



# Assessing Risks to Resident Bald Eagles in the Kalamazoo River Floodplain - The Exposure Assessment

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## STUDY SCOPE

- Kalamazoo River Area of Concern**
  - Swan Creek, Ottawa Marsh
  - PCB exposure via KRADC and anadromous Great Lakes fish
- Coastal Lake Michigan Riverine Controls**
  - Manistee, Pere Marquette Rivers
  - PCB Exposure via anadromous Great Lakes fish
- North Central Lacustrine Controls**
  - Backus Flooding, Lake St. Helen
  - "Background Level" PCB exposure



## ABSTRACT

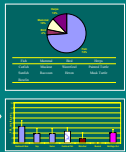
Summary text from the abstract, detailing the study's purpose and findings.

## BOTTOM-UP

### METHODS

- 1. Visually characterize site specific dietary composition  
*n* = 102
- 2. Identify prey items collected from nest and base of nest tree
- 3. Collect and analyze identified dietary items for PCBs  
*n* = 90

### RESULTS



## ISSUES

- 1. Limited sample size
- 2. Limited dietary data
- 3. Limited PCB data
- 4. Limited PCB data
- 5. Limited PCB data
- 6. Limited PCB data
- 7. Limited PCB data
- 8. Limited PCB data
- 9. Limited PCB data
- 10. Limited PCB data

## OBJECTIVES

- 1. Assess PCB exposure to bald eagles
- 2. Assess PCB exposure to bald eagles
- 3. Assess PCB exposure to bald eagles
- 4. Assess PCB exposure to bald eagles
- 5. Assess PCB exposure to bald eagles
- 6. Assess PCB exposure to bald eagles
- 7. Assess PCB exposure to bald eagles
- 8. Assess PCB exposure to bald eagles
- 9. Assess PCB exposure to bald eagles
- 10. Assess PCB exposure to bald eagles

Item	Mean (mg/kg)	95% UCL (mg/kg)
PCB Dietary Composition	0.22	0.44
Bald Eagle Nest/Prey PCB Dietary	0.033	0.066
Calculated egg (from diet)	0.1	0.2

## TOP-DOWN

### METHODS

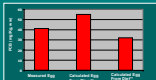
- 1. Analyze nesting blood plasma and added eggs for PCBs  
*n* = 2

### RESULTS

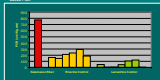
Year	Kalamazoo River			Western Control			Lacustrine Control		
	Mean	95% UCL	95% LCL	Mean	95% UCL	95% LCL	Mean	95% UCL	95% LCL
2006	175	300	100	100	150	50	10	20	5
2007	100	150	50	100	150	50	10	20	5
2008	100	150	50	100	150	50	10	20	5
2009	100	150	50	100	150	50	10	20	5
2010	100	150	50	100	150	50	10	20	5
2011	100	150	50	100	150	50	10	20	5
2012	100	150	50	100	150	50	10	20	5
2013	100	150	50	100	150	50	10	20	5
2014	100	150	50	100	150	50	10	20	5
2015	100	150	50	100	150	50	10	20	5
2016	100	150	50	100	150	50	10	20	5
2017	100	150	50	100	150	50	10	20	5
2018	100	150	50	100	150	50	10	20	5
2019	100	150	50	100	150	50	10	20	5
2020	100	150	50	100	150	50	10	20	5
2021	100	150	50	100	150	50	10	20	5
2022	100	150	50	100	150	50	10	20	5
2023	100	150	50	100	150	50	10	20	5
2024	100	150	50	100	150	50	10	20	5
2025	100	150	50	100	150	50	10	20	5
2026	100	150	50	100	150	50	10	20	5
2027	100	150	50	100	150	50	10	20	5
2028	100	150	50	100	150	50	10	20	5
2029	100	150	50	100	150	50	10	20	5
2030	100	150	50	100	150	50	10	20	5

## CONCLUSIONS

Bald Eagle Egg Concentration Comparisons (Approximate vs. Measured) Reflect Inconsistencies between Bottom-Up and Top-Down Exposure Assessment Methods



Eagle Blood Plasma PCB Concentrations Suggest a Portion of Kalamazoo River Bald Eagle Exposure is Likely Originating From Anadromous Great Lakes Fish



\* Mean egg concentration calculated using PCB distribution derived from nest and prey data (1998)

\*\* Mean egg concentration calculated using PCB distribution from the Lake Michigan and Western Lake Erie Basin (1998)