

Russian River Biological Opinion Public Policy Facilitating Committee

December 20, 2012

Five Year Review: Coho Captive Rearing
Broodstock Program

**California Department of Fish and Game (Wildlife)
Eric Larson, Fisheries Programs Manager**

Russian River Coho Salmon Captive Broodstock Program

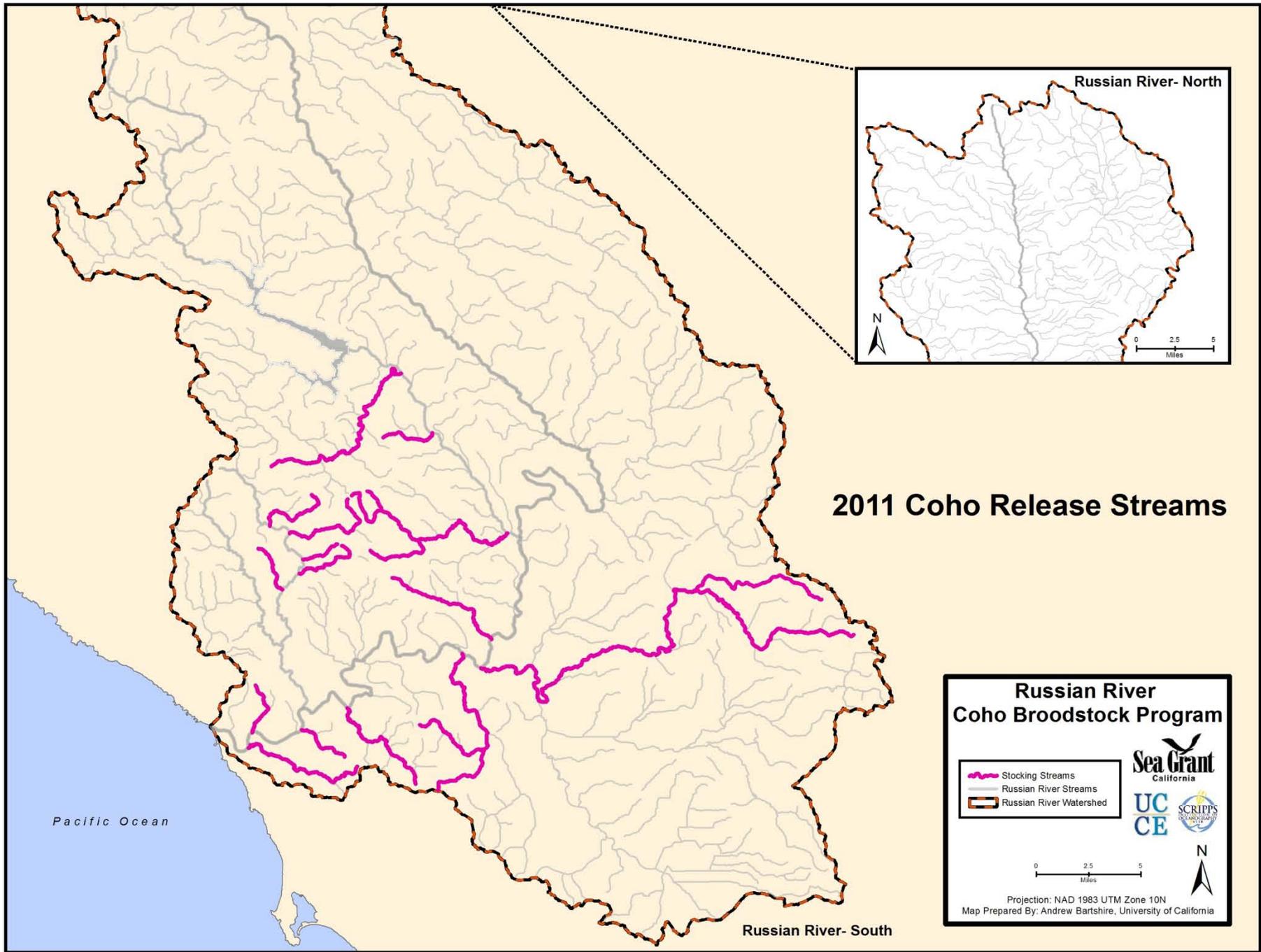
- In the late 90's, extinction of coho salmon in the Russian River basin was imminent without immediate intervention
- State and federal agencies, along with other entities, collaborated to begin a captive broodstock program
- Program Goal: Re-establish self-sustaining runs of native coho salmon in historic habitat within the Russian River watershed



Russian River Coho Salmon Captive Broodstock Program

- Juvenile coho captured from Russian River tributaries and Olema Creek
- Juveniles reared to maturity and spawned at Warm Springs Hatchery
- Offspring released at different life stages into coho streams in the Russian River Basin





2011 Coho Release Streams

Russian River Coho Broodstock Program

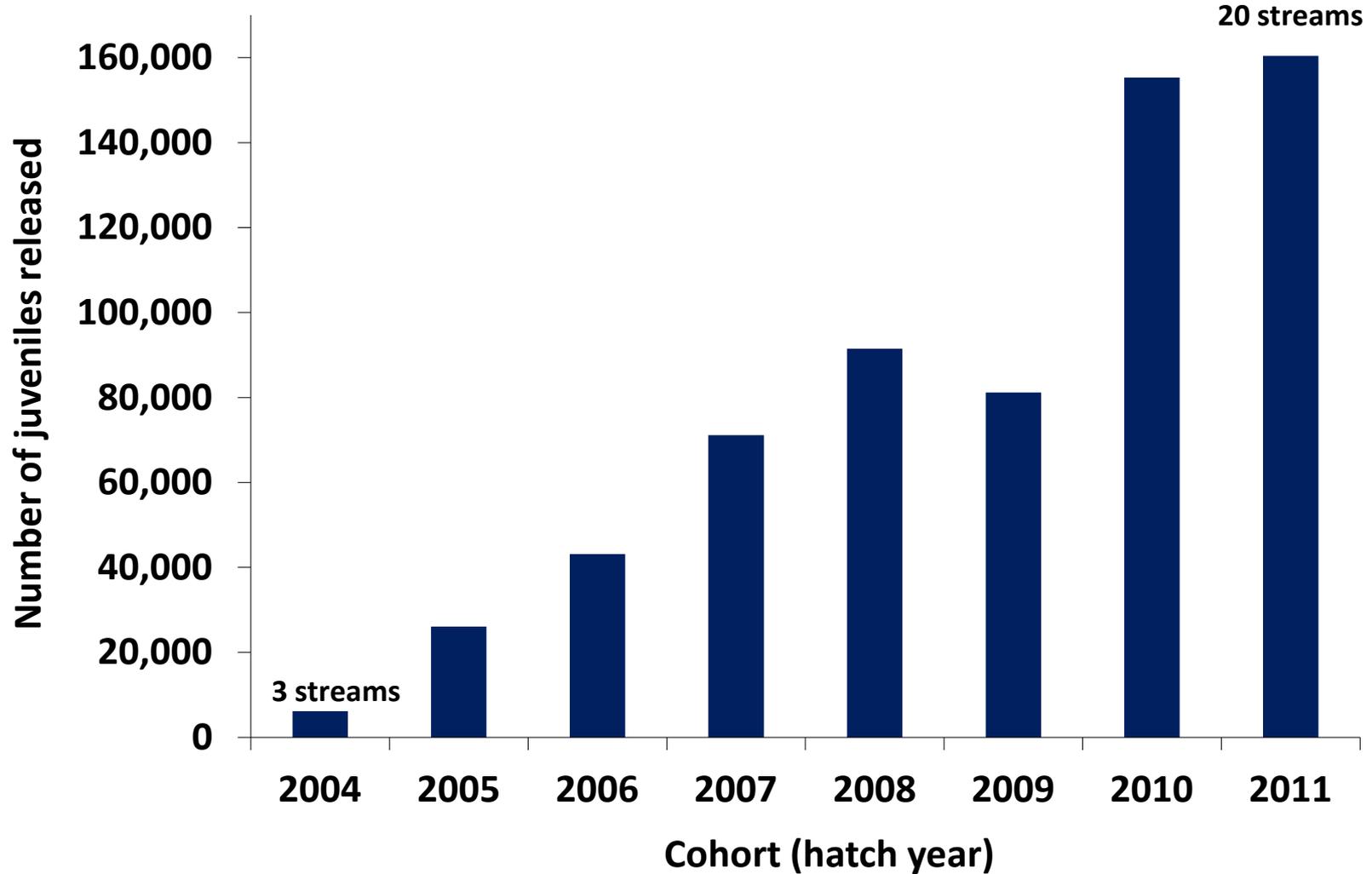
- Stocking Streams
- Russian River Streams
- Russian River Watershed

Sea Grant California
UC CE SCRIPPS INSTITUTION OF OCEANOGRAPHY

0 2.5 5 Miles

Projection: NAD 1983 UTM Zone 10N
Map Prepared By: Andrew Bartshire, University of California

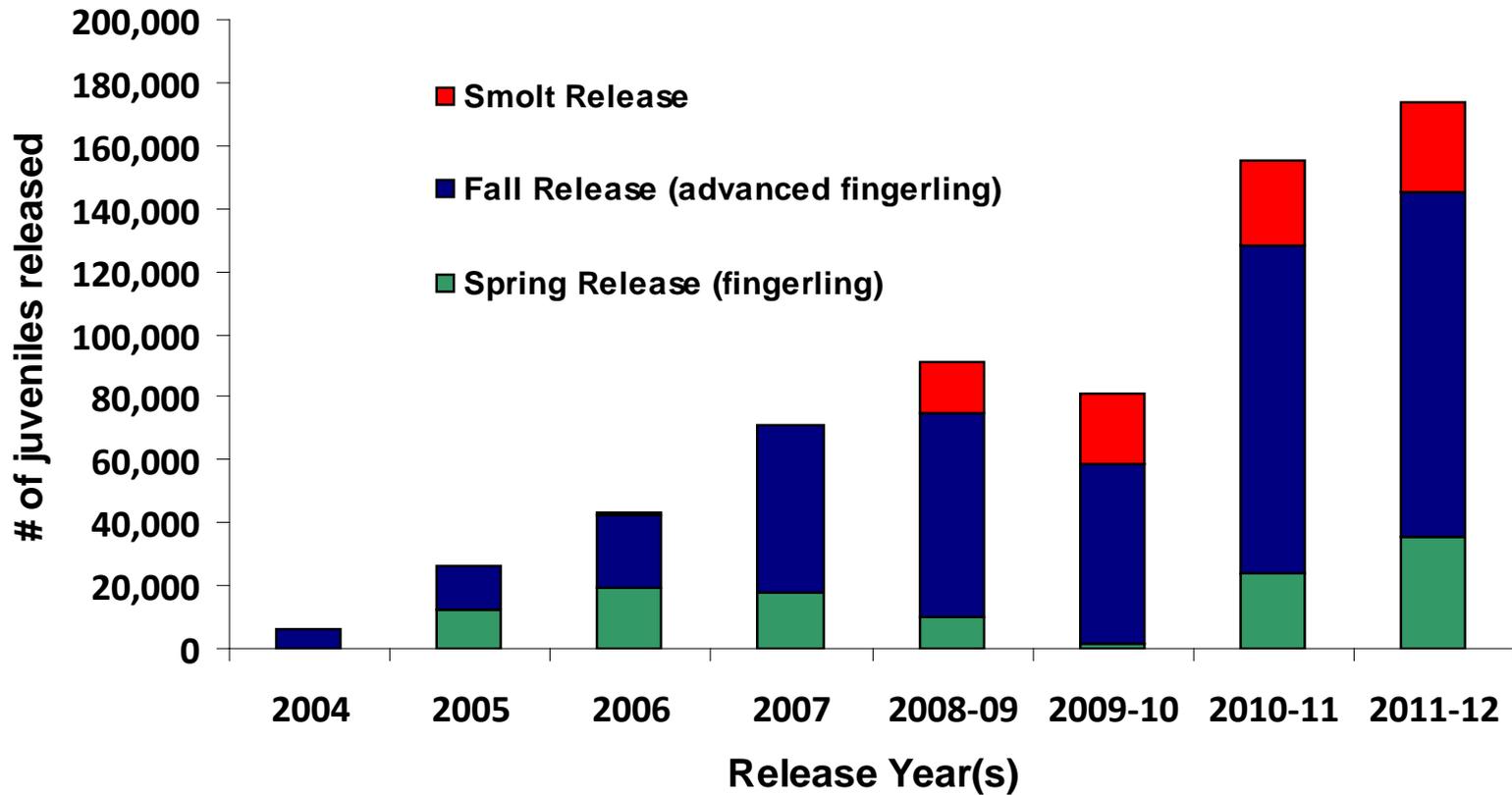
Annual coho releases from Warm Springs Hatchery



2011-12 Coho Release Sites

Release Date(s)	Release Stream	# Released
6/13/2011	Mill Creek	1,014
6/13/2011	Grape Creek	1,019
6/14/2011	Dutch Bill Creek	1,016
6/14/2011	Green Valley Creek	1,018
6/15/2011	Palmer Creek	7,059
6/15/2011	Angel Creek	2,058
6/16/2011	Black Rock Creek	7,059
6/20/2011	Thompson Creek	3,358
6/20/2011	Gilliam Creek	3,061
6/21/2011	Devil Creek	4,049
6/22/2011	Gray Creek	5,056
2011 Spring Release Total:		35,767
10/18/2011	Willow Creek	11,062
10/19/2011	Freezeout Creek	3,046
10/20/2011	Sheephouse Creek	3,047
10/21/2011	Pena Creek	9,046
10/25/2011	Mark West Creek	9,047
10/26/2011	Porter Creek (MW)	4,047
10/27/2011	Porter Creek (RR)	9,122
11/1/2011	Green Valley Creek	9,046
11/2/2011	Purrington Creek	3,079
11/3/2011	Dutch Bill Creek	9,052
11/4/2011	Grape Creek	3,050
11/8 & 11/9/2011	Mill Creek	25,014
11/10 & 11/17/2011	Walker Creek (Marin)	11,784
2011 Fall Release Total:		109,442
3/13/2012	Dry Creek	10,081
4/30/2012	Mill Creek	3,990
5/29/2012		1,915
4/16/2012	Dutch Bill Creek	1,999
5/10/2012		1,994
5/29/2012		1,773
5/2/2012	Green Valley Creek	1,998
5/12/2012		1,316
5/17/2012		955
5/29/2012		951
2012 Smolt Release Total:		26,972
2011-12 Release Total:		172,181

Annual Juvenile Coho Releases by Release Year and Life Stage

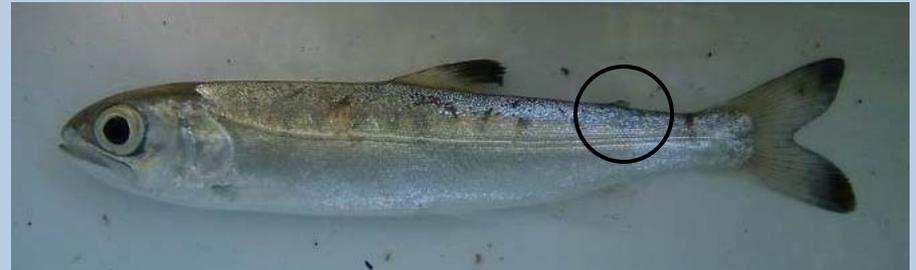


Coho monitoring questions

- **Are hatchery-released coho surviving the winter in the tributaries and migrating out as smolts?**
- **Are adult coho returning and successfully spawning?**
- **Are offspring of hatchery returns completing their life cycle?**

Marking strategies

Adipose fin clip:



Coded wire (CWT) tags:



Passive integrative transponder (PIT) tags:



PITNumber	Tributary
3D9.1C2D3E578A	Mill Creek
3D9.1C2D3E20BD	Grape Creek
3D9.1C2D3EE395	Willow Creek
3D9.1C2D3EDAA9	Pena Creek
384.1B796C2F3E	Gray Creek
384.1B796C4232	Palmer Creek

Monitoring Methods

Smolt trapping:



PIT antennas:



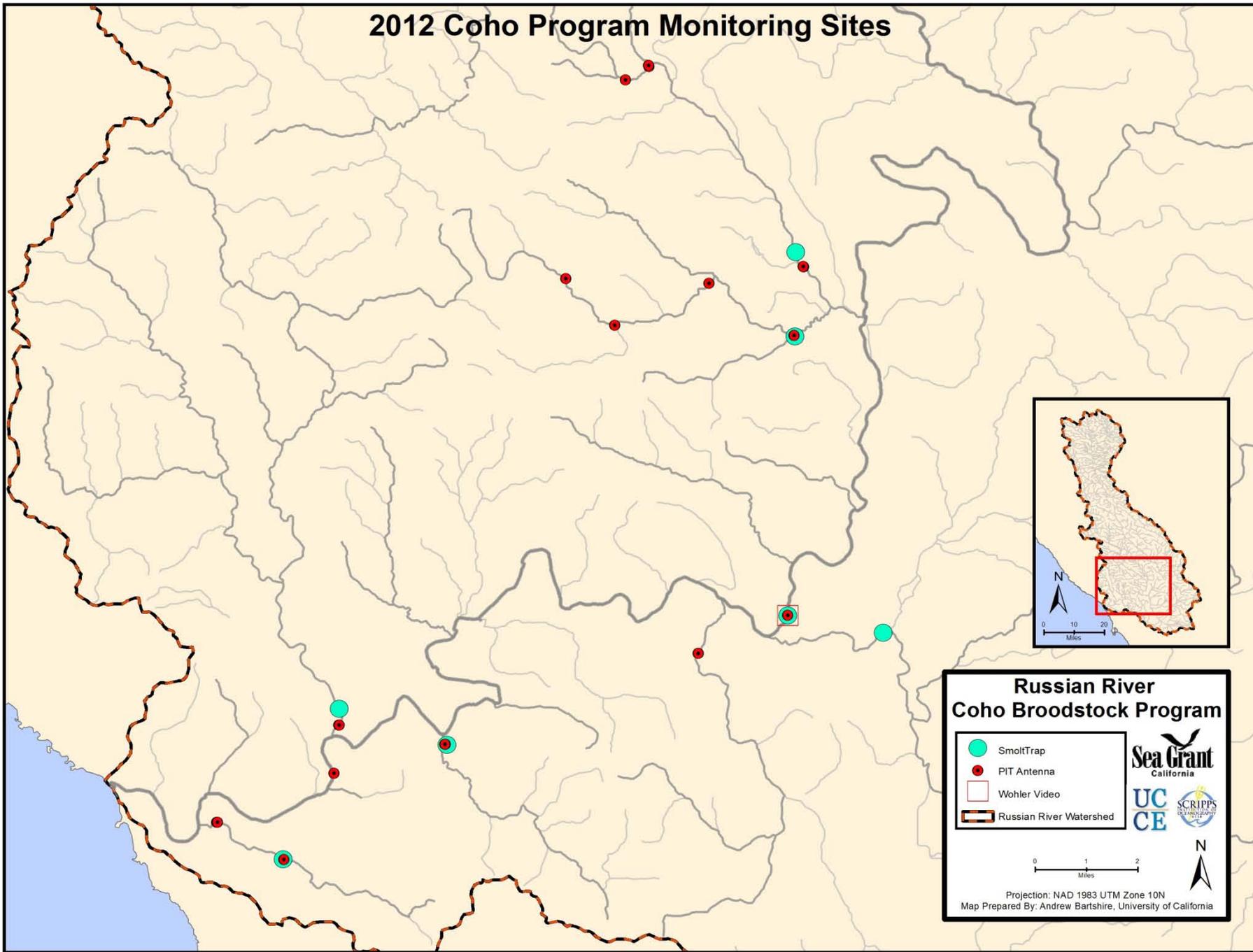
Spawner surveys:



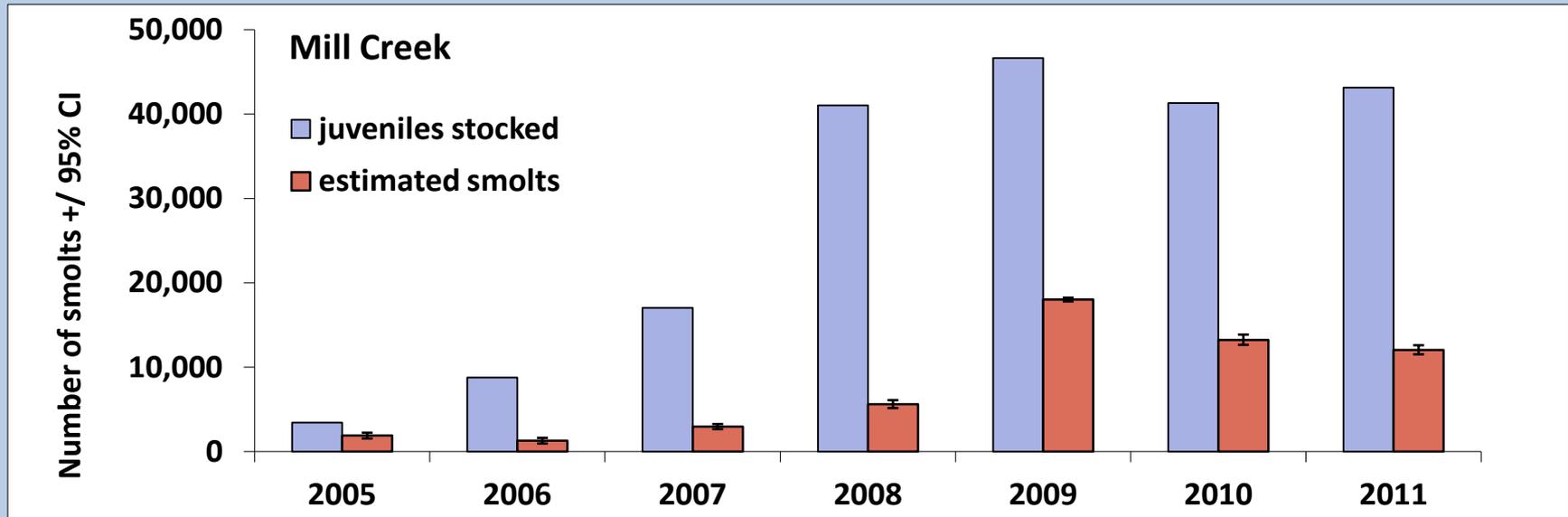
Snorkeling surveys:



2012 Coho Program Monitoring Sites



Smolt abundance and overwinter survival

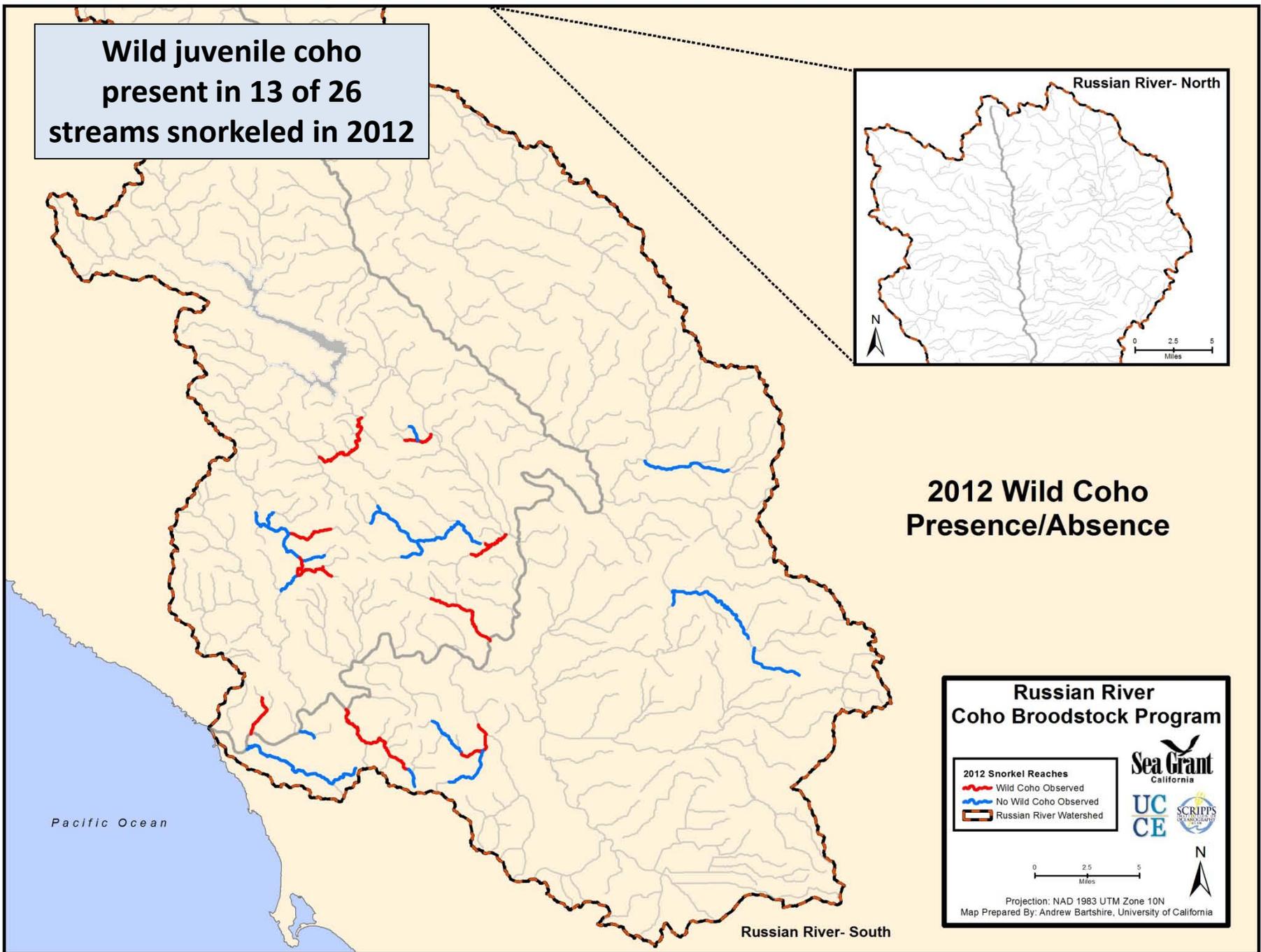


- Hatchery-released coho are surviving the winter and migrating out as smolts
- Average survival over six streams and seven years is 0.23 (ranging from 0.05 to 0.56)

**Wild juvenile coho
present in 13 of 26
streams snorkeled in 2012**



2012 Wild Coho Presence/Absence



Russian River Coho Broodstock Program

2012 Snorkel Reaches

- Wild Coho Observed
- No Wild Coho Observed
- Russian River Watershed

Sea Grant California

UC CE

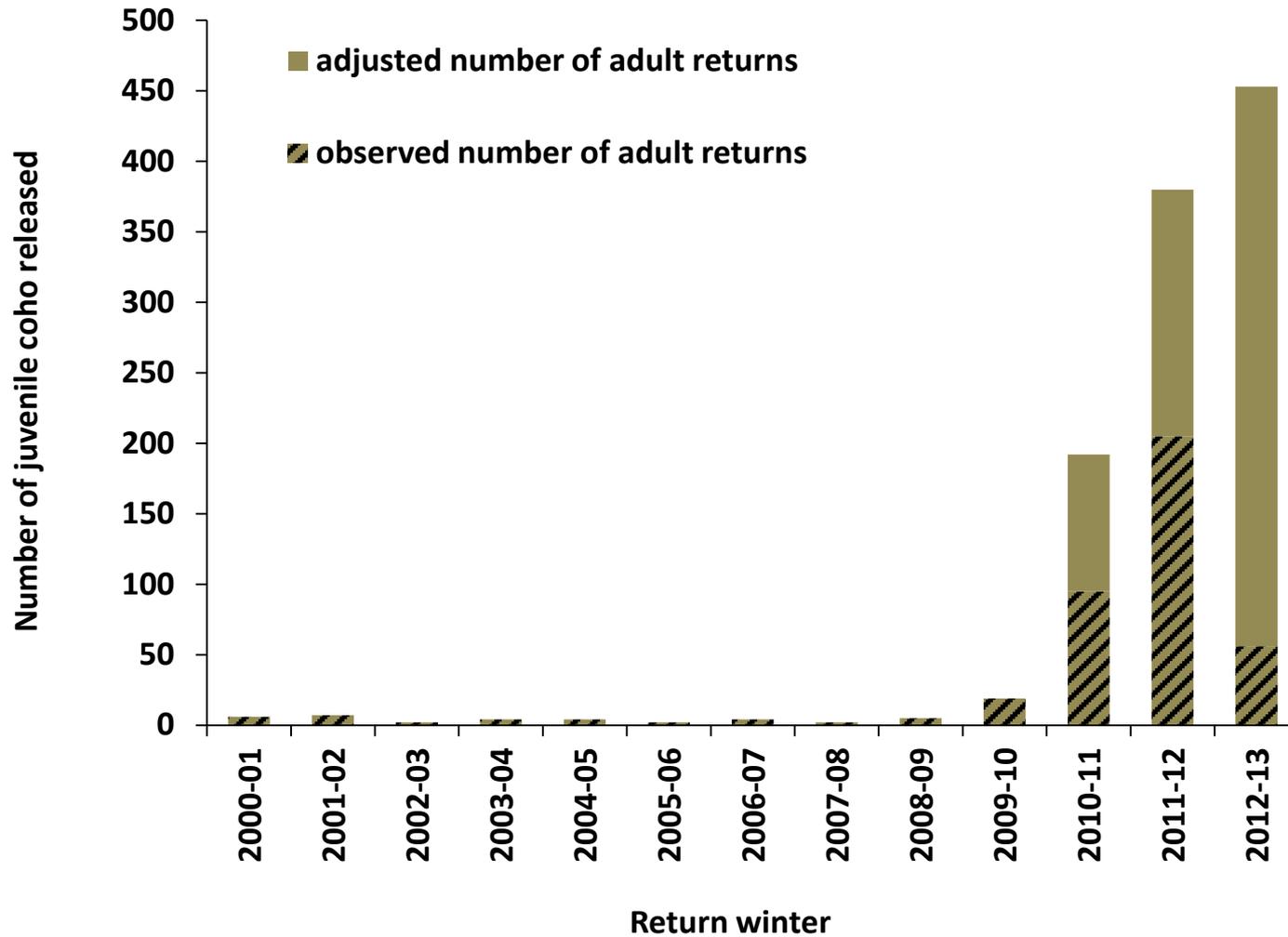
SCRIPPS INSTITUTION OF OCEANOGRAPHY

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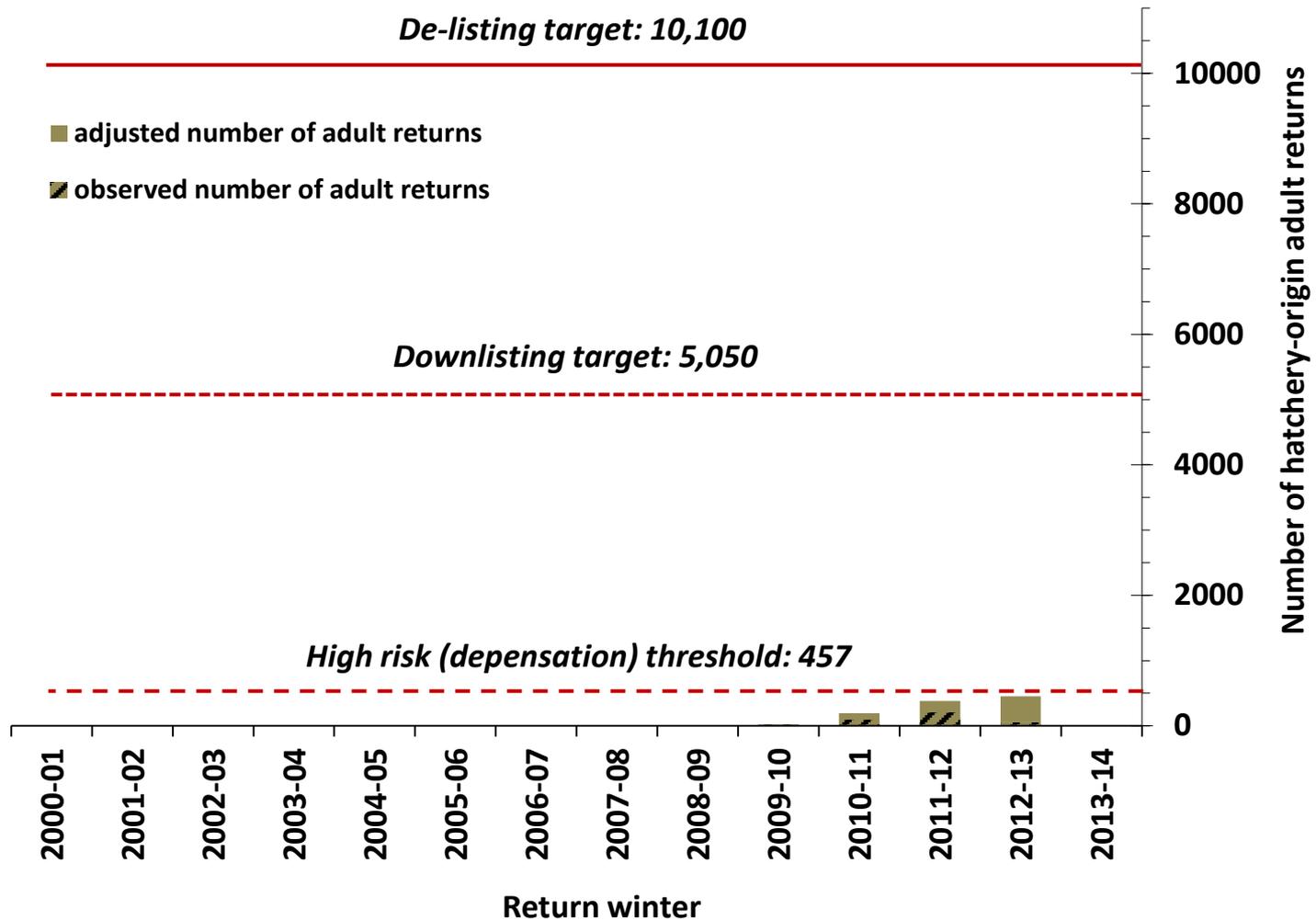
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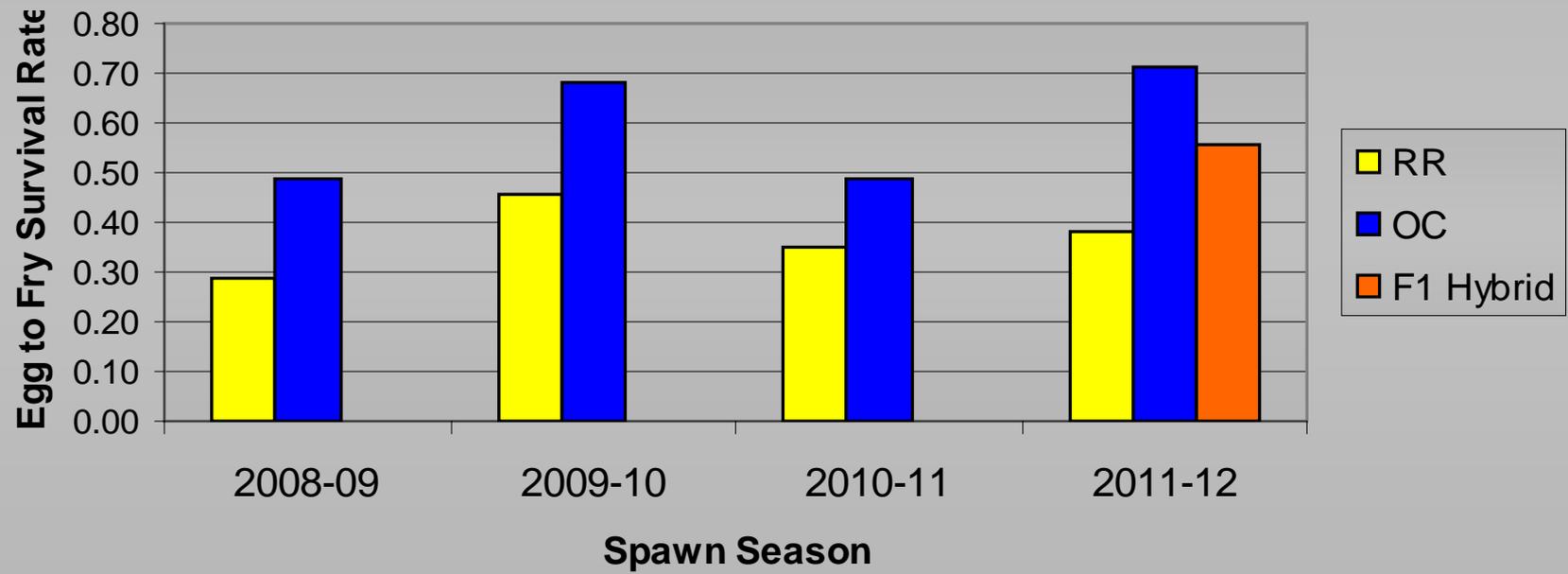
Hatchery-origin adult coho returns to the Russian River basin



Hatchery-origin adult coho returns to the Russian River basin and NMFS recovery targets



Comparison of Egg to Fry Survival Rates: RR Females vs. OC Females



Acknowledgements

- Mariska Obedzinski, UC Cooperative Extension Sonoma/ Sea Grant
- Ben White, Warm Springs Hatchery, United States Army Corps of Engineers

**Russian River Coho Salmon Captive Broodstock Program:
Broodstock Management and Progeny Releases**
2008-2011 Annual Report to the National Marine Fisheries Service
December, 2012



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Thank You

