


Ecosystem Monitoring Project 2014 Fish Sampling Update

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**Lower Columbia Estuary
Partnership Science Workgroup
Meeting
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2014 Update

- **2014 Field sampling**

- Fish habitat occurrence and salmon health at four of six trends sites (limited sampling at Ilwaco Slough and Secret River)
- Restricted seasonal sampling (February through July)

- **Additional data from 2013**

- Chinook salmon stock composition

- **Bonus data**

- Baseline PAH exposure for USGS coal train study in the Columbia Gorge

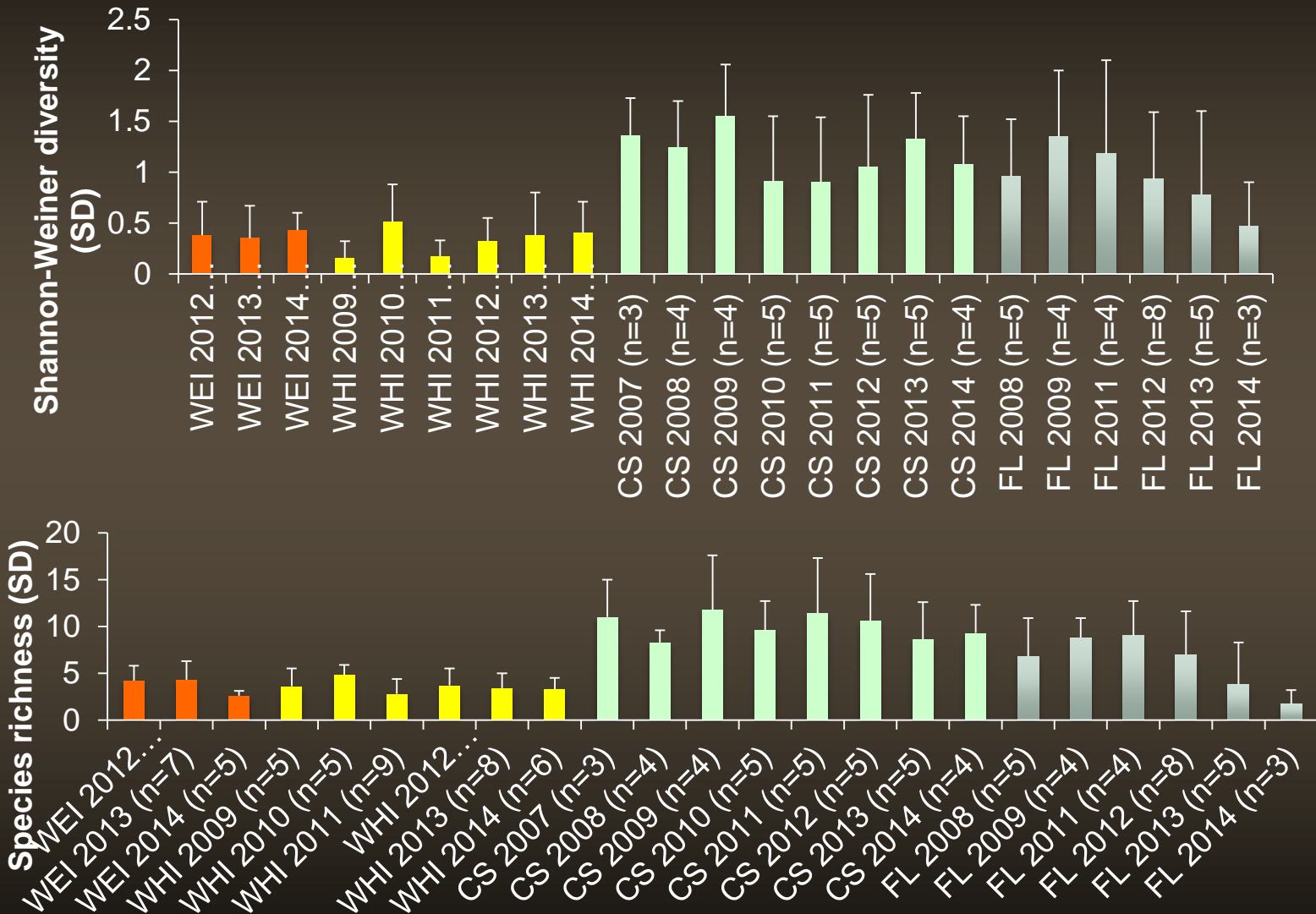
Fish Parameters Measured for EMP

- **Fish community**
 - Species richness
 - Species diversity
 - % non-native species in catch
 - % fish that could be salmon predators in catch
- **Salmon species composition and habitat occurrence**
 - % of salmon species in catches
 - Density of salmon species
 - Chinook salmon stock composition
- **Salmon condition**
 - Length, weight, condition factor, size ranges
 - Lipid content
 - Growth rate (otoliths)
 - Contaminants

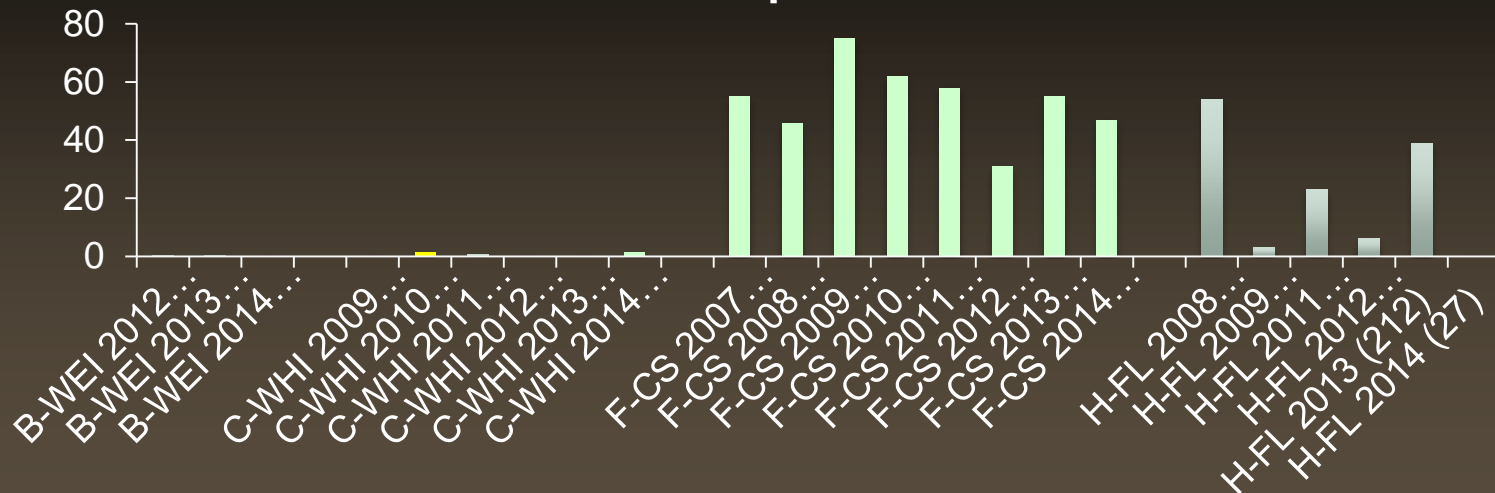


Fish Community Characteristics

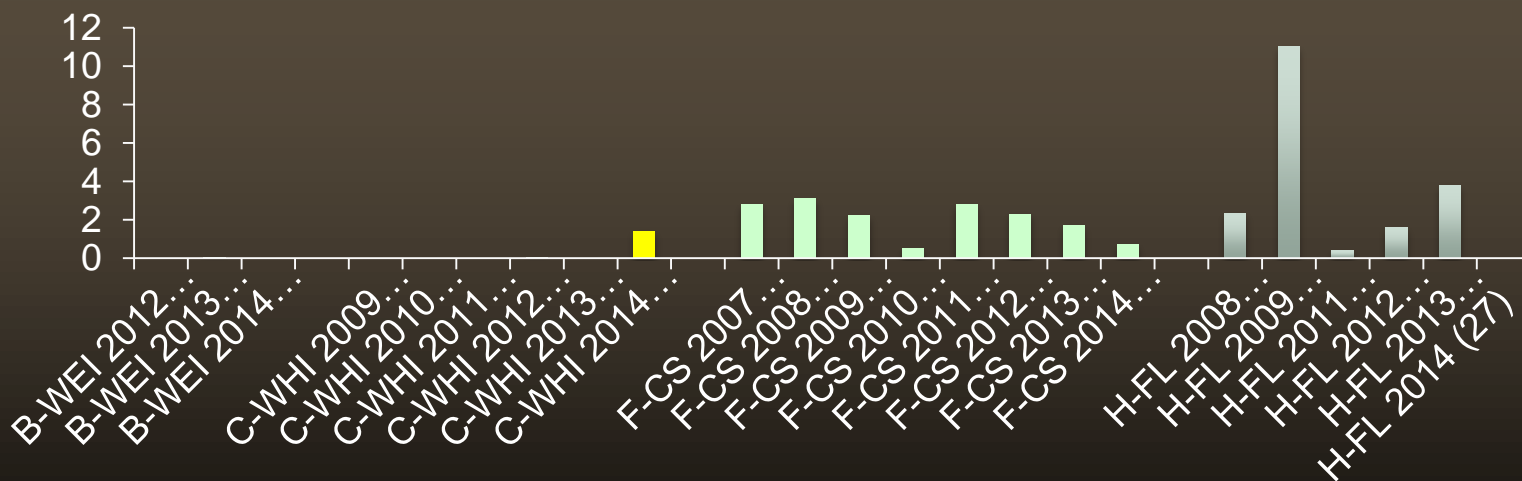
Species diversity and richness – temporal trends



% non-native species in catch



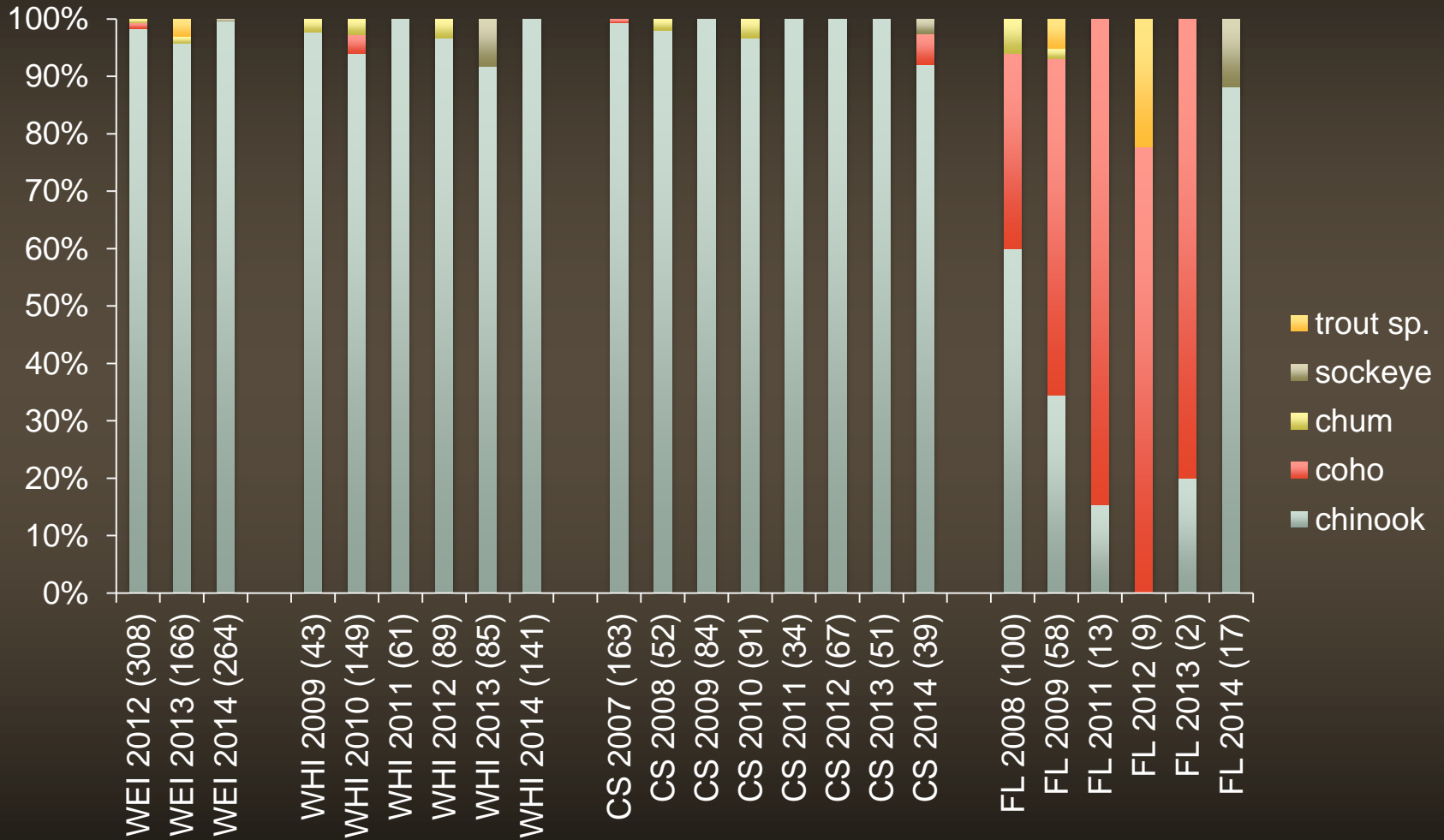
% predator species in catch





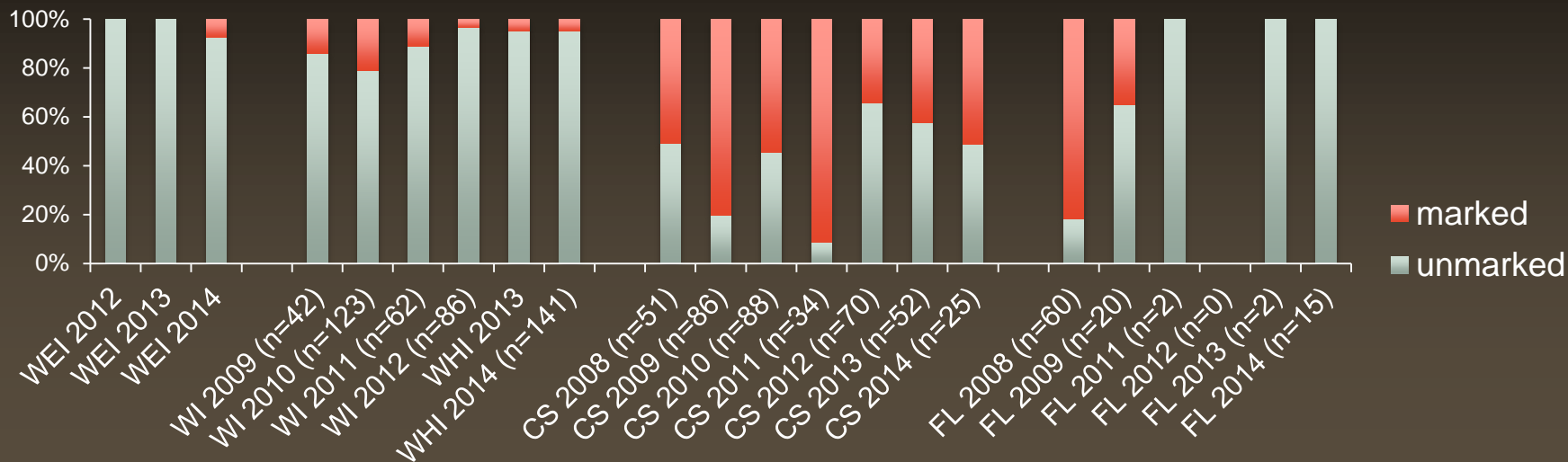
Salmon Habitat Occurrence

Salmon species composition: 2014 vs. previous years

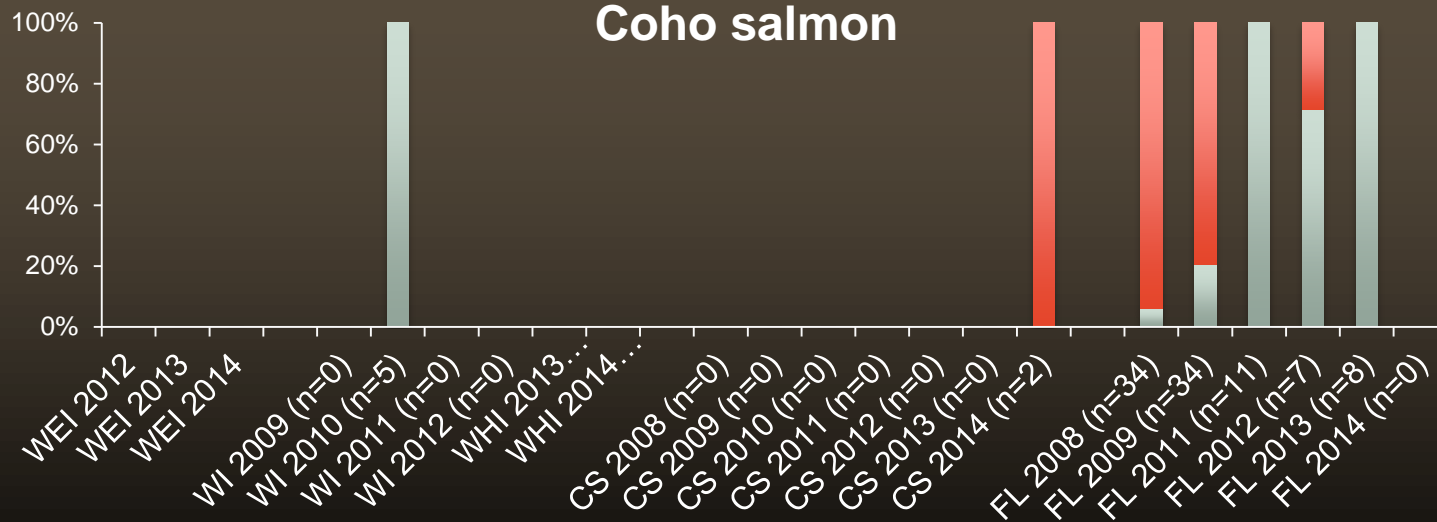


Marked vs. unmarked salmon: 2014 vs. previous years

Chinook salmon

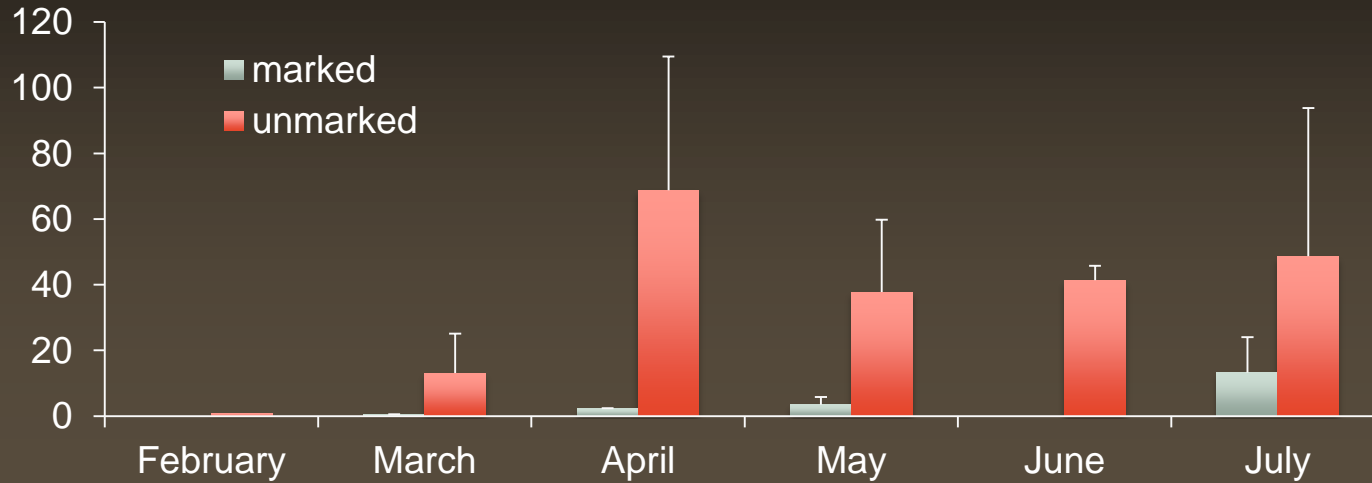


Coho salmon

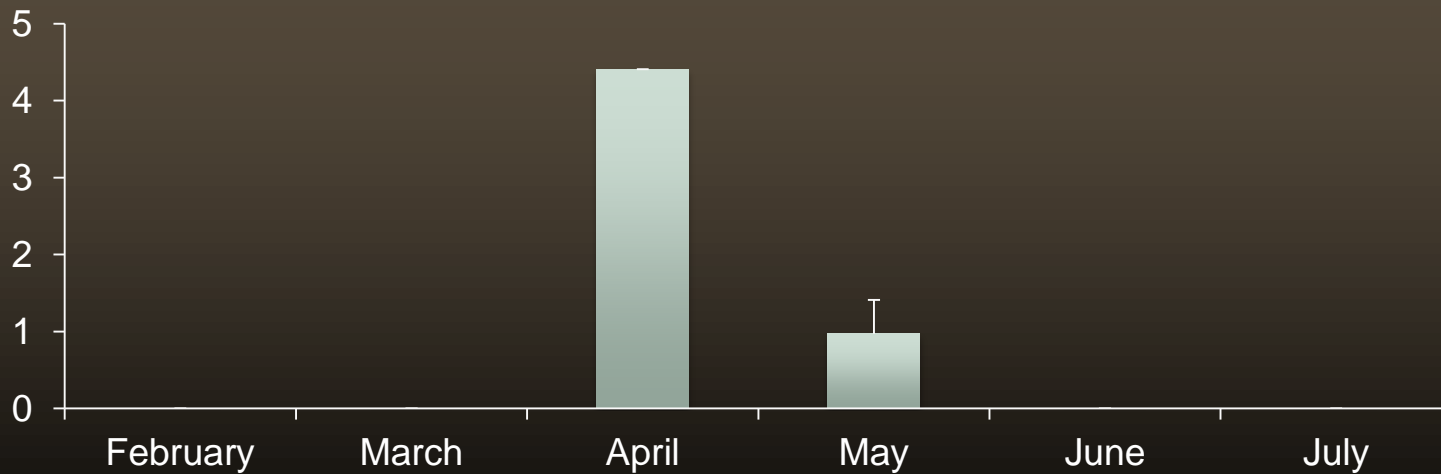


Season salmon occurrence

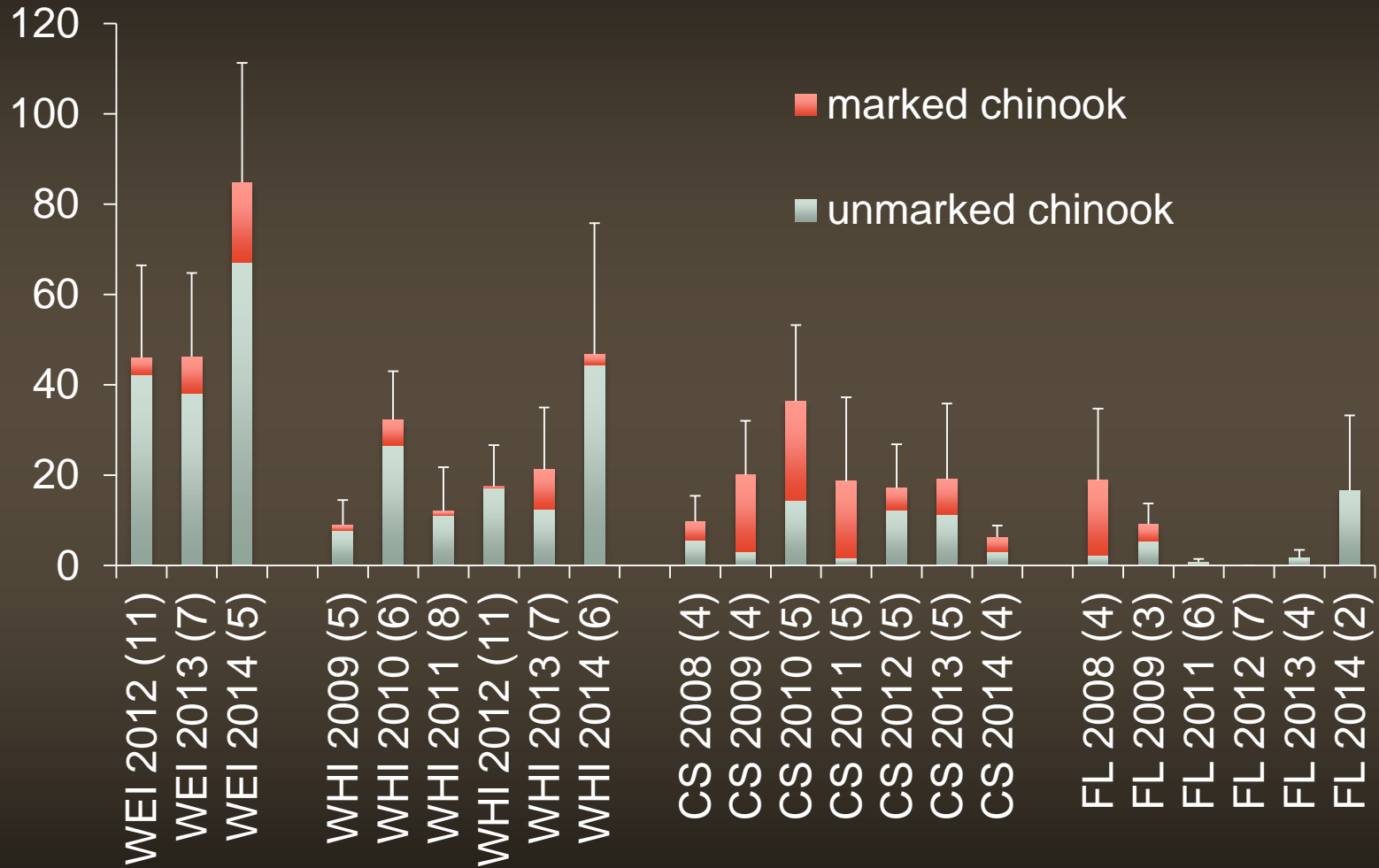
Chinook salmon



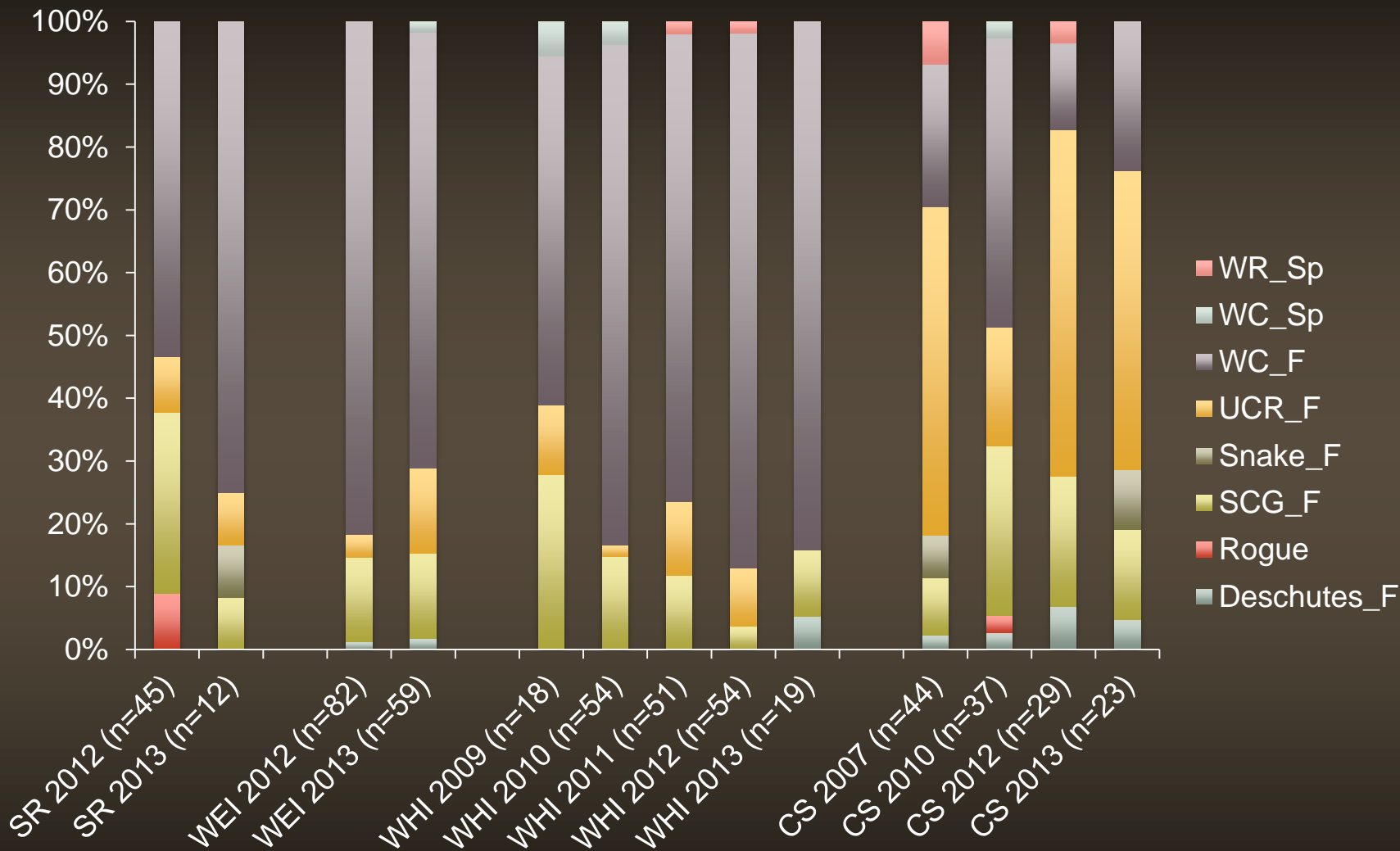
Sockeye salmon



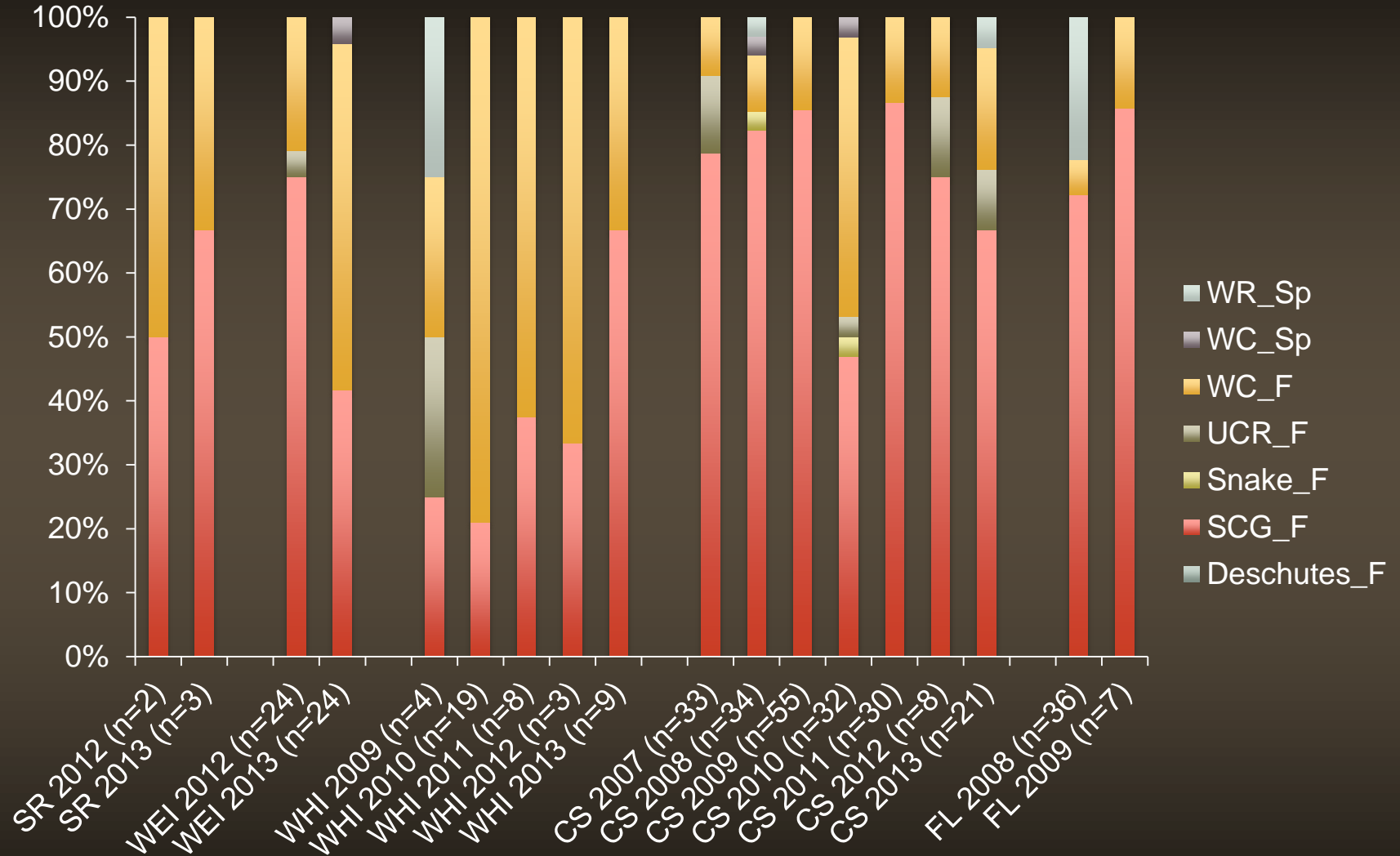
Chinook salmon density- temporal trends



Unmarked Chinook salmon stock composition



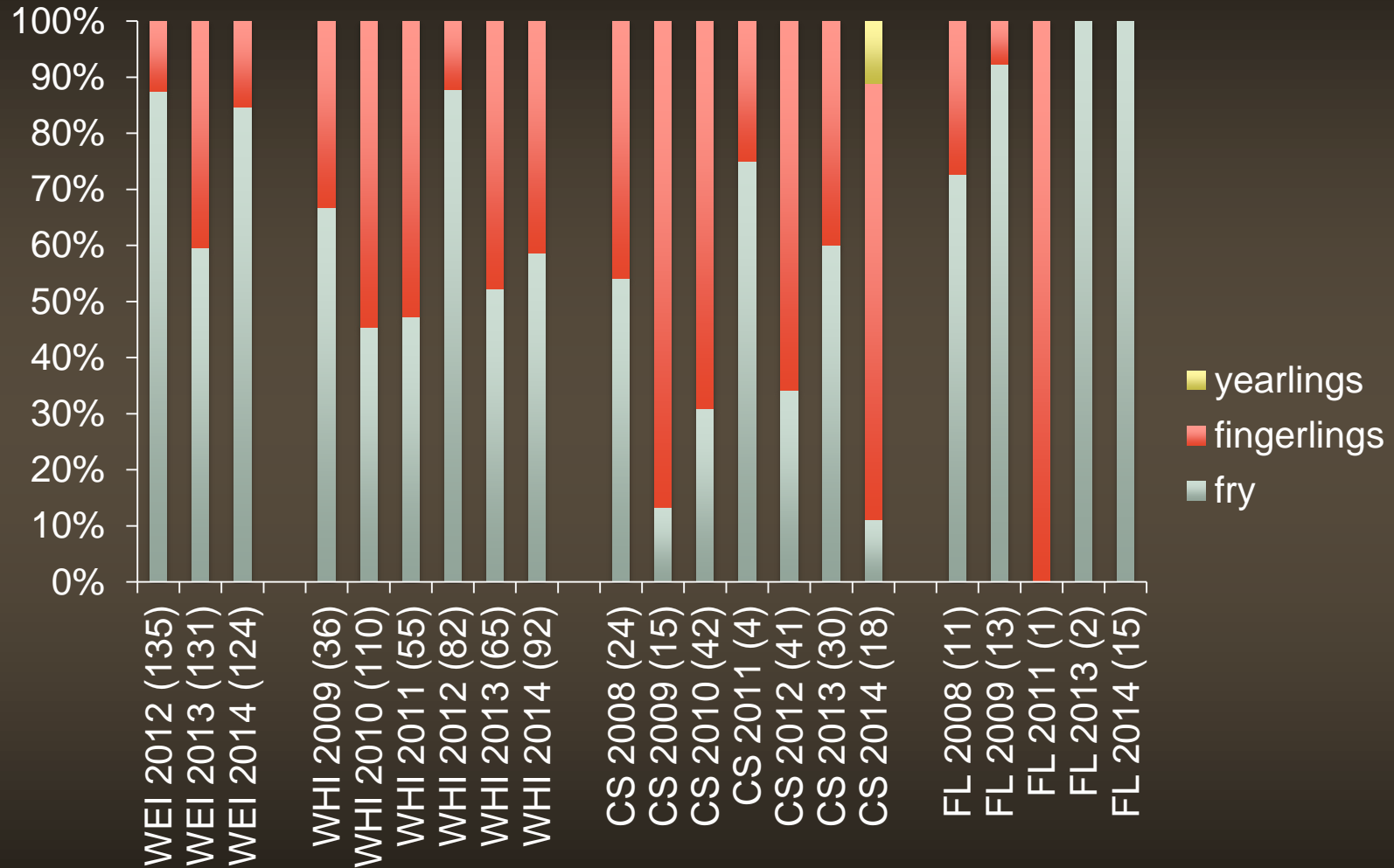
Marked Chinook salmon stock composition





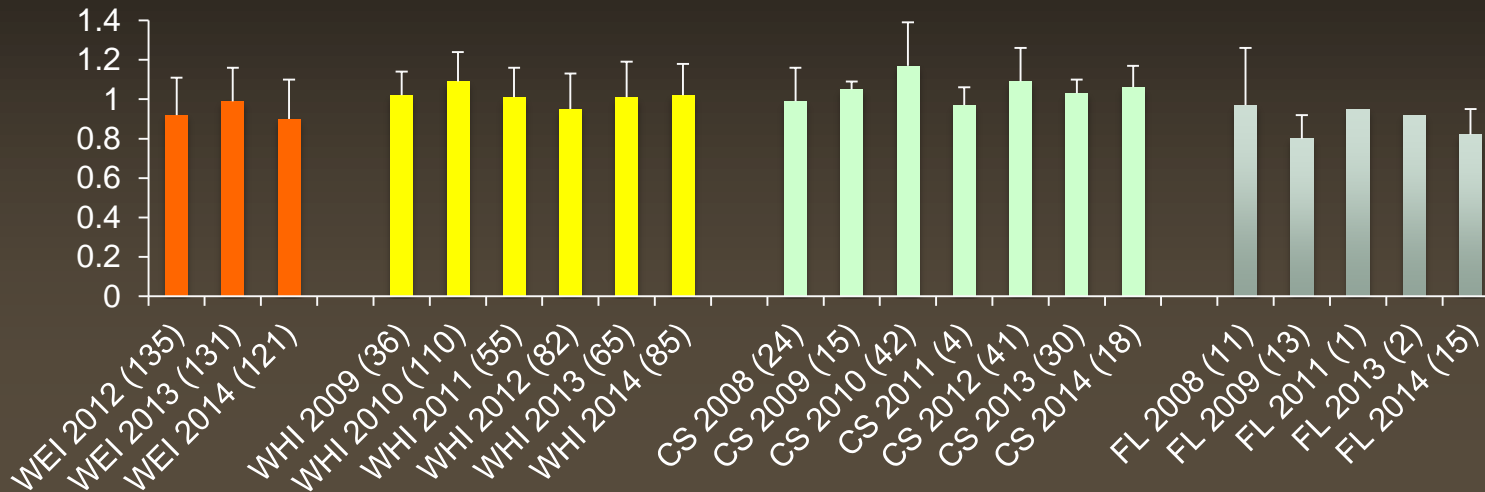
Salmon Health
and Condition

Unmarked Chinook size class distribution- temporal trends

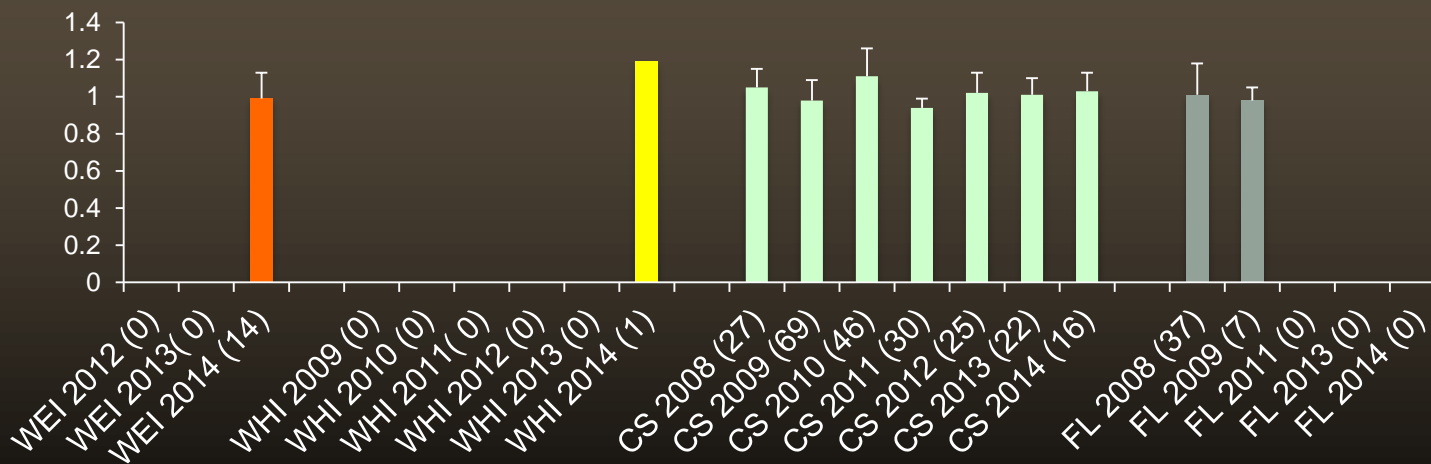


Chinook Condition Factor - temporal trends

Unmarked Chinook



Marked Chinook



Summary of Findings

- Consistent patterns for fish community characteristics and salmon occurrence at Welch Island, Whites Island, and Campbell Slough
 - Low species diversity, few non-native species at Welch and Whites Island; more at Campbell Slough
 - Higher Chinook salmon density, more fry, more unmarked fish at Welch Island and Whites Island than at Campbell Slough
 - More interior Columbia Chinook salmon stocks at Campbell Slough than at Welch Island or Whites Island
- Franz Lake highly variable – trends difficult to evaluate because of limited access/sampling
- No chum and few coho in 2014
- Increasing number of sockeye salmon in catches

Still to come for 2013-2014 fish...

- Genetics stock identification
- Lipid content and classes
- Growth rate estimates from otoliths
- Contaminant exposure data

Coal Train study with USGS

- Collect baseline information on PAH contamination at sites along the Columbia River adjacent to railroad, that might be affected by increased coal transport
- Two sites: Steigerwald Lake near Washougal and Horse Thief Lake near the Dalles
- Collected Chinook salmon bodies, bile, stomach contents for PAH analyses chemistry

Coal Train study sampling sites



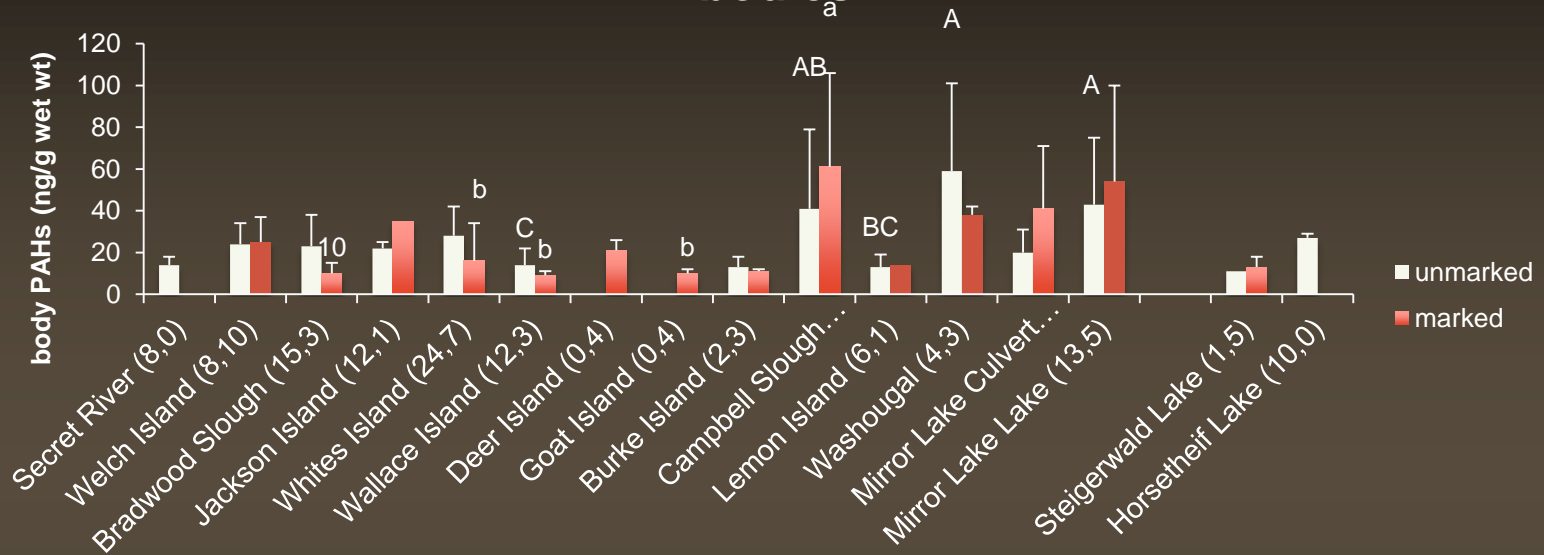
Horsethief
Lake



Steigerwald
Lake

PAHs in Chinook salmon

bodies



stomach contents

