

# Spatial Comparison of PBTs in Marine Fish and Invertebrates from King County Waters

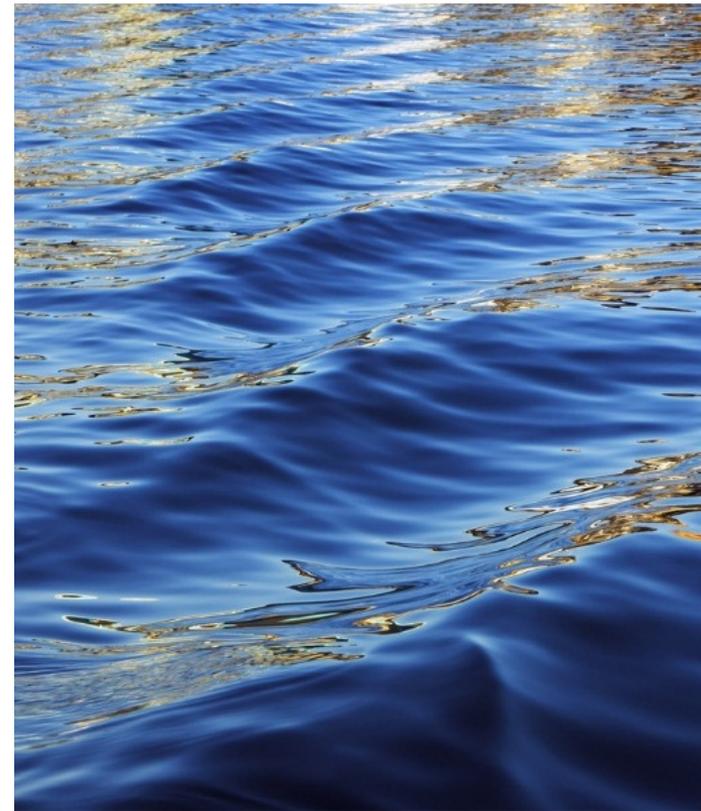
Rory O'Rourke,  
Jenée Colton, and  
Debra Williston

## Science Seminar November 2018

Water and Land Resources Division



**King County**





*King County Photo by  
Ned Ahrens*



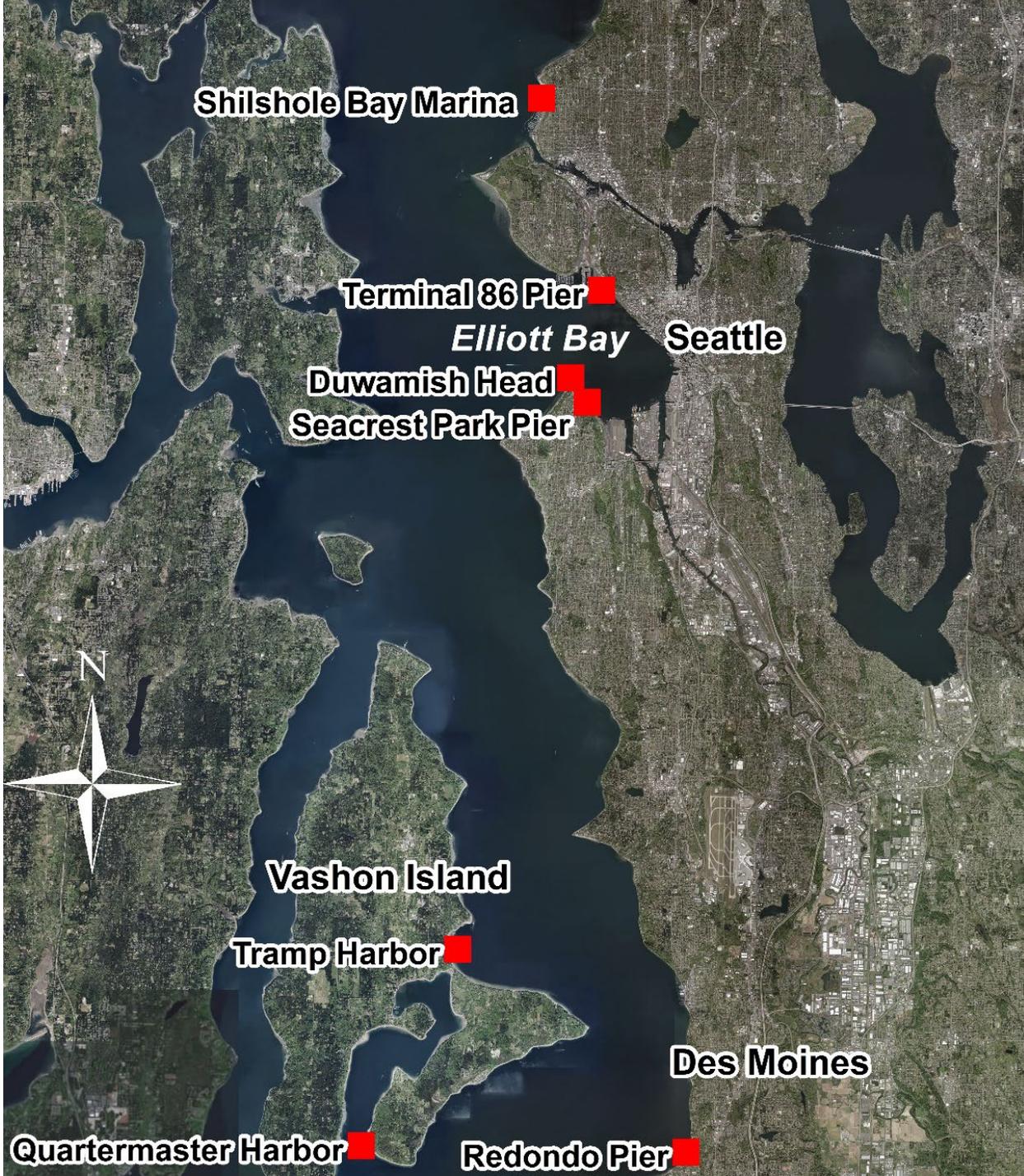
*Public Health-  
Seattle & King County*

**Monitoring  
Program  
Goals**

# Marine Tissue Monitoring – Sampling Events

- Dungeness and Red rock crabs – 2014, 2018
- English sole and rockfish – 2015, 2017
- Market squid – 2016
- Forage fish in future

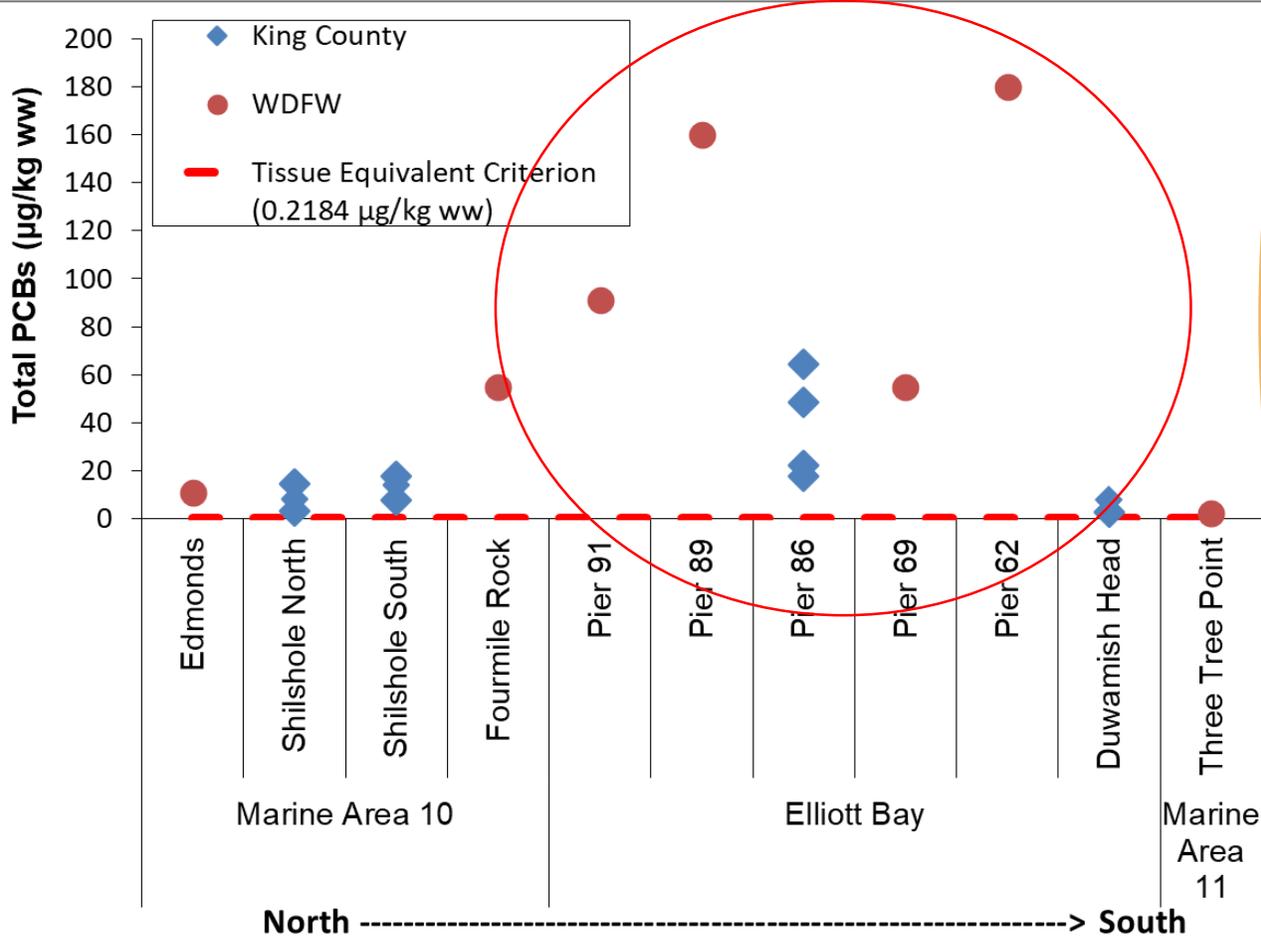




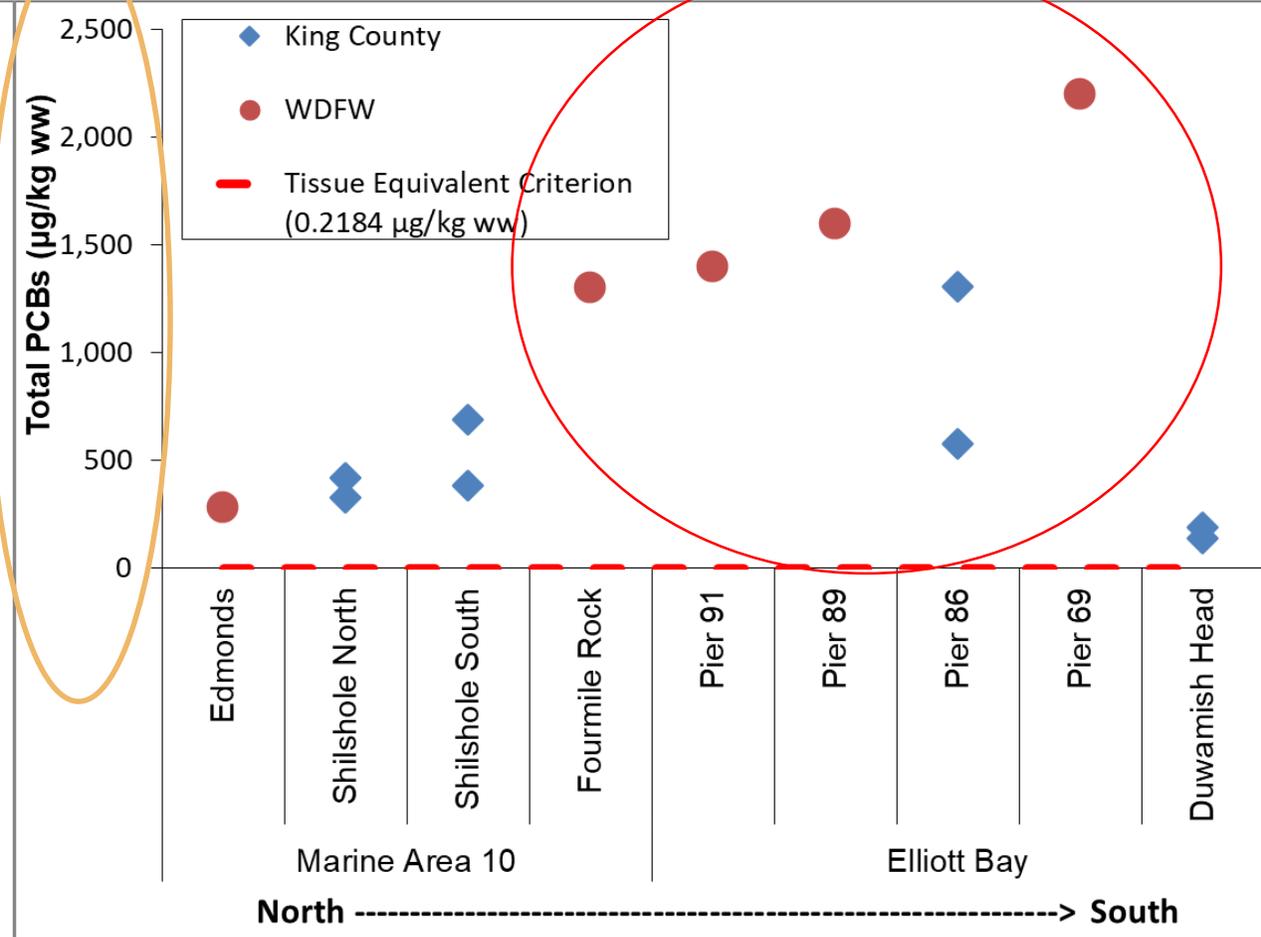
# Sampling Locations - Dungeness and Red Rock Crab

- Six sample locations per species.
- Parameters
  - PCBs
  - PBDEs (2018 only)
  - Metals
- Composite Samples
  - Muscle
  - Hepatopancreas

# 2014 Dungeness Crab - PCBs

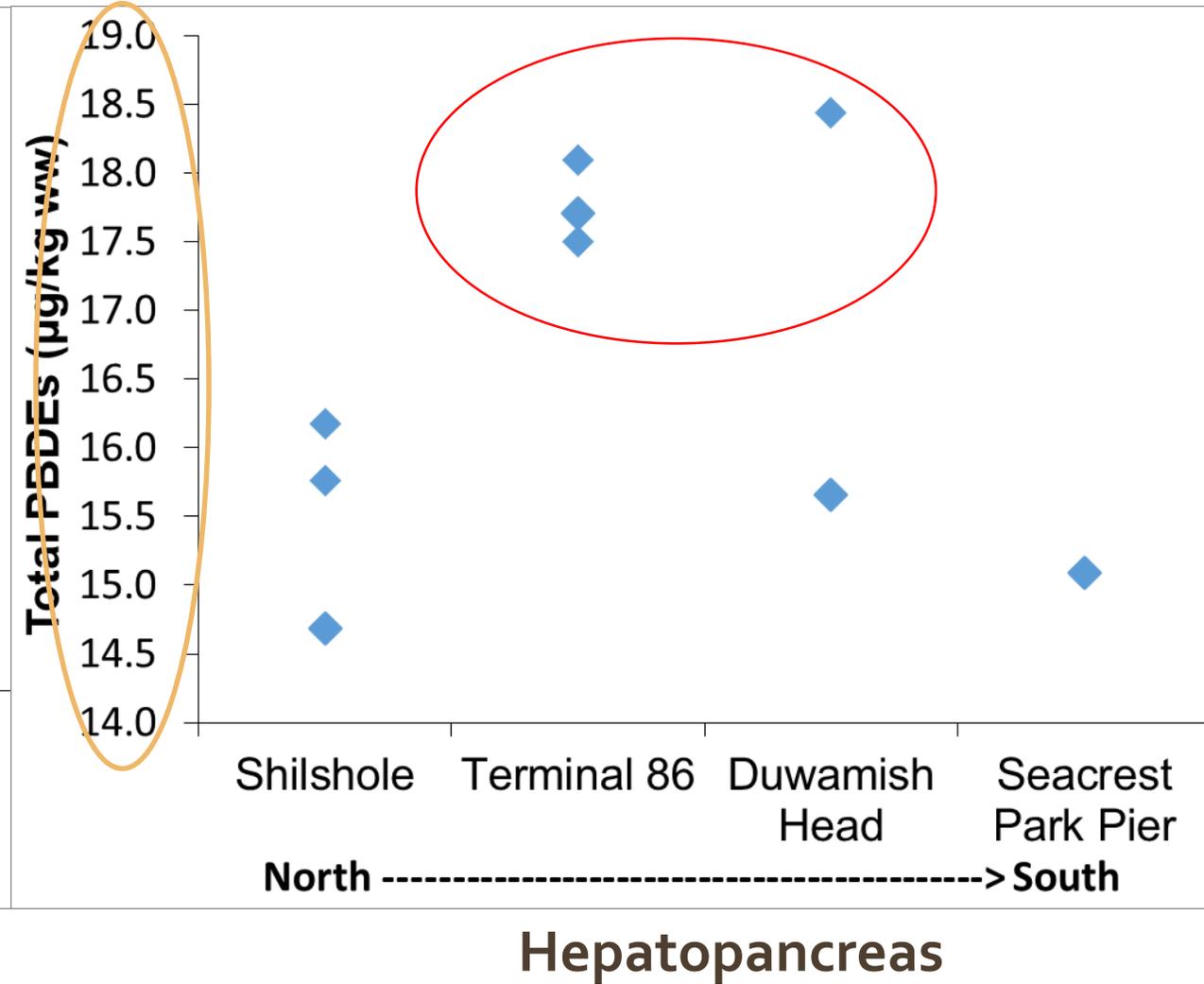
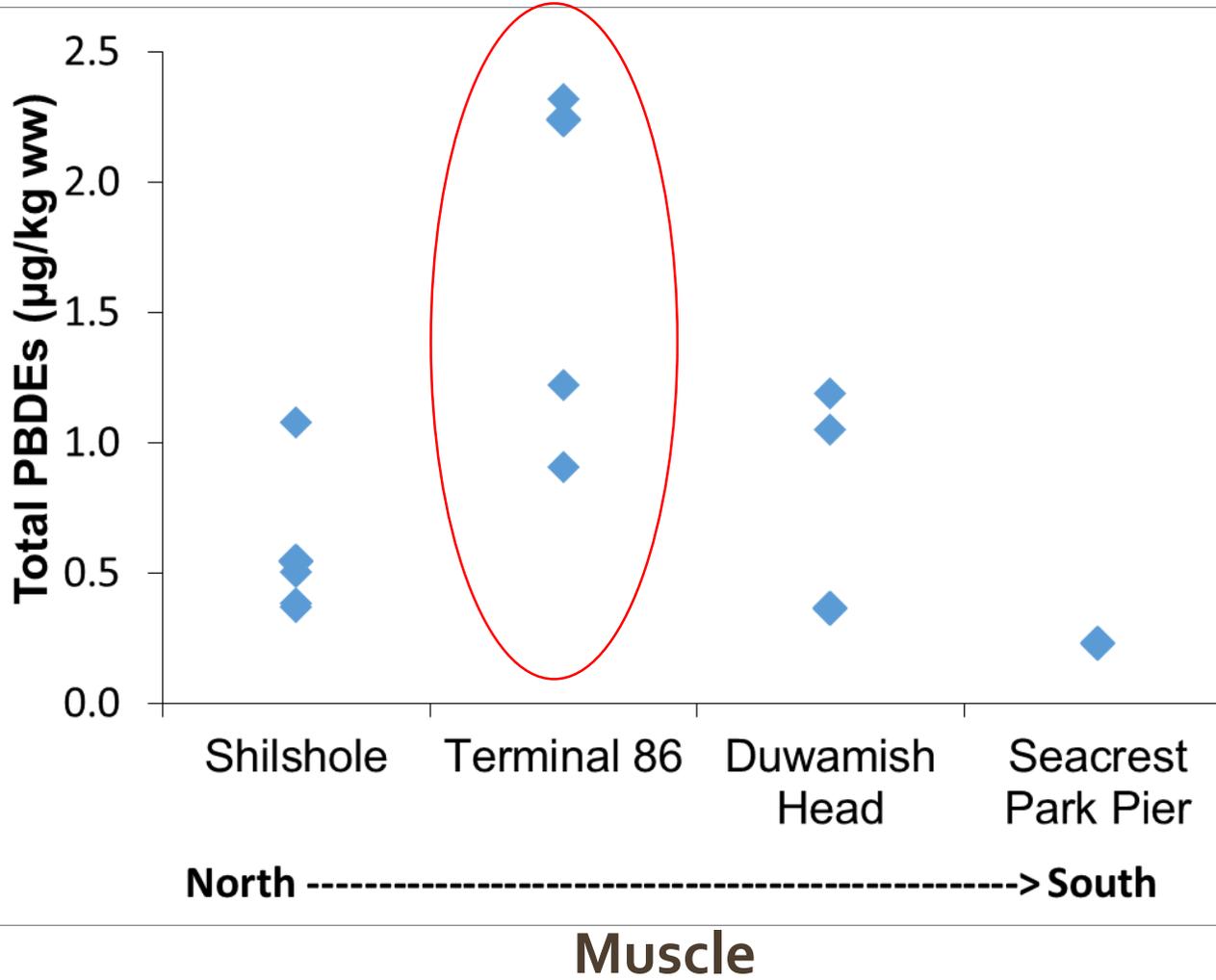


**Muscle**



**Hepatopancreas**

# 2018 Dungeness Crab - PBDEs



# English sole (*Parophrys vetulus*)

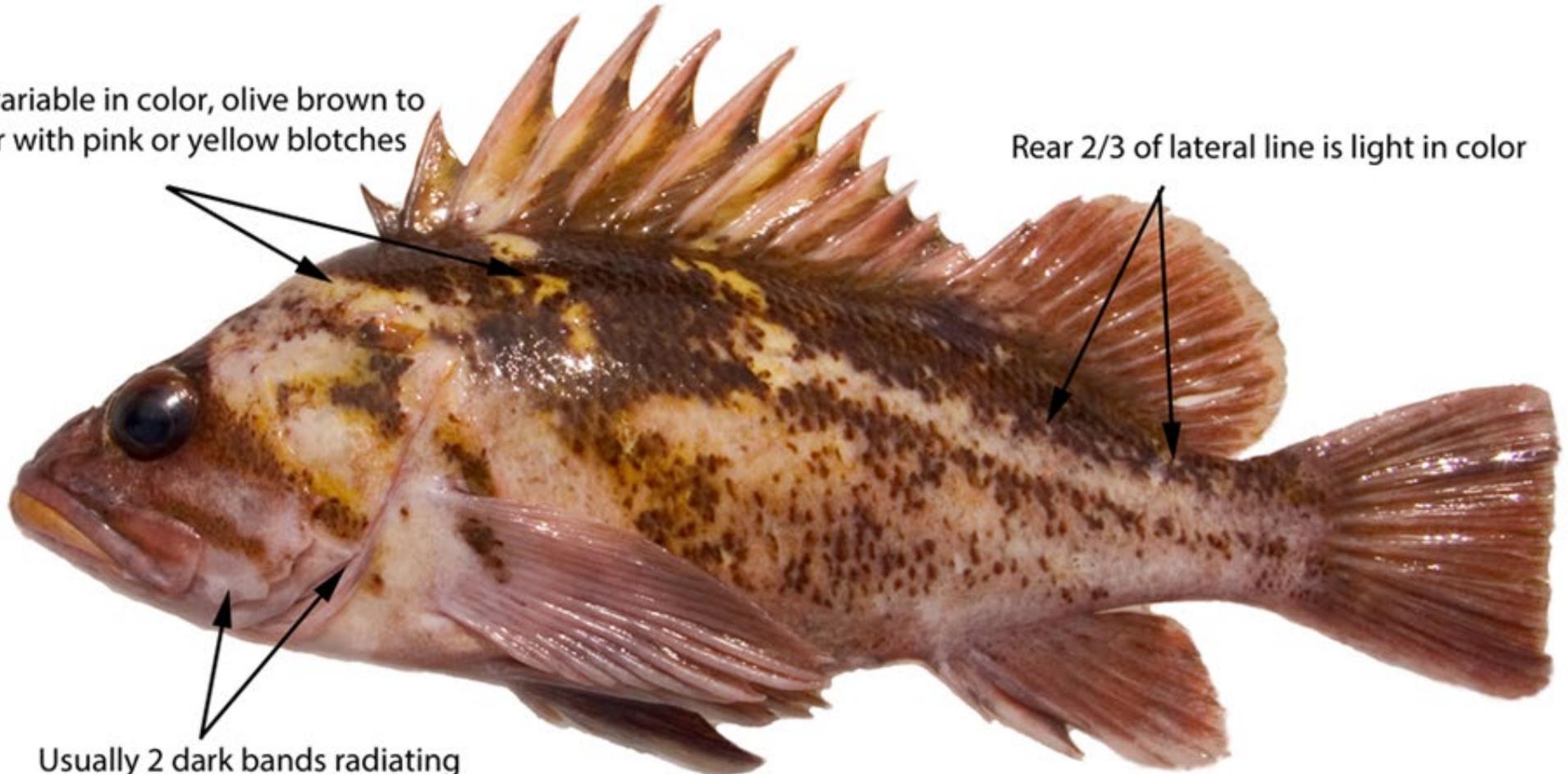


Source: WDFW

# Rockfish (*Sebastes spp.*) (Copper pictured)

Body variable in color, olive brown to copper with pink or yellow blotches

Rear 2/3 of lateral line is light in color



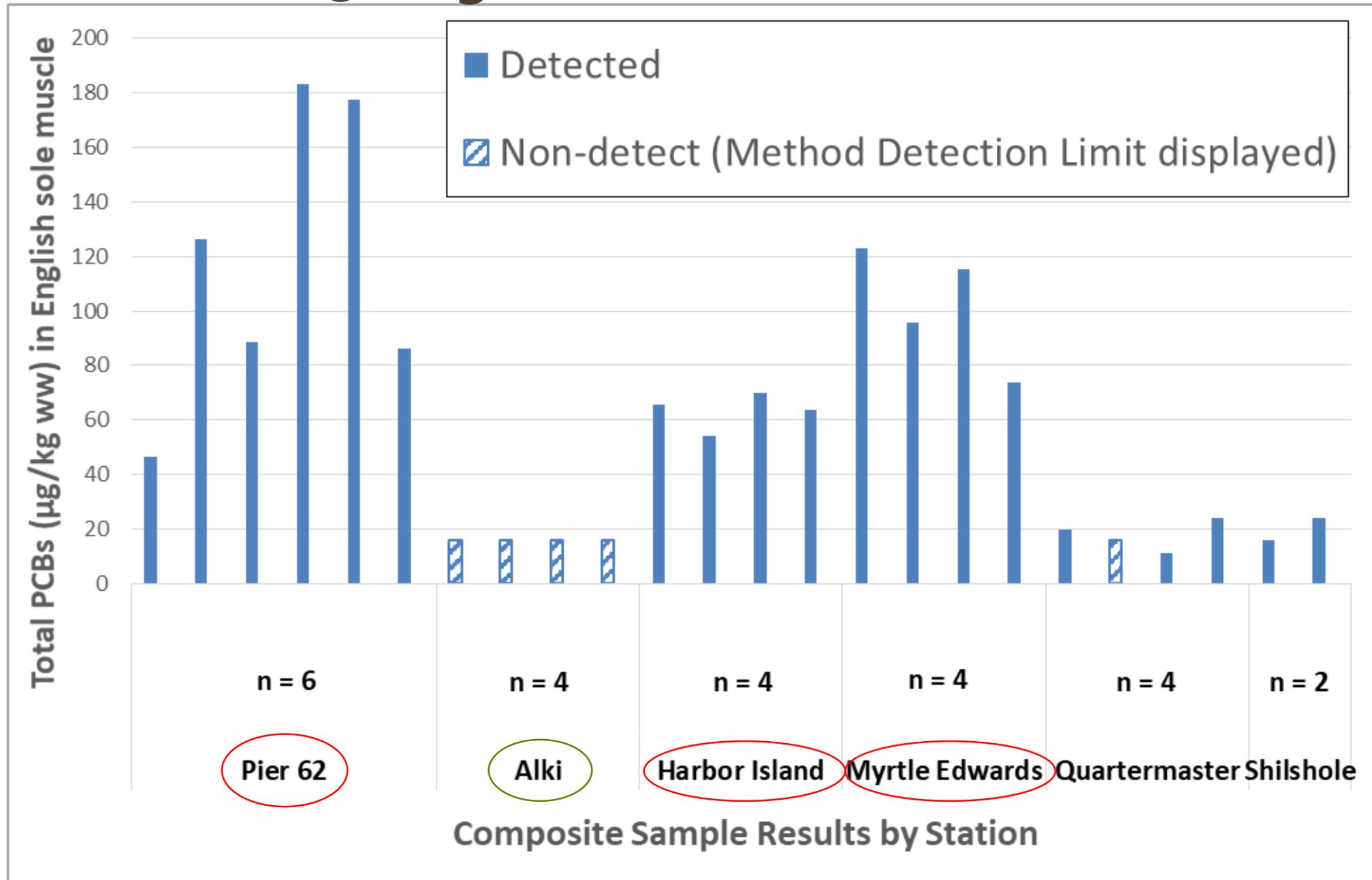
Usually 2 dark bands radiating backwards from eye



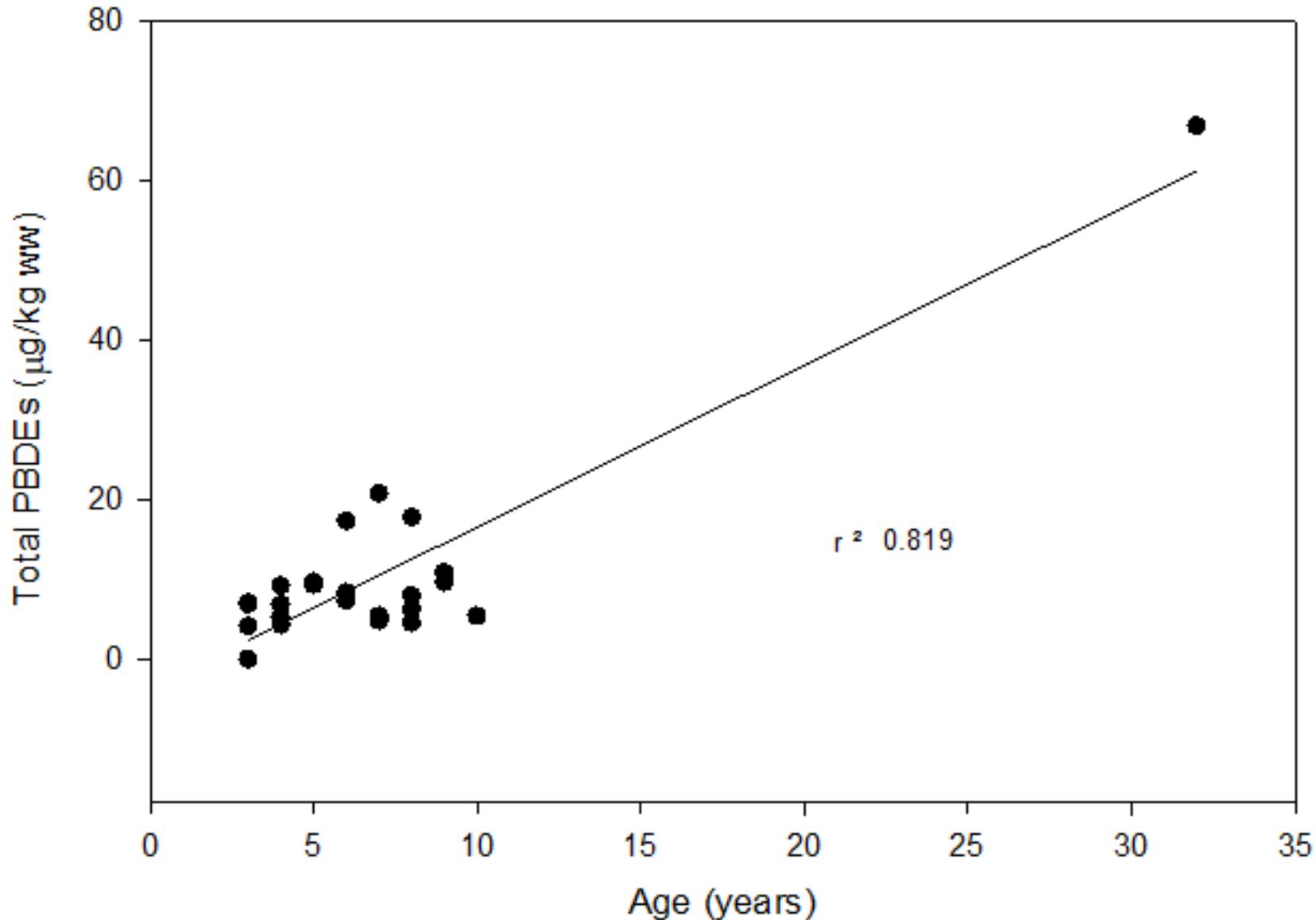
# English Sole/ Rockfish Trawl Locations

- Six trawl locations
- Parameters
  - PCBs
  - PBDEs
  - OC Pesticides (English sole only)
  - Metals
- Composite Samples
  - Muscle (English sole)
  - Whole (Rockfish)

# 2015 English Sole Muscle- PCBs

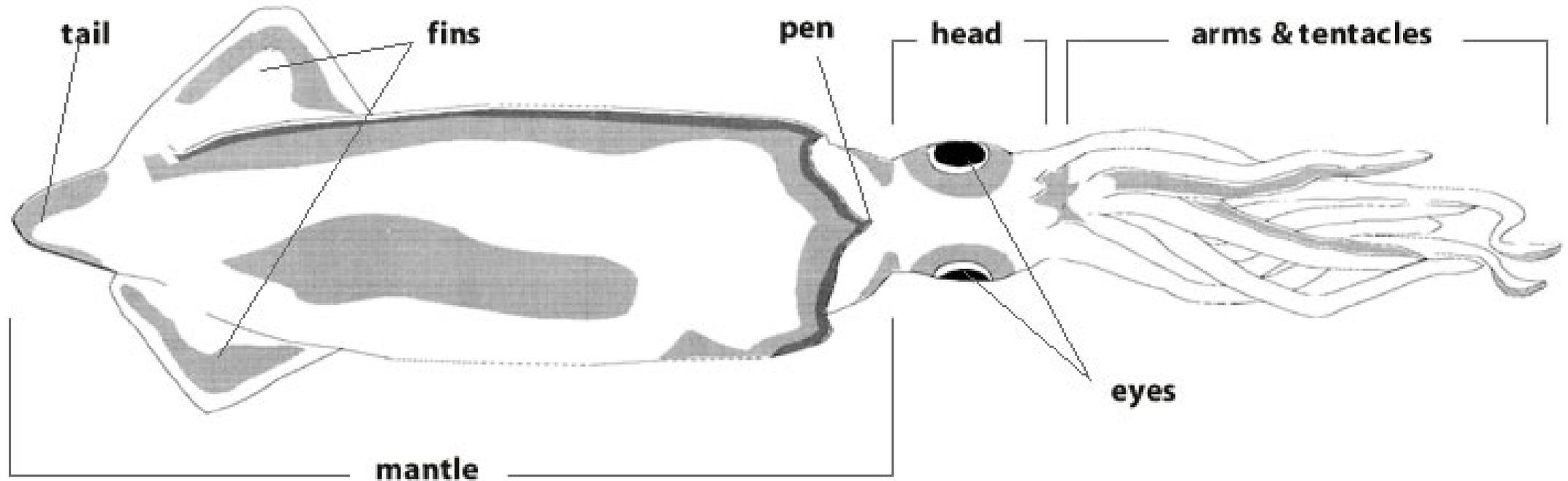


# Rockfish Whole-Body Contaminants & Age



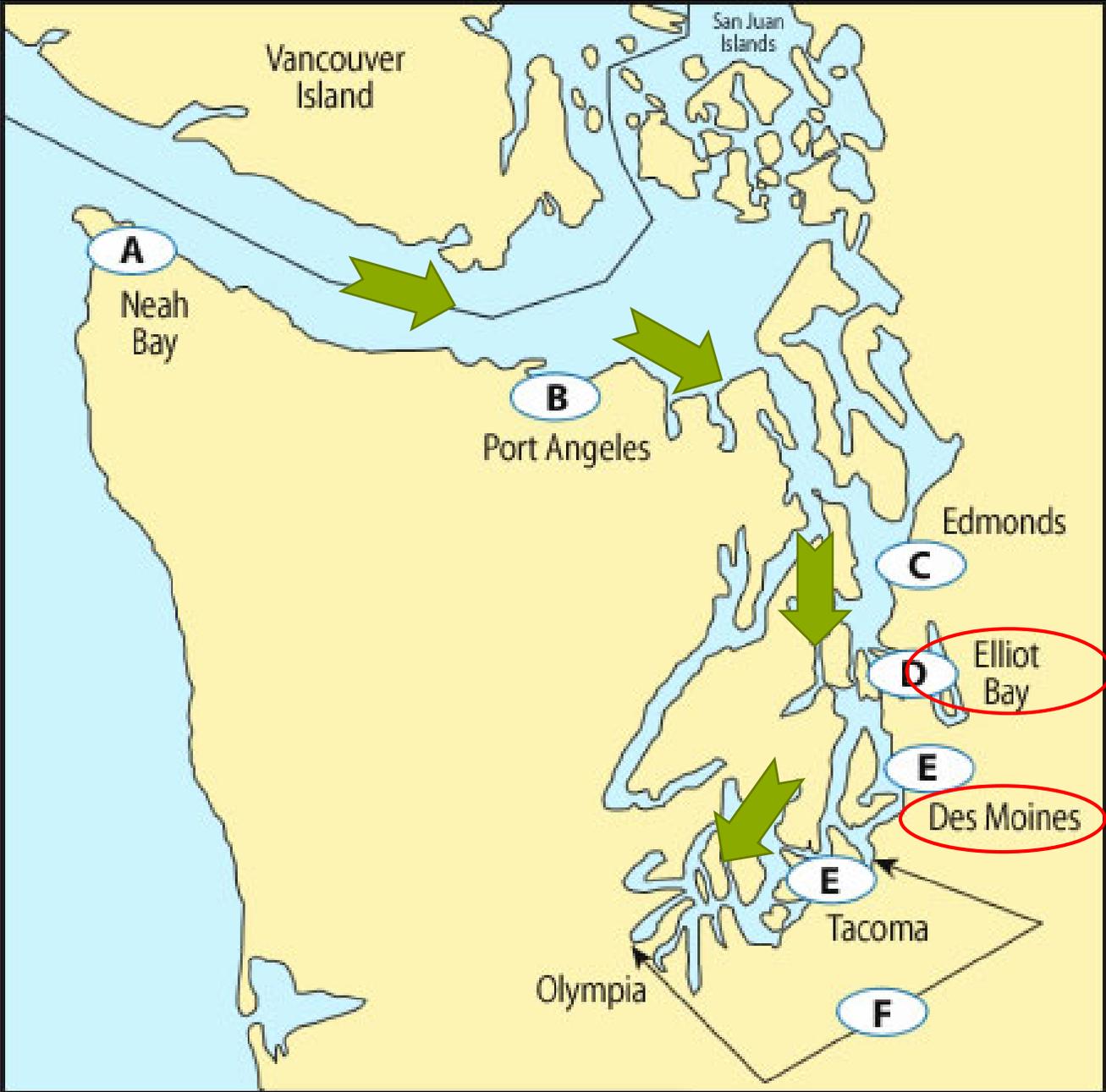
**Similar trends  
observed with Hg and  
PCBs ( $R^2 = 0.76 - 0.85$ )**

# Market squid (*Doryteuthis [Loligo] opalescens*)



Source: WDFW

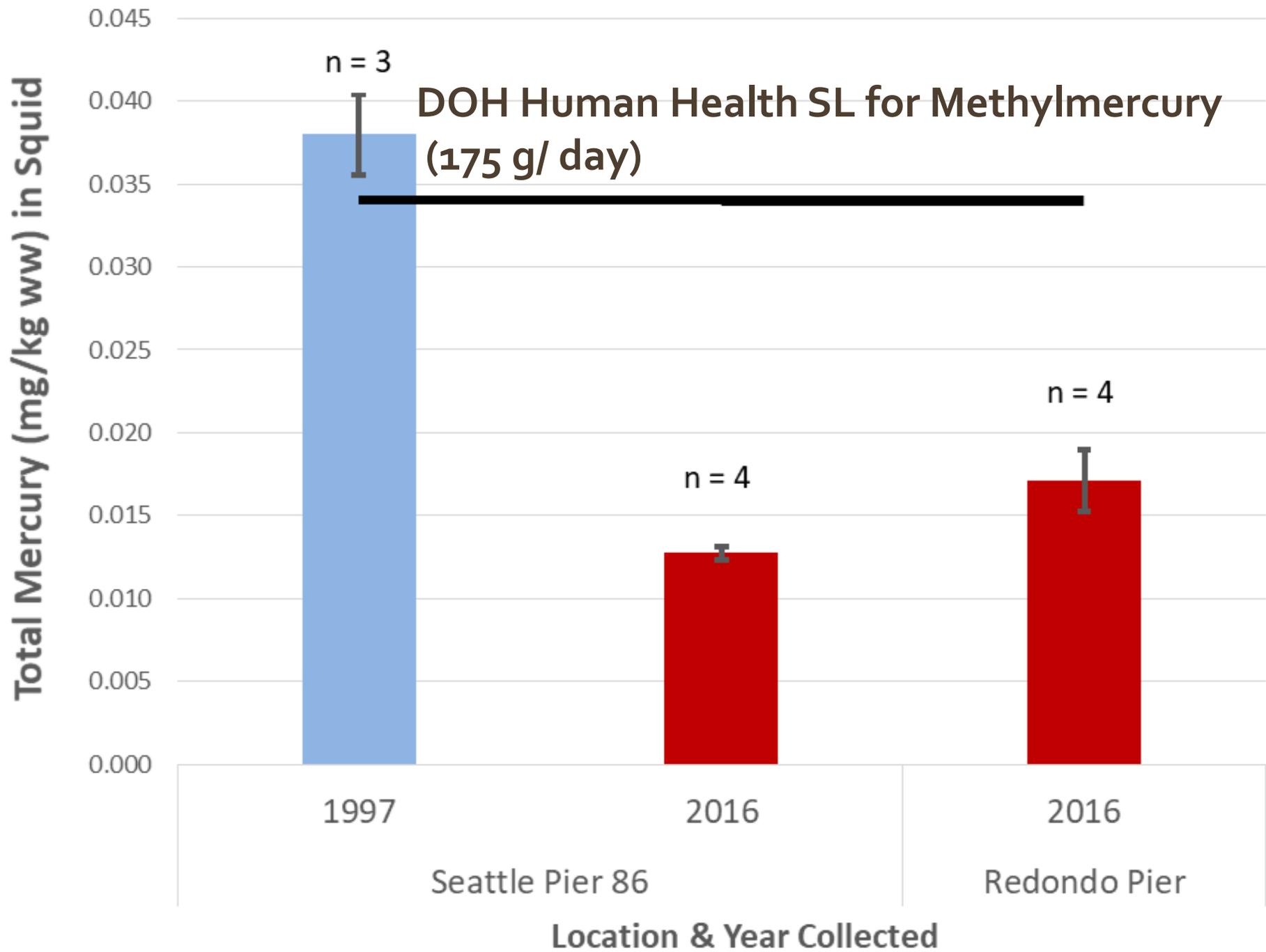
# Market squid ocean-to-Sound migration



Terminal 86 Pier

Redondo Pier

Image courtesy WDFW



# Conclusions

1. Observed small spatial scale differences.
2. PCBs higher in inner Elliott Bay for crab, English sole, and rockfish.
3. Confirms findings from WDFW's crab report.
4. Decrease in mercury observed in squid between 1997 and 2016.

# Future Work

- Evaluate changes in contaminants in all species over time.
- Continue sharing information with partners.
- Compare to WDFW's historic rockfish data to evaluate bioaccumulation trends.

# Acknowledgements

- King County Environmental Laboratory staff
- Water and Land Resources Fisheries Ecologists
- WDFW
  - Toxics-focused Biological Observing System (T-BiOS)
  - Groundfish Trawl Survey
  - Aging Lab
- *F/V Chasina*: Kurt Dobzinsky and crew
- David McBride at Washington State Dept. of Health

Questions?





**King County**



Thank you.

Rory O'Rourke, Jenée Colton, and  
Debra Williston

Water and Land Resources Division  
King County Department of Natural Resources and Parks

