

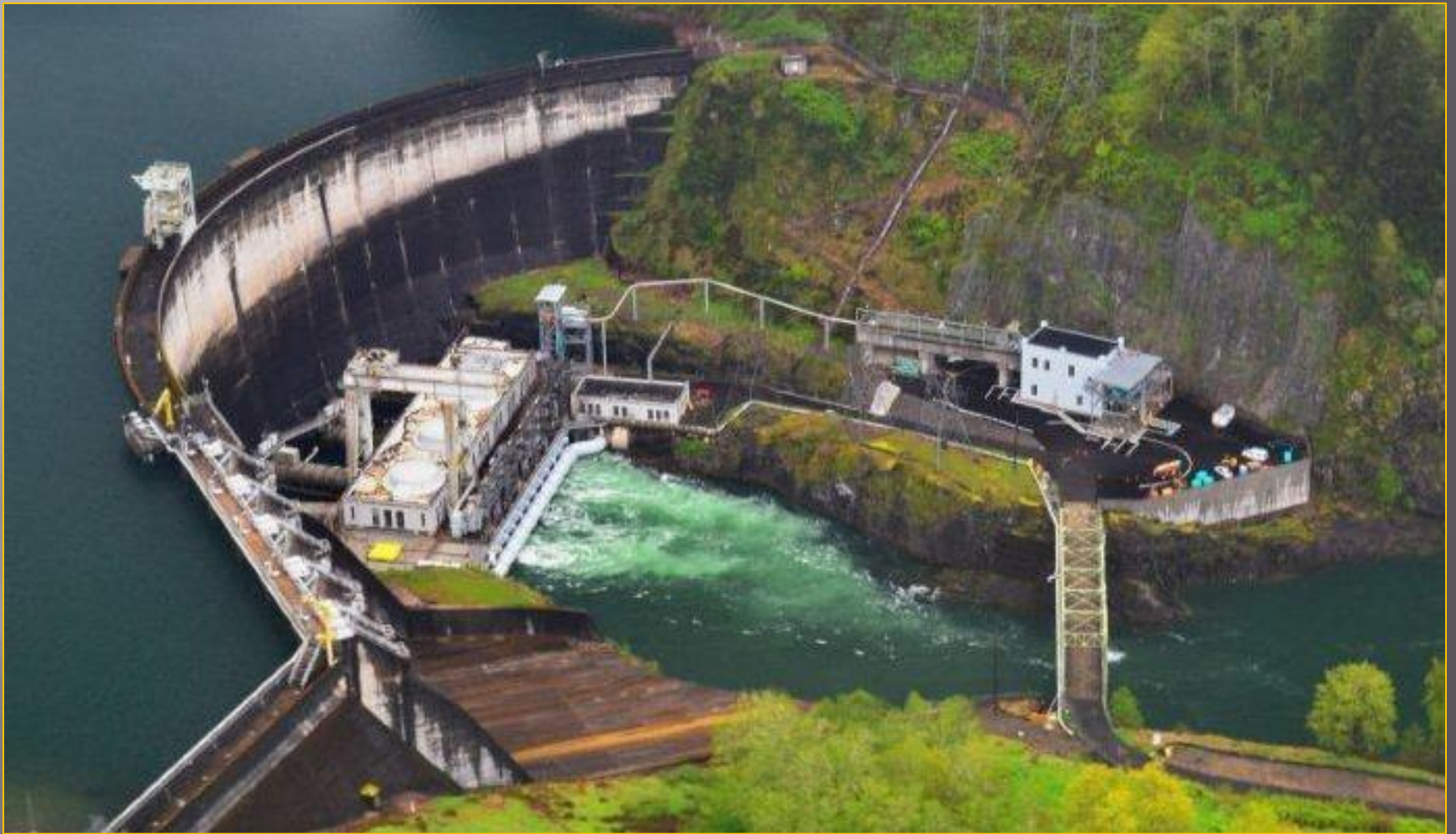
LEWIS RIVER FISH PASSAGE PROGRAM 2015 REVIEW



Noteworthy Environmental Conditions and Procedural Changes in 2015

- ▣ Extreme Flow Conditions
- ▣ Established FSC Summer Outage Period
- ▣ Inclusion of Late-Run Coho Upstream
- ▣ Release of Acclimation Fish from Spring to Fall Releases

Merwin Fish Collection Facility



Merwin Trap Collection Numbers

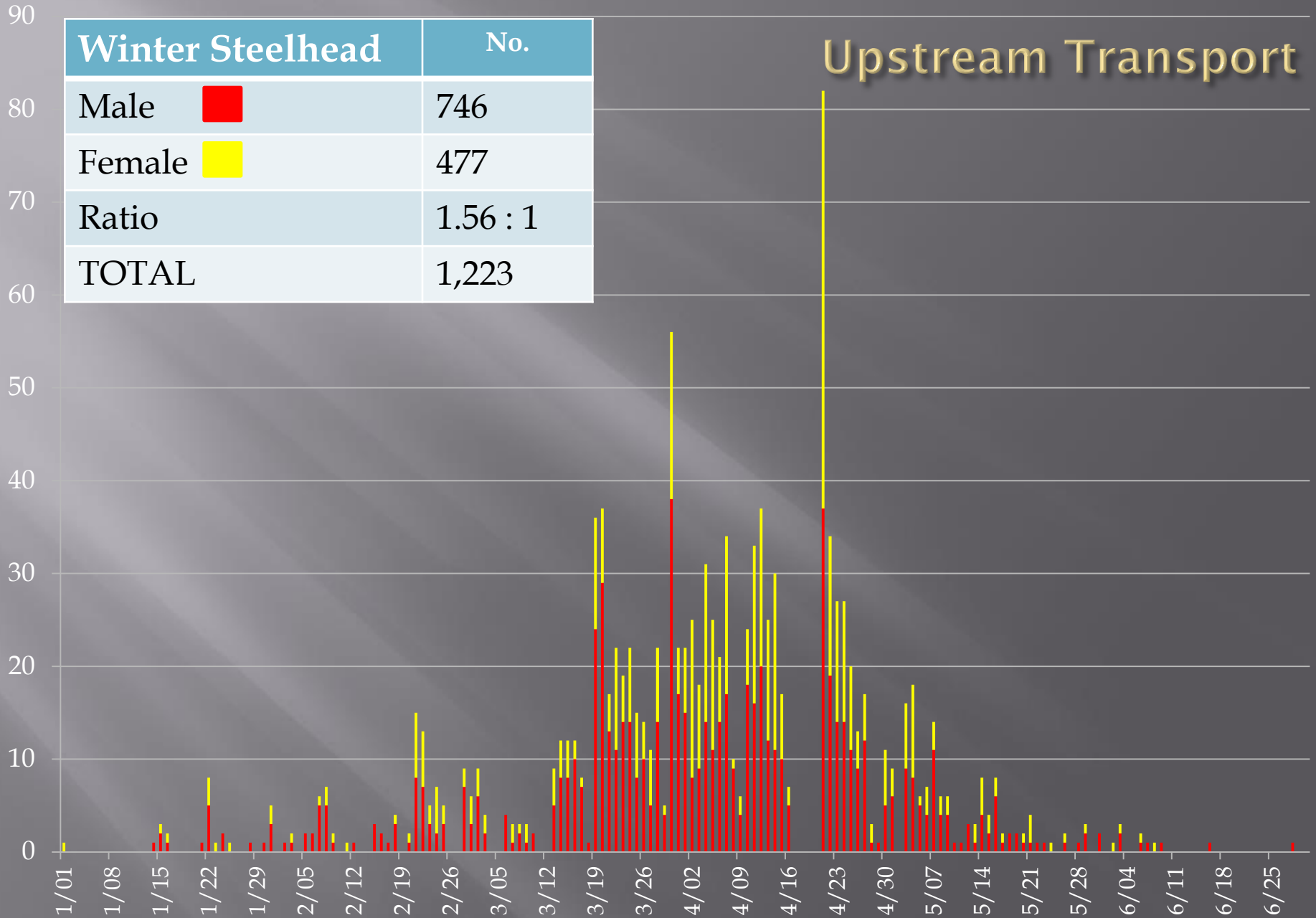
Characteristic	AD Clip			CWT			Wild			Wild Recap			Wild-BWT		Recap		Misc	Total	%	
Species	M	F	J	M	F	J	M	F	J	M	F	J	M	F	M	F	Not sexed			
Spring Chinook	366	327	30				14	15	5						6	3		766	5	
Fall Chinook	239	286	6				102	139	31	6	2							811	5	
Early Coho	123	147	544	74	103	76	24	34	17						2			1,144	7	
Late Coho	933	771	256	142	115	24	21	14	16						1			2,293	15	
Summer Steelhead	1471	2651					7	18							681	1428		6,256	40	
Winter Steelhead	1522	1249					41	31					748	504	51	38		4,184	27	
Sockeye Salmon	1						14	17		1	1							34	0	
Chum Salmon																		0	0	
Pink Salmon	1																	1	0	
Cutthroat (>13 in)																	31	31	0	
Cutthroat (< 13 in)																	2	2	0	
Rainbow (< 20 in)																	75	75	0	
Bull Trout (> 13 in)																		0	0	
Bull Trout (< 13 in)																		0	0	
																		Total	15,597	100

Upstream Transport

Species (Adults)	2012	2013	2014	2015
Coho (Early & Late in 2015)	206	7,035	9,179	3,754
Winter Steelhead	189	741	1,033	1,223
Spring Chinook	0	579	0	0
Coastal Cutthroat Trout	-	-	42	31

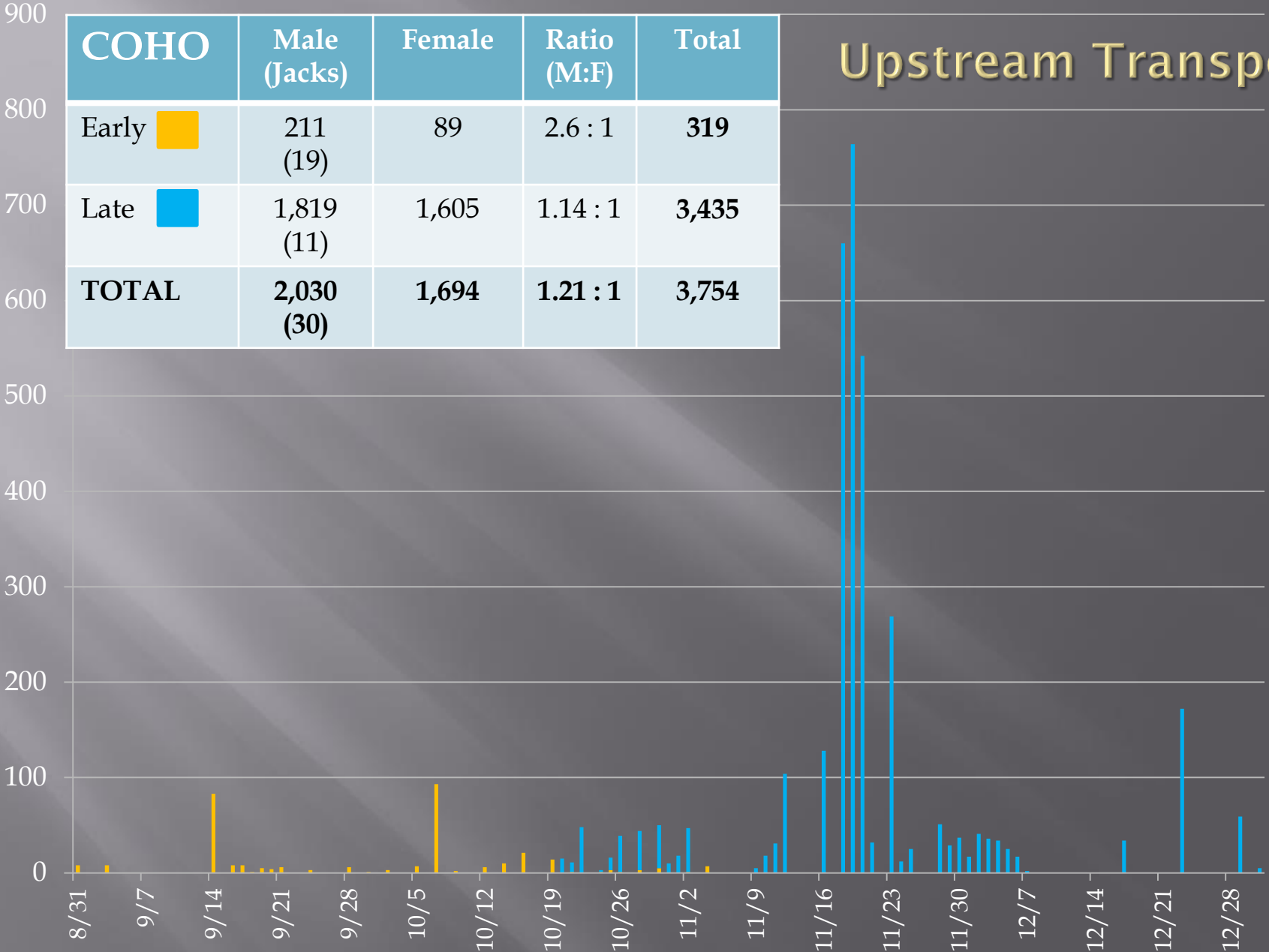
Upstream Transport

Winter Steelhead	No.
Male ■	746
Female ■	477
Ratio	1.56 : 1
TOTAL	1,223



Upstream Transport

COHO	Male (Jacks)	Female	Ratio (M:F)	Total
Early ■	211 (19)	89	2.6 : 1	319
Late ■	1,819 (11)	1,605	1.14 : 1	3,435
TOTAL	2,030 (30)	1,694	1.21 : 1	3,754



- ▣ Upstream Passage Survival:
 - Goal of 99.5% for all Transport Species

Species	Transported	Morts	Survival
Coho	3,754	0	100%
Winter Steelhead	1,223	6	99.9%
Spring Chinook	0	0	100%
Coastal Cutthroat	31	0	100%
TOTAL	5,008	6	99.9%

Seed Plants 2015

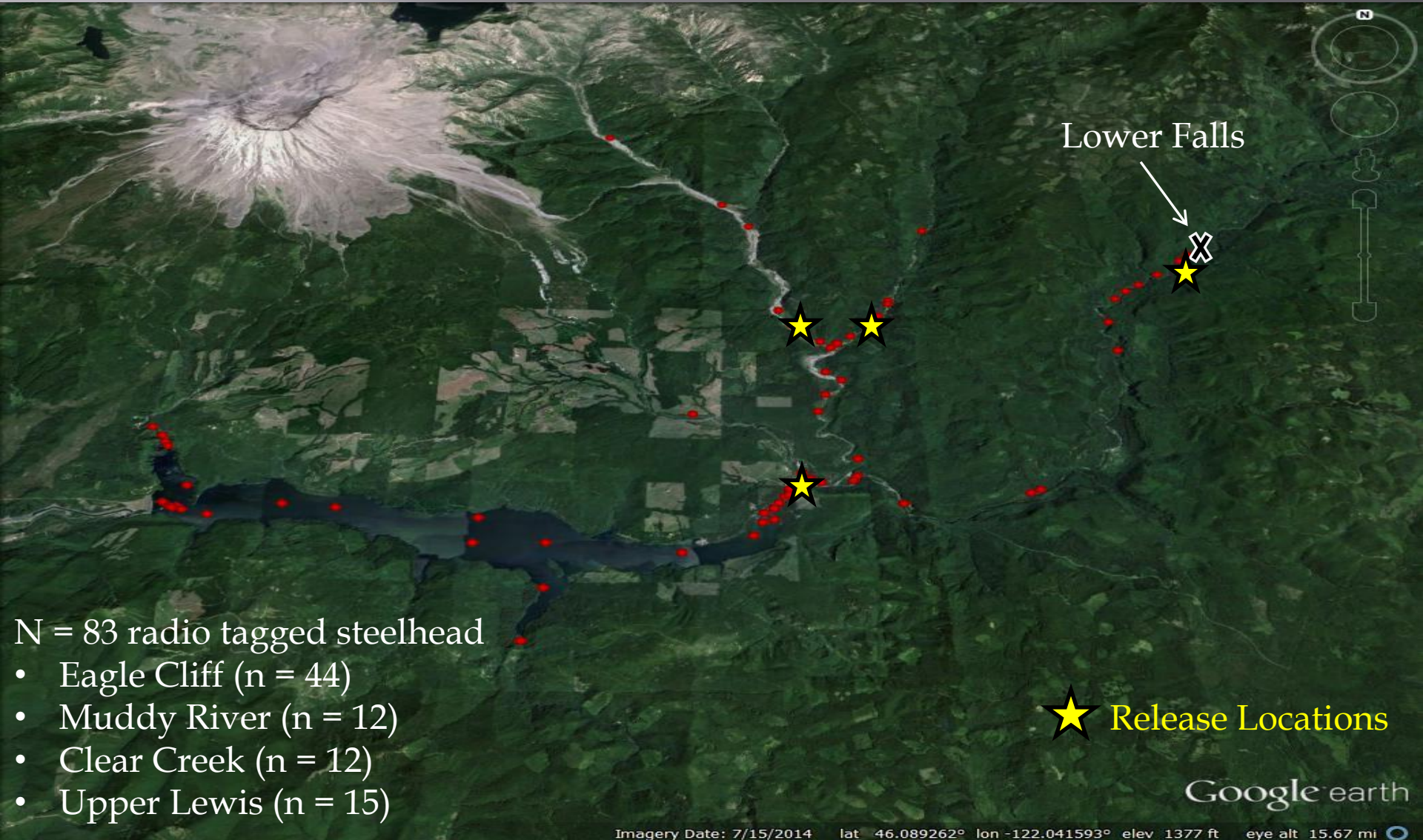
Winter Steelhead	Eagle Cliff	Muddy River Bridge	Clear Creek Bridge	Upper Lewis (Crab Creek)	Total
Untagged	1,047	28	31	34	1,140
Radio Tagged	44	12	12	15	83
Total	1,091	40	43	49	1,223

Coho	Eagle Cliff	Muddy River Bridge	Clear Creek Bridge	Upper Lewis (Crab Creek)	Total
Untagged	3,249	124	146	106	3,625
Radio Tagged	49	30	18	32	129
Total	3,298	154	164	138	3,754

Steelhead Detections 2014



Steelhead Detections 2015

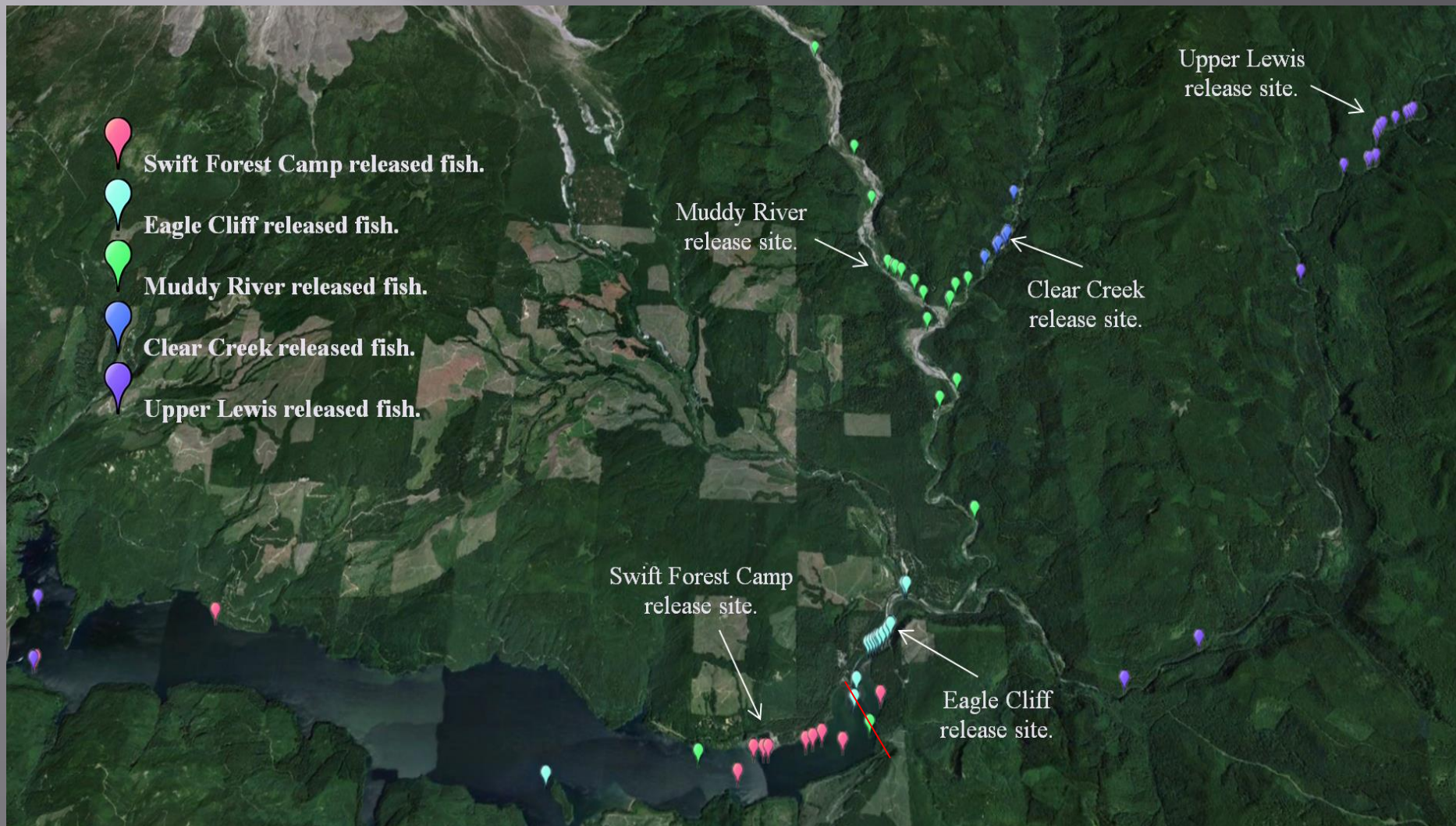


N = 83 radio tagged steelhead

- Eagle Cliff (n = 44)
- Muddy River (n = 12)
- Clear Creek (n = 12)
- Upper Lewis (n = 15)

Coho Detections

November 20th, 2015

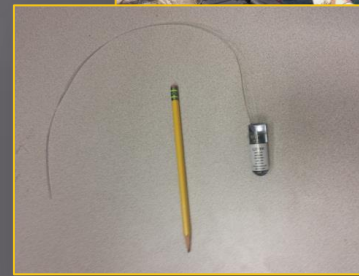


Coho Detections December 30th, 2015



- ▣ Adult Trap Efficiency (ATE)
 - Goal of 98% for all Transport Species

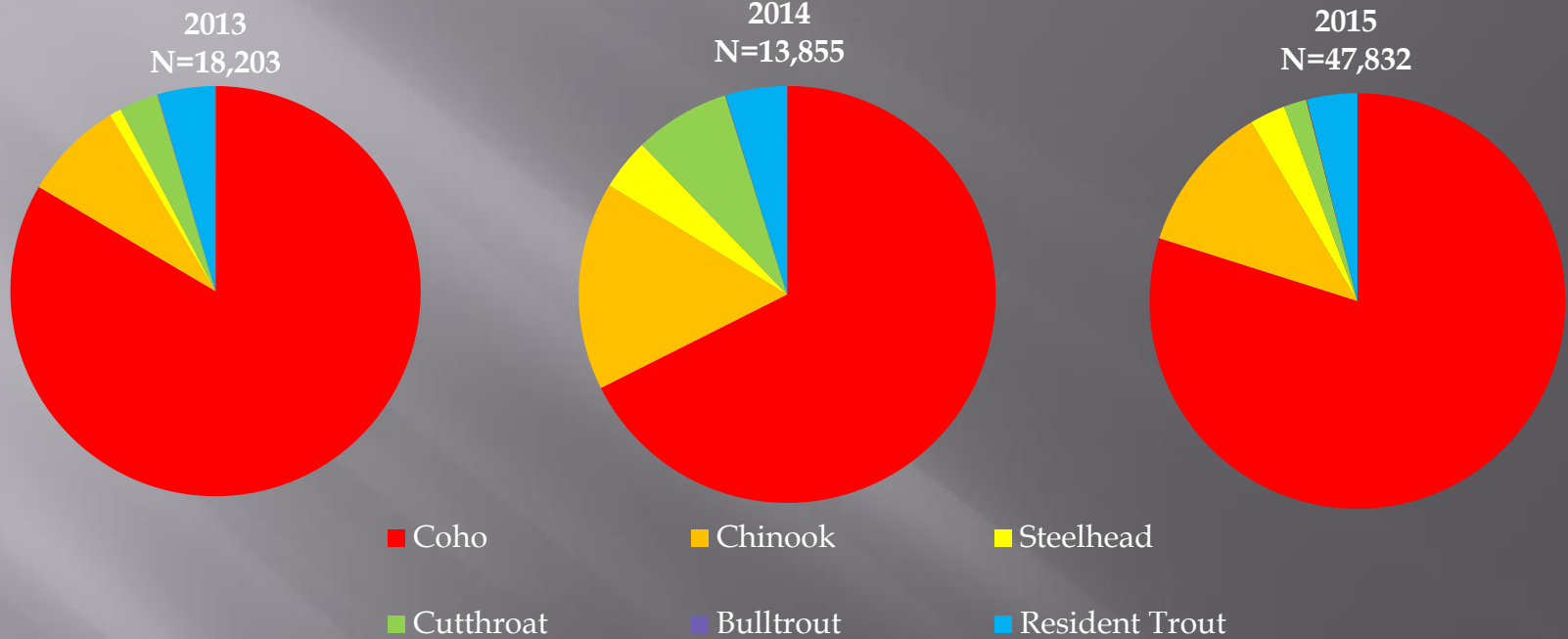
Results of 2015
Study Year will be
provided at the
March ACC
Meeting
Stay Tuned!



Swift Reservoir Floating Surface Collector (FSC)



FSC Collection Numbers



2015 Counts

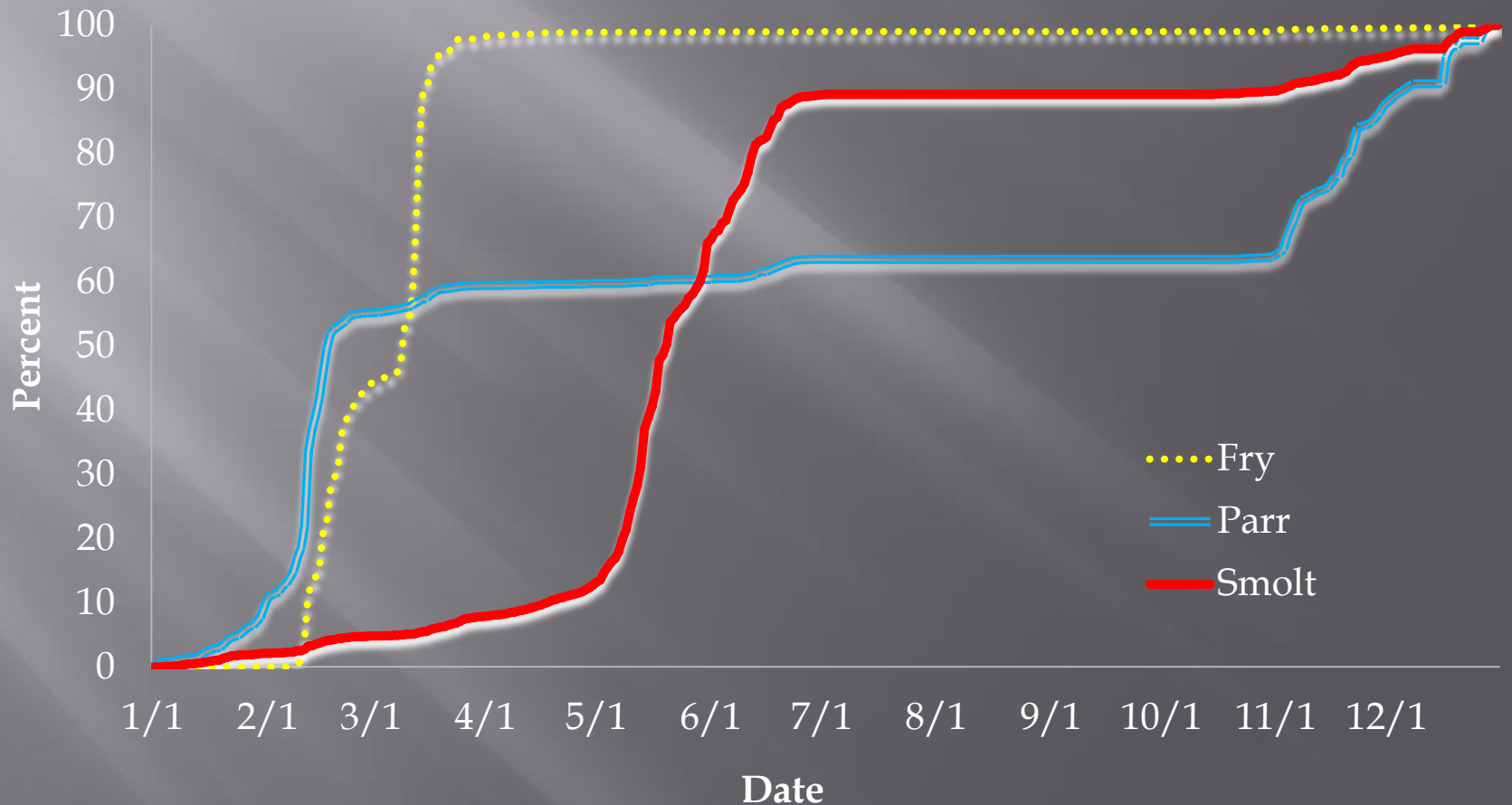
Month	Coho				Chinook			Steelhead					Cutthroat			Bull Trout	Res. Trout	Total Trapped
	Fry	Parr	Smolt	Adult	Fry	Parr	Smolt	Fry	Parr	Smolt	Adult (Pre-spawn)	Kelt	Fry	< 13 in.	> 13 in.			
Total	5,860	6,729	25,555	35	0	230	5,305	5	47	1,282	16	31	17	776	48	20	1,876	47,832

Downstream Transport

Species (Out-migrants)	2013	2014	2015
Coho	15,074	7,588	31,919
Winter Steelhead	166	539	1,324
Spring Chinook	1,431	2,164	5,401
Coastal Cutthroat Trout	556	857	811

Run Timing - FSC

Cumulative Run Timing Curves by Life-Stage - (All Species 2015)



Injury and Survival

- ▣ Injury goal of less than or equal to 2% for out-migrating fish collected at the FSC
- ▣ Collection survival (CS) goal of 99.5% for smolts and 98% for fry
 - $CS = (S_{\text{-collection}}) + (S_{\text{-transportation}})$

Species	Life-Stage	Sampled	Mortality	Survival
Coho	Fry	5,860	0	100%
	Smolt	32,284	365	98.9%
Chinook	Fry	0	0	NA
	Smolt	5,532	134	97.6%
Steelhead	Fry	5	0	100%
	Smolt	1,329	5	99.6%
Cutthroat	Smolt	824	11	98.7%
Bull Trout	All	20	1	95.0%

Collection Efficiency

- Collection Efficiency (CE) standard of 95% for all out-migrating species

Metric	Coho Salmon	Spring Chinook	Steelhead	Total
Total Tagged (n)	139	14	47	200
Detected at ZOI	110	6	43	159
P_{RES}	79.1%	42.9%	91.5%	79.5%
Captured at FSC	13	0	8	21
Collection Efficiency (P_{CE})	11.8%	0.0%	18.6%	13.2%

Fish Behavior

