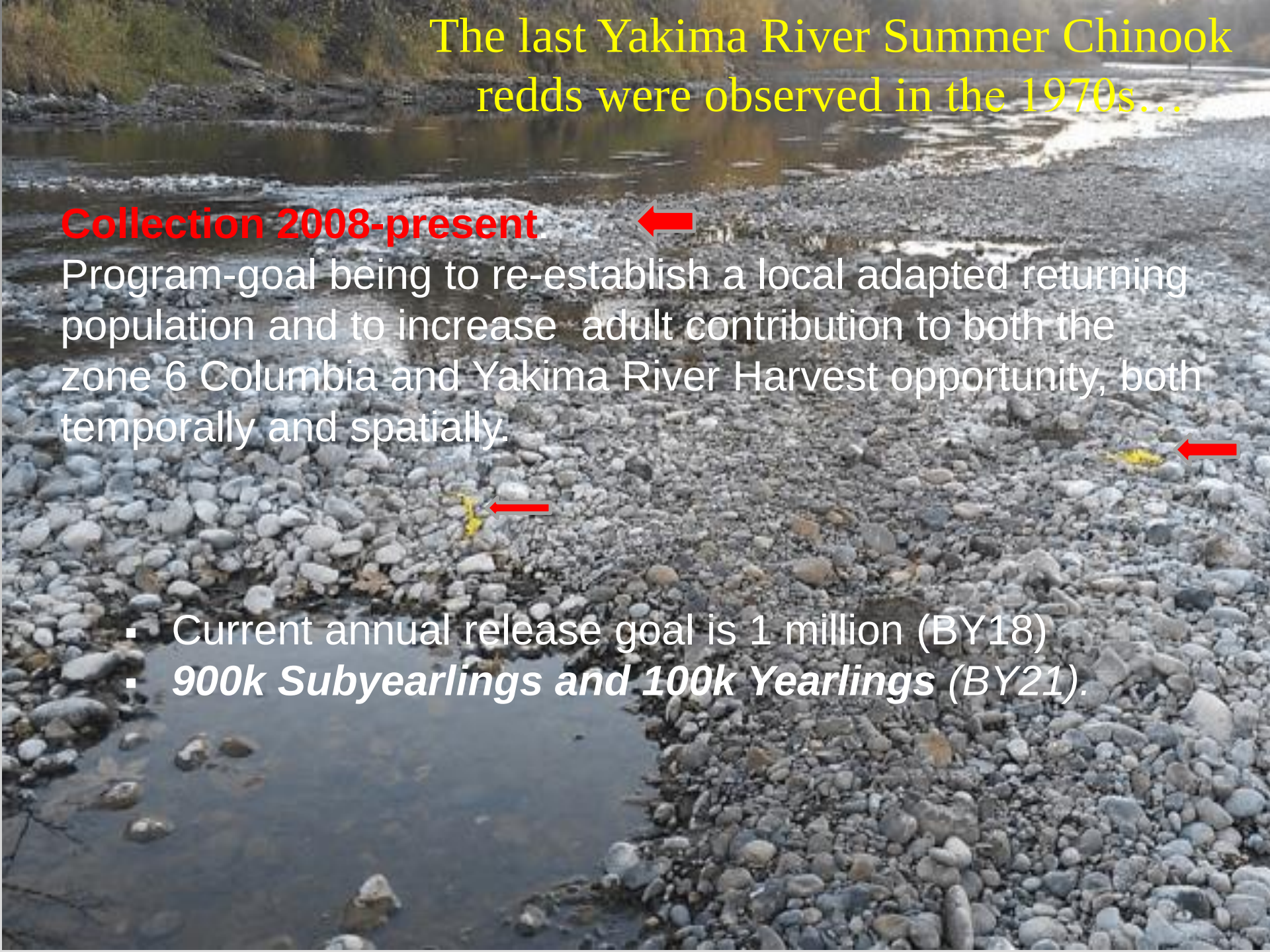
1994-we began restoration through acclimation, Supplementation releases began in 1999-present using both in and out of basin stock.

Summer Chinook

BY2008 begin collecting green eggs/milt from Wells H to test survival feasibility.

Eastbank 2020-23
Collect 620 pairs

YN Marion Drain Hatchery



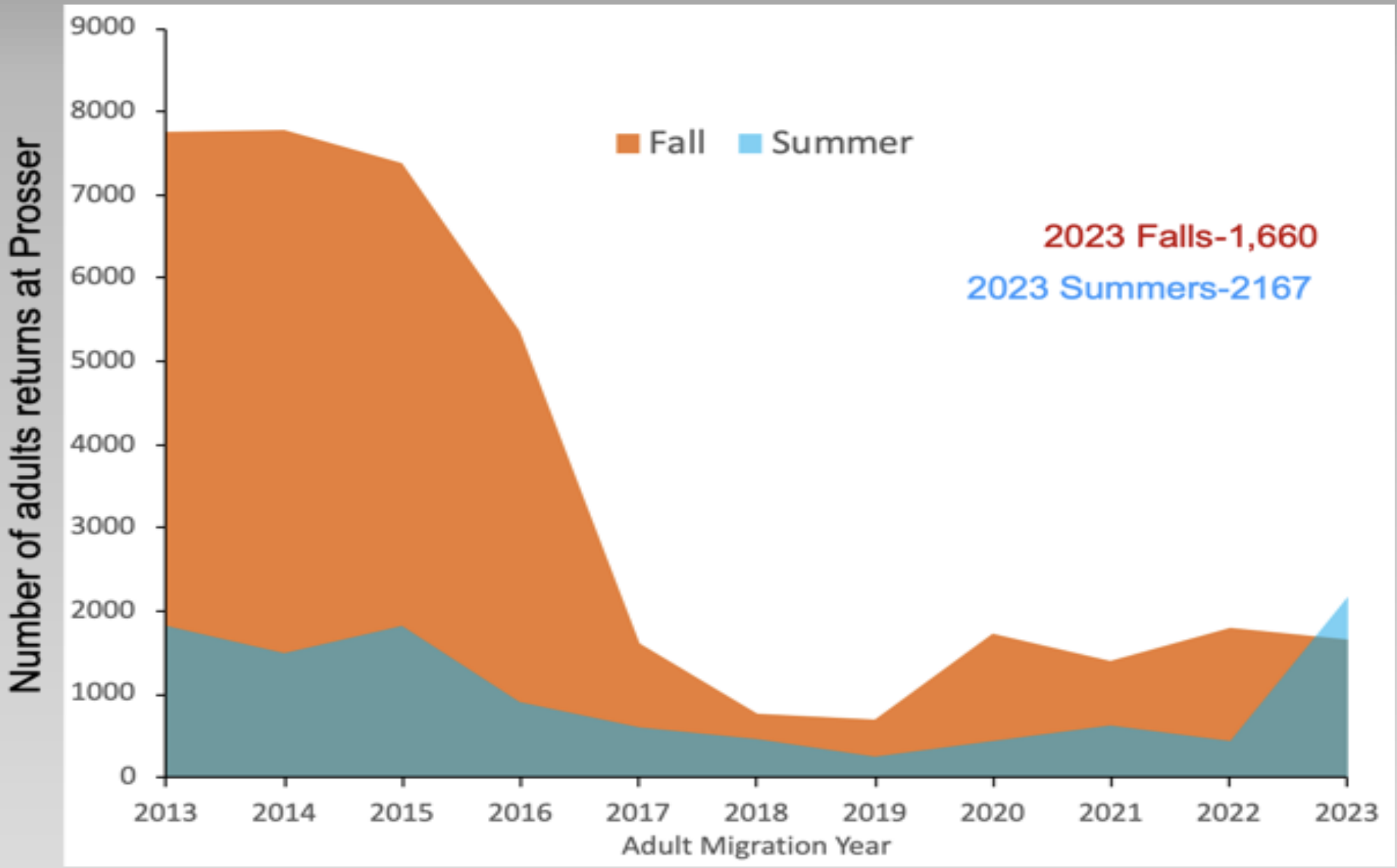
The last Yakima River Summer Chinook redds were observed in the 1970s…

Collection 2008-present.

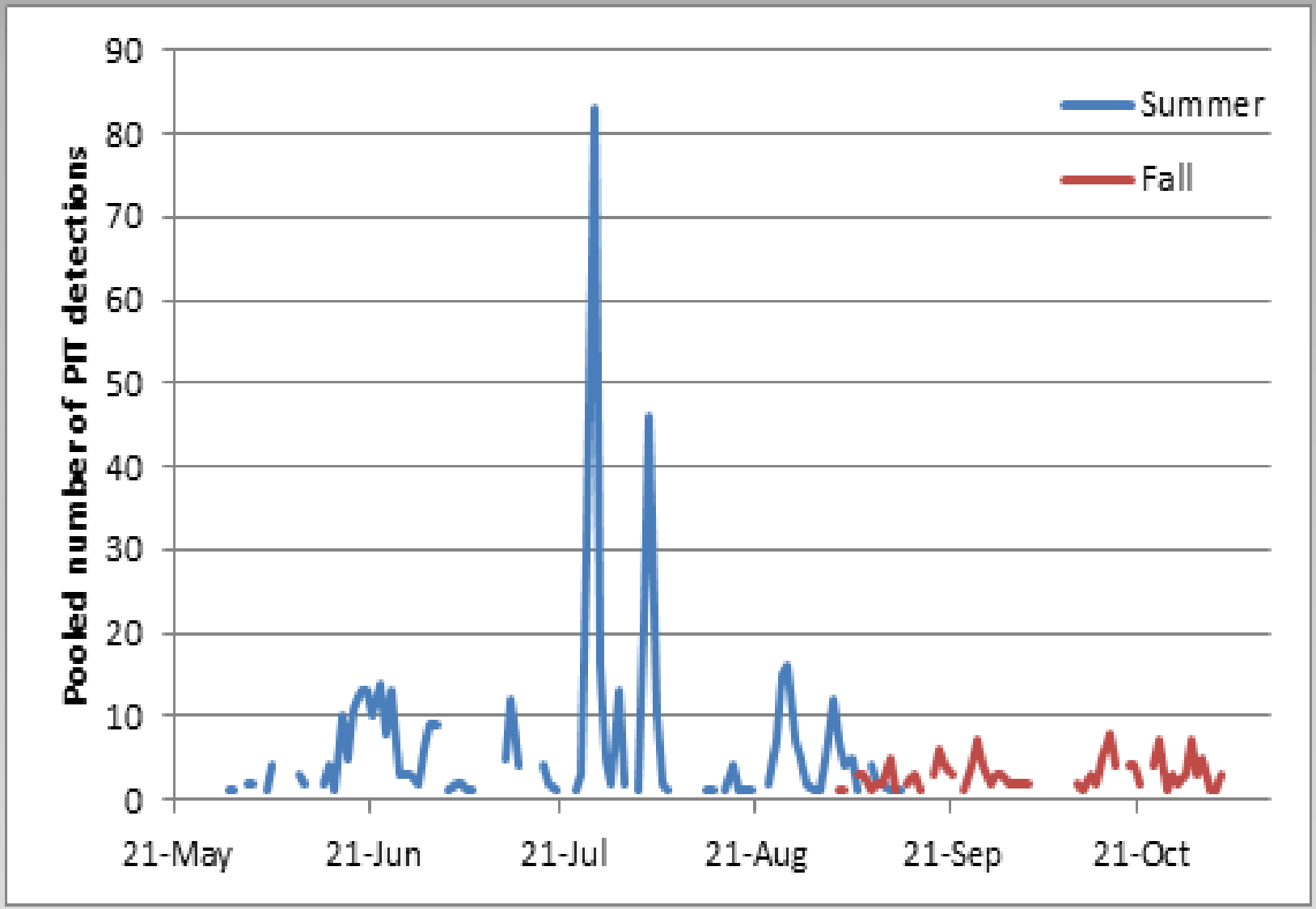
Program-goal being to re-establish a local adapted returning population and to increase adult contribution to both the zone 6 Columbia and Yakima River Harvest opportunity, both temporally and spatially.

- Current annual release goal is 1 million (BY18)
- ***900k Subyearlings and 100k Yearlings*** *(BY21).*

Returning Adults

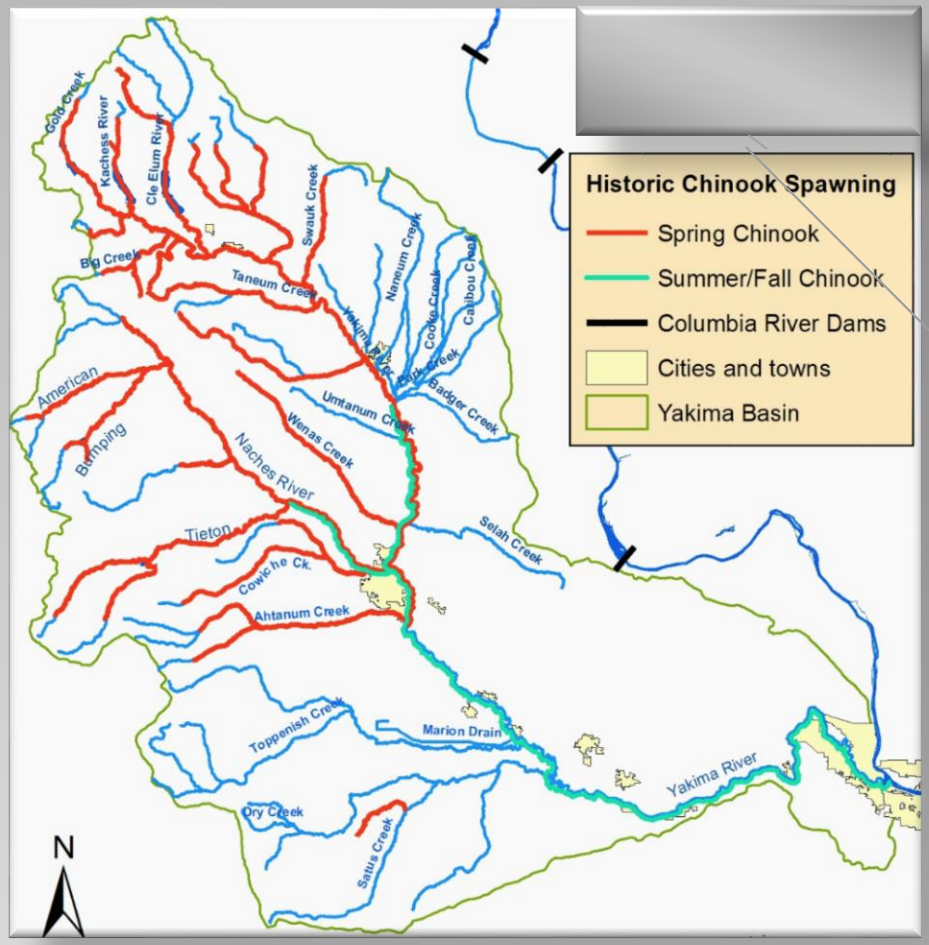


Detection timing: Summer vs. Fall

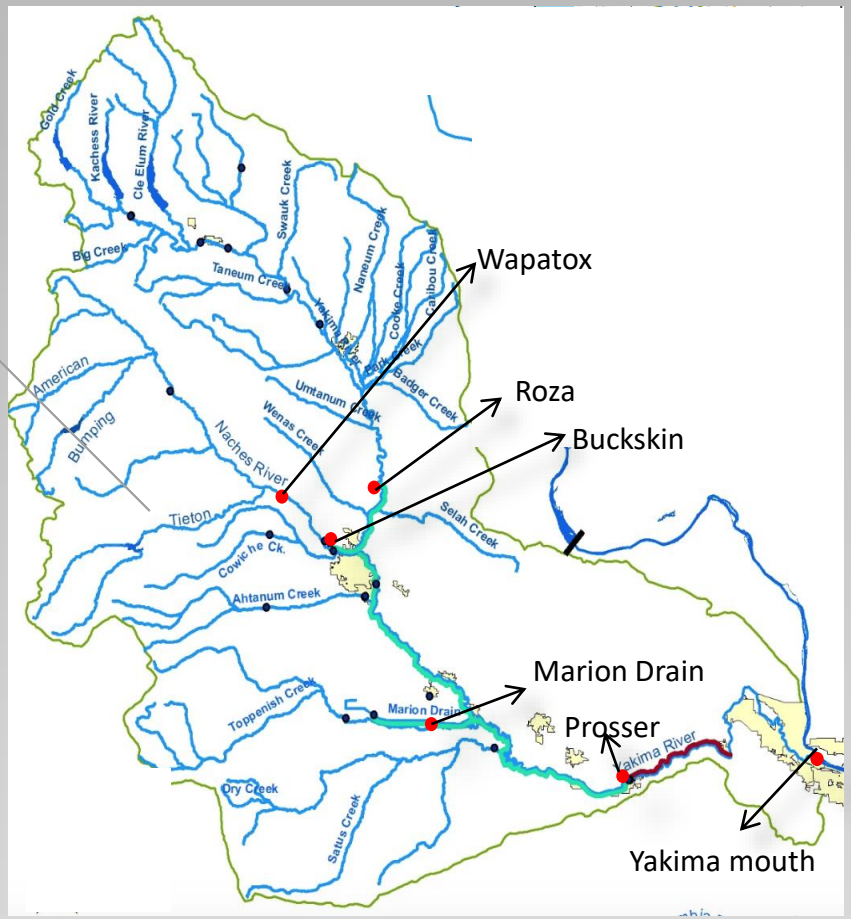


Summer/Fall chinook

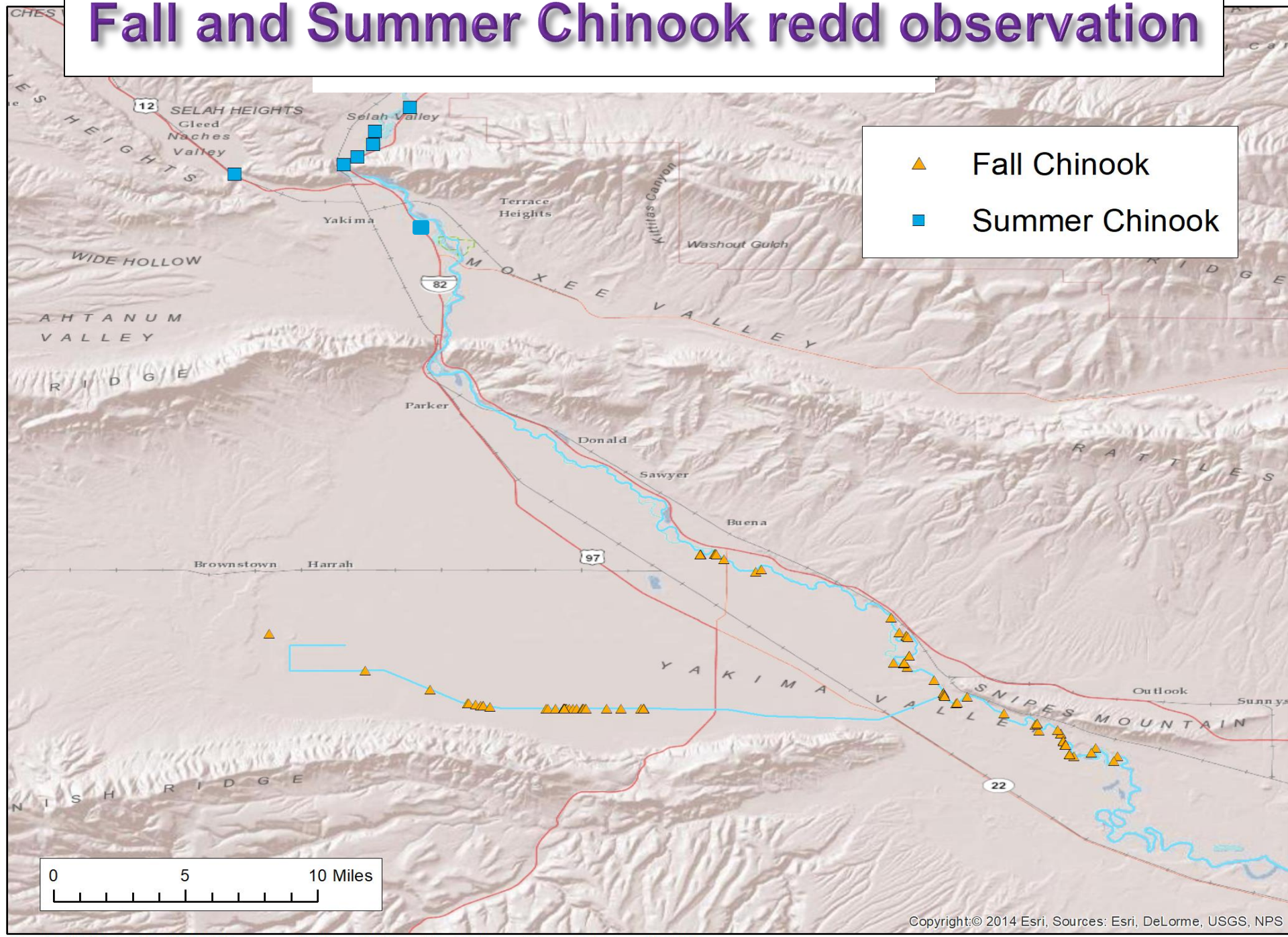
A. Historical Chinook spawning area



B. Current Chinook spawning area and Juvenile releasing locations

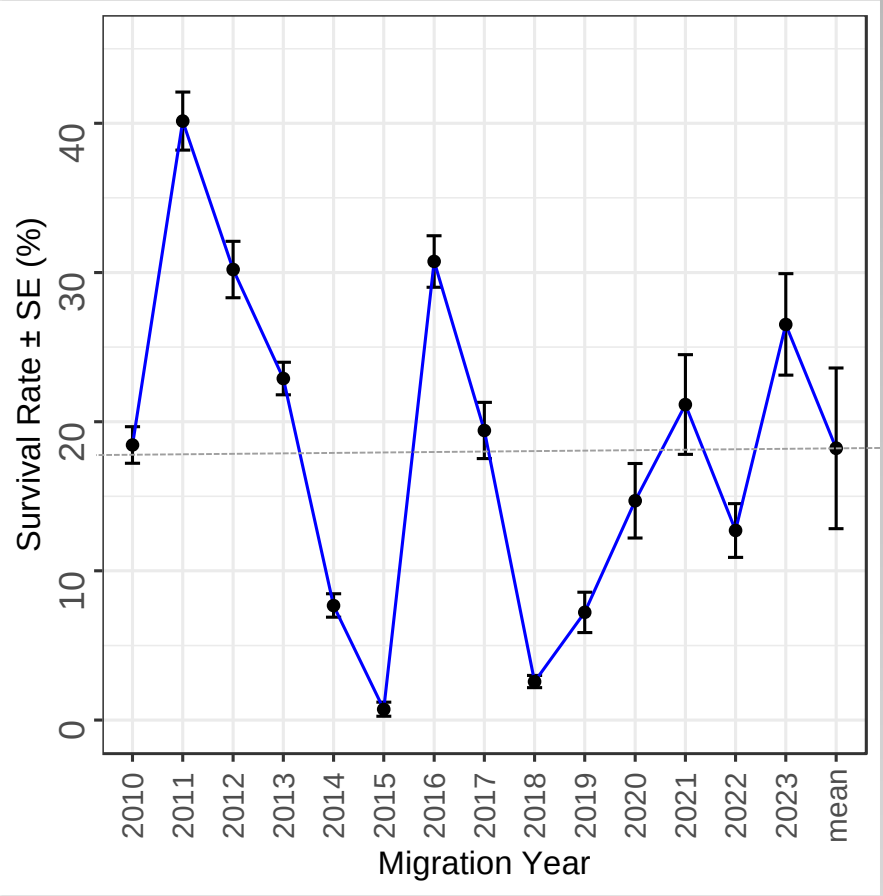


Fall and Summer Chinook redd observation

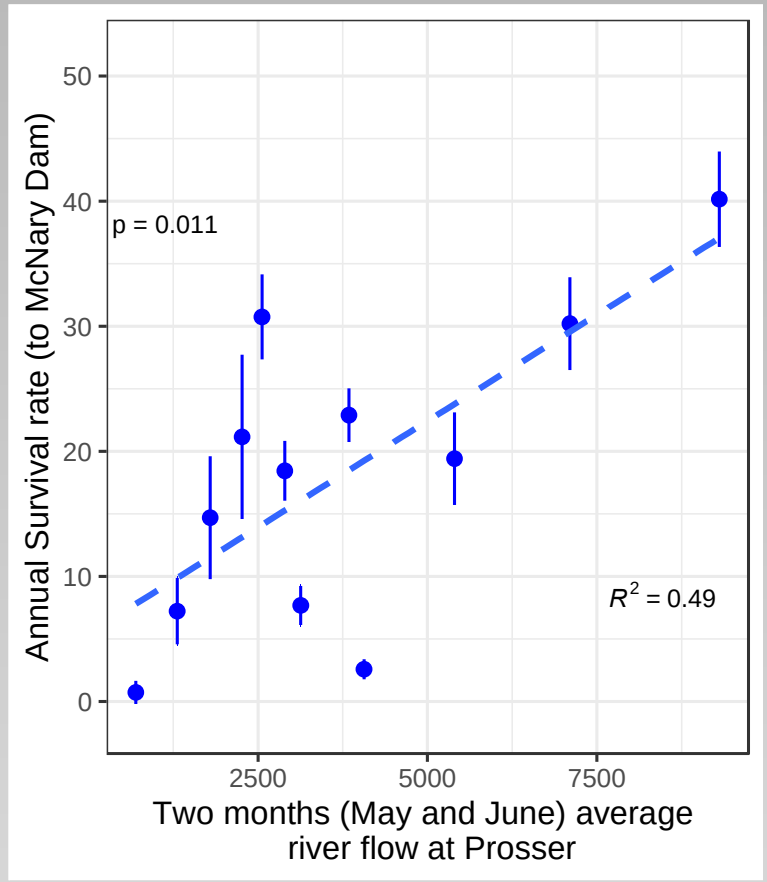


Summer chinook

A. Smolt survival rate (to McNary Dam)

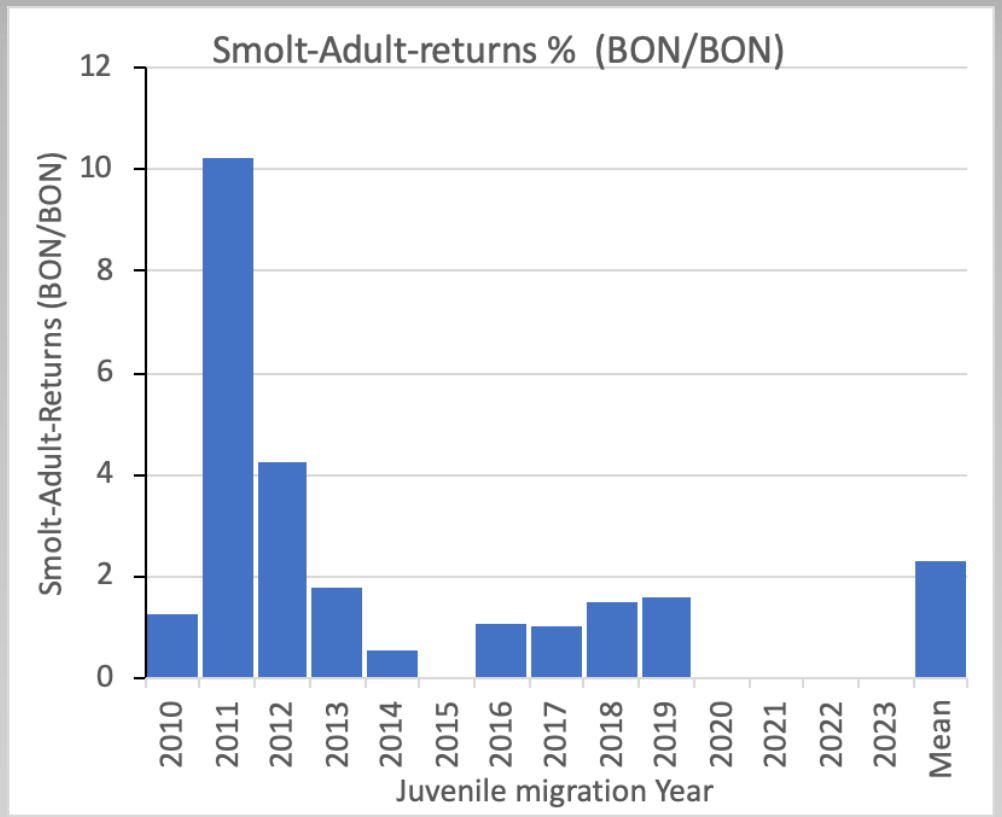


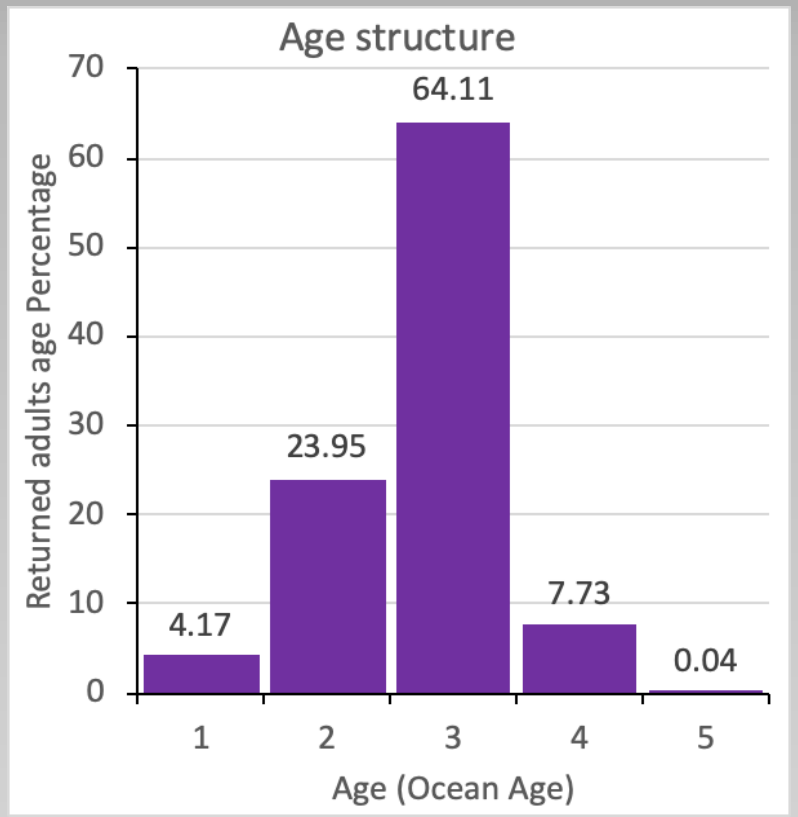
B. Relation between annual survival rate and River flow



Summer chinook

Smolt–Adult- Returns (%) and Age structure



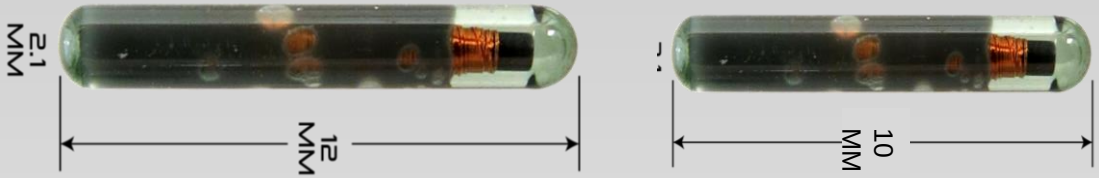


Ongoing experiment

Since our strategy to increase the juvenile survival data and adult returns, we are evaluating whether the following conditions affect them, especially:

- Rearing in circular versus traditional raceways

- Releasing smaller fish earlier with small PIT tags (9 or 10mm) verses bigger fish later with 12mm



- Releasing sub-yearling versus Yearling

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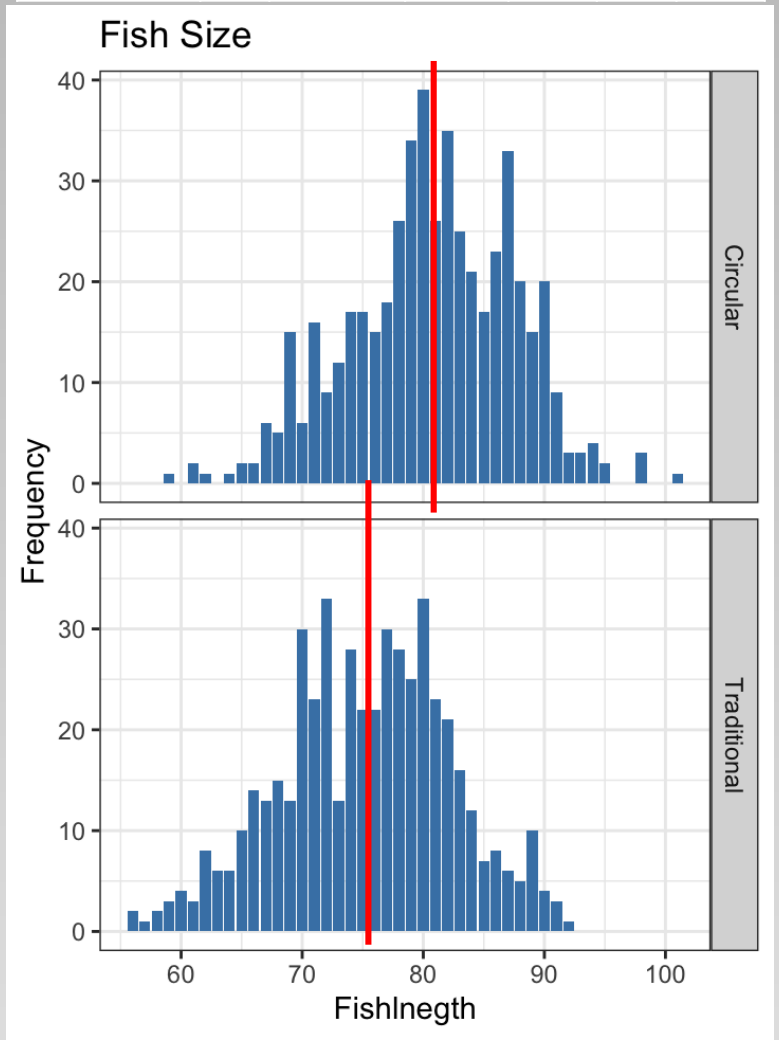
Releasing sub-yearling versus yearlings

Fish length

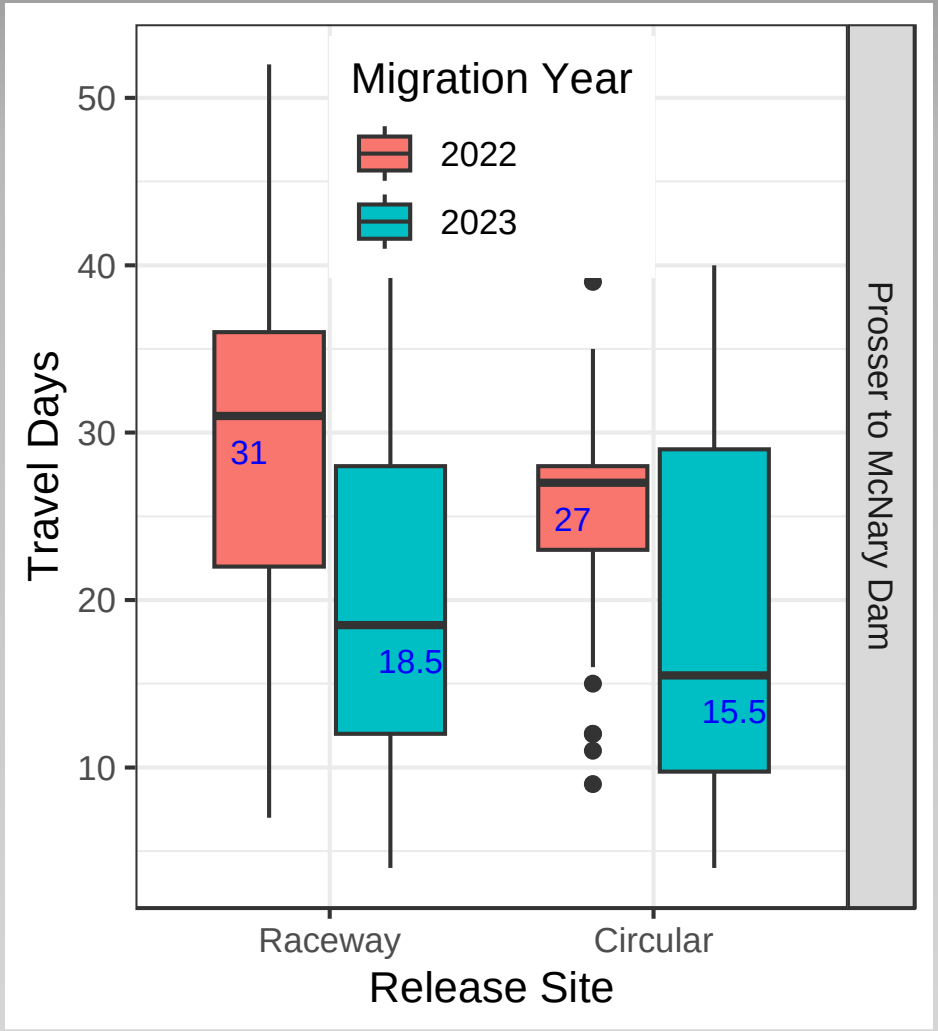
2022

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

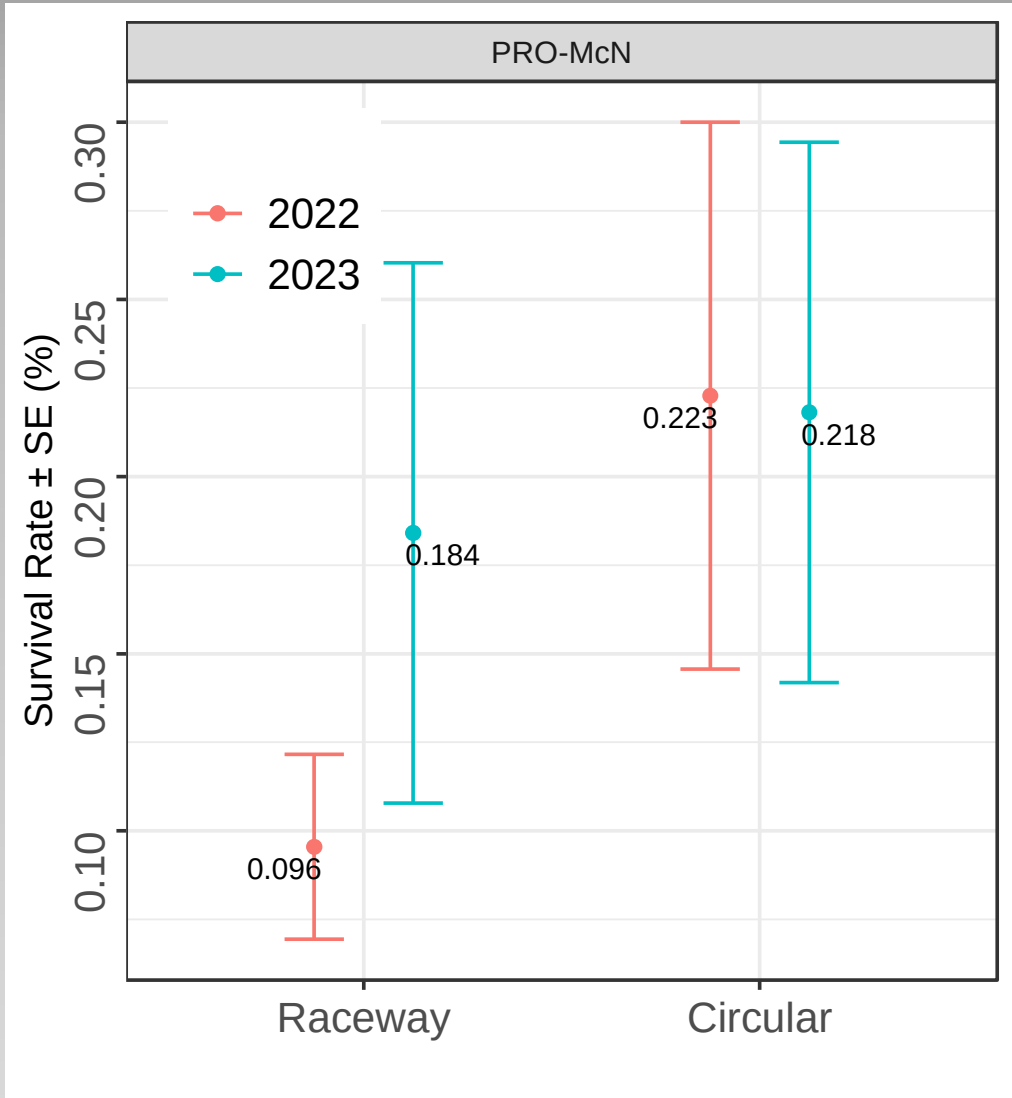


Travel time

From Prosser to McNary Dam



Survival rate



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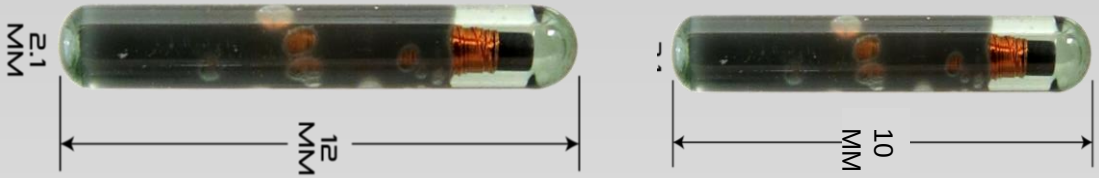
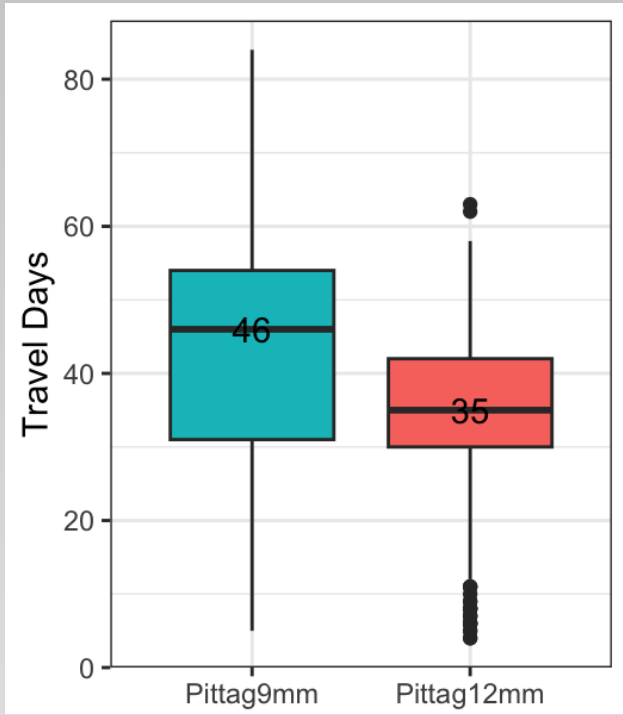


- Releasing sub-yearling versus yearling

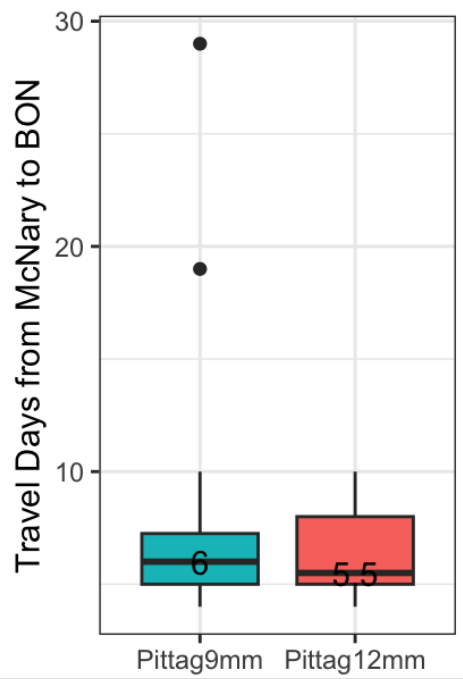
PIT tags shedding and travel time

PIT tags size	Marked	Released	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

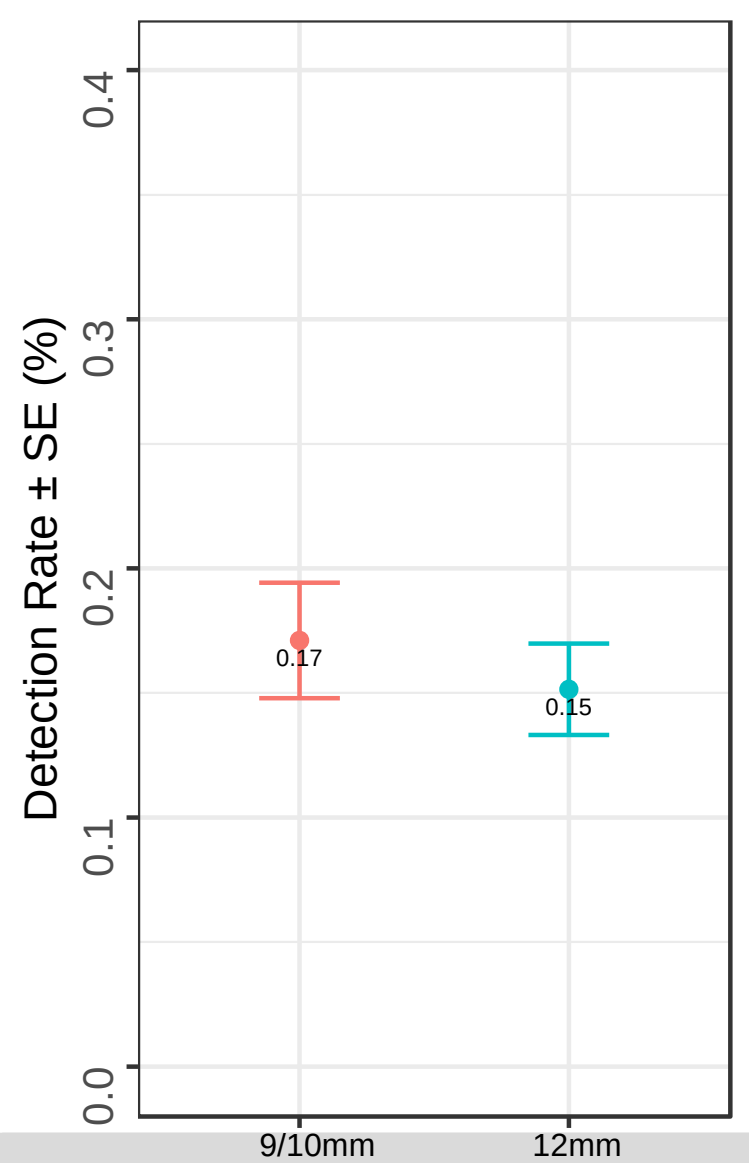
A. Prosser to McNary Dam



B. McNary to Bonneville Dam



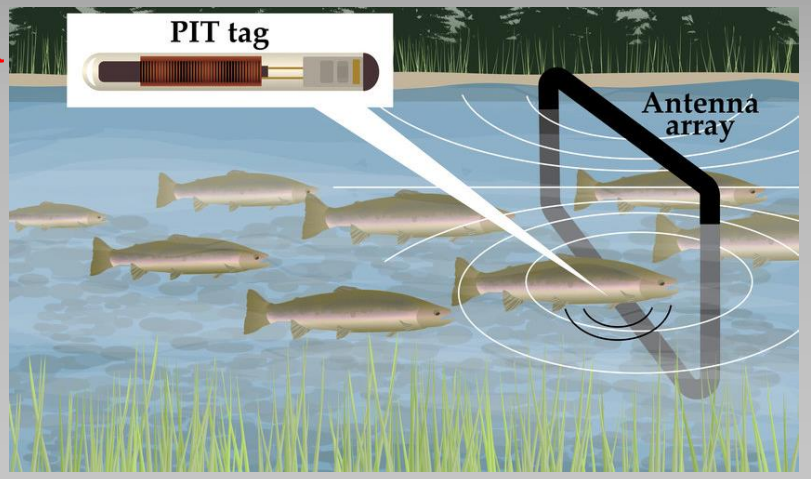
Detection rate at McNary Dam)

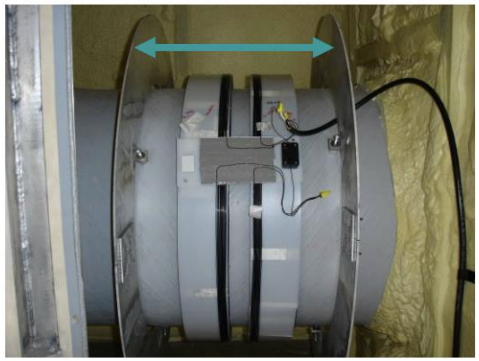


Detection Rate (at McNary Dam)

PIT-tag interrogation system installed on the main juvenile fish bypass pipe at McNary Dam

Antenna





The photo shows how a typical antenna is wrapped for the full-flow PIT-tag system. The double-headed line delineates the spacing between the two metal RF clamps that determine the size of the tag-energizing electromagnetic field.

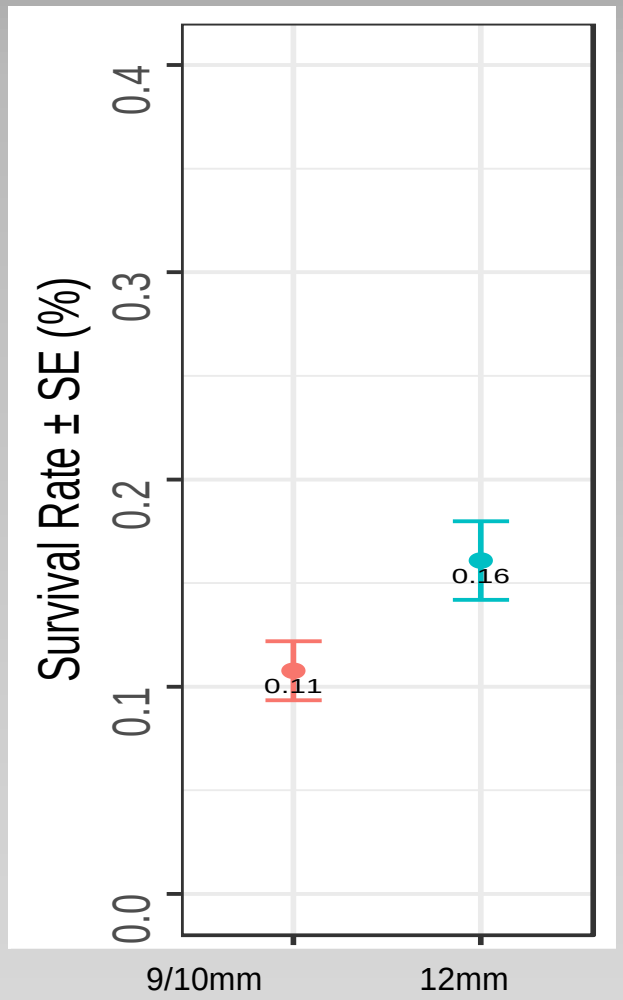
System description

Dam	Distance from pipe entrance to first antenna (ft)	Spacing between RF clamps	Transport pipe internal diameter	Water velocity (ft/s)
McNary	255	30"(original)	91.4 cm | 36 in	11
Ice Harbor	251	33"	88.9 cm | 35 in	12
Lower Monumental	200	32"	91.4 cm | 36 in	10
John Day	750	32"	91.4 cm | 36 in	10.5
Bonneville	~9,000 (1.7 mi)	30"	121.9 cm | 48 in	4.8
Little Goose	115	32"	91.4 cm | 36 in	9.5

Lower detection rates may be possible for smaller PIT tags in the river antenna, but not in the Juvenile Bypass system.

The electromagnetic field of the 9mm/10mm PIT tags appears to be fall within the antenna coverage, indicating no significant effects on the detection of PIT tags measuring 9/10mm at the juvenile bypass system.

Survival rate (Prosser-McNary Dam)



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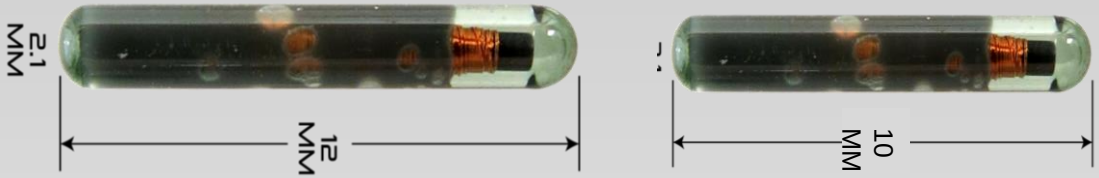
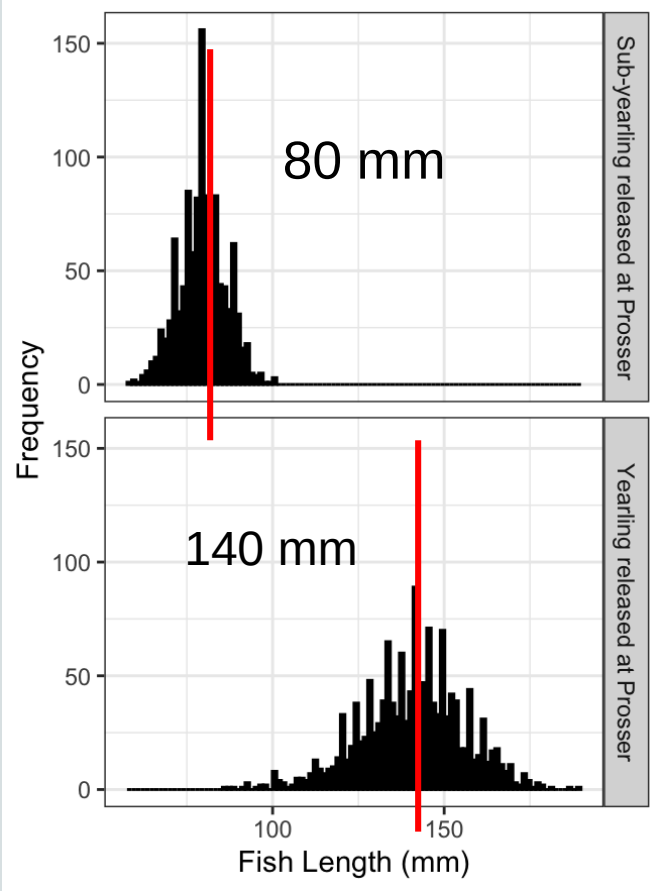


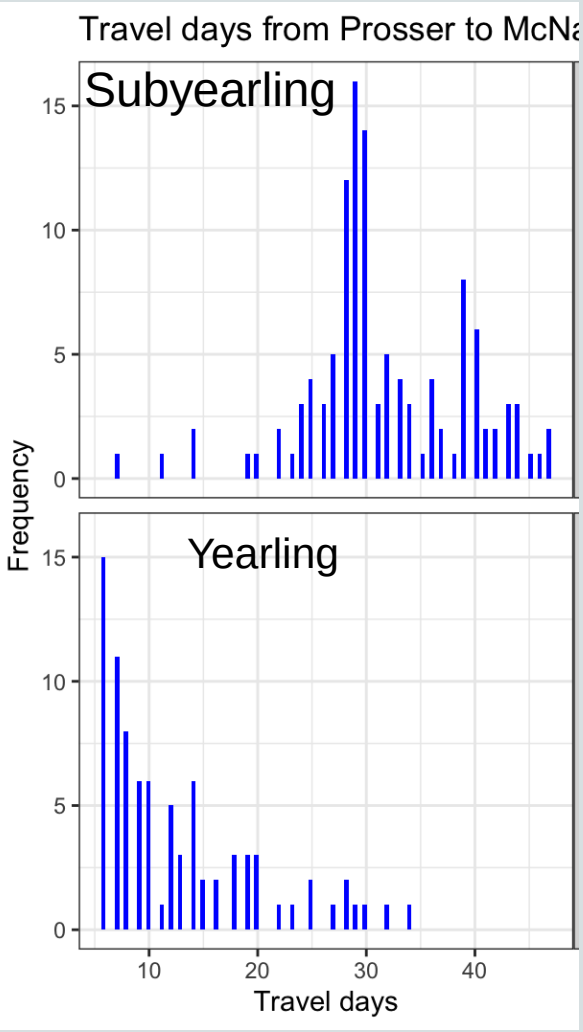
- Releasing sub-yearling versus Yearling

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

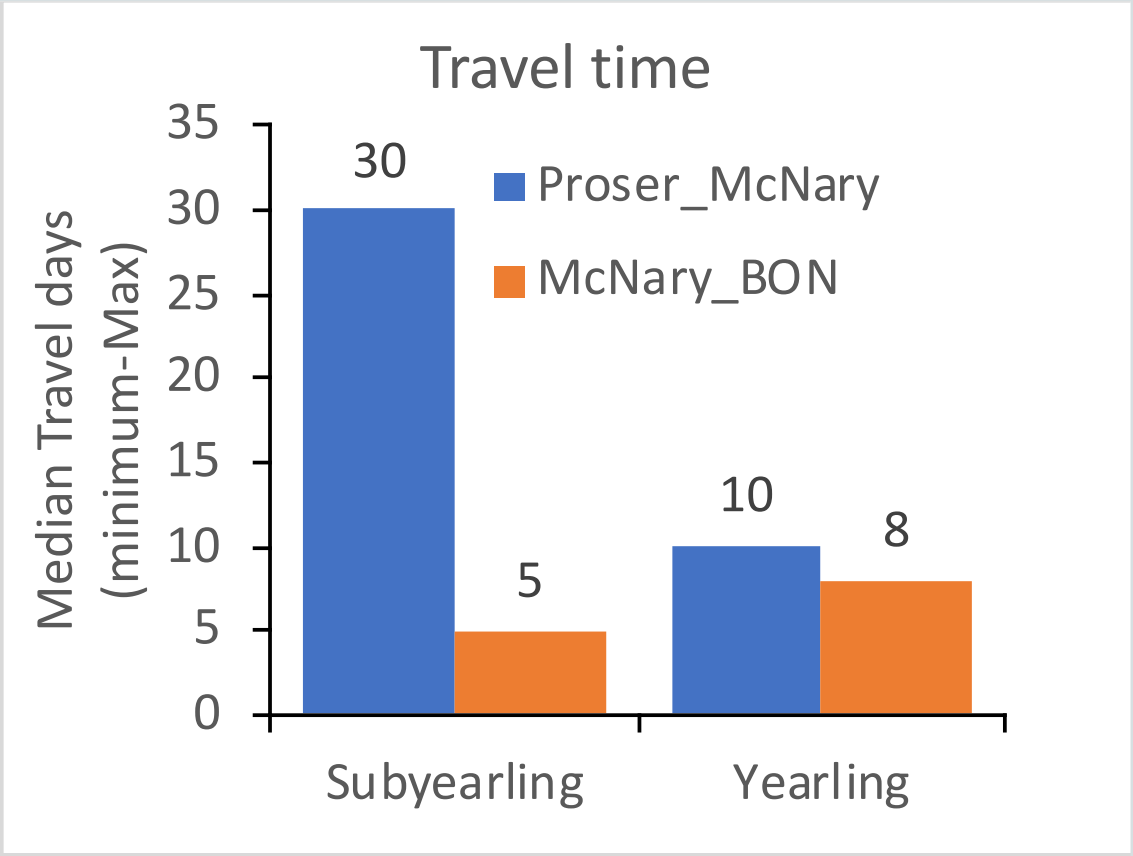


TRAVEL TIME

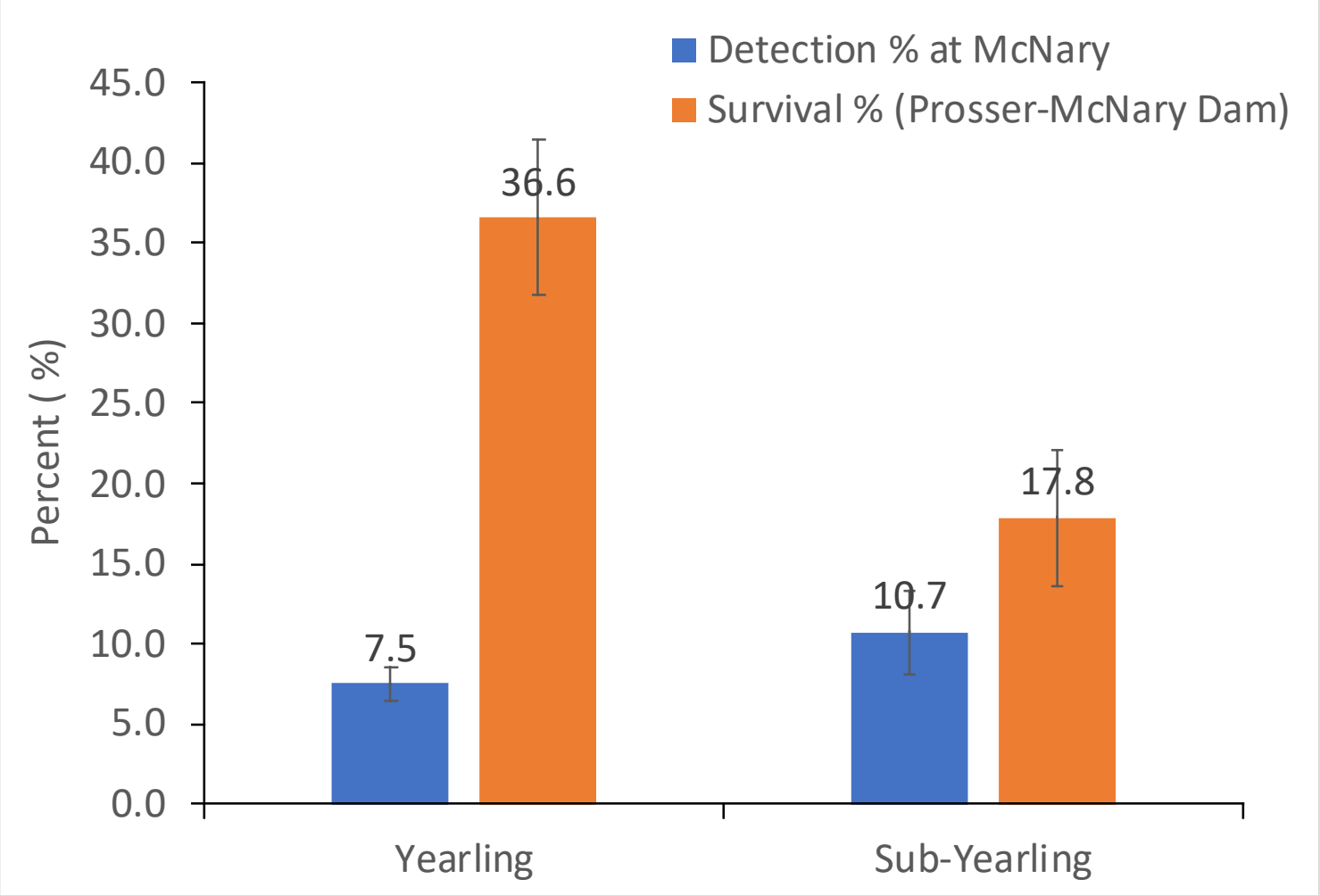


Median Travel days (minimum-maximum)

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

- In general, smolt outmigration survival rates varied by year,
- Annual juvenile survival rate seems to be increasing as the river flow of May and June increasing,
- Age of the adults fish were from age 1 to age 6 but the majority of fish were age 4 (Ocean age 3),
- Juvenile rearing in circular has better survival then traditional raceways,
- Smaller fish with 9/10mm PIT tags had a slightly lower survival rate but it was not significantly different,
- Survival rate of yearling release group had better survival rate than the sub-yearling

QUESTIONS?