7.1 Ocean Salmon Cooperative Research

- West Coast Salmon GSI Collaboration
  - Overview
    - Data collection and analysis
    - Fisheries Information System and Portals
  - Coastwide results
    - Stock-specific CPUE
  - Washington, Oregon, California results
    - Focus on protected species and other limiting stocks
  - Conclusions, Obstacles, Opportunities

Pete Lawson
5 May 2015

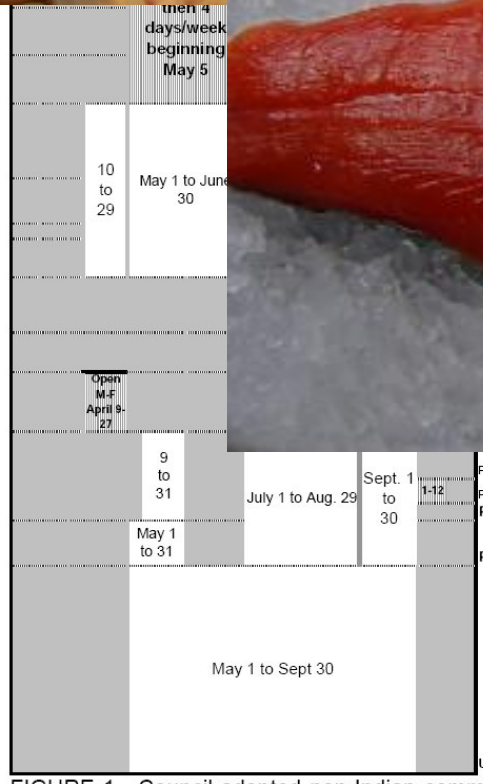
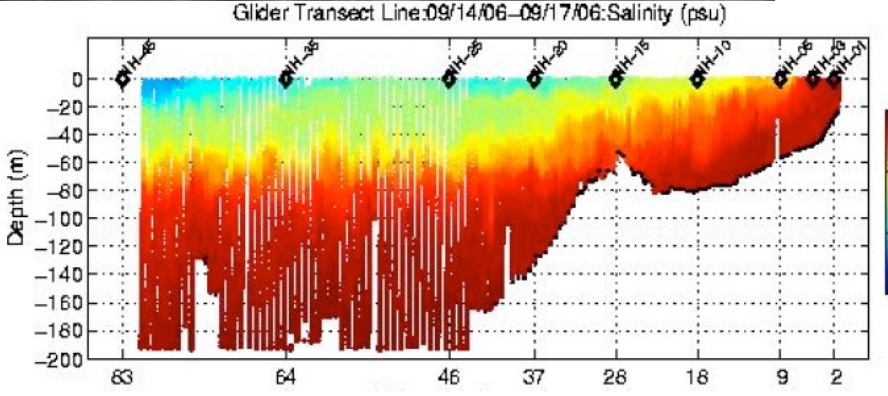


FIGURE 1. Council-adopted non-Indian commercial salmon seasons for 2007. Dates are the first or last days of the month unless otherwise specified.



CROOS and WCS-GSI data

Data Inputs

Other linked data bases

Data Integration

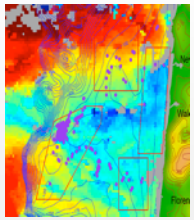
Mapping and Analysis

CROOS/PFX Database

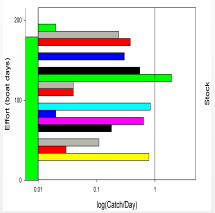
pacificfishtrax.org

Project Managers

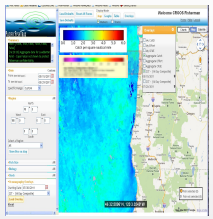
Scientists



Fishery Managers



Fishermen

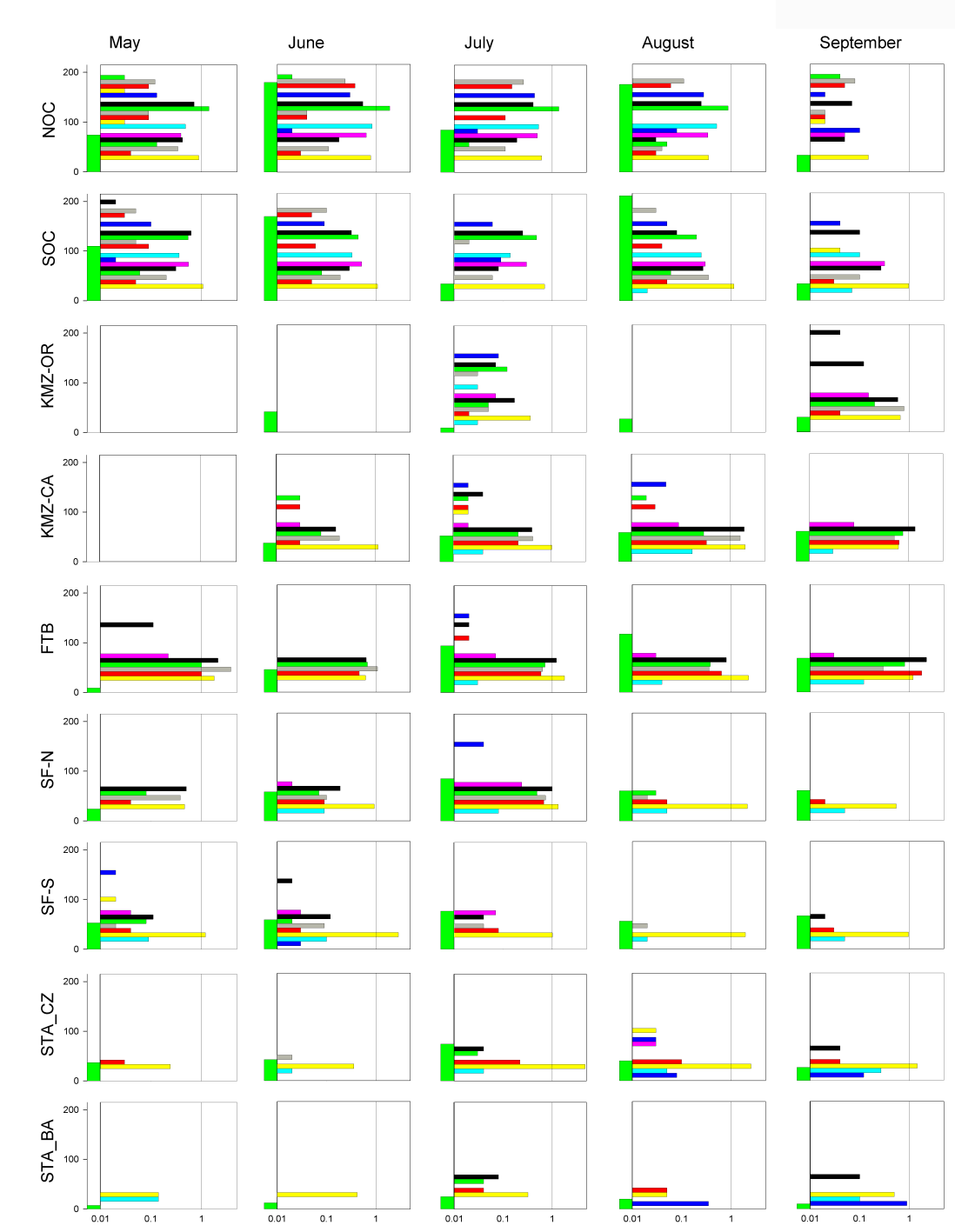


Processors Marketers

General Public

Find Your Fish

Marketing Kiosks



2010 Results

May - September Effort

Low High

0 45 90 180 270 360 Kilometers

Garibaldi
Newport
Winchester Bay
Coos Bay
Port Orford
Brookings
Crescent City
Eureka
Fort Bragg
Bodega Bay
San Francisco
Half Moon Bay
Santa Cruz
Morro Bay
Santa Barbara

2010 Sampling

- open seasons
- non-retention fishing in closed times and areas
  - NMFS Scientific Research Permit
- Goal = 200 samples per cell

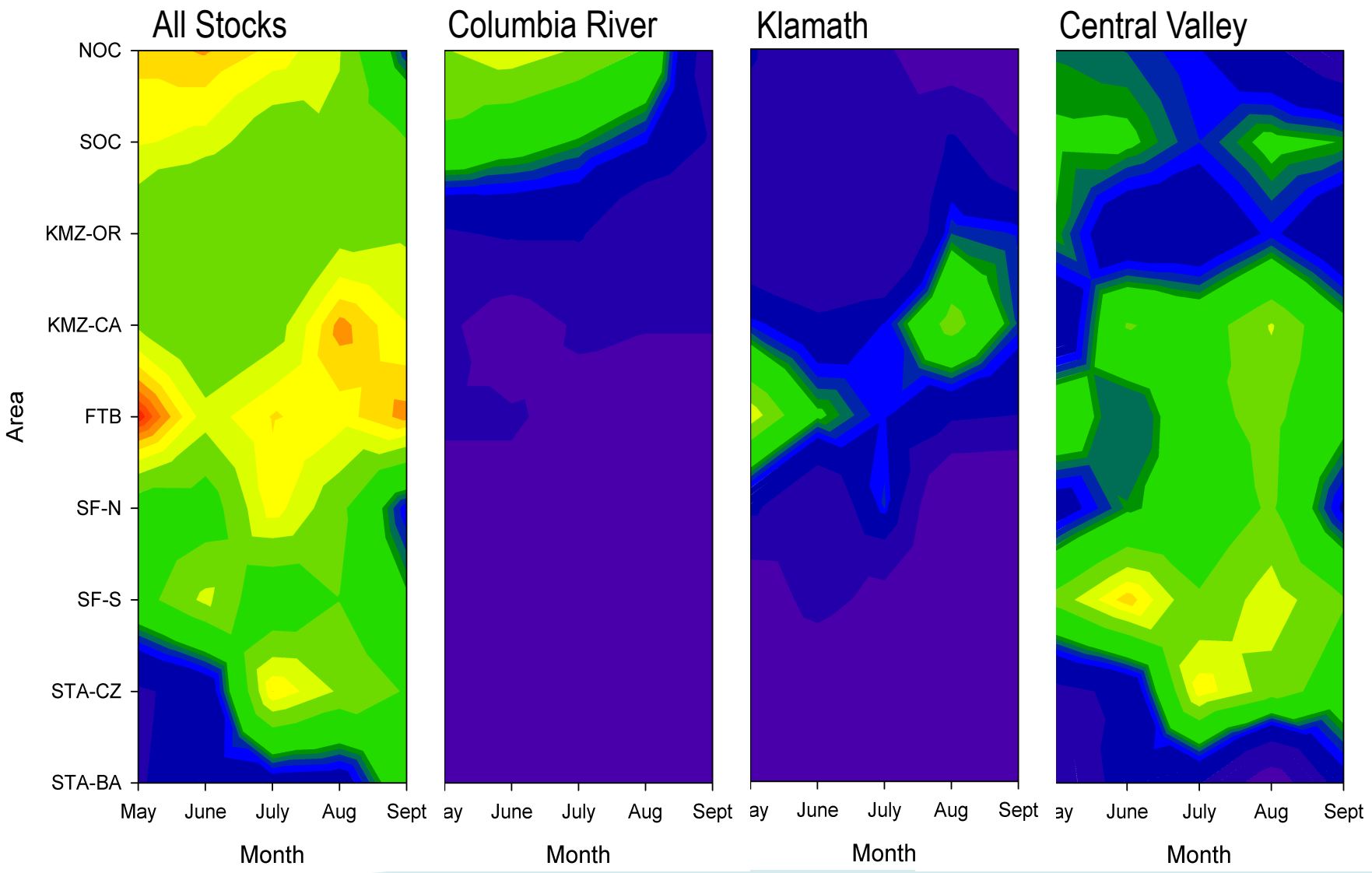
Legal-size samples:

4487	Oregon
4354	California
8841	Total

Also includes Washington

2010 Stock Distributions

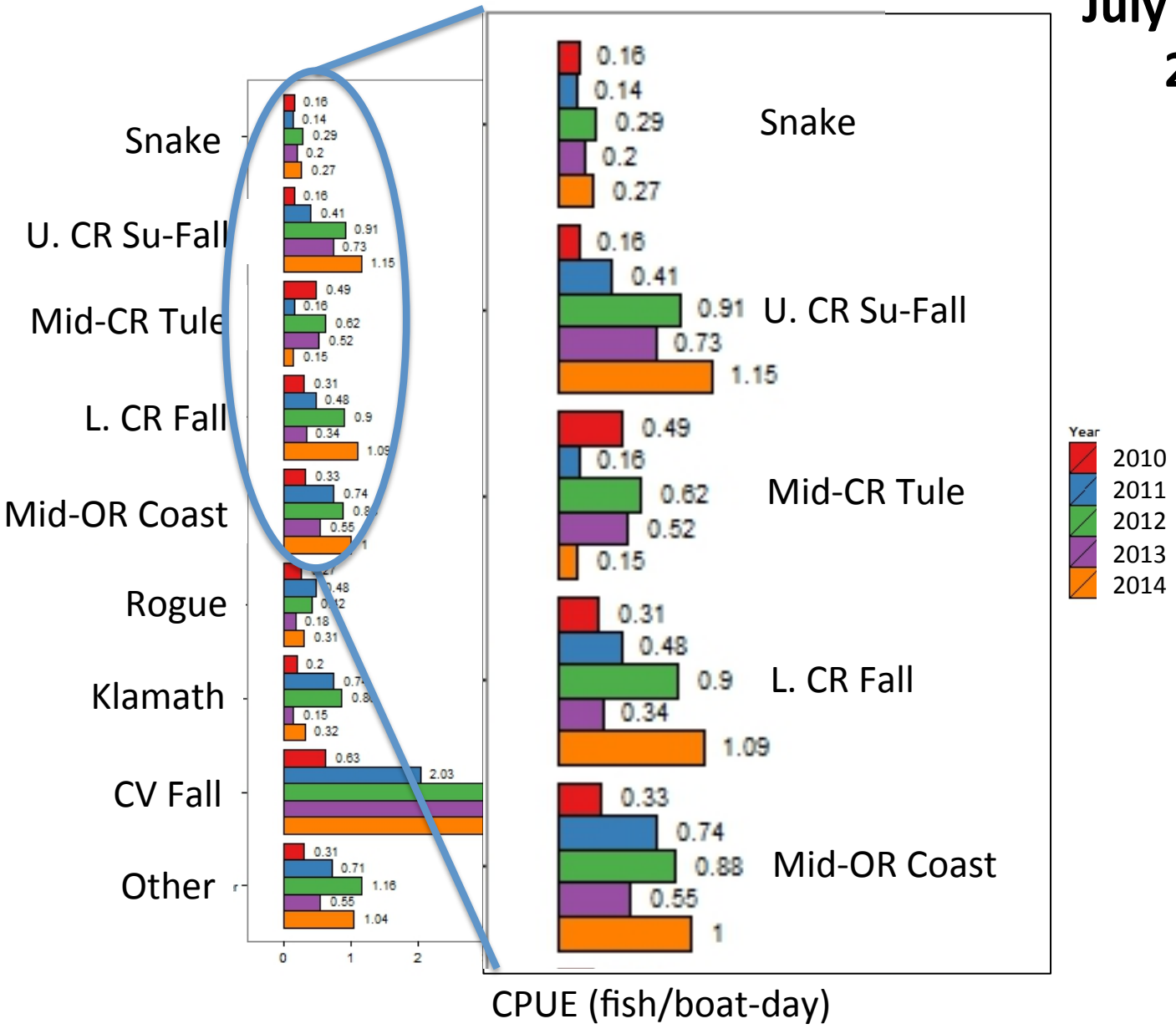
CPUE from low (blue) to high (red)



Oregon SSCPUE by Stock

July - September

2010 to 2014



GSI Samples collected and analyzed
2010 - 2014

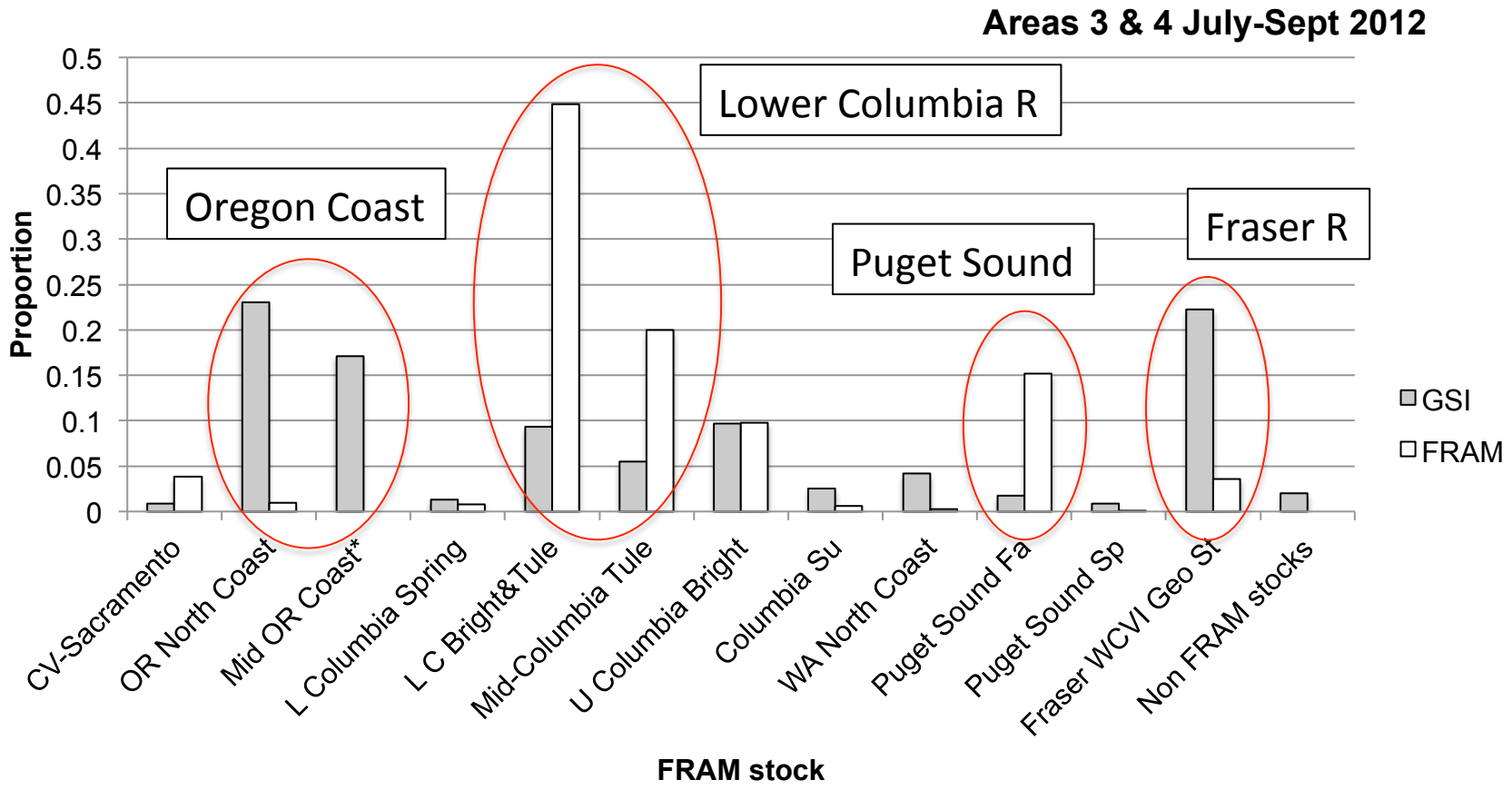
	WA*	OR	CA	Total
2010		4,046	4,972	**9,018**
2011		3,523	7,948	**11,471**
2012	1,655	8,301	9,123	**19,079**
2013	1,375	2,437	2,885	**6,697**
2014	2,149	1,222	4,143	**7,514**
Total	**5,179**	**19,529**	**29,071**	**53,779**

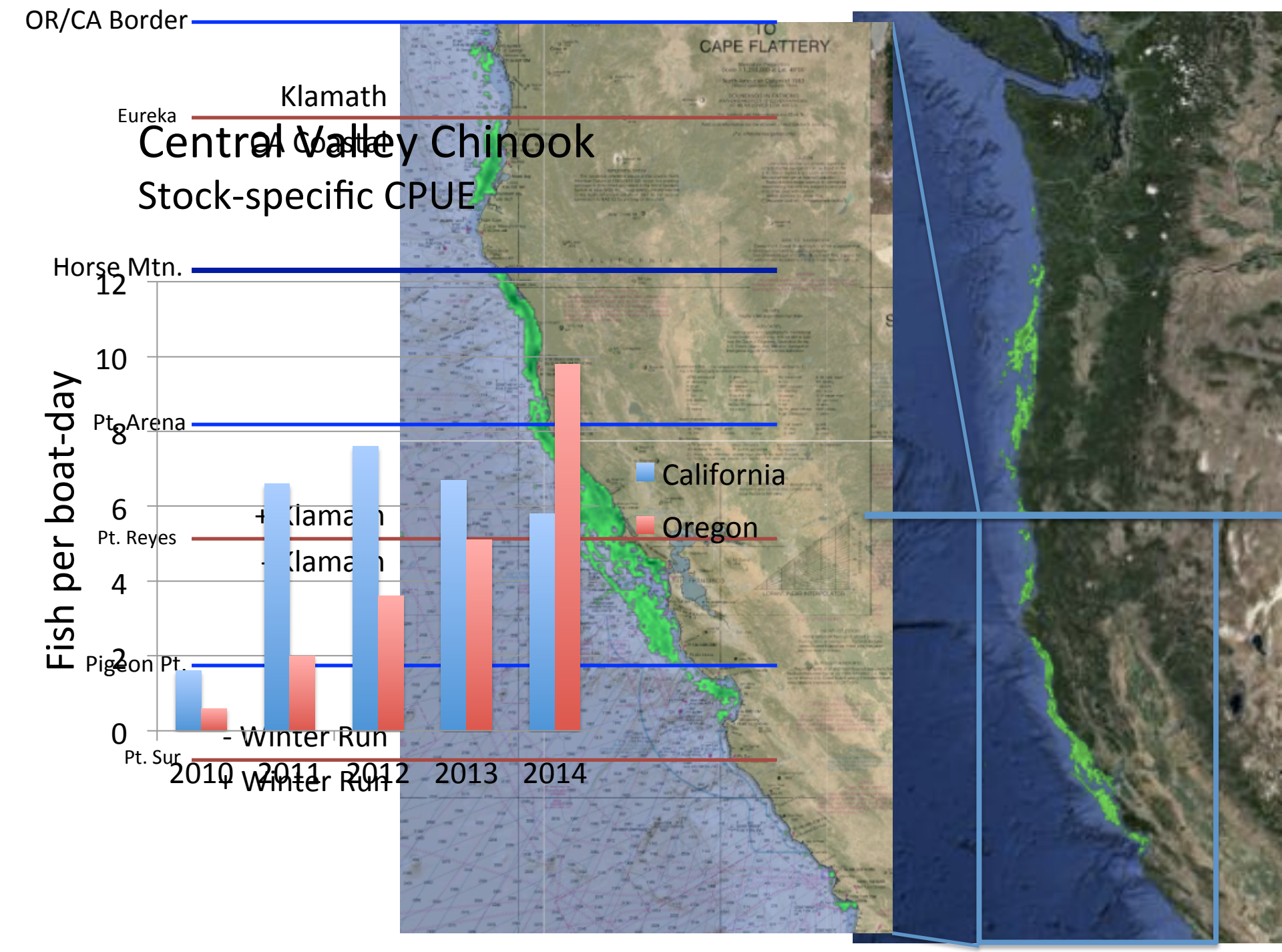
*Washington has typically analyzed about 60% of their samples due to funding limitations. Reported here is total samples collected.

Washington troll sampling program 2012 -2015

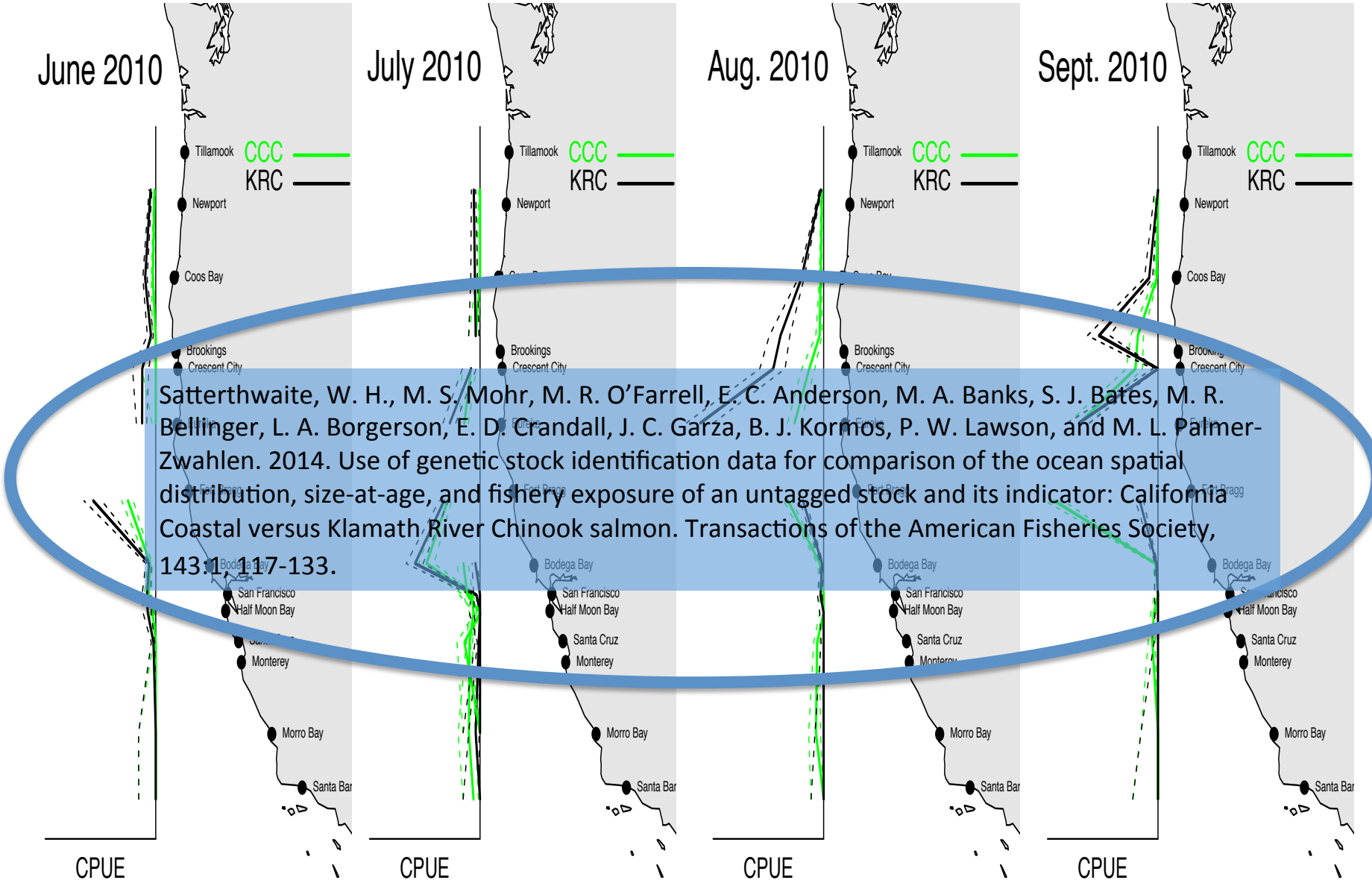
- Develop independent stock composition estimates for evaluating the coded-wire-tag model (FRAM) currently being re-calibrated to a more recent base period
- Use genetic data to target potential refinements in the FRAM
- Evaluate stock composition in years with different spatial and temporal fishing effort

Compared with FRAM, 2012 GSI shows more Oregon and Puget Sound fish and fewer Lower Columbia and Fraser River fish

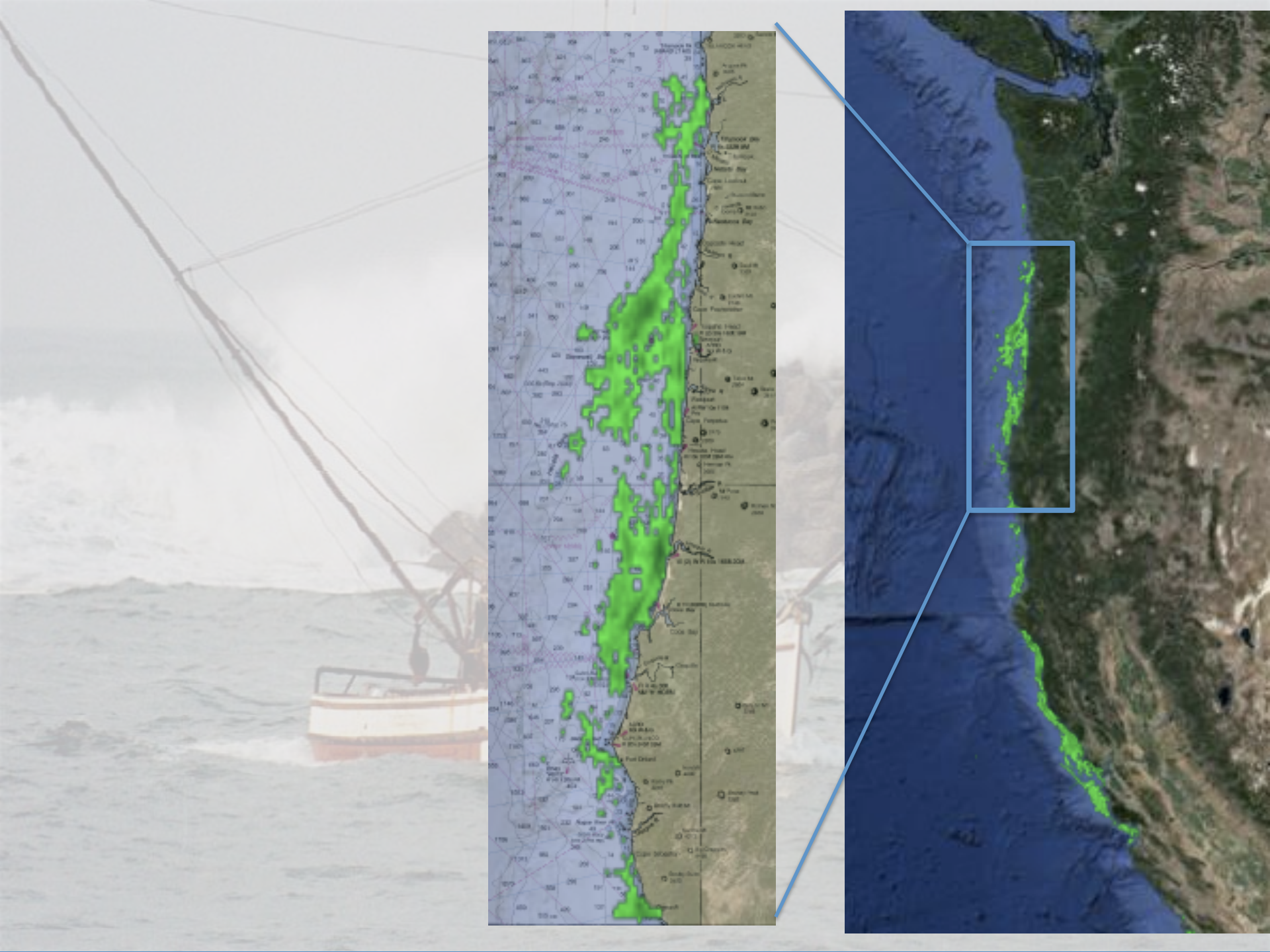



OR/CA Border
Klamath
Eureka
Central Valley Chinook
Stock-specific CPUE
Horse Mtn.
Fish per boat-day
12
10
Pt. Arena
8
6
Pt. Reyes
4
2
Pigeon Pt.
0
Pt. Sur
2010
2011
2012
2013
2014
California
Oregon
- Winter Run
CAPE FLATTERY

Klamath and California Coastal Chinook Seasonal Distribution

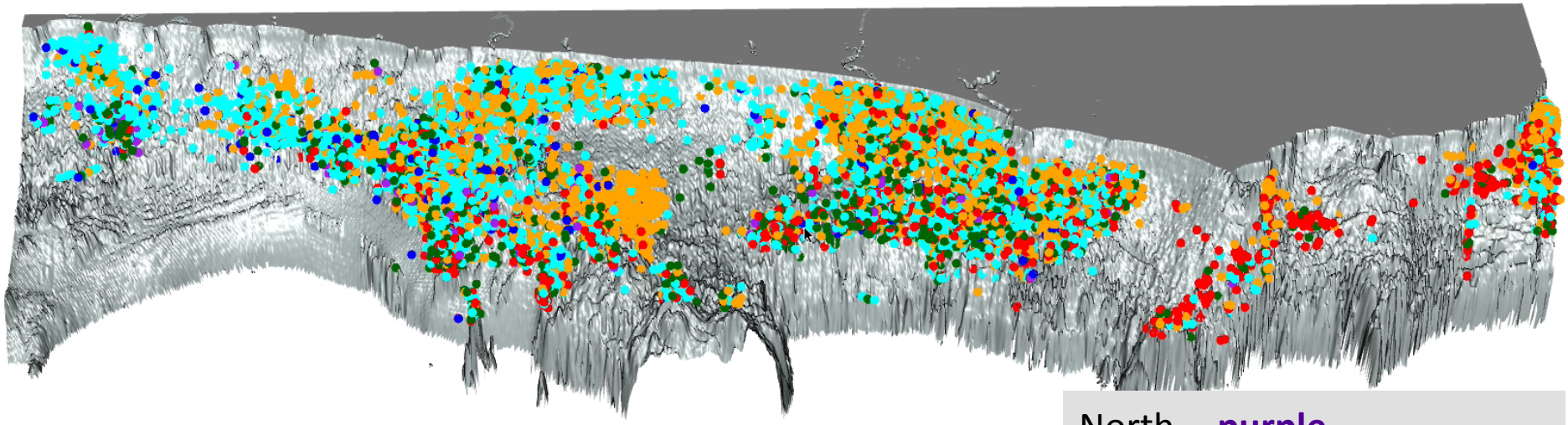


Satterthwaite, W. H., M. S. Mohr, M. R. O'Farrell, E. C. Anderson, M. A. Banks, S. J. Bates, M. R. Bellinger, L. A. Borgerson, E. D. Crandall, J. C. Garza, B. J. Kormos, P. W. Lawson, and M. L. Palmer-Zwahlen. 2014. Use of genetic stock identification data for comparison of the ocean spatial distribution, size-at-age, and fishery exposure of an untagged stock and its indicator: California Coastal versus Klamath River Chinook salmon. Transactions of the American Fisheries Society, 143:1, 117-133.



3D Visualization

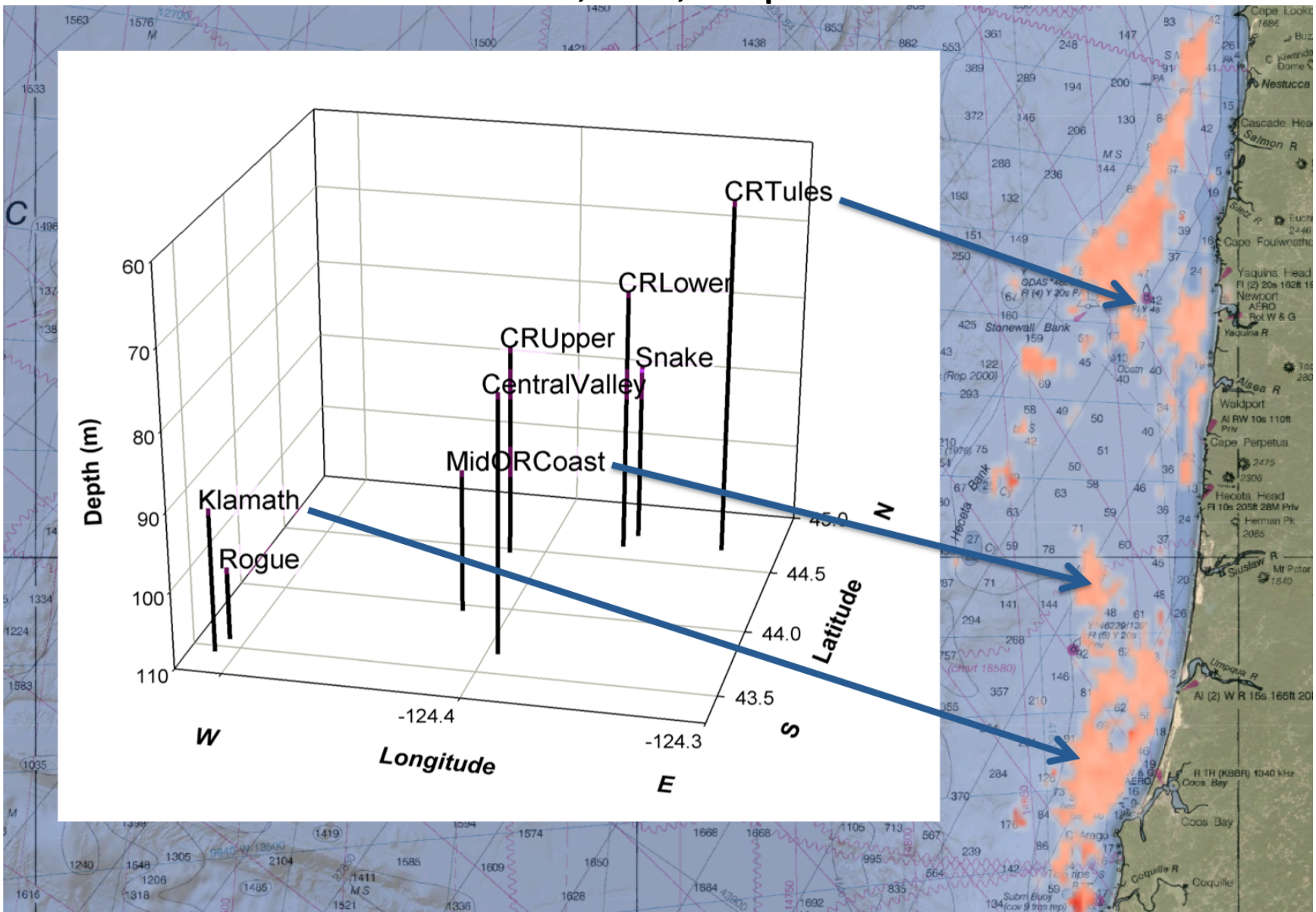
Oregon Samples 2010 - 2014

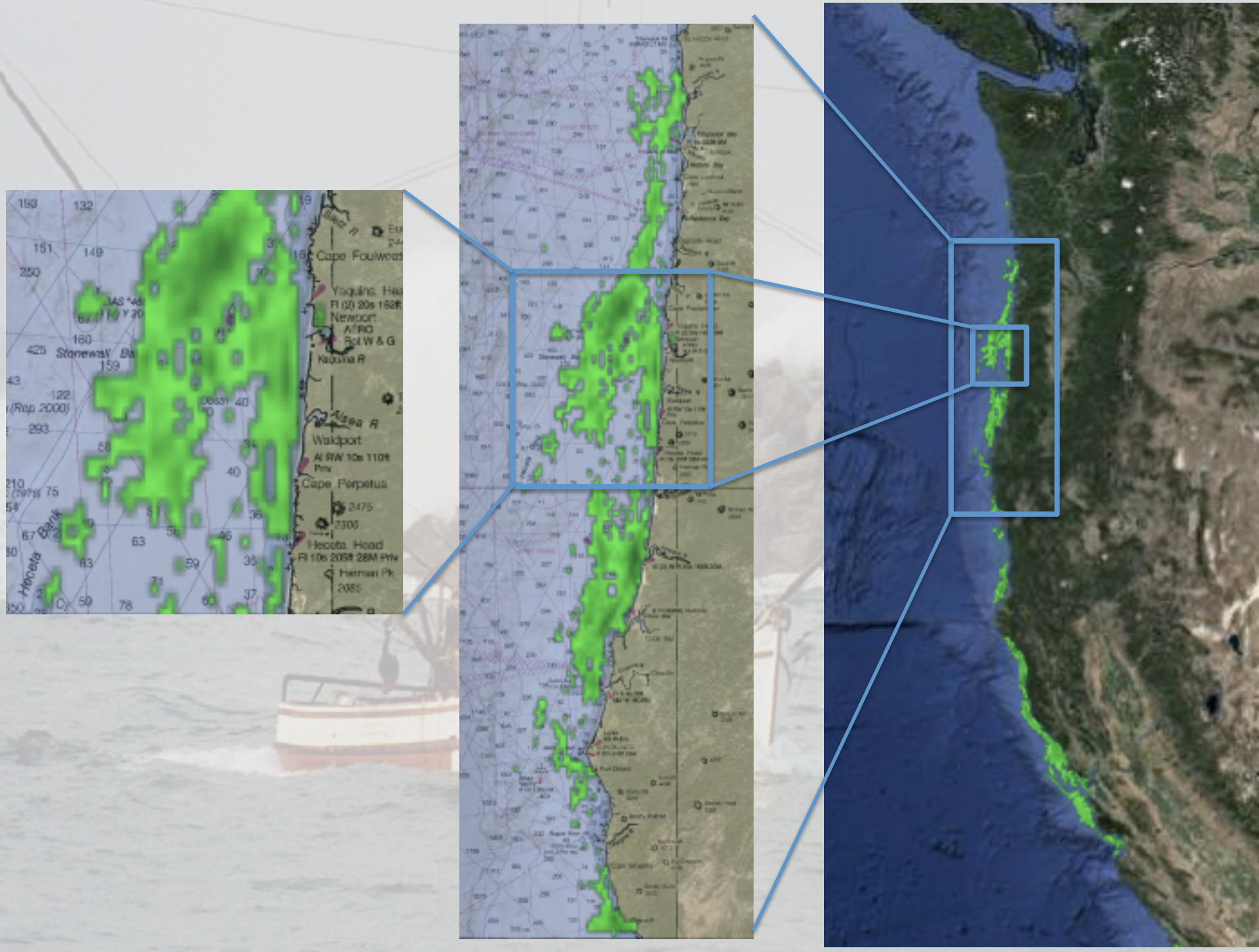


North -- **purple**
Washington -- **blue**
Columbia R. -- **cyan**
Oregon -- **dark green**
Rogue/Klamath -- **red**
Central Valley -- **orange**

Stock-specific distributions in 3D

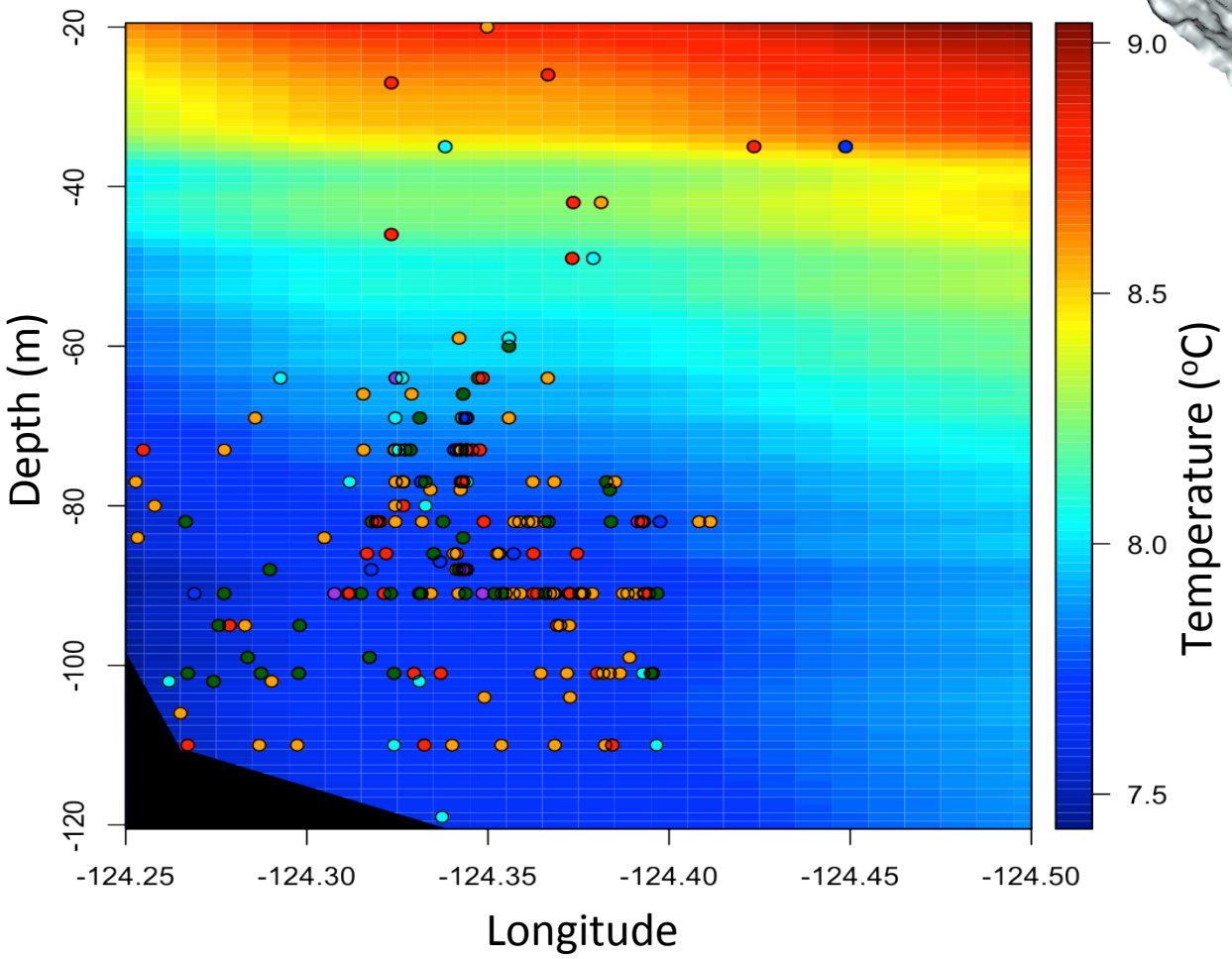
median lat, lon, depth: 2010



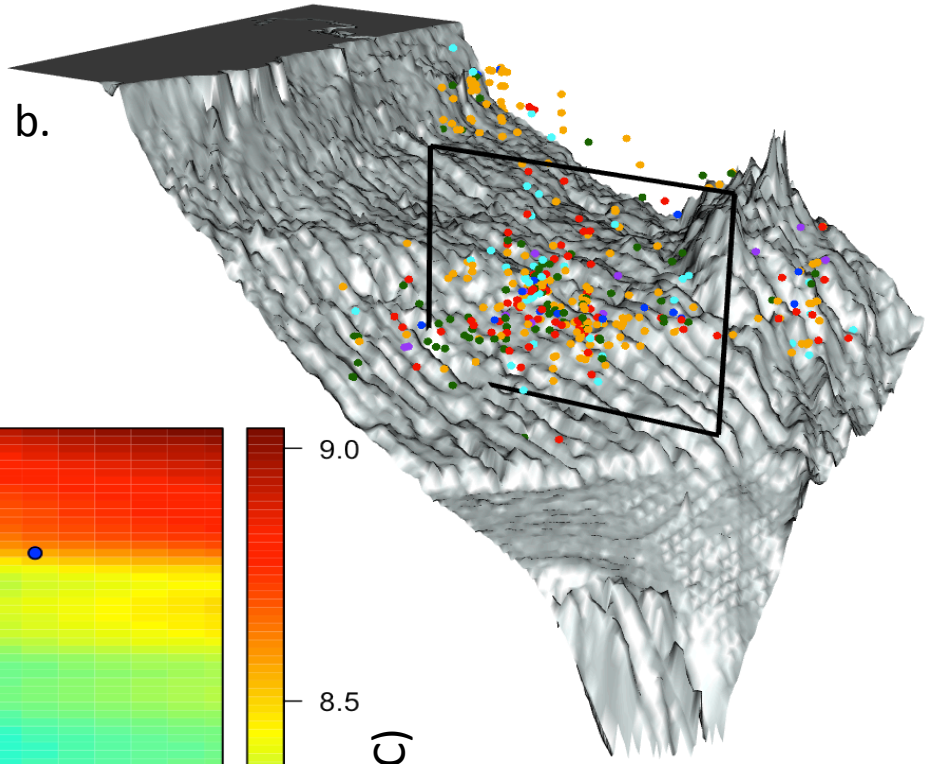

Cape Foulwea
Yaquina Hea
Fl (2) 20s 162ft
Newport
AfRO
Bot W & G
Yaquina R
Stonewall Ba
Alsea R
Waldport
Al RW 10s 110ft
Priv
Cape Perpetua
2475
2306
Heceta Head
Fl 10s 205ft 28M Priv
Herman Pk
2085
Heceta Bank

Newport Snapshot
September 2012

a.



b.



- Temperature-depth profile from sensors on fishing lines.
- Measure of actual conditions when and where fish were sampled.

What we need

- Integration with fisheries management
- 3 more years of coast-wide data collection
- Fishery Information System development

NOAA FISHERIES

Obstacles

- Fishery management heavily invested in coded-wire tags. Change is hard.
- Inadequate funding
- NMFS administrative structure
  - IT
  - Grants and contracts

Opportunities

- Bycatch reduction
- Economic efficiency
- Transferrable to other fisheries

- Chinook ocean ecology
- Ecosystem understanding

Carlos Garza
Will Satterthwaite
Mike O'Farrell
Sarah Bates
David Goldenberg
Paul Moran
Joe Dazey
Scott Blankenship
Sewall Wright
Adrian Seiders
Pete Lawson
Gil Sylvia
Michael Banks
Jeff Feldner
Corey Feldner
Nancy Fitzpatrick
Scott Boley
Paul Merz
Aaron Longton
Renee Bellinger
Kelsey Miller
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Lorenzo Ciannelli
Cheryl Harrison