

Juvenile spring Chinook migrant estimates and movement in the South Fork McKenzie River and downstream movement in the North Fork Middle Fork Willamette River



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Objectives

We help inform decisions on improving juvenile downstream passage.

- Migration timing
- Temporal size of migrants
- Migrant abundance estimates or relative abundance

South Fork McKenzie River



Legend

- USACE Dam
- OWR Screw Trap

South Fork McKenzie upstream of Cougar Reservoir migrant estimates 2010-2016



Brood Year (BY)	Field Season	Migrant estimate	95% CI	Subyearling CHS captured	Number of BY females
2009	2010	685,723	±72,519	28,074	629
2010	2011	152,159	±26,665	4,348	320
2011	2012	228,241	±34,715	6,482	336
2012	2013	557,526	±66,031	20,082	448
2013	2014	415,741	±56,164	11,402	337
2014	2015	227,780	±44,765	4,996	462
2015	2016	627,876	±98,638	21,169	456

The Cougar Project



Below Cougar Dam

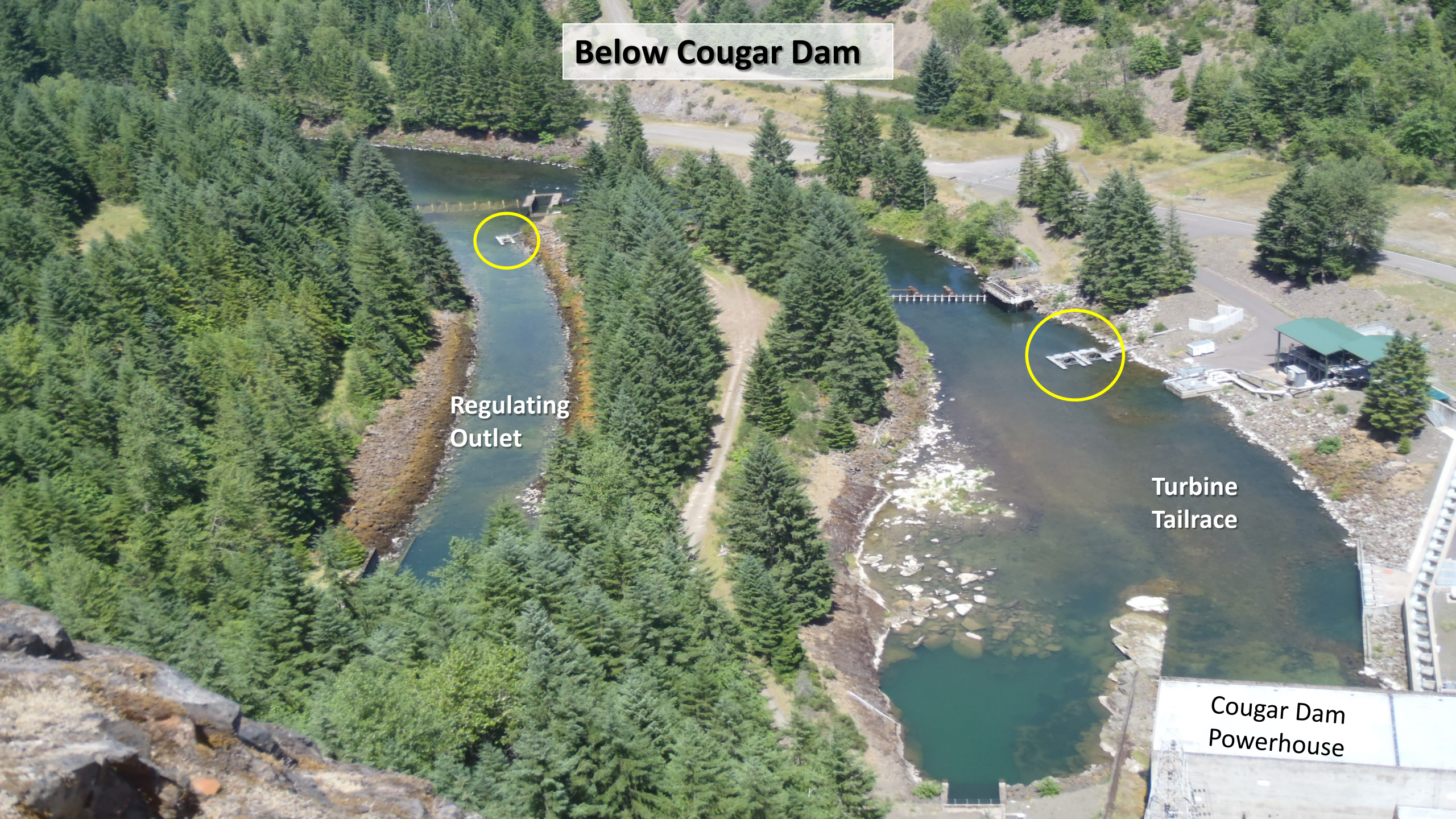


Regulating
Outlet

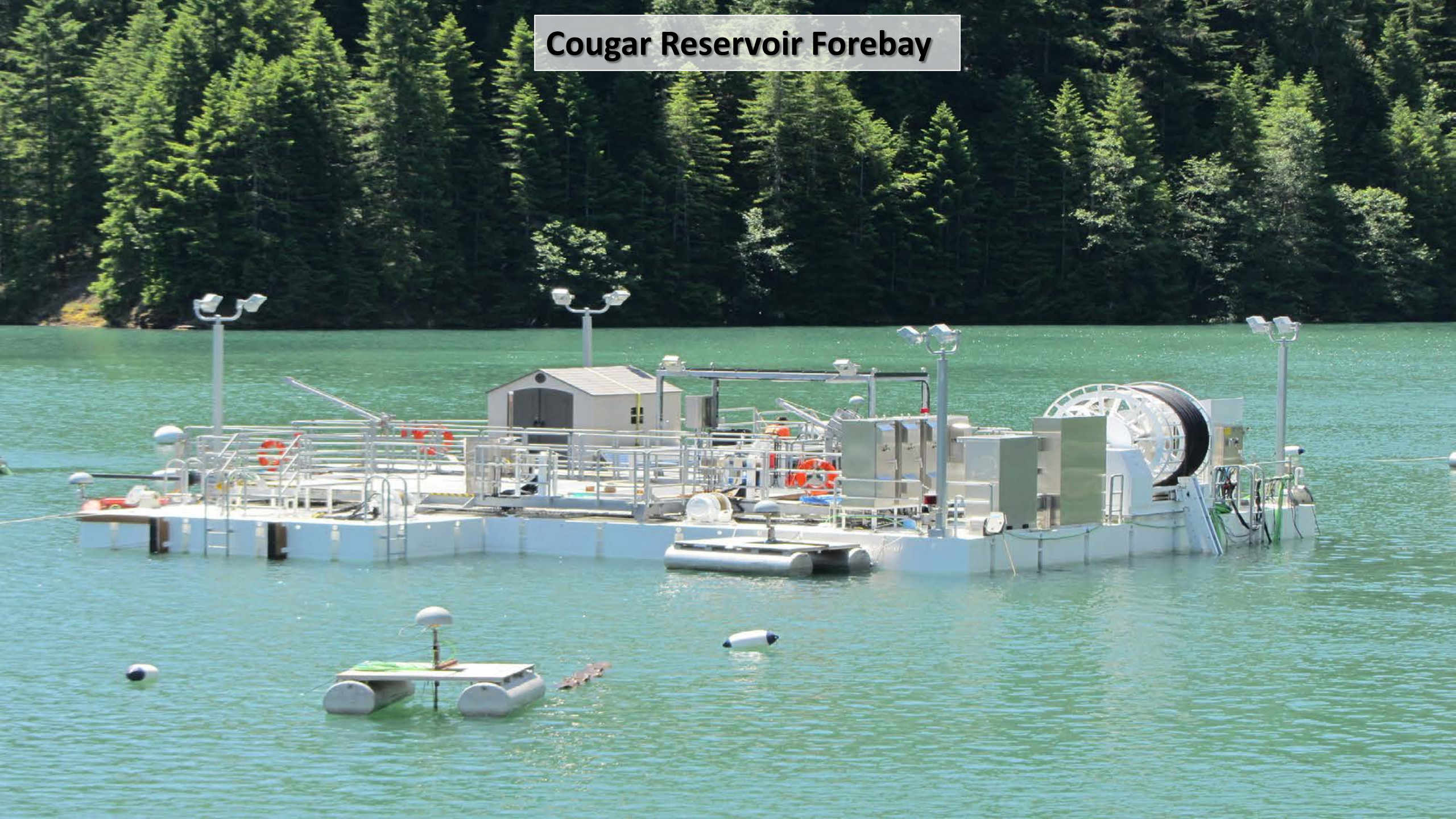


Turbine
Tailrace

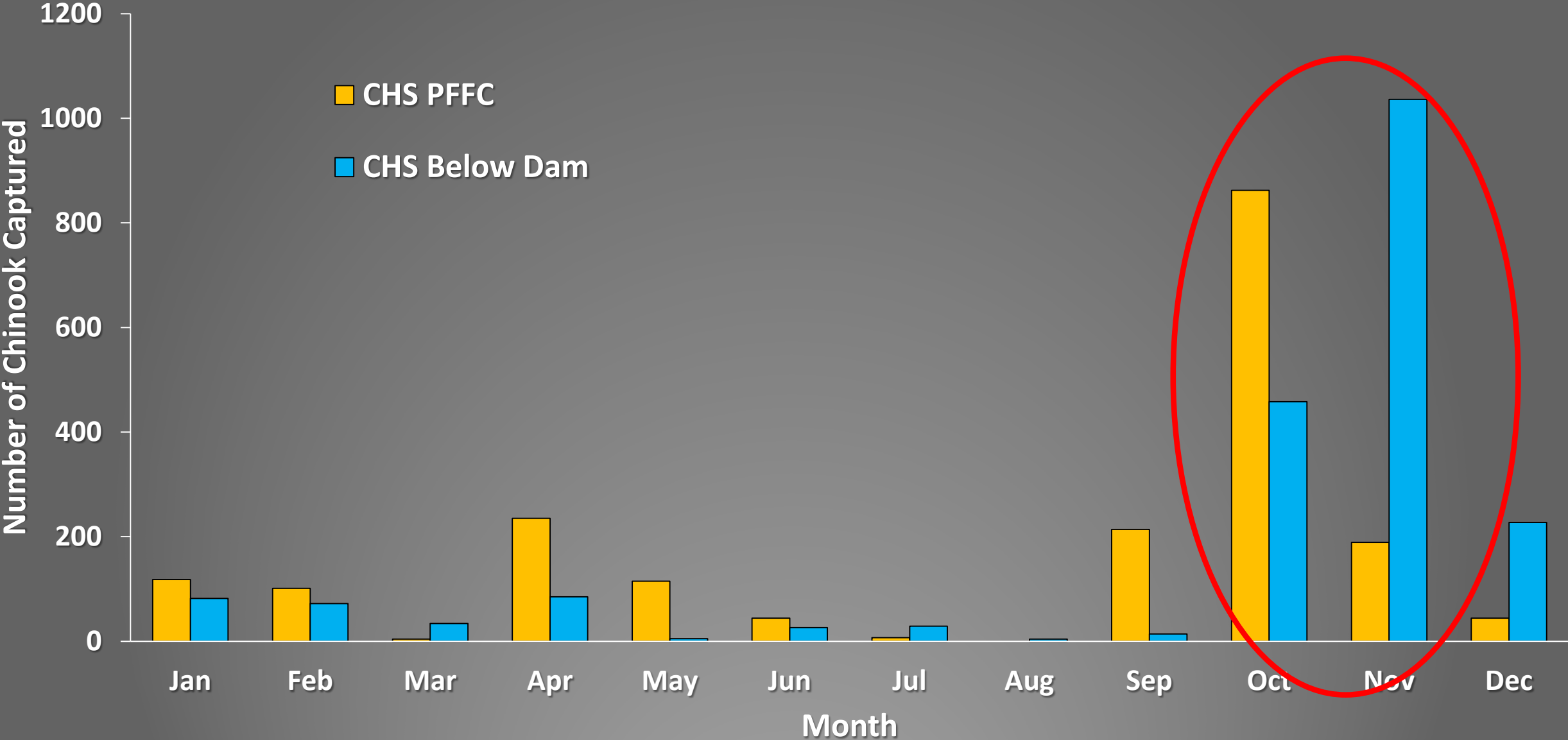
Cougar Dam
Powerhouse



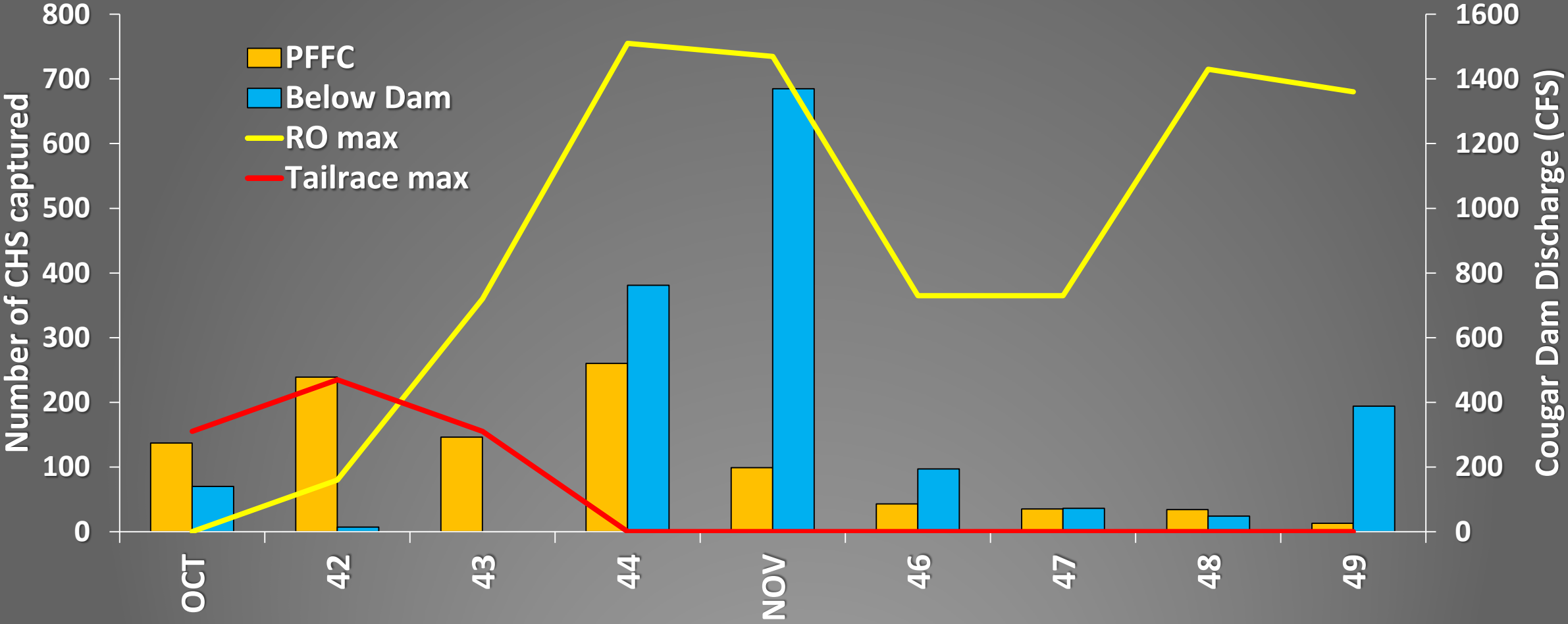
Cougar Reservoir Forebay



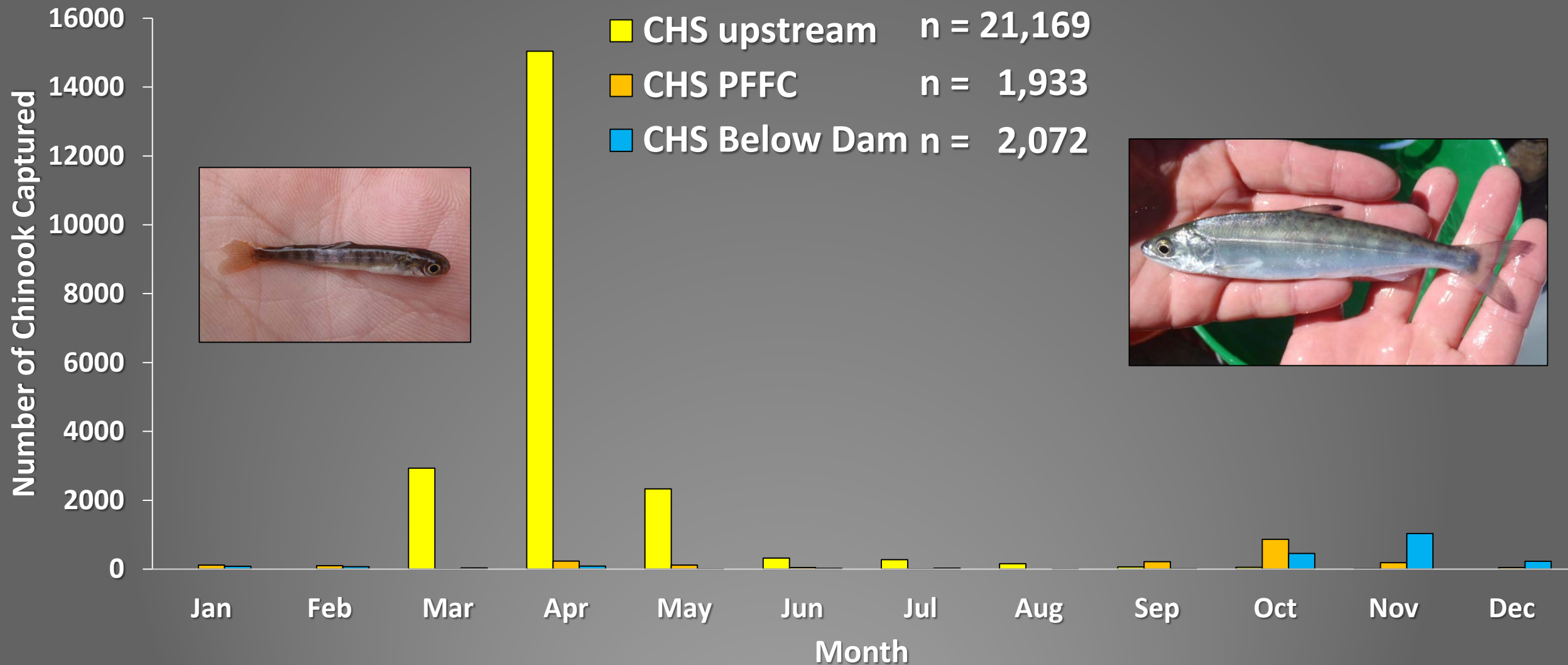
Portable Floating Fish Collector (PFFC) and Below Dam juvenile Chinook catch Summarized by month, 2016



Portable Floating Fish Collector (PFFC) and Below Dam juvenile Chinook catch in October and November 2016, summarized by week





Juvenile Chinook salmon captured upstream of Cougar Reservoir, in the PFFC and Below Cougar Dam summarized by month, 2016

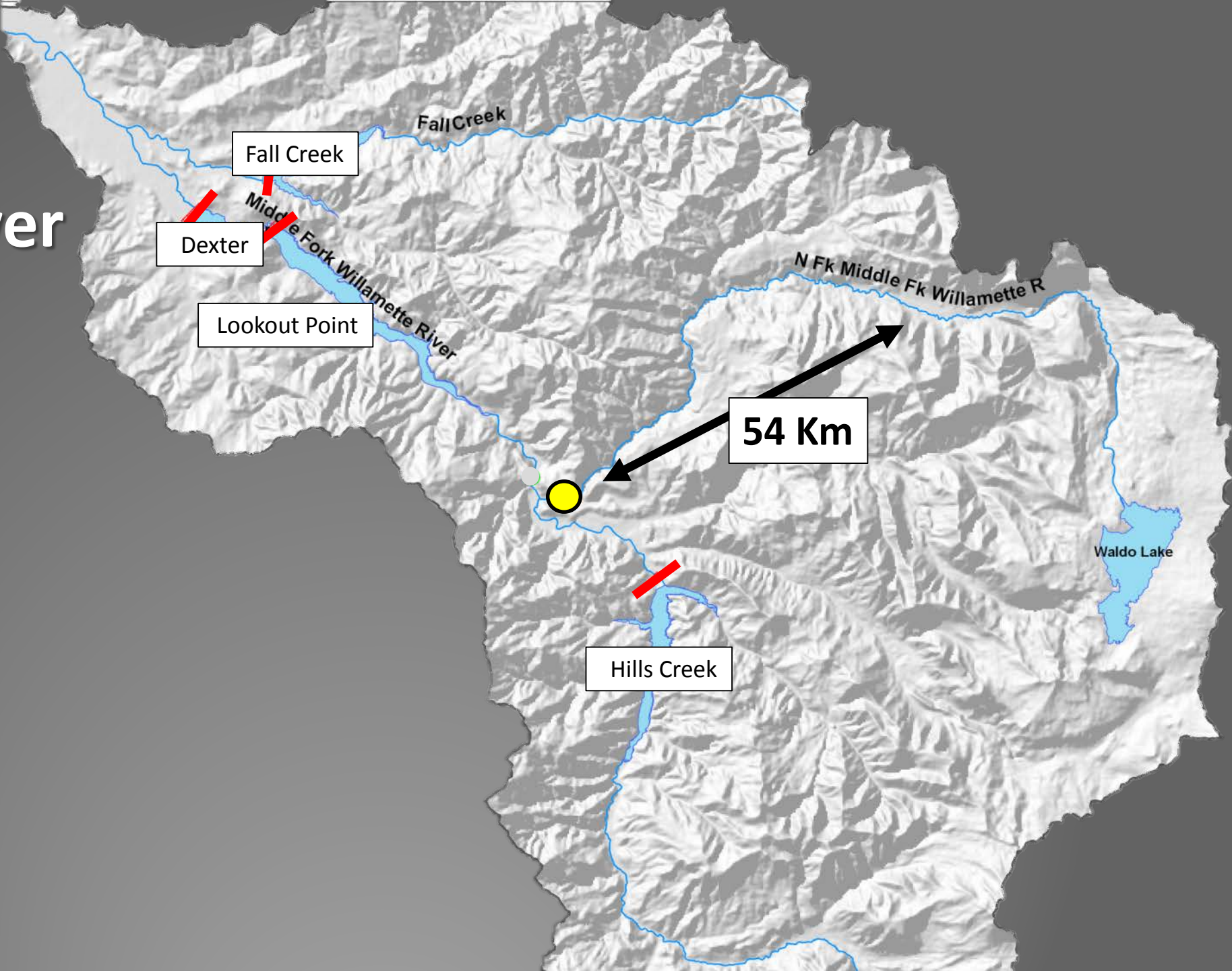


North Fork Middle Fork Willamette River

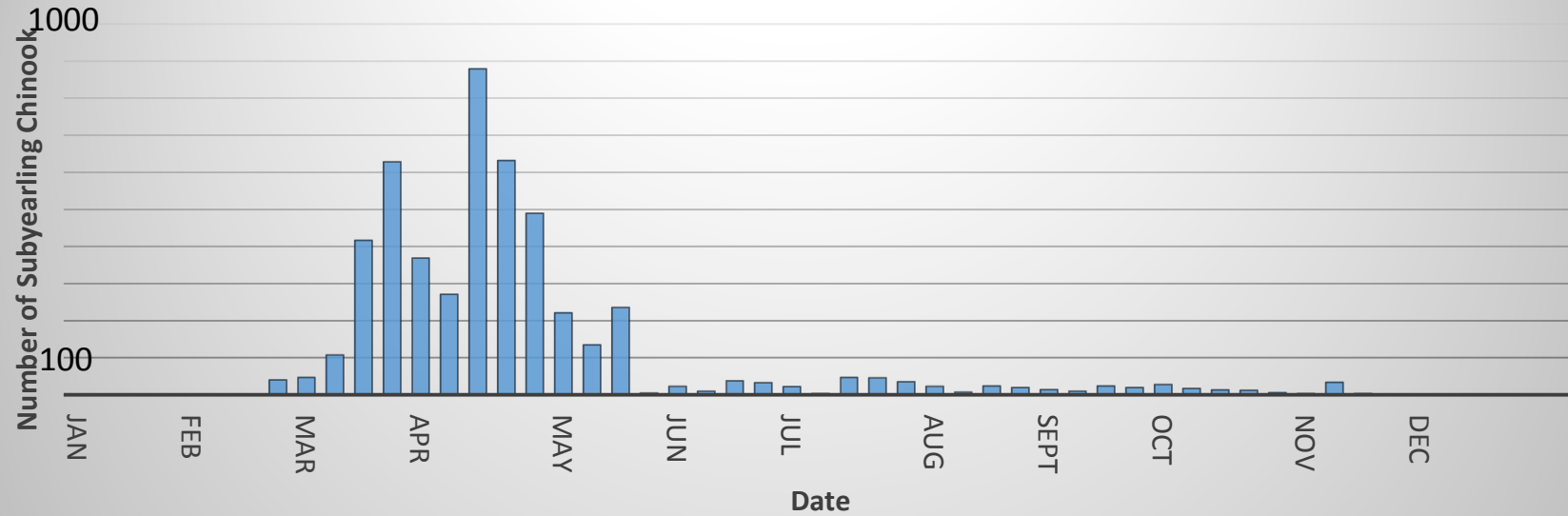


Legend

-  USACE Dam
-  OWR Screw Trap



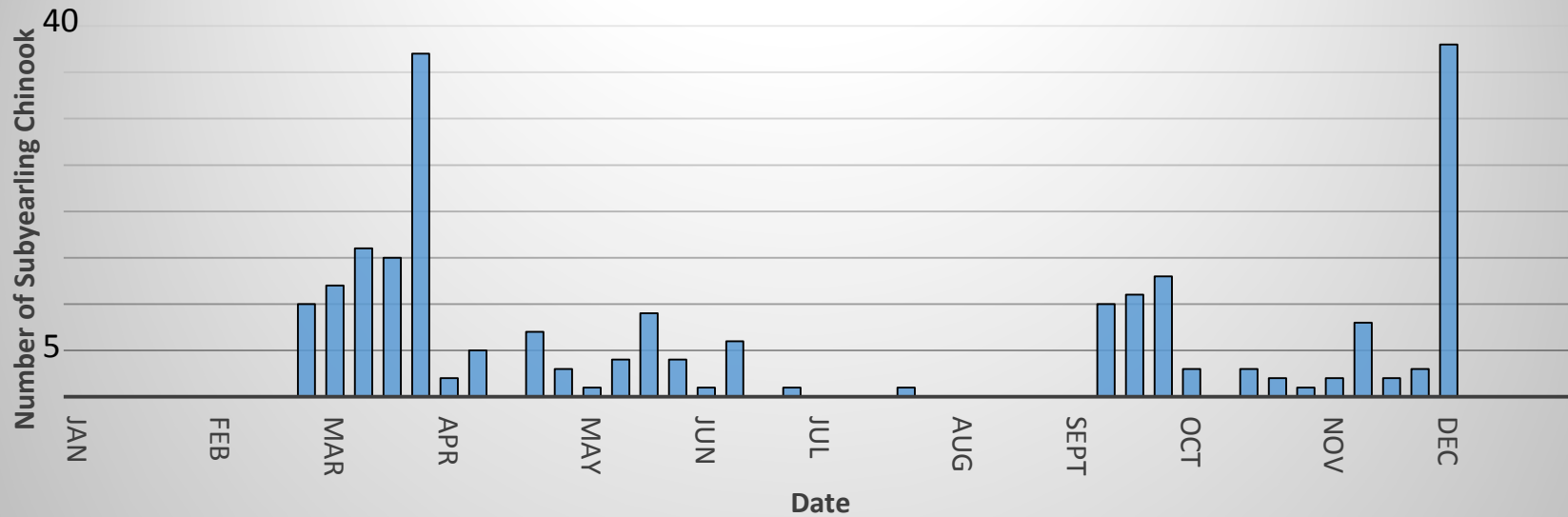
South Fork McKenzie Subyearlings 2015



September – December

n = 169 / 4,996

North Fork Middle Fork Willamette Subyearlings 2015



n = 96 / 230

Percent of fall migrants from different Willamette River sub-basins 2013-2016

River	Year	Sept-Dec	Total	Percent
North Fork Middle Fork	2015	96	230	41.7
North Santiam	2013	74	305	24.3
North Santiam	2016	201	1,288	15.6
North Fork Middle Fork	2016	85	552	15.4
North Santiam	2015	118	1,646	7.2
South Santiam	2015	3	55	5.5
North Santiam	2014	60	1,151	5.2
South Santiam	2016	11	229	4.8
Breitenbush	2016	54	1,290	4.2
South Fork McKenzie	2015	169	4,996	3.4
South Fork McKenzie	2014	370	11,402	3.2
Middle Fork Willamette	2013	40	1,912	2.1
South Fork McKenzie	2013	327	20,082	1.6
South Santiam	2013	6	733	0.8
South Fork McKenzie	2016	127	21,169	0.6
Middle Fork Willamette	2014	5	1,342	0.4

Summary

- We captured 21,169 juvenile Chinook in the South Fork McKenzie screw trap.
- Estimated that ~630,000 subyearlings entered Cougar Reservoir
- Juvenile Chinook were present in the forebay of Cougar Reservoir in the fall, but didn't pass the dam until there was an increase in discharge from the regulating outlet.
- Fall migrants in the North Fork Middle Fork Willamette may be a significant component of the migrant population.

Casting a Broader Net



OREGON CHAPTER OF THE AMERICAN FISHERIES SOCIETY



53rd Annual Meeting
February 28 – March 3, 2017

The Riverhouse on the Deschutes
Bend, Oregon

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Kefer et al. 2012. High-head dams affect downstream fish passage timing and survival in the Middle Fork Willamette River.

