Columbia River Basin: Possible Indicators

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Tacoma, WA

Effects Subgroup

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Outline

- Role of indicators in State of the River Report
- Summary of 9/19 indicator workshop
- Possible indicators for State of the River Report
- Next steps for indicators.

Indicators

- Developing report to “tell the story” of Columbia River Basin
- Indicators a part of story
- State of the Sound 2007
  - Indicators synthesize scientific data to help inform us about the topic of interest…Each indicator helps us understand the **current condition** of some key element of **Puget Sound’s health**, and whether the **trend** for that key element is positive or negative.

Indicators - Why

- Help evaluate the current and future health of ecosystem
- Good tool for decision makers
- Method to communicate with public
- However, challenge to develop indicators

Indicators Workshop

- Met 9/19 w/21 people representing 12 groups
- Purpose: ID indicators to evaluate human and ecological health for the “State of the River Report for Toxics”
- Discussed potential criteria and indicators
- Broke up into three groups to discuss
- Identified 7 possible indicator groups

Indicator Criteria

- Trend data available
- Relevant to people and how people use/interact with River
- Relevant to larger geographic area
- Provides clear link to contaminants/effects
- Useful in guiding management decisions

Possible Indicators

- Resident Fish (tissue concentration)
- Salmon (tissue concentration juvenile)
- Sturgeon (tissue concentration)
- Lamprey (tissue concentration)
- Osprey and Bald Eagle (egg concentration)
- Mink or Otter (TBD)
- Clams (tissue concentration)

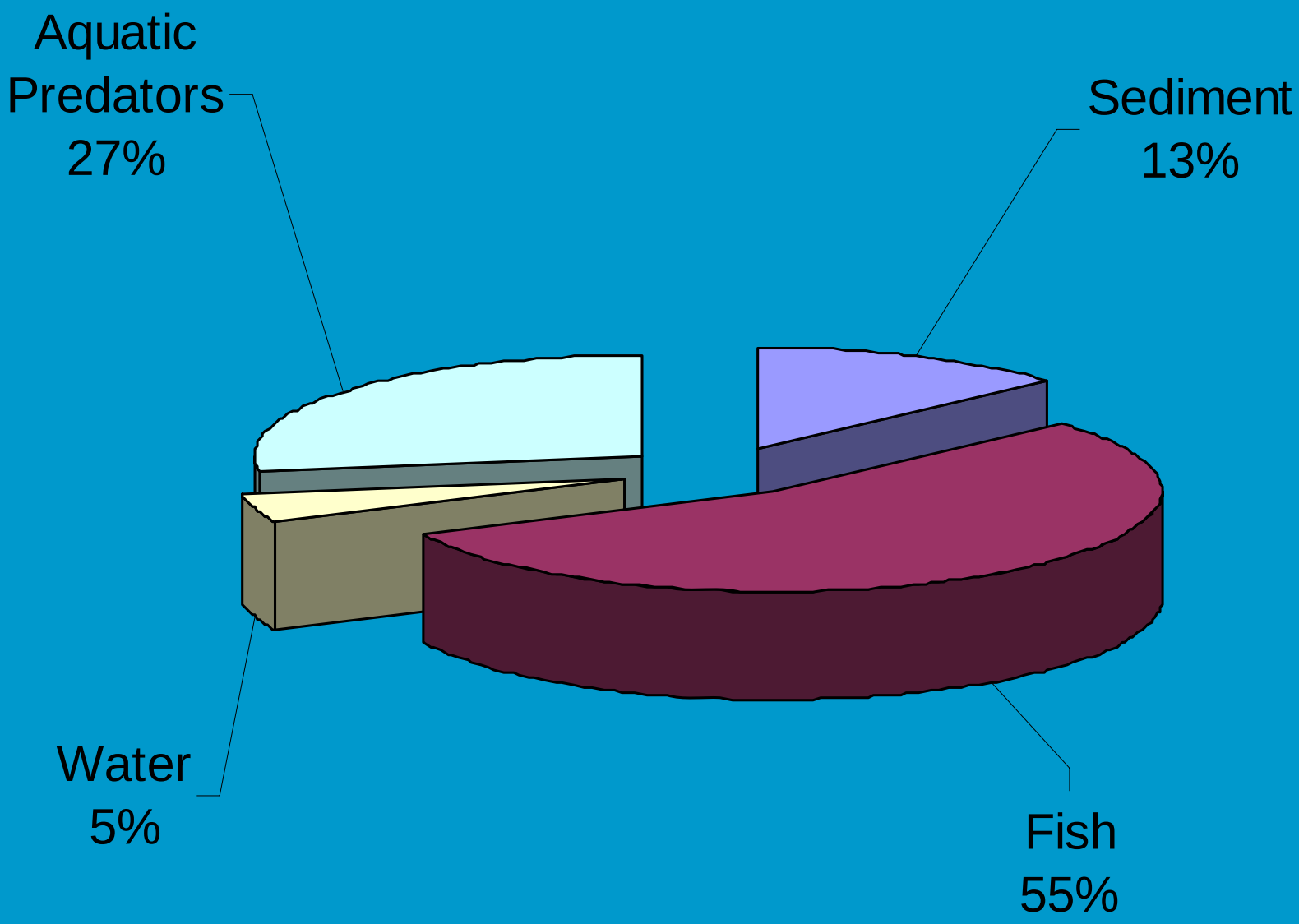
Resident Fish - Candidates

- Whitefish in British Columbia
  - Increasing PBDE
- Suckers and whitefish in Yakima River
  - Decreasing DDT associated with TMDL for suspended sediment
- Sediments in Owyhee to Snake
  - Increasing mercury from Owyhee to Snake. Need additional data to evaluate potential impacts
- Trout/suckers in Spokane River
  - Decreasing PCBs
- Northern pikeminnow/bass/sucker in Willamette
  - Mercury trends

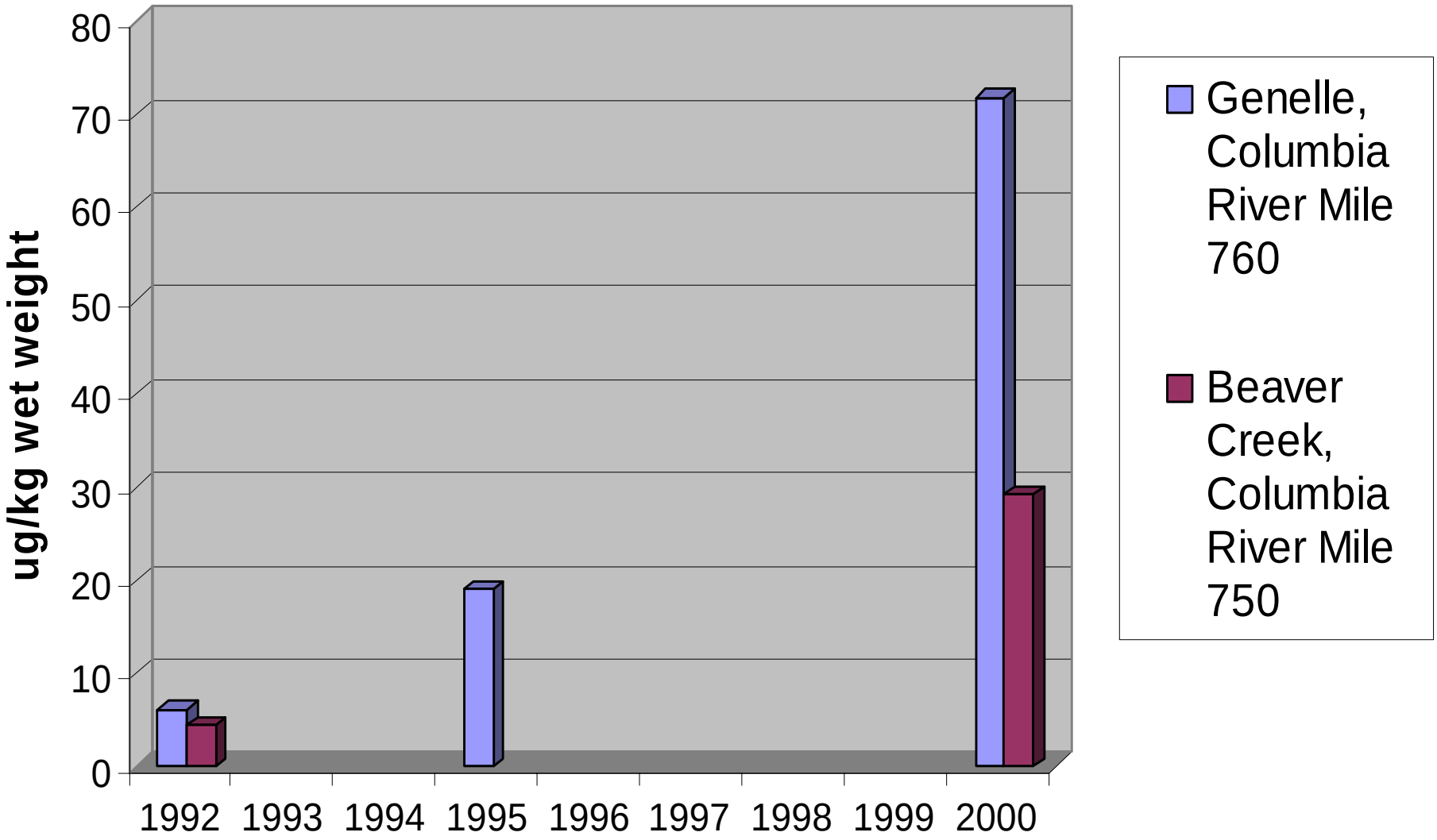
PBDE Data

- 16 Datasets for PBDEs in Columbia Basin; 9 public accessible
- Approximately 500 data points (total PBDEs)
- Spatial range from Hugh Keenleyside Dam, in BC to the lower estuary (780 miles)

Total PBDE Data Points



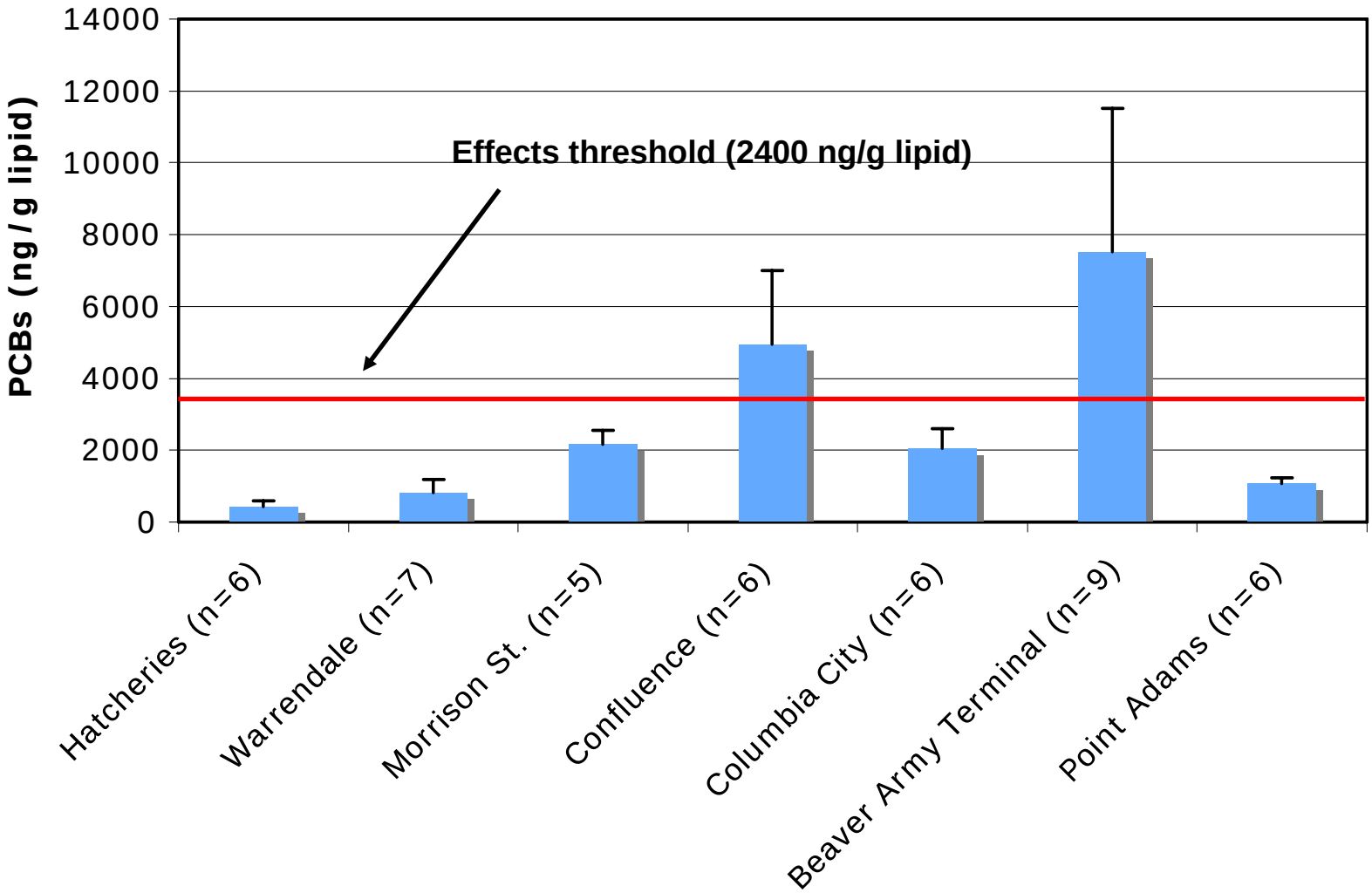
Total PBDEs in Mountain Whitefish in the Columbia River Upstream of the Canadian Border



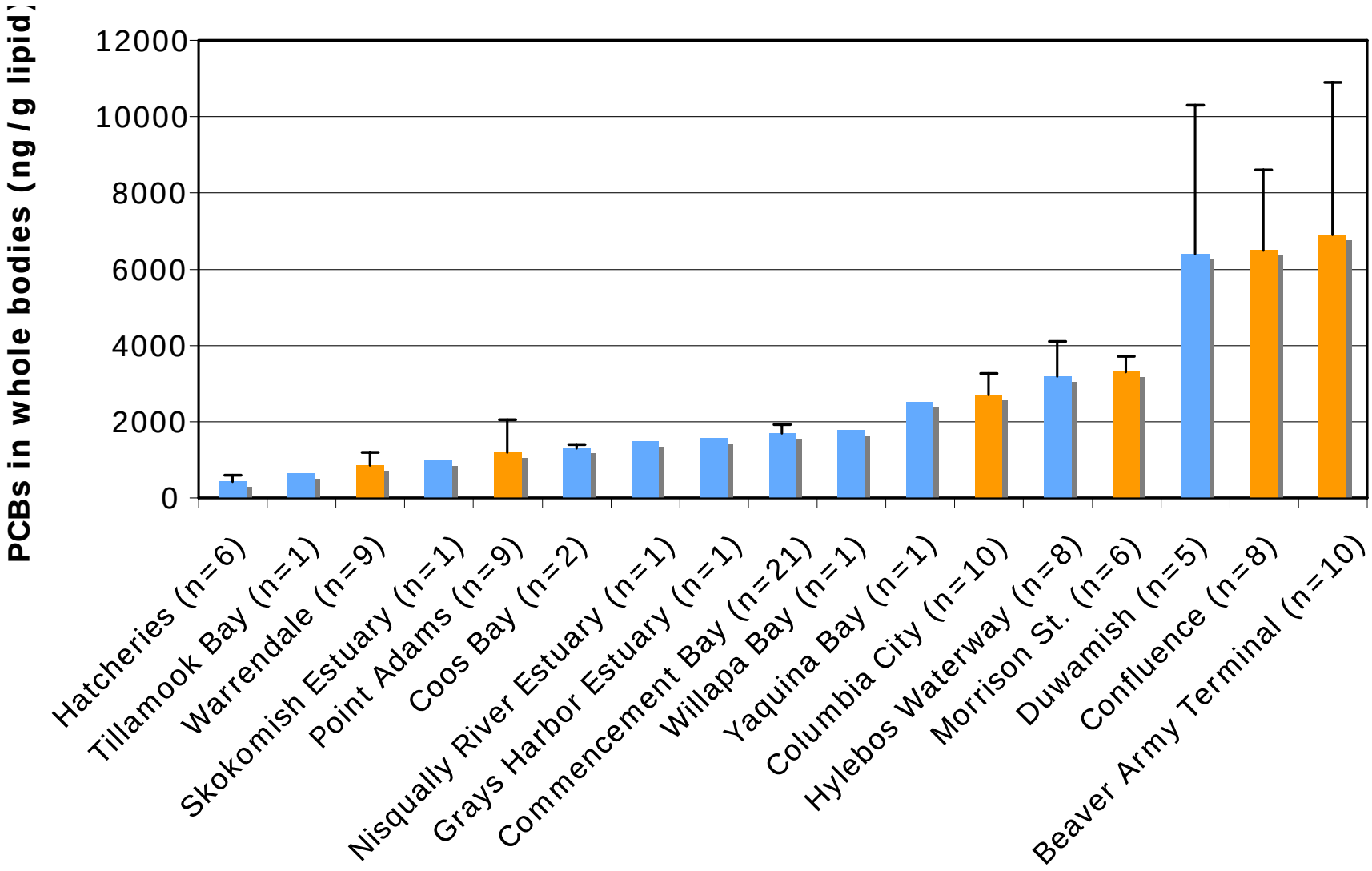
Salmon

- Juveniles: Focus on PCBs since they have the best evidence for effects of 4 COCs
  - Body burdens are above thresholds for biological effects at several sites
  - Relatively high compared to other systems/estuaries in PNW
  - Lower river important source of exposure, but have limited data on exposure in rest of Columbia Basin
- Adults: TBD
  - Is there trend data for COCs in adult salmon in basin?
  - Are there effects being seen on adult salmon from toxics?

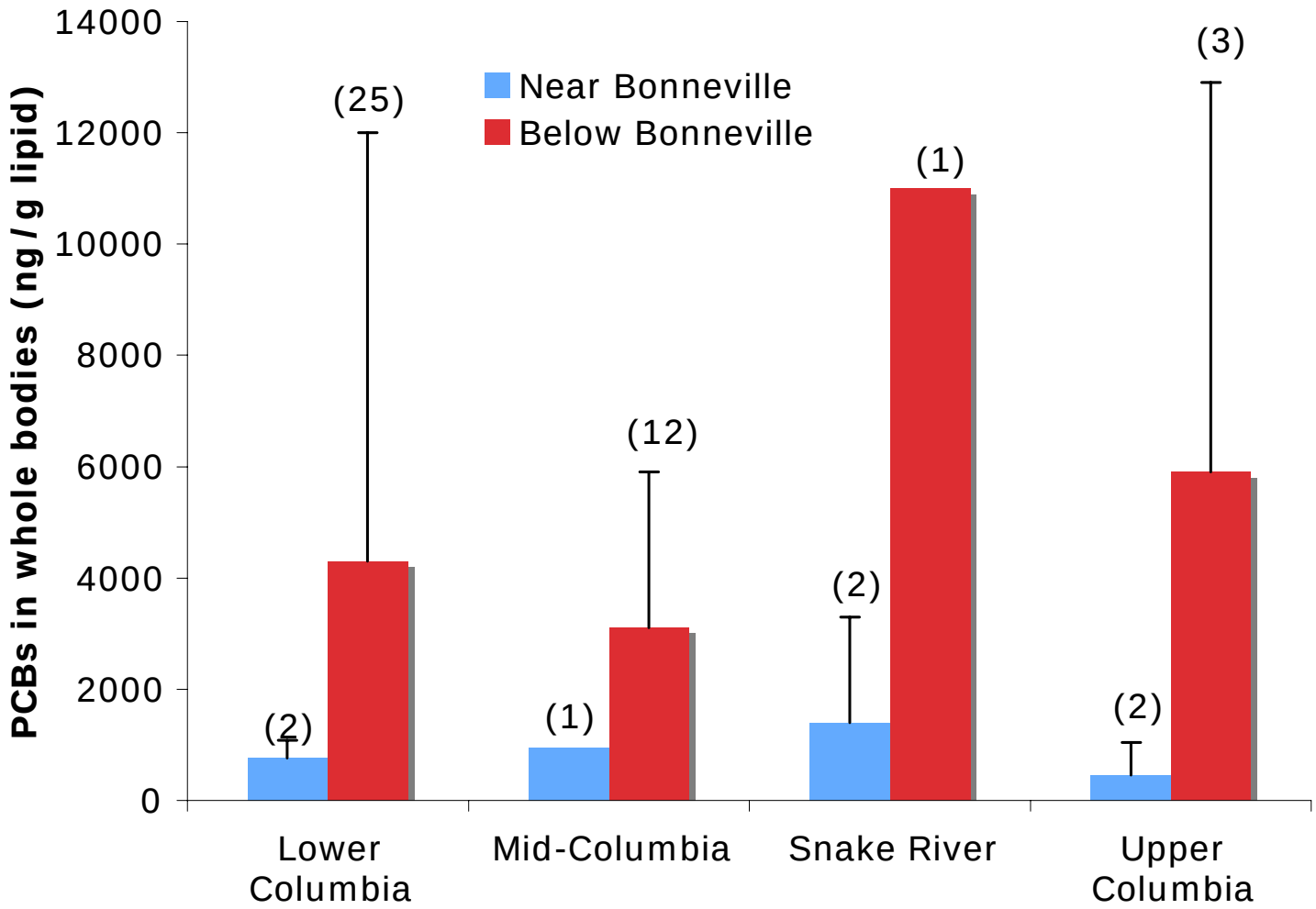
PCB concentrations in juvenile salmon bodies exceed health effects thresholds at several sites



PCBs in Columbia River juvenile salmon compared to other PNW sites



In all stocks, PCB concentrations are higher below Bonneville than at Bonneville, suggesting the Lower Columbia is an important contaminant source



Next Steps

- Work with individuals ID for each indicator to determine compelling "story to tell"
- Compile data to tell story
- Decide how to present data in report
- ID data gaps and future research
- Review sections of report when completed