NOAA FISHERIES

Report on Science Center Activities

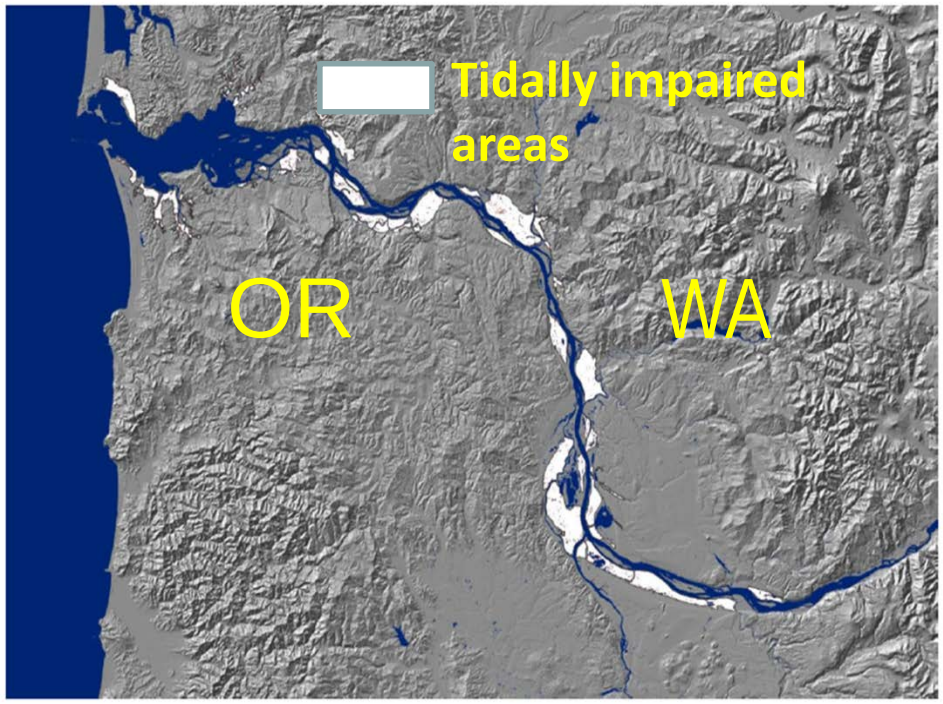
- Columbia River Estuary Habitat
- Puget Sound Harbor Seal Predation
- West Coast Salmon GSI
- Climate Update

Evaluating the Effectiveness of Habitat Restoration Actions in the Lower Columbia River and Estuary

Pacific Northwest National Laboratory,
National Marine Fisheries Service

Project Goals

- Evaluate ecological benefits of restoration actions for juvenile salmon in the lower Columbia River and estuary
- Provide a holistic framework for understanding the benefits of estuarine restoration.



Background and Applicability

Fundamental management question addressed: Are the estuary habitat restoration actions achieving expected biological and environmental benefits, especially with respect to juvenile salmon?

Harbor seals and steelhead

- 12 Instrument packs deployed (4/3/2014 – 4/28/2014)
- 7 males and 5 females
- 55 to 101 kg
- 11 Instrument packs recovered

Key findings

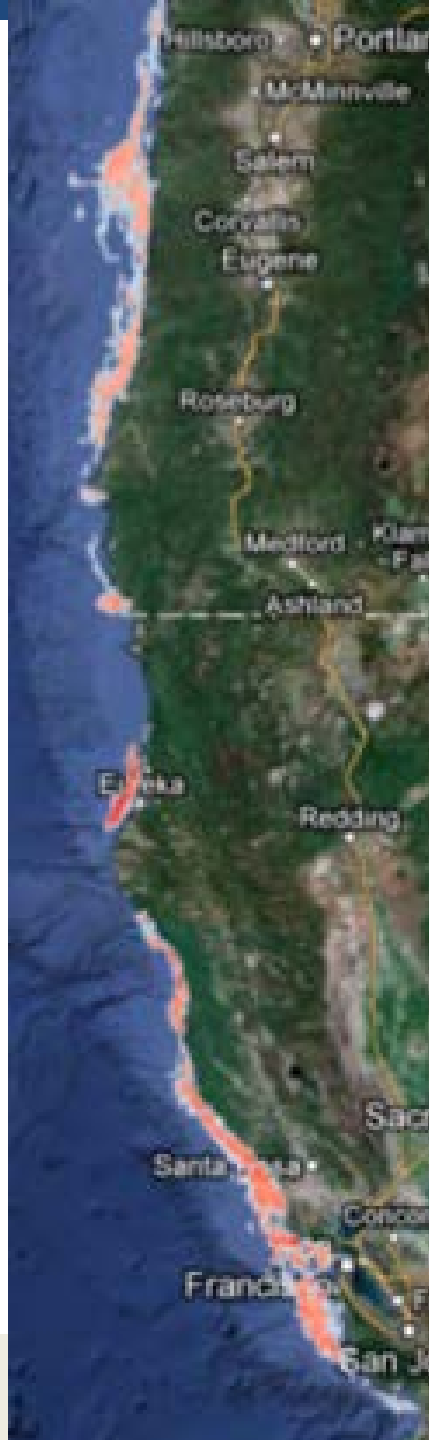
- Half of Nisqually River smolts reaching Central Puget Sound were detected by harbor seals
- More migrating steelhead and stationary tags were detected in Central Puget Sound than in Admiralty Inlet
- Seals provided locations for steelhead during AND after the outmigration season
- Tags found stationary at haul-out locations
- Association between transient killer whale presence and steelhead smolt survival

Moving forward

- Study expanding to estimate proportion of steelhead smolts eaten by harbor seals in Puget Sound
- Cooperative effort
  - NOAA NWFSC
  - WDFW
  - Nisqually and Muckelshoot tribes
  - Tribal and co-management agencies
  - Long Live the Kings

West Coast Salmon Genetic Stock Identification Update and Plans for 2016

- Brief summary of 2015 sampling
- 2016 Plans – Saltonstall-Kennedy Grants
  - Washington Trollers Association
    - Archived sample analysis
  - Oregon Salmon Commission project
    - Fishery Information System development
  - California Salmon Council project
    - GSI sampling, Southern Oregon to San Francisco



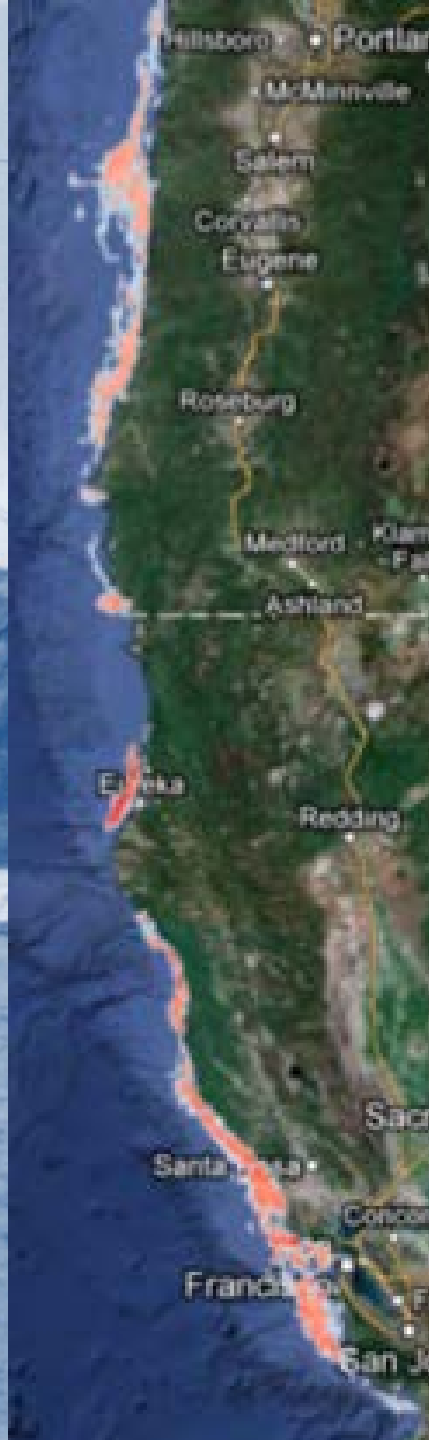
GSI Samples collected and analyzed

2010 - 2015

	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	**19,089**
2013	1,375	2,437	2,885	**6,697**
2014	2,149	1,222	4,143	**7,514**
2015	2,597	945	2,769	**6,311**
Total	**7,786**	**20,474**	**31,840**	**60,100**

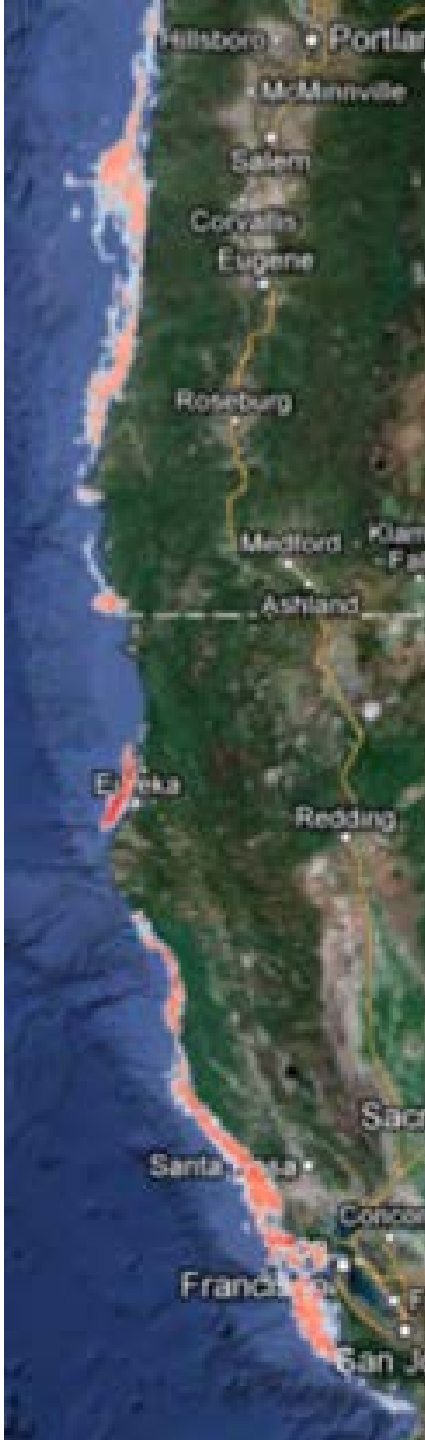
*Washington has typically analyzed about 60% of their samples due to funding limitations.

- Reported here is total samples collected.

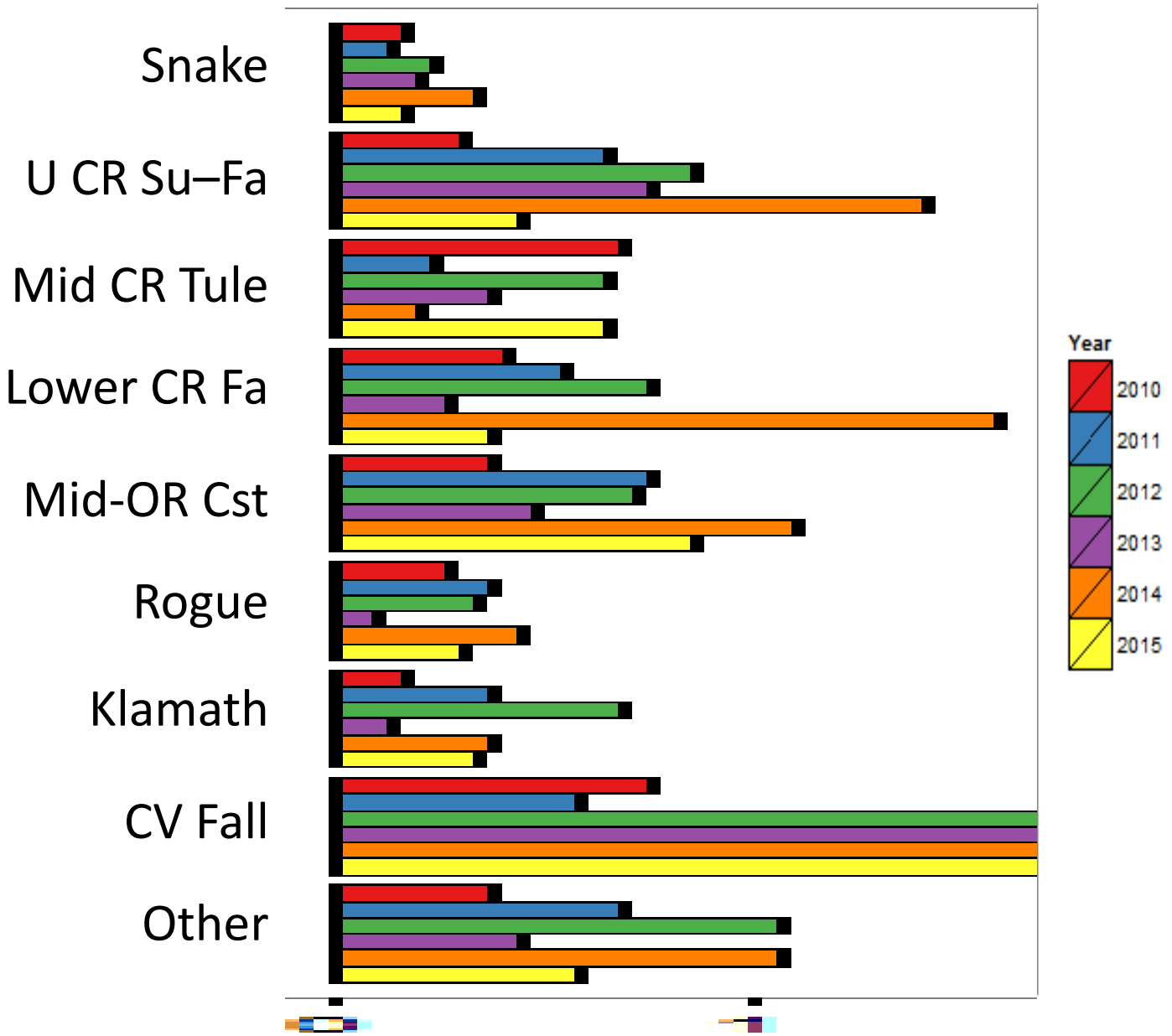


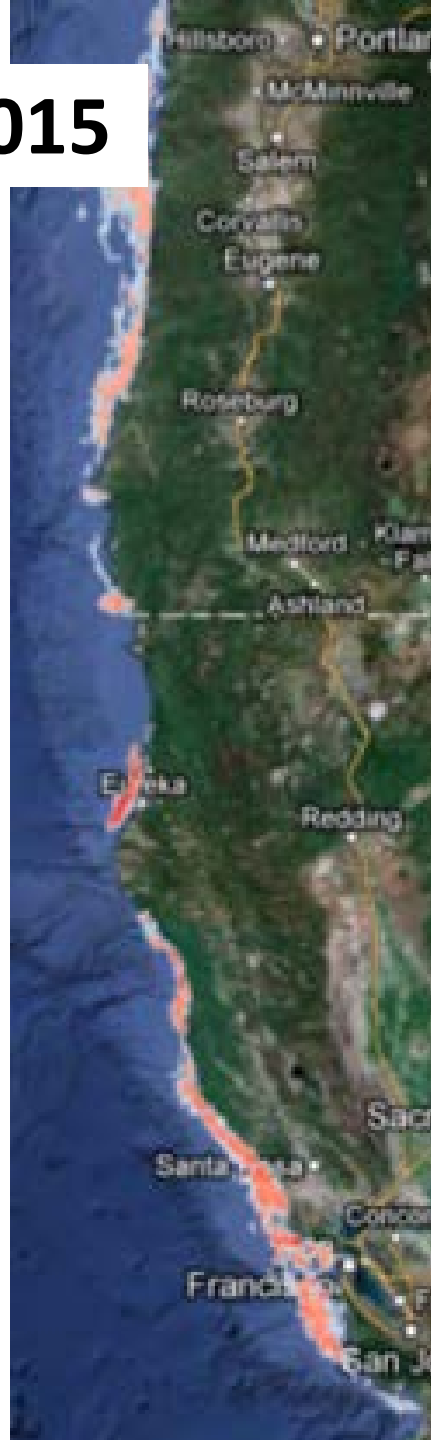
Washington GSI Update

- Analyze archived samples
- Compare GSI stock composition estimates with FRAM base period update
- Evaluate Chinook bycatch stock composition in the hake fishery

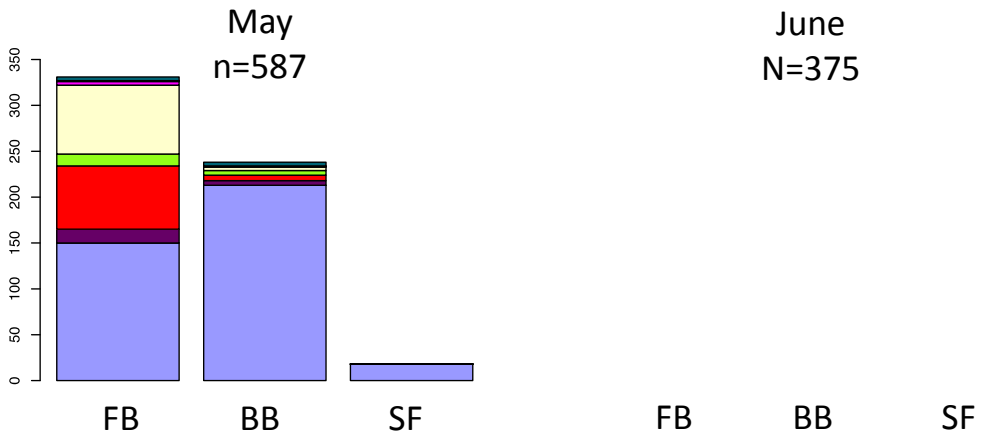


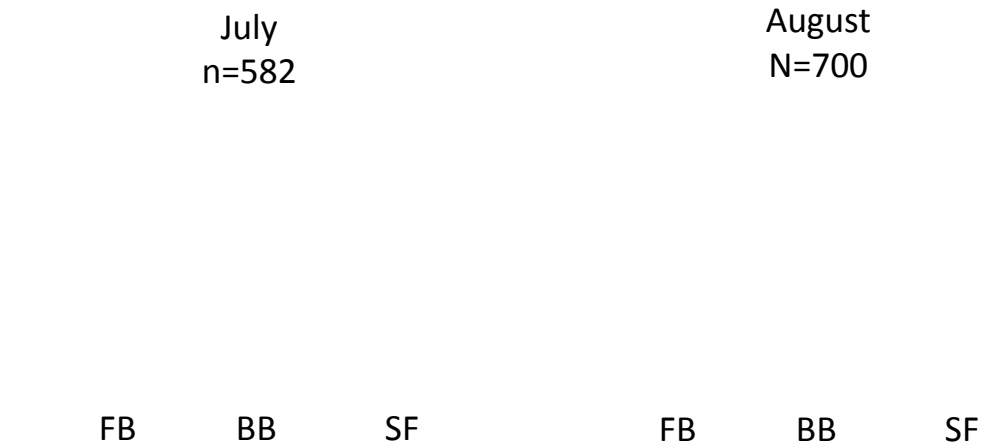
Stock-specific CPUE in Oregon 2010 - 2015

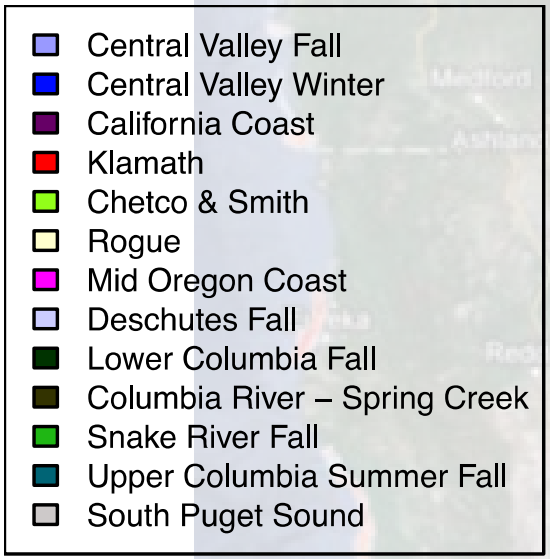




Stock-specific sample numbers California 2015



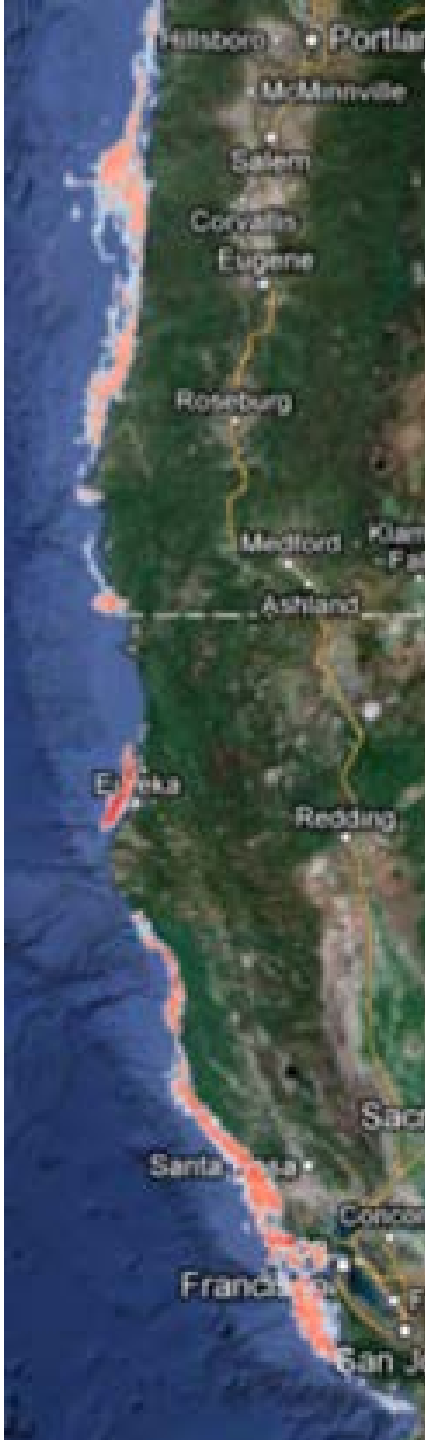




California Salmon Council
Saltonstall-Kennedy Grant

Objectives

- Distinguish the distributions of Klamath, Central Valley, and California Coastal Chinook stocks between Humbug Mountain and Pigeon Point
- Use precise capture location and depth to generate time-series maps of stock distribution throughout the fishing season
- Use WCS-GSI sampling protocols and GSI analysis
- **May include non-retention sampling**

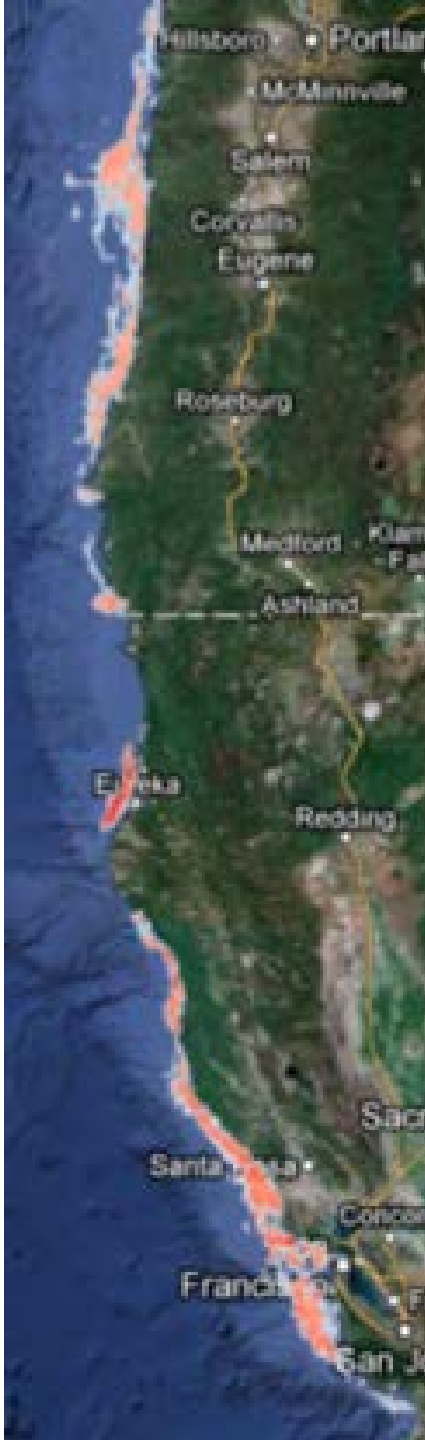


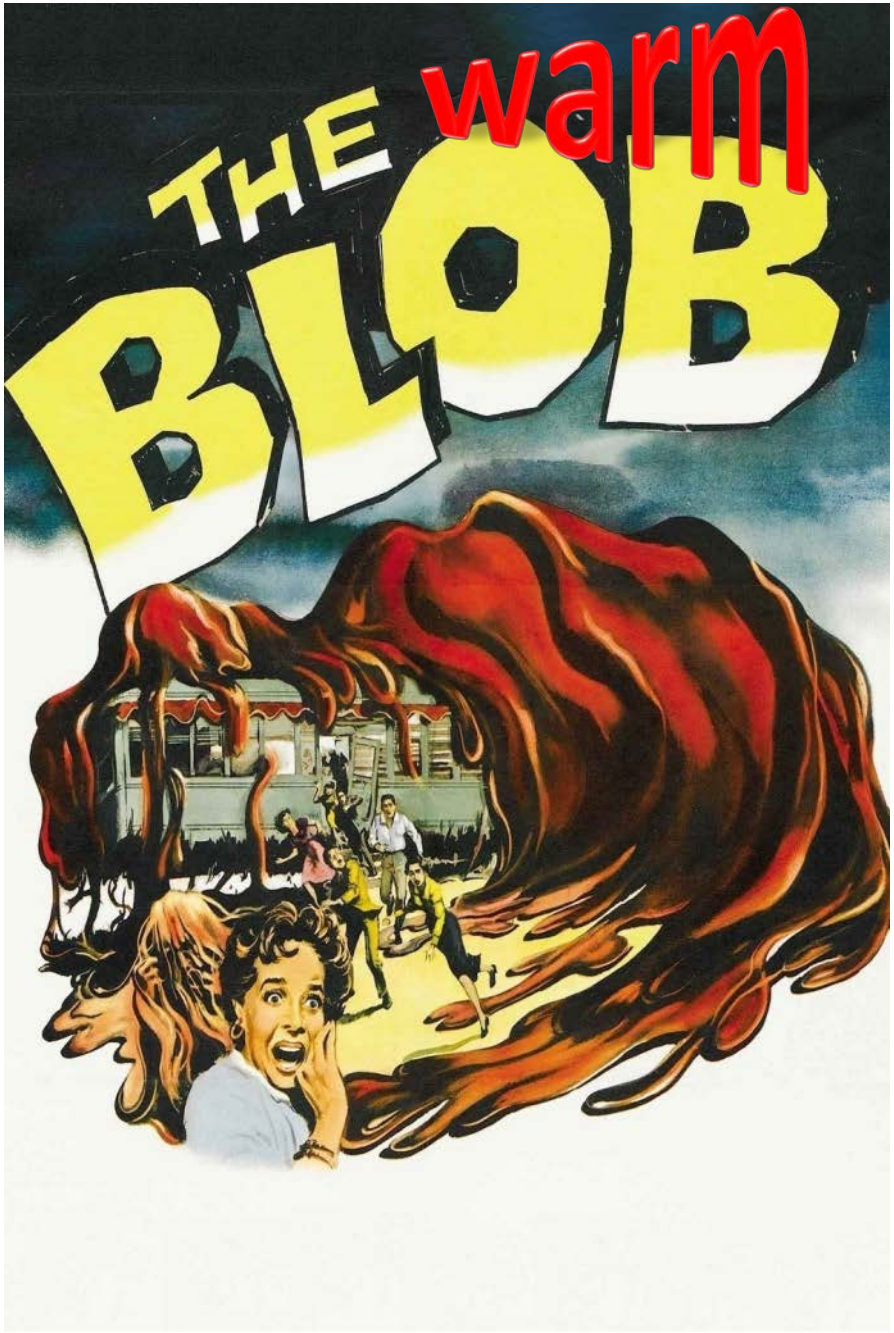
CDFW: CWT Sampling
Proposal by California Fishermen

Objectives

- Determine Klamath contribution N/S of Klamath River mouth
- Sample commercial fishery dockside for CWTs
  - 20 CWT per stock per area
    - KRFC
    - SRFC
- Repeat for 3 years

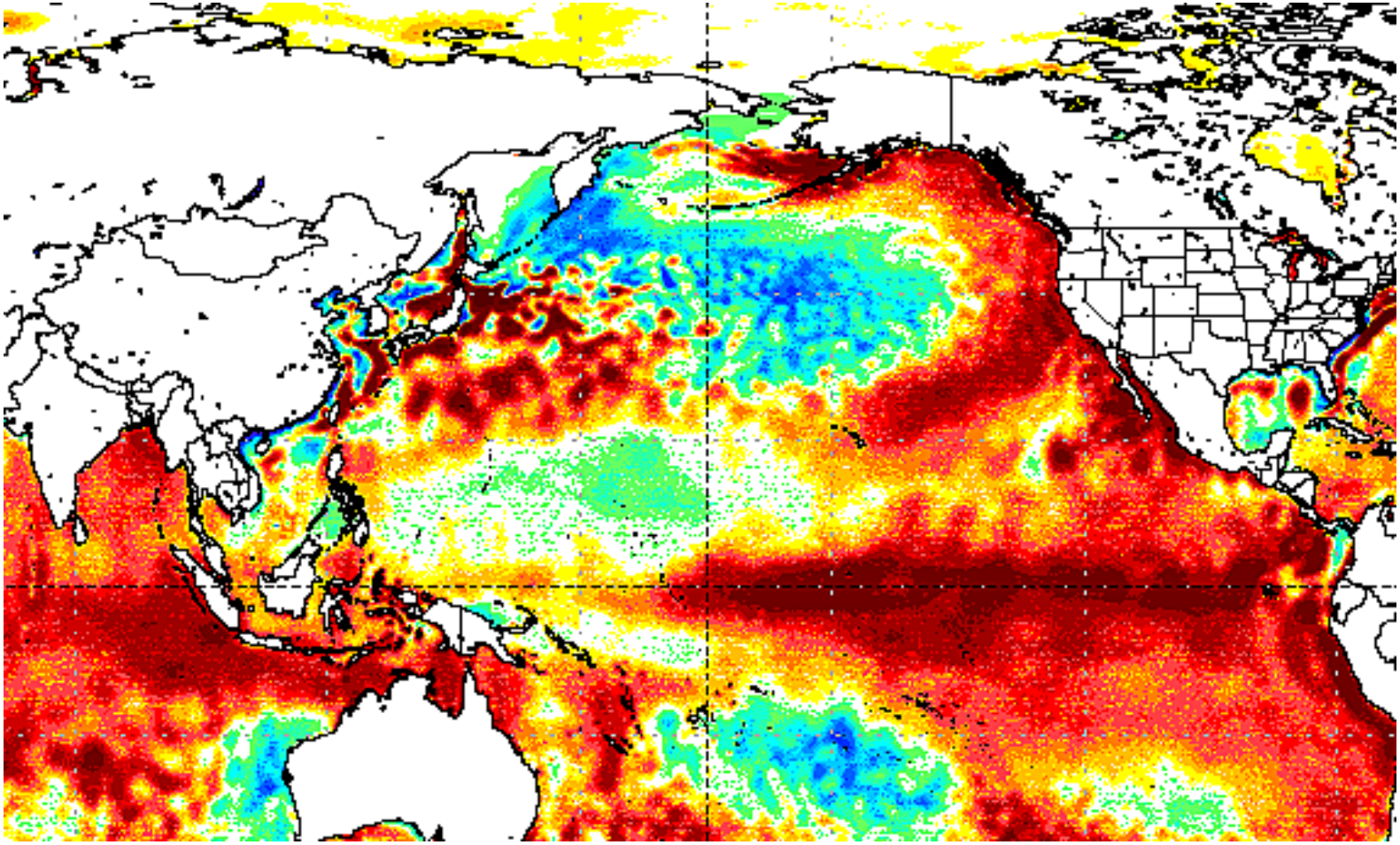
Independent of WCS-GSI proposal




THE
warm
BLOB

SST anomalies 28 Feb 2016

http://polar.ncep.noaa.gov/sst/ophi/



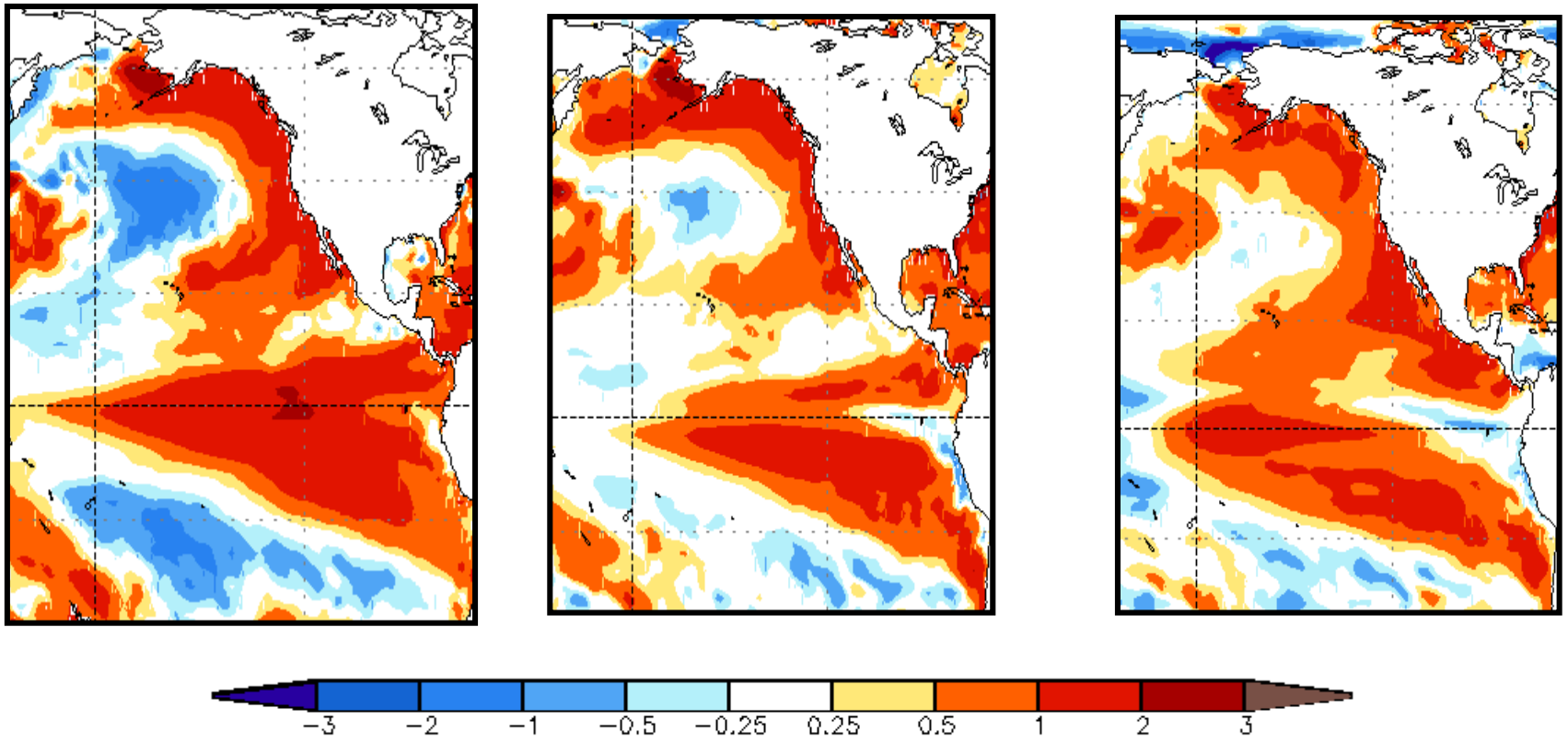
Forecast SST anomalies

NOAA Climate prediction Center coupled forecast model 2

Mar-Apr-May 2016

May-Jun-Jul 2016

Aug-Sep-Oct 2016



http://www.cpc.ncep.noaa.gov/products/CFSv2/CFSv2seasonal.shtml

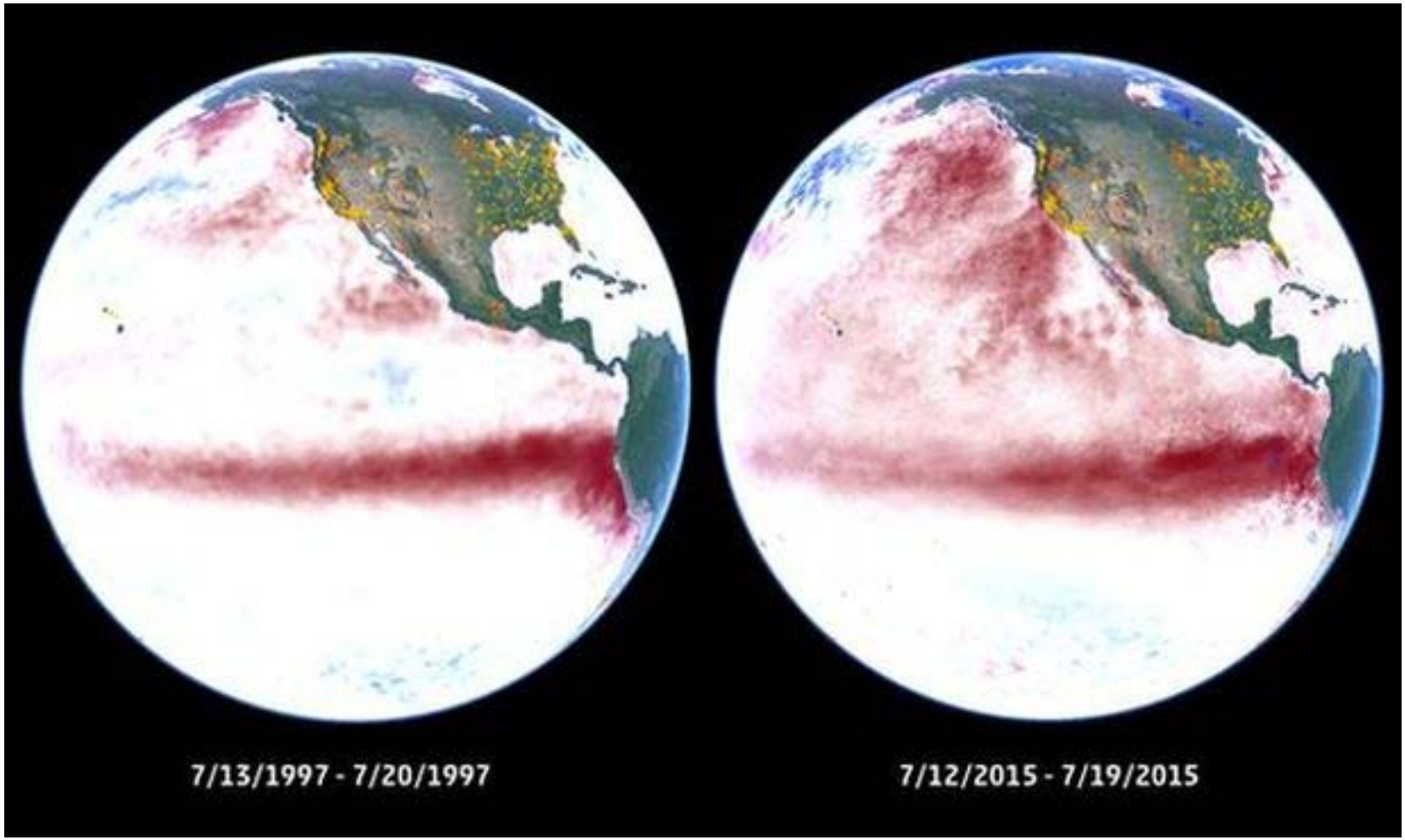
El Niño Forecast (29 Feb 2016)

El Niño conditions are present

A transition to ENSO-neutral is likely during late Northern Hemisphere spring or early summer 2016, with a possible transition to La Niña conditions during the fall.

www.elnino.noaa.gov

This year's El Niño is different because North Pacific was already warm



Every El Niño is different

The Bottom Line

- The blob has caused elevated SSTs across NE Pacific. As of March 2016 the strong El Niño hasn't had much effect on marine waters
- Poor ocean conditions for salmon that entered marine waters in 2014 and 2015 could affect future adult returns
- Early indications suggest 2016 ocean conditions may be unfavorable for juvenile salmon due to continued warm coastal water

7/13/1997 - 7/20/1997 7/12/2015 - 7/19/2015