Apr 4th, 4:15 PM - 4:30 PM

Spatial comparison of PBTs in marine fish and invertebrates from King County waters

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Salish Sea Ecosystem Conference: April 2018

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

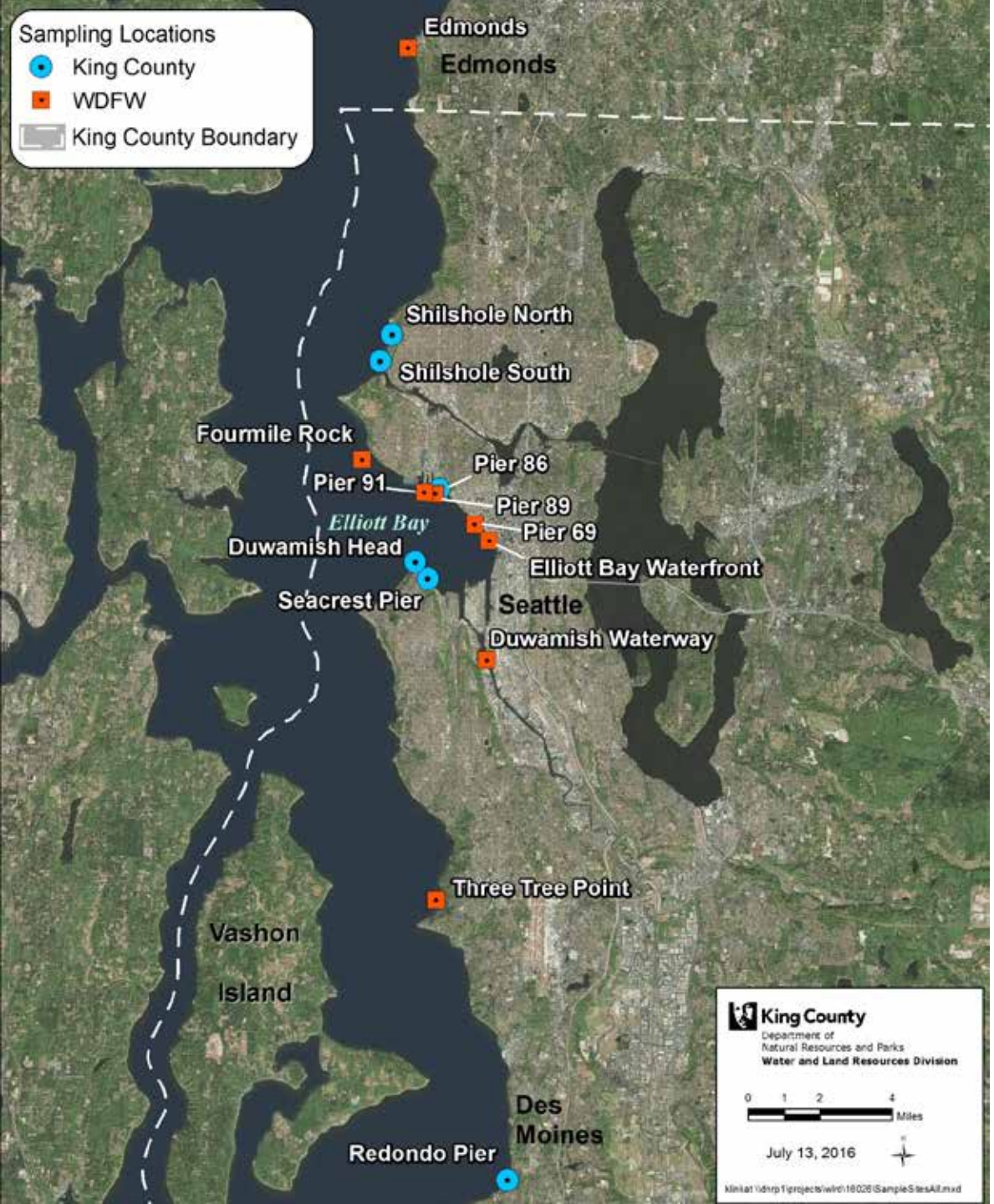
WLR

Protecting King County's water and lands for everyone to enjoy safely today, and for generations to come.

Monitoring Program Goals

Marine Tissue Monitoring – Sampling Events

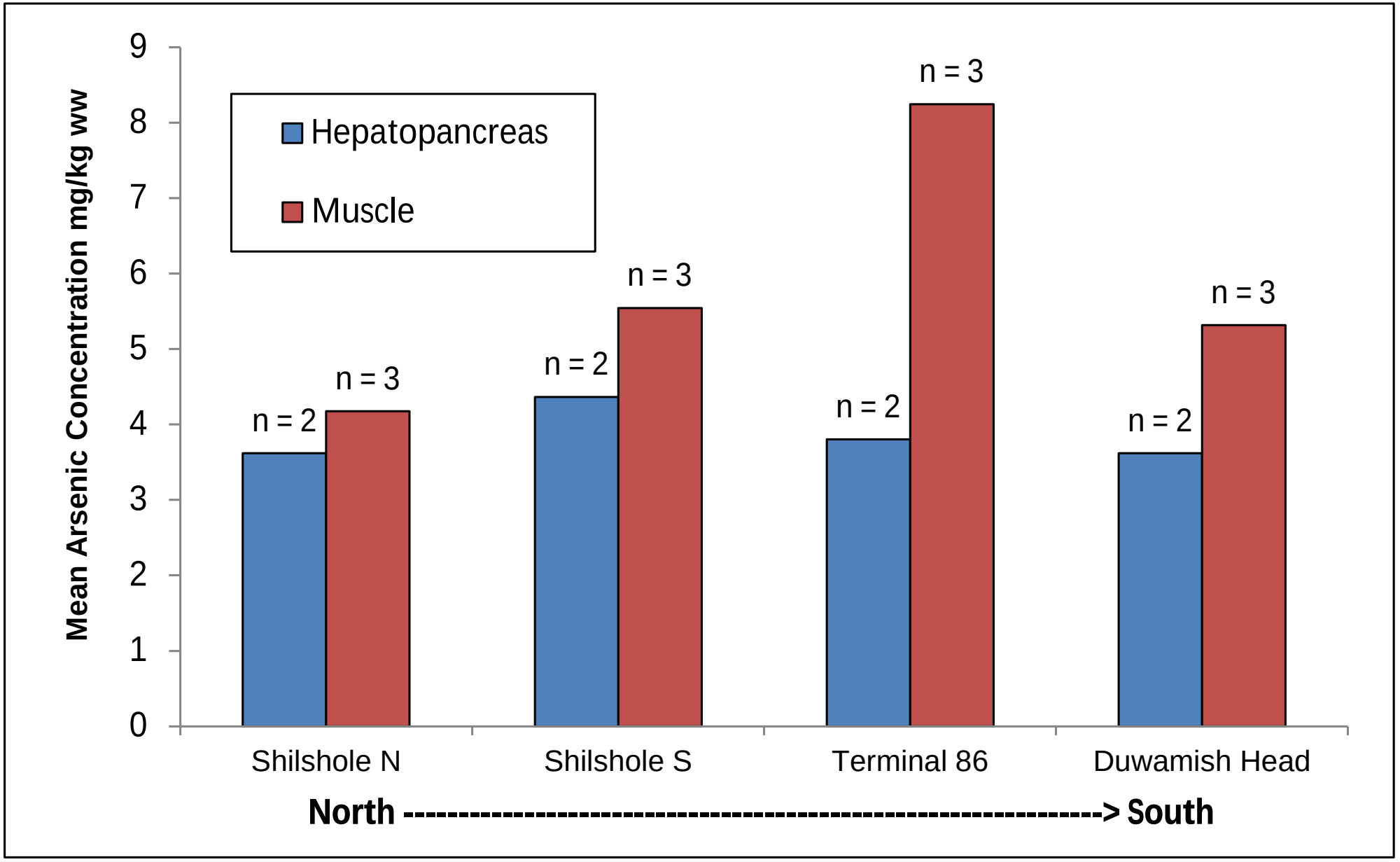
- Dungeness and Red rock crabs – 2014, 2018
- English sole and rockfish – 2015, 2017
- Market squid – 2016
- Forage fish - 2020



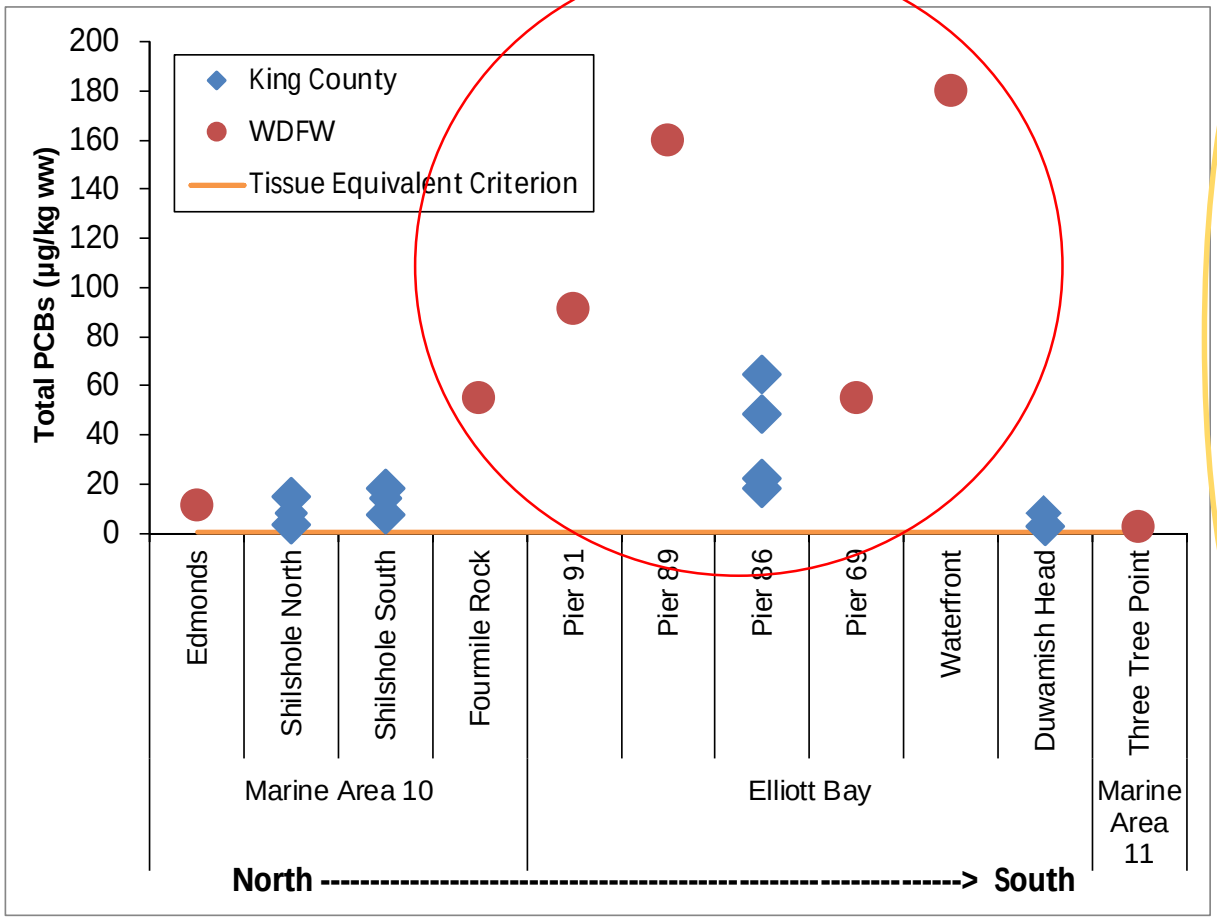
Sampling Locations- Dungeness and Red Rock Crab

- 6 sample locations
- Parameters
  - PCBs
  - Metals
- Composite Samples
  - Muscle
  - Hepatopancreas

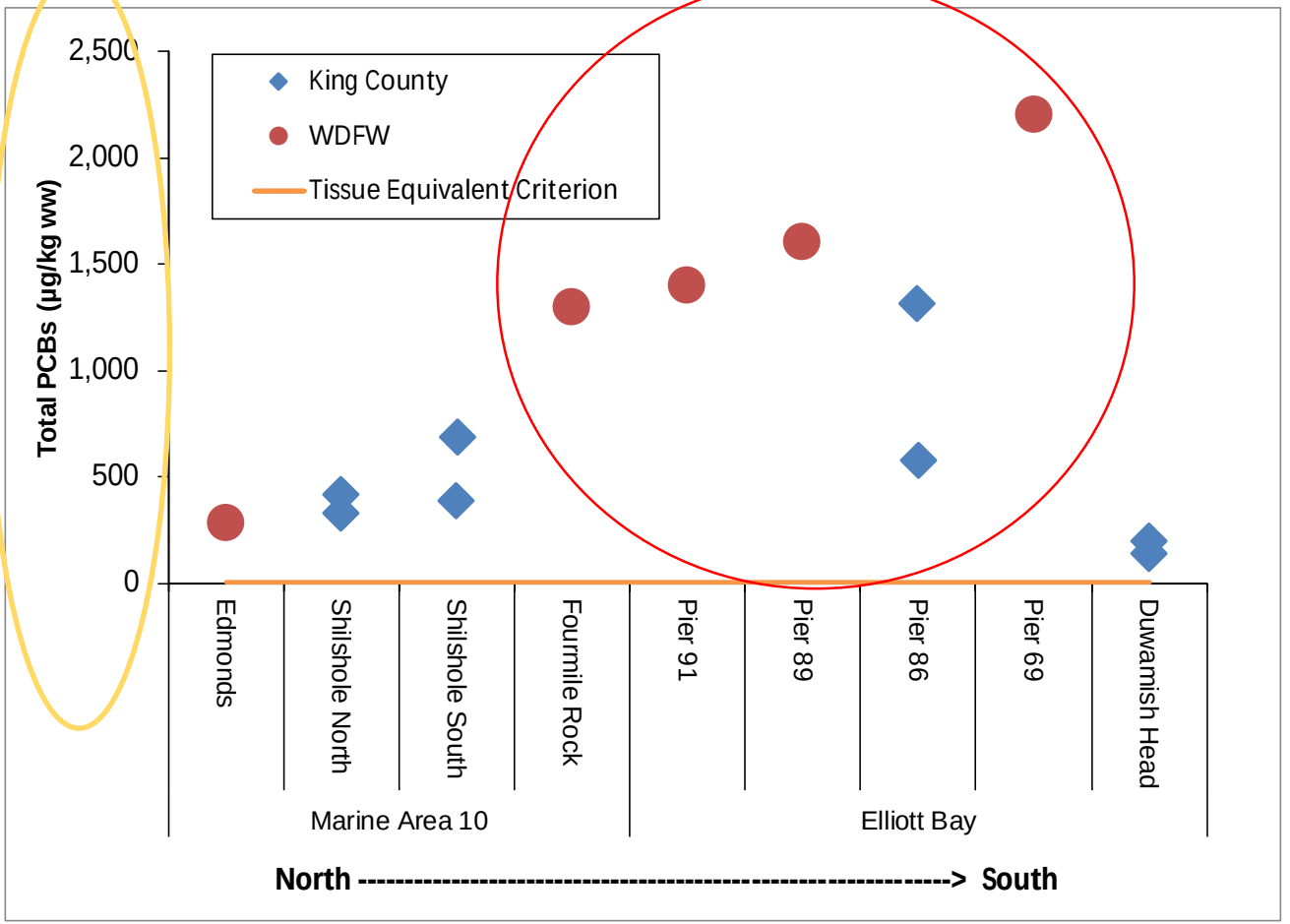
Dungeness Crab - Arsenic



Dungeness Crab - PCBs



Muscle

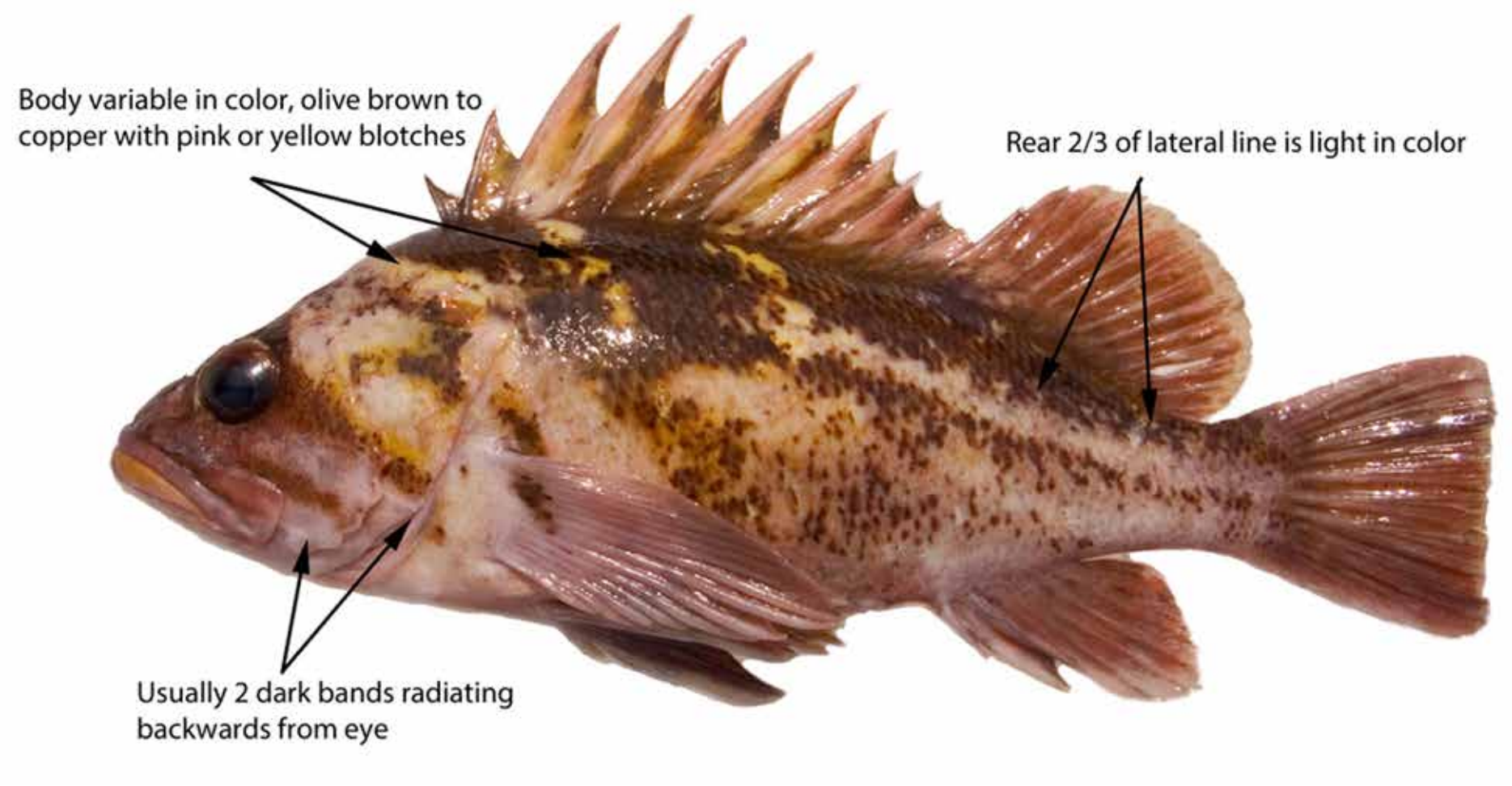


Hepatopancreas

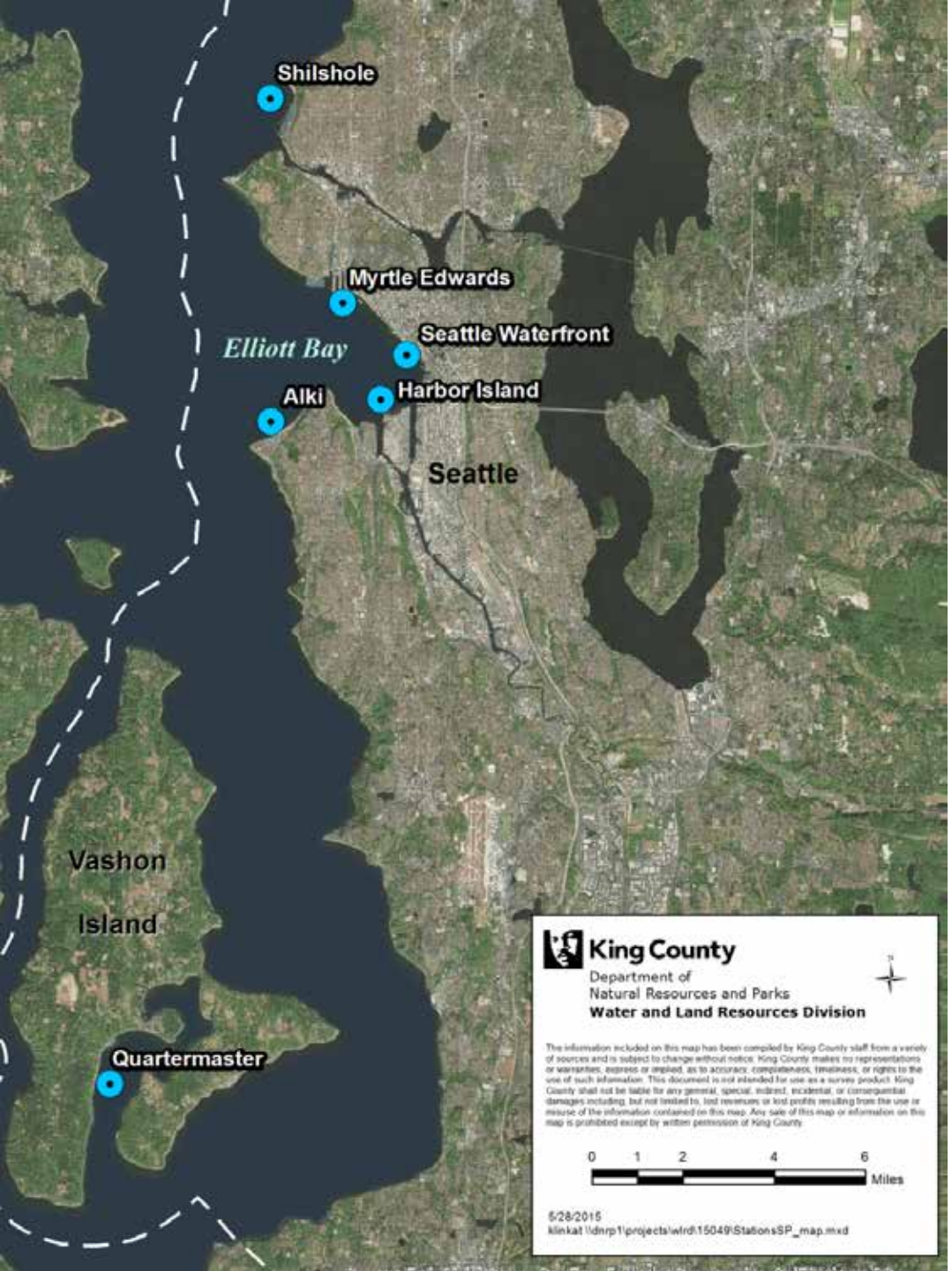
English sole

Source: WDFW

Rockfish (Copper pictured)



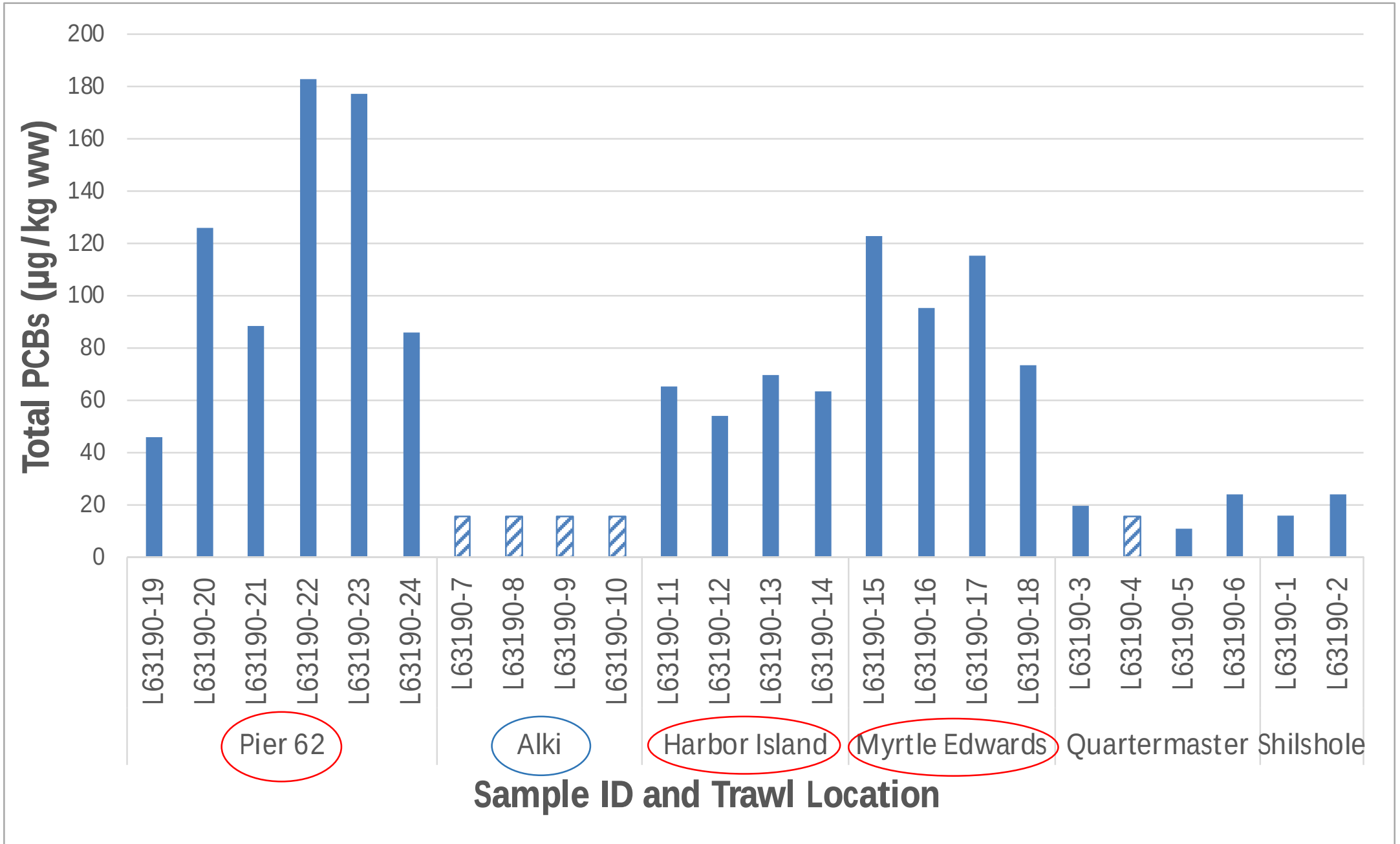
Source: WDFW



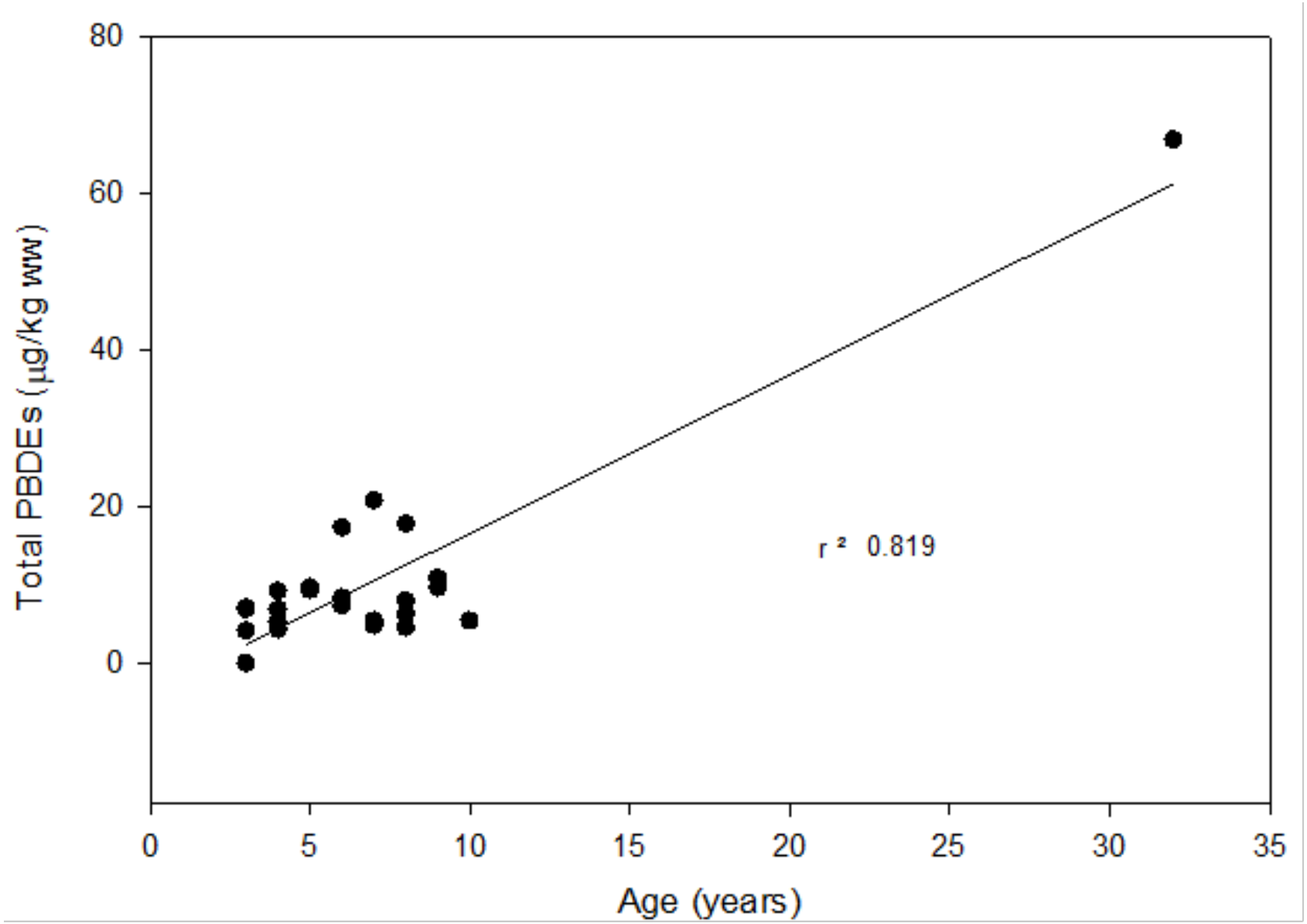
English Sole/ Rockfish Trawl Locations

- 6 trawl locations
- Parameters
  - PCBs
  - PBDEs
  - Metals
- Composite Samples
  - Fillet (English sole)
  - Whole (Rockfish)

English Sole Fillet- PCBs



Rockfish Contaminants & Age



Similar trends observed with Hg and PCBs (R^2 = 0.76 – 0.85)

Market squid

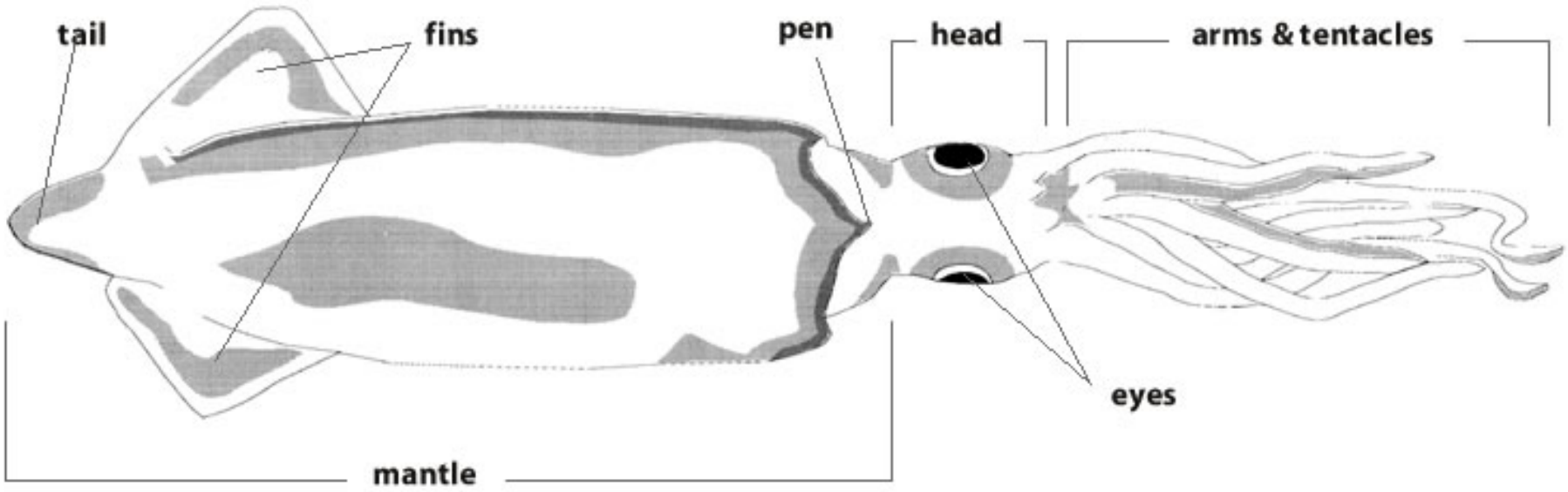


Image Courtesy WDFW

Market squid ocean-to-Sound migration

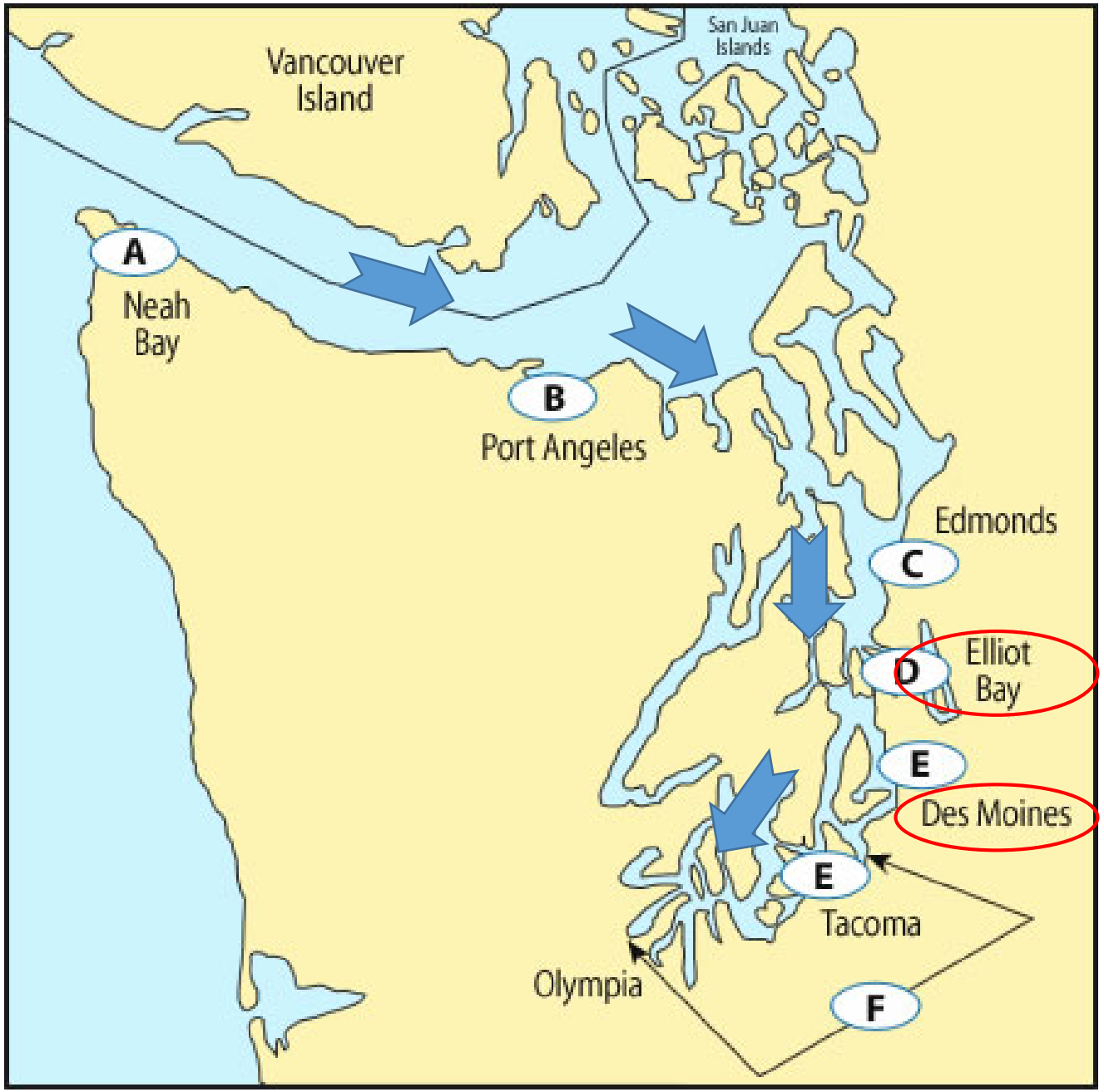
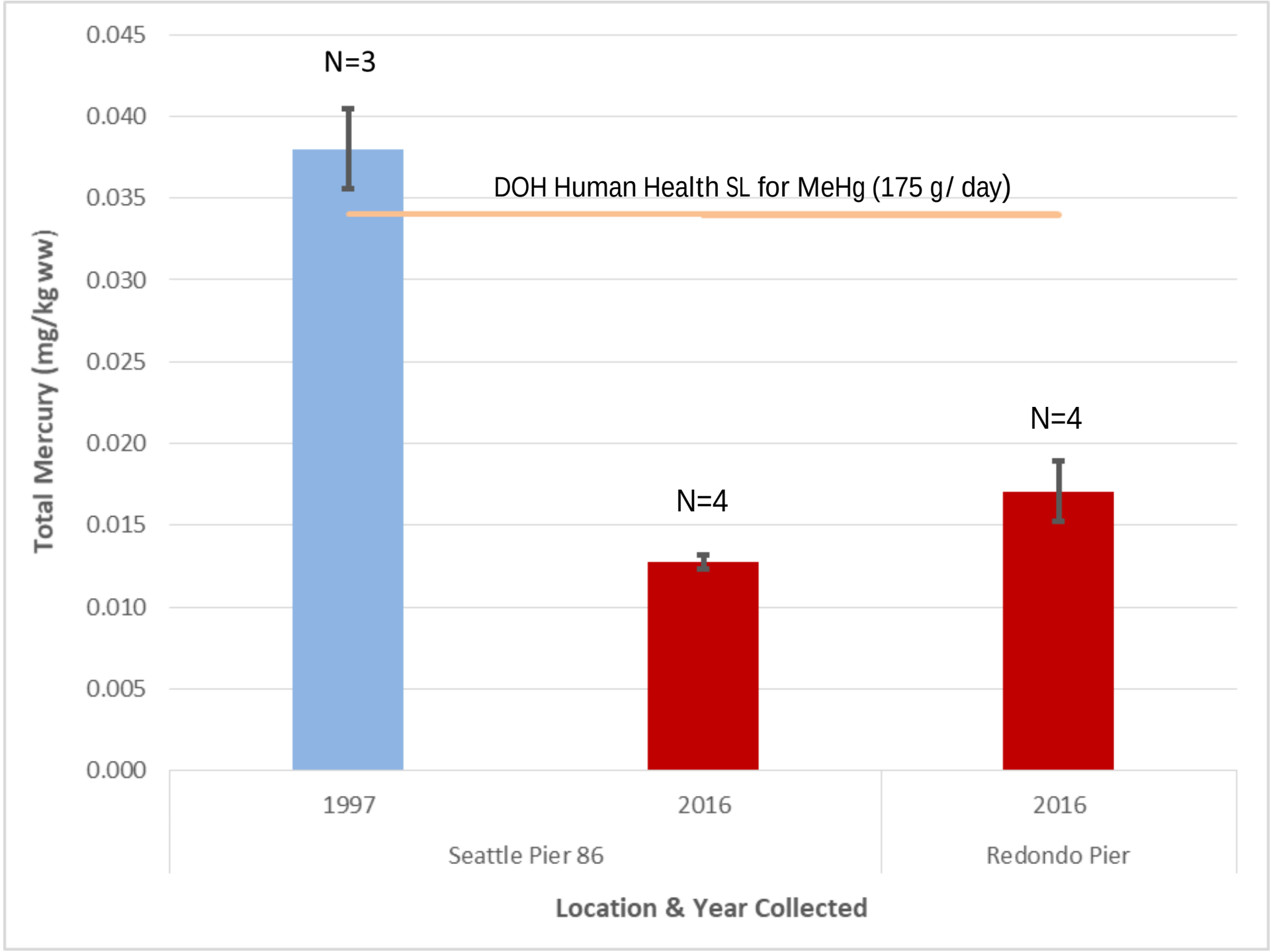


Image courtesy WDFW


0.045
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
Total Mercury (mg/kg ww)
N=3
DOH Human Health SL for MeHg (175 g/ day)
N=4
N=4
1997
2016
2016
Seattle Pier 86
Redondo Pier
Location & Year Collected

Conclusions

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

Future Work

- Evaluate changes in contaminants in biota 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
  - TBiOS Program
  - Groundfish Trawl Survey
  - Aging Lab
- *F/V Chasina*: Kurt Dobzinsky and crew
- David McBride at Washington Dept. of Health

Questions?