



Western Washington University
Western CEDAR

Salish Sea Ecosystem Conference

2018 Salish Sea Ecosystem Conference
(Seattle, Wash.)

Apr 4th, 3:45 PM - 4:00 PM

Persistent bioaccumulatives in freshwater fish of the Lake Washington watershed

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Colton, Jenee; O'Rourke, Rory; and Jack, Richard, "Persistent bioaccumulatives in freshwater fish of the Lake Washington watershed" (2018). *Salish Sea Ecosystem Conference*. 79.
<https://cedar.wwu.edu/ssec/2018ssec/allsessions/79>

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PBTs in Freshwater Fish of the Lake Washington Watershed

By Jenée Colton, Rory O'Rourke, and Richard Jack

2018 Salish Sea Environmental Conference

April 4-8

Seattle, WA



King County

Department of Natural Resources and Parks
Water and Land Resources Division

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to enjoy safely today, and for generations to come.*

King County Tissue Monitoring Program

OBJECTIVES

- 1) Track changes over time
- 2) Inform ecological and human health risk
- 3) Detect change from wastewater or stormwater management actions
- 4) Fill data gaps as needed

FRESHWATER

MARINE



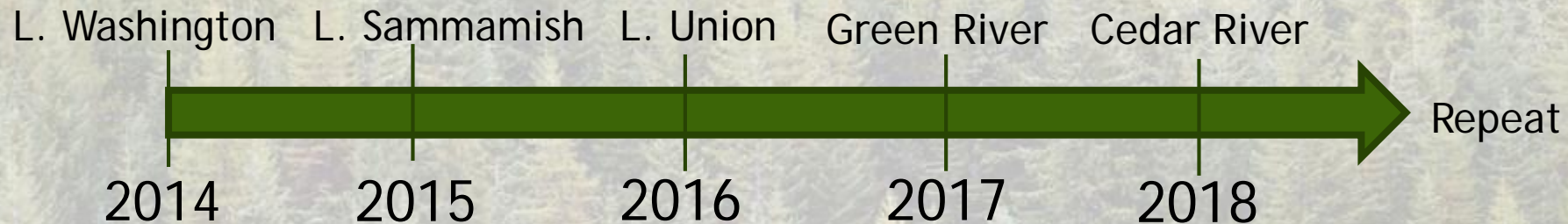
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Freshwater Program Cycle



- Metals and mercury,
- PCBs,
- PBDEs,
- DDTs and chlorinated pesticides.



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Lake WA Watershed



Species Collected



Photo: Chris Gregersen



Photo: USGS

Lake Washington Watershed Contaminants

Statewide mercury fish advisory

- Do Not Eat – N. pikeminnow
- 2 meals/month – Largemouth & smallmouth bass

LAKE WASHINGTON
ADVISORY

DO NOT EAT these fish
due to chemical pollution.




Cutthroat Trout: Only 1 meal a month.



GOOD TO EAT!

2-3 meals a week: Sockeye, Rainbow Trout, Pumpkin Seed
1 meal a week: Yellow Perch



For more information, contact the
Department of Health:
1-877-485-7316
www.doh.wa.gov/fish

 **Public Health**
Quality & Excellence

Lake Washington Watershed Contaminants

L. Washington PCBs Fish Advisory

Added 1 meal/week - Large yellow perch (>270mm)

LAKE WASHINGTON
ADVISORY

DO NOT EAT these fish due to chemical pollution.

 Northern Pike minnow
 Carp

Cutthroat Trout: Only 1 meal a month.

 Cutthroat Trout

GOOD TO EAT!

2-3 meals a week: Sockeye, Rainbow Trout, Pumpkin Seed
1 meal a week: Yellow Perch

 Sockeye Trout
 Rainbow Trout
 Pumpkin Seed
 Yellow Perch

For more information, contact the Department of Health:
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 Department of Health
 Public Health

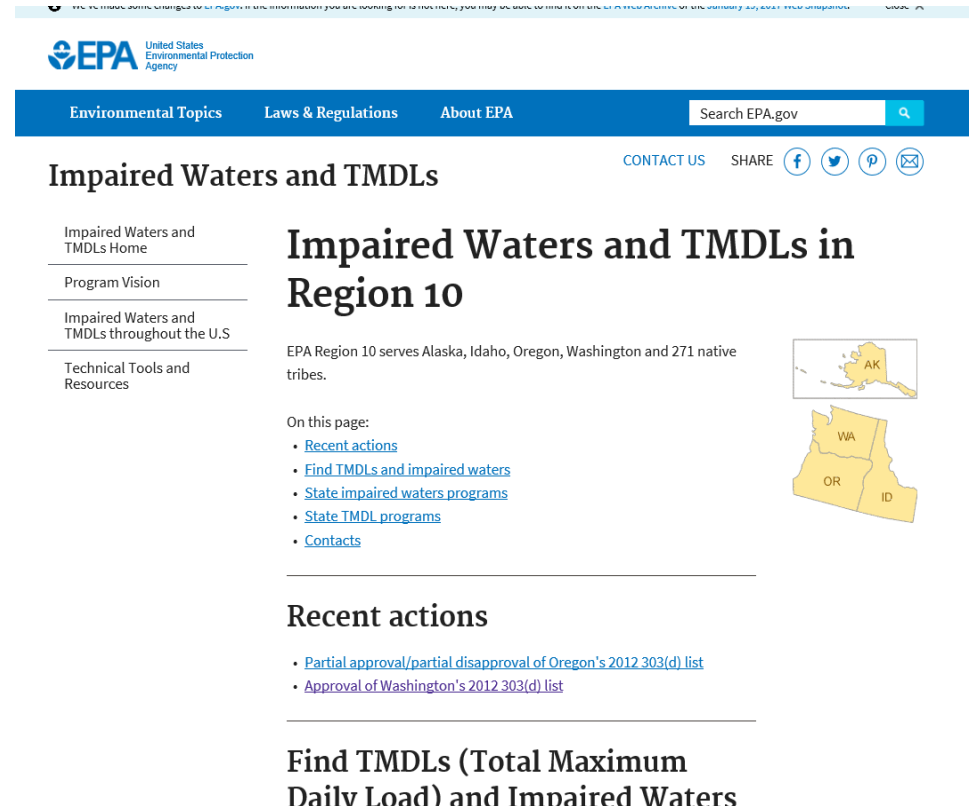
Lake Washington Watershed Contaminants

CWA Impairments for Tissue

L. Washington

- PCBs,
- chlordane, DDE, DDD, dieldrin,
- TCDD,
- mercury.

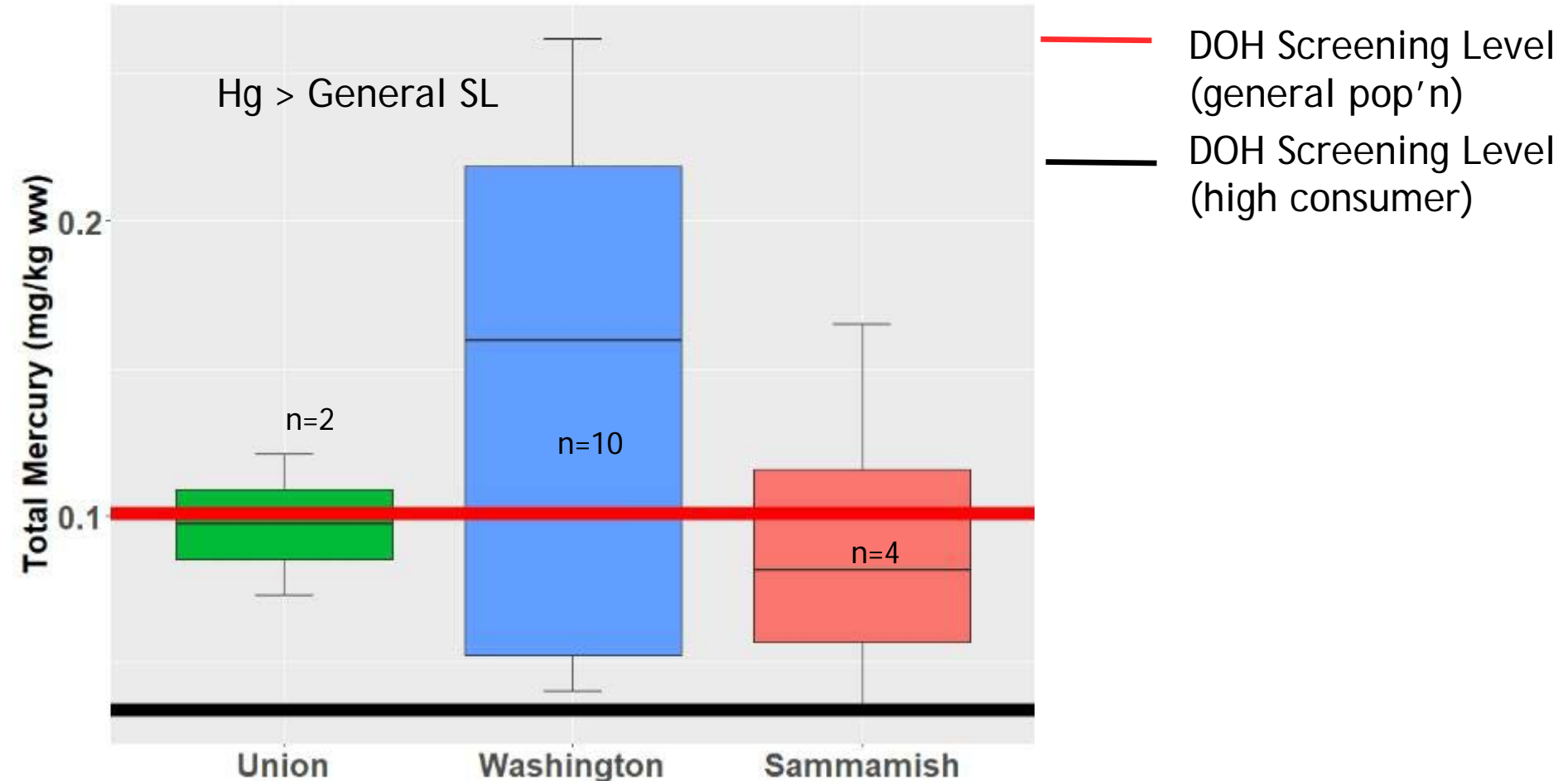
L. Sammamish - PCBs



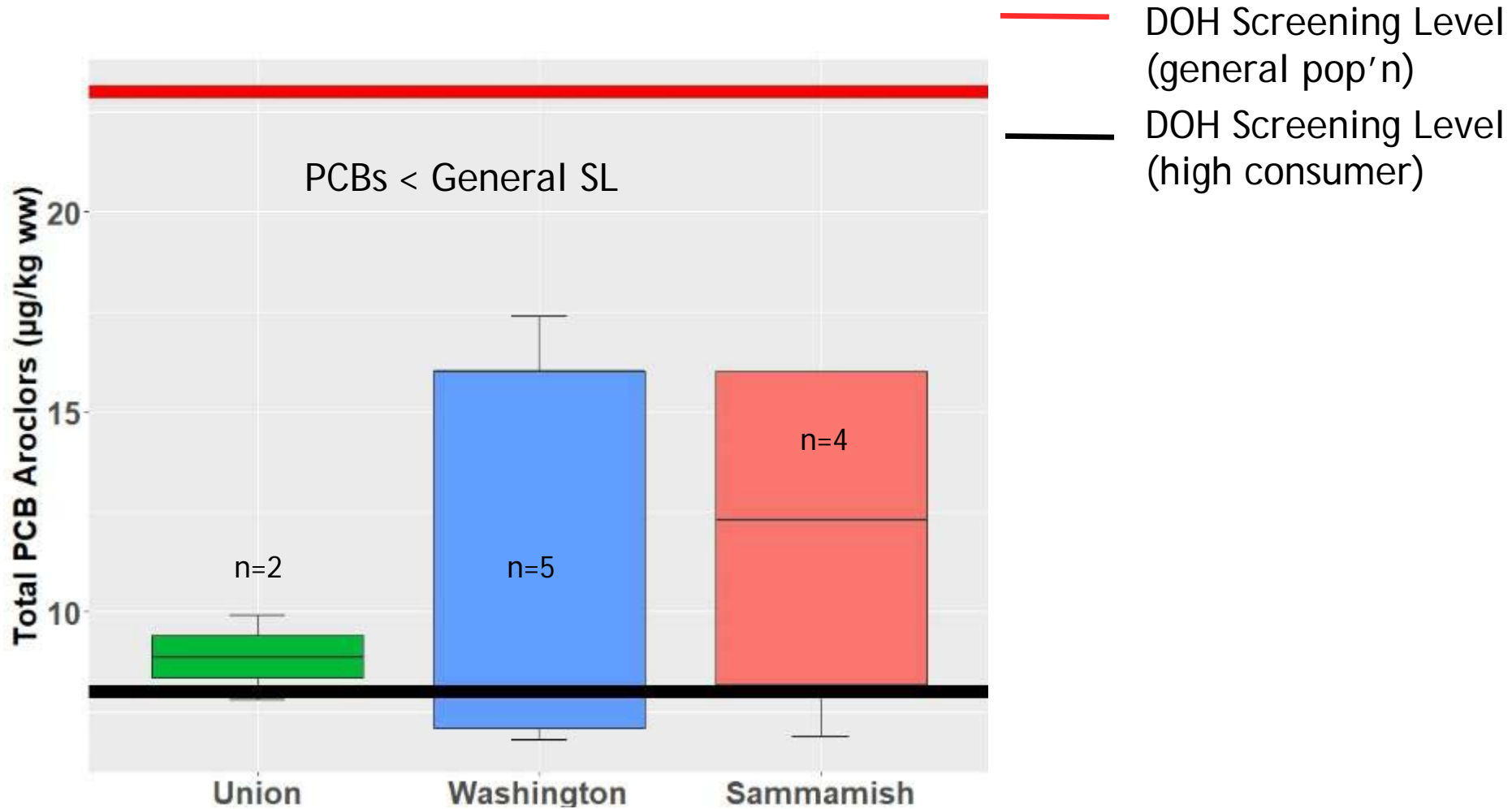
The screenshot shows the EPA website page for "Impaired Waters and TMDLs in Region 10". The page features the EPA logo, navigation tabs for "Environmental Topics", "Laws & Regulations", and "About EPA", and a search bar. The main content area includes a sidebar with links to "Impaired Waters and TMDLs Home", "Program Vision", "Impaired Waters and TMDLs throughout the U.S", and "Technical Tools and Resources". The main heading is "Impaired Waters and TMDLs in Region 10", followed by a description: "EPA Region 10 serves Alaska, Idaho, Oregon, Washington and 271 native tribes." Below this is a map of the region and a list of "Recent actions" including "Partial approval/partial disapproval of Oregon's 2012 303(d) list" and "Approval of Washington's 2012 303(d) list". At the bottom, there is a section titled "Find TMDLs (Total Maximum Daily Load) and Impaired Waters".

Policy revision underway for State 303(d) Listings (Policy 1-11)

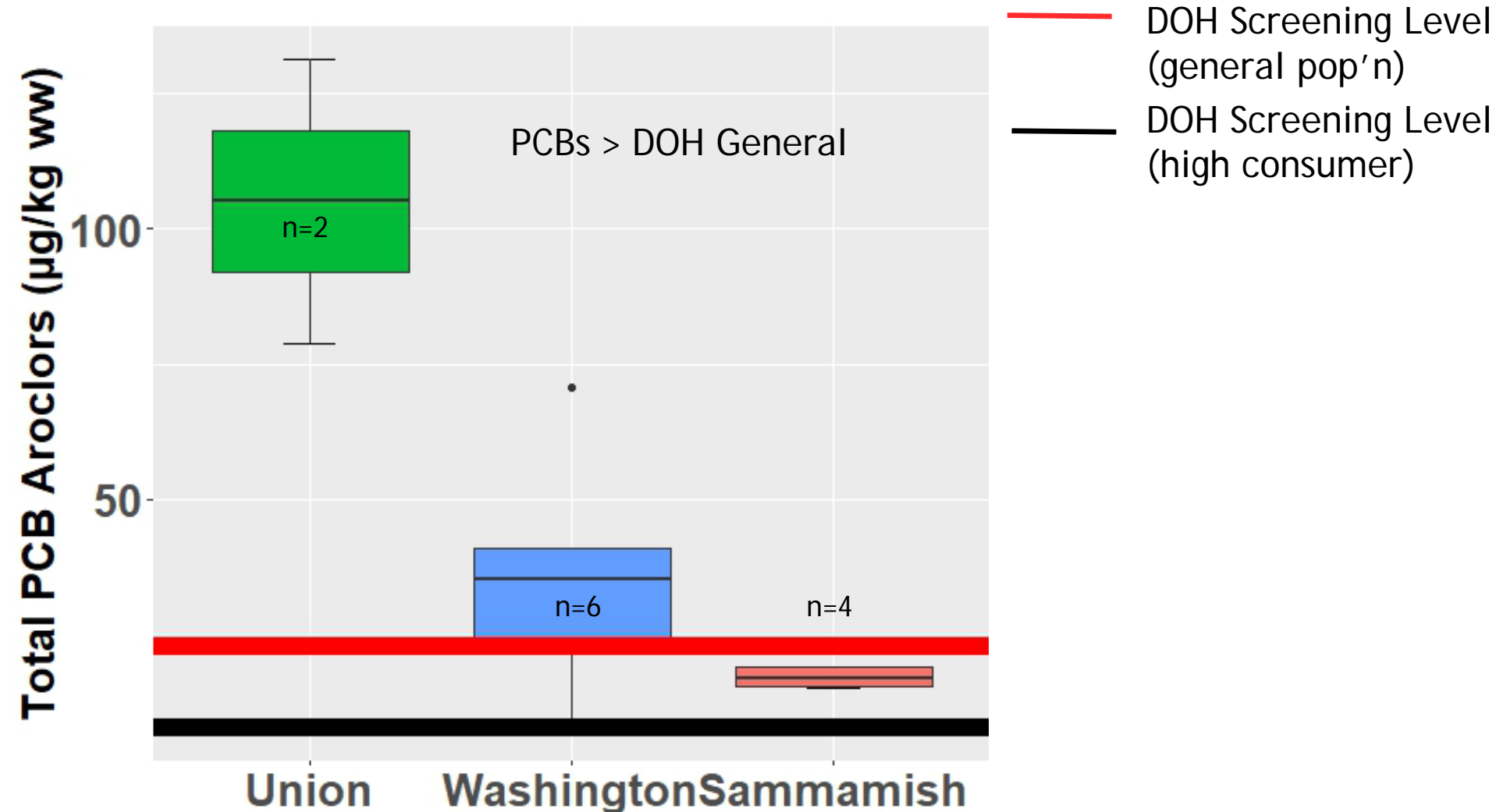
Large Yellow Perch Fillet - Hg



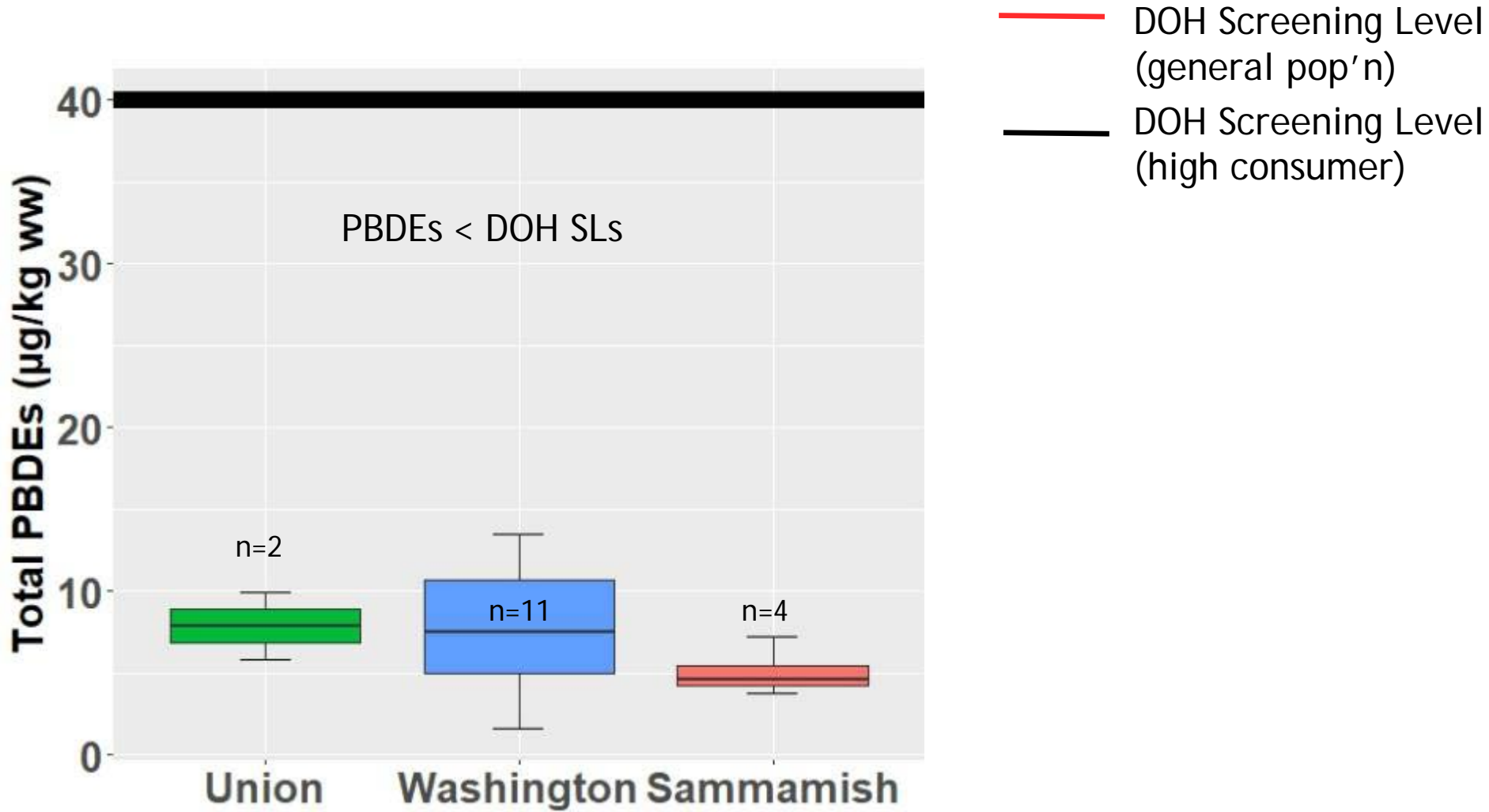
Large Yellow Perch Fillet - PCBs



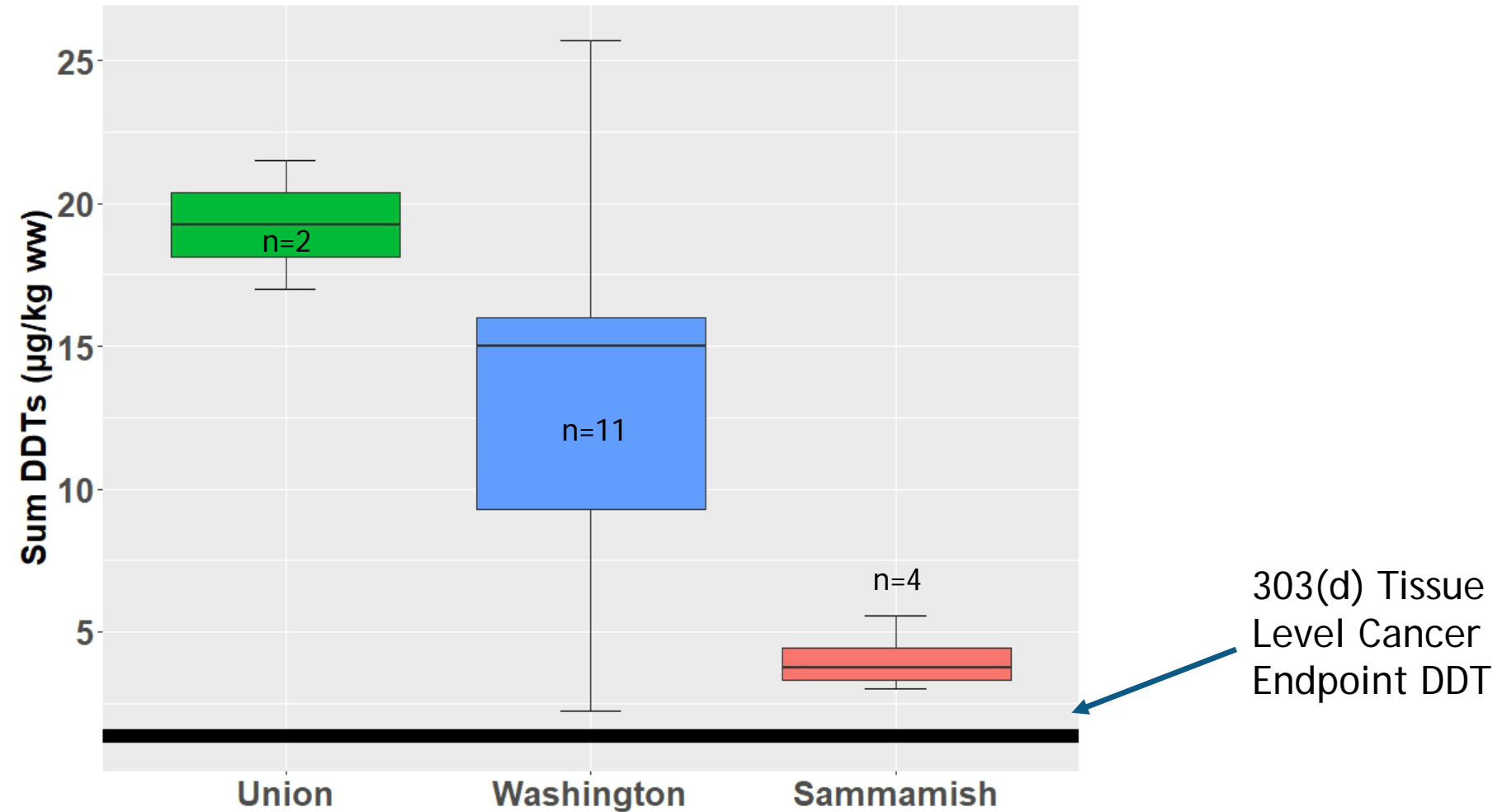
Smallmouth Bass Fillet - PCBs



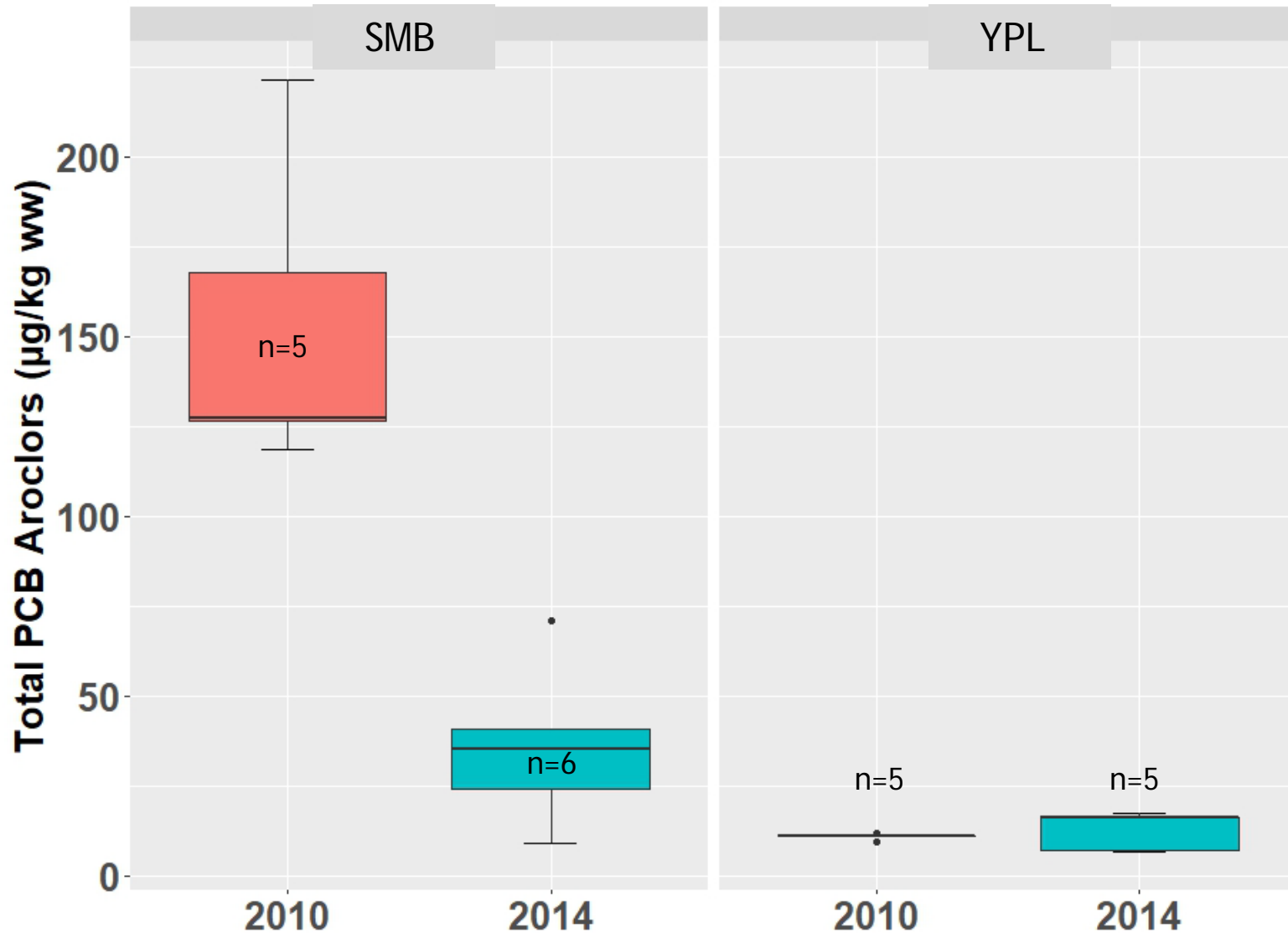
Smallmouth Bass Fillet - PBDEs



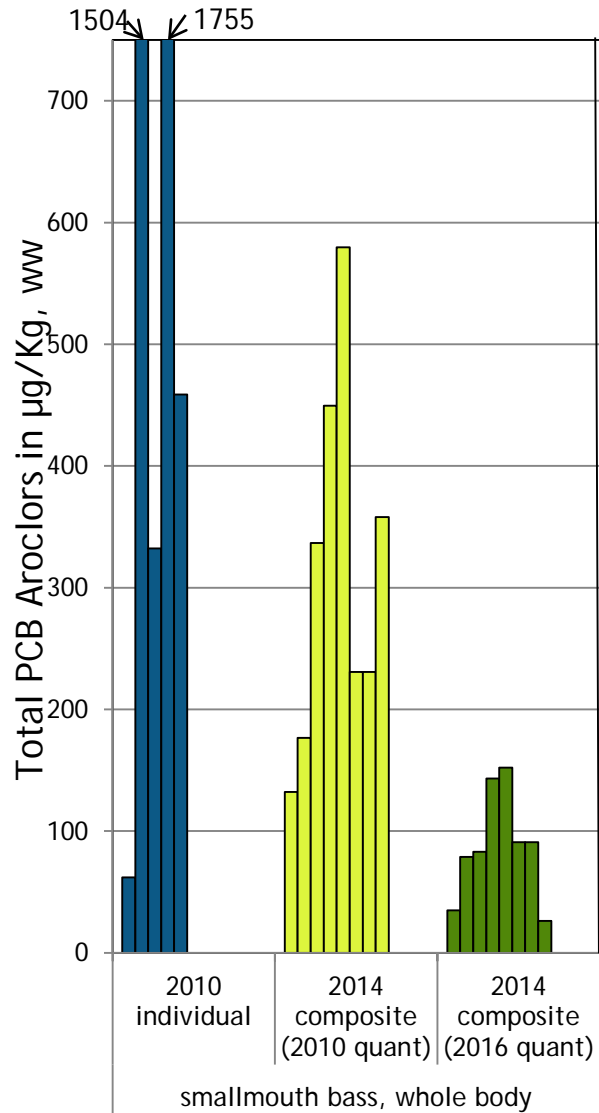
Smallmouth Bass Fillet - DDTs



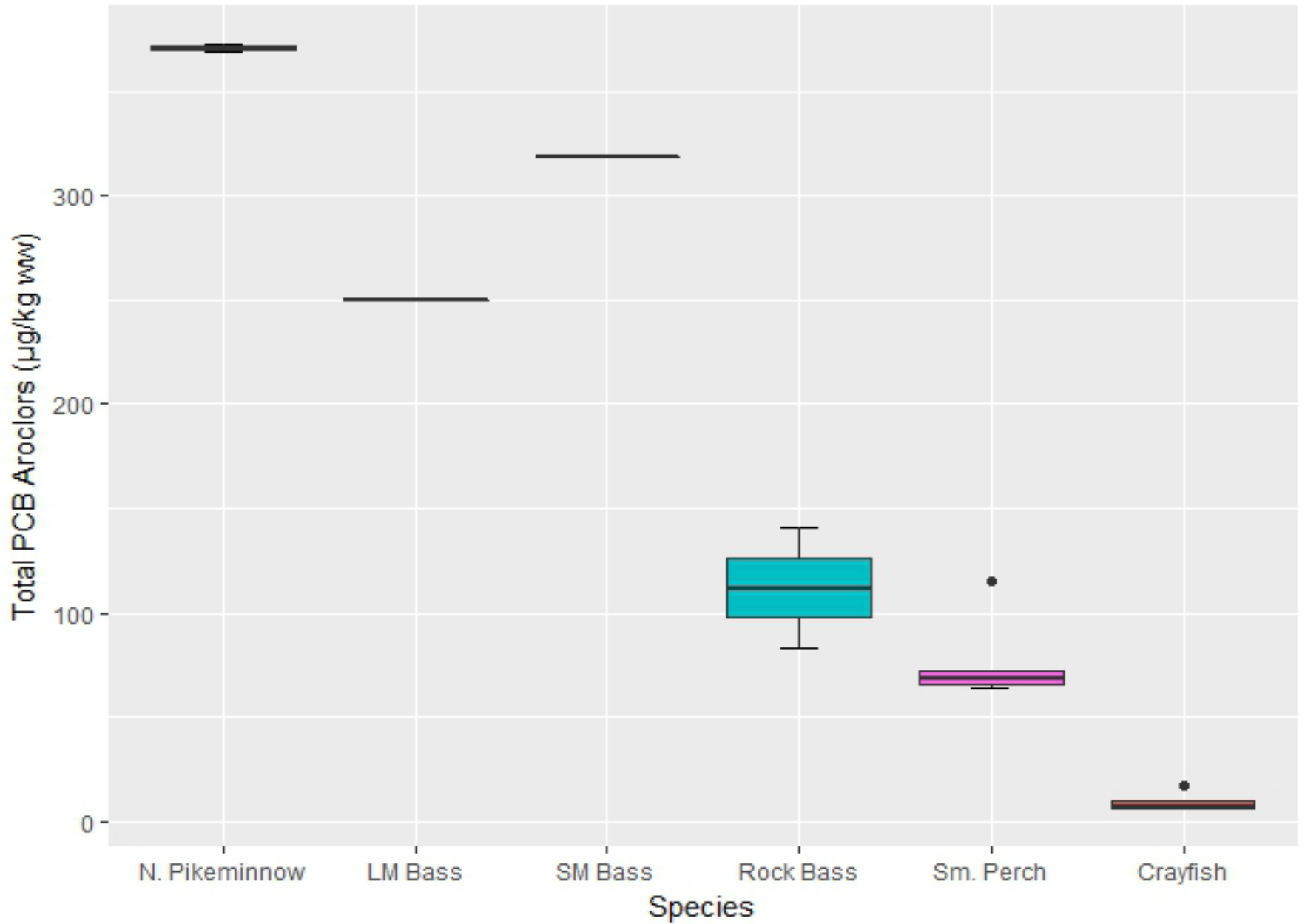
PCBs L. Washington 2010 to 2014



PCB Method Changes



Lake Union



Conclusion

- PBTs lowest in L. Sammamish fish
- Smallmouth bass and yellow perch reliable
- Mercury advisory justified
- Possible fish consumption risk – Lake Union for PCBs
- Advisory not needed for PBDEs
- Possible 303(d) listing – DDTs in L. Union



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Acknowledgements

- Dan Lantz, Chris Gregersen, Colin Elliott (King County)
- Keith Seiders (WA Dept. of Ecology)



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