

National Park Service

Monitoring Persistent Toxics





9 Parks

6 on the Great Lakes

2 on large rivers

1 on the Canadian
border lakes



Initial Set of Indicators



3 Parks Sampled in 2006 & 2007

Heavy Metals

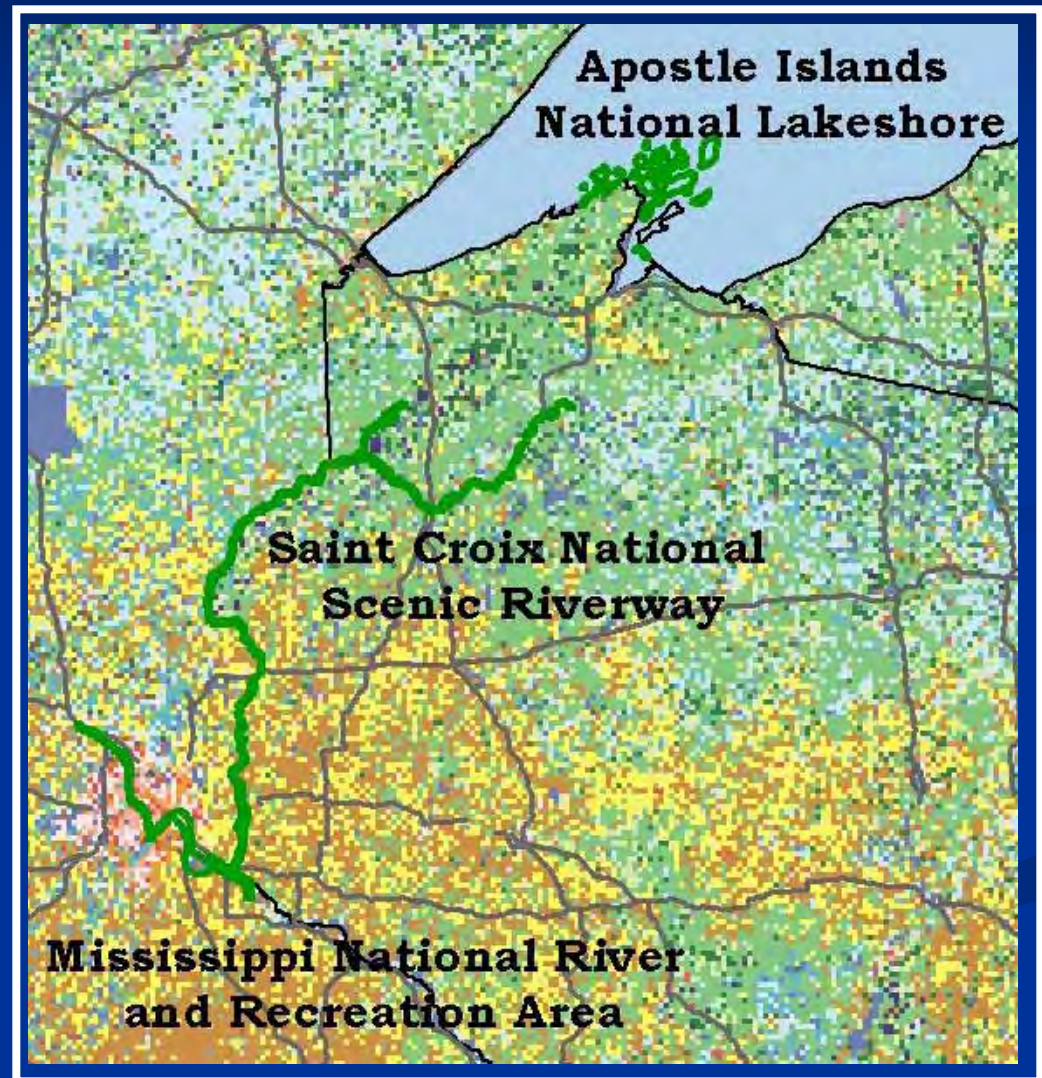
- Mercury (Hg)
- Lead (Pb)

Banned

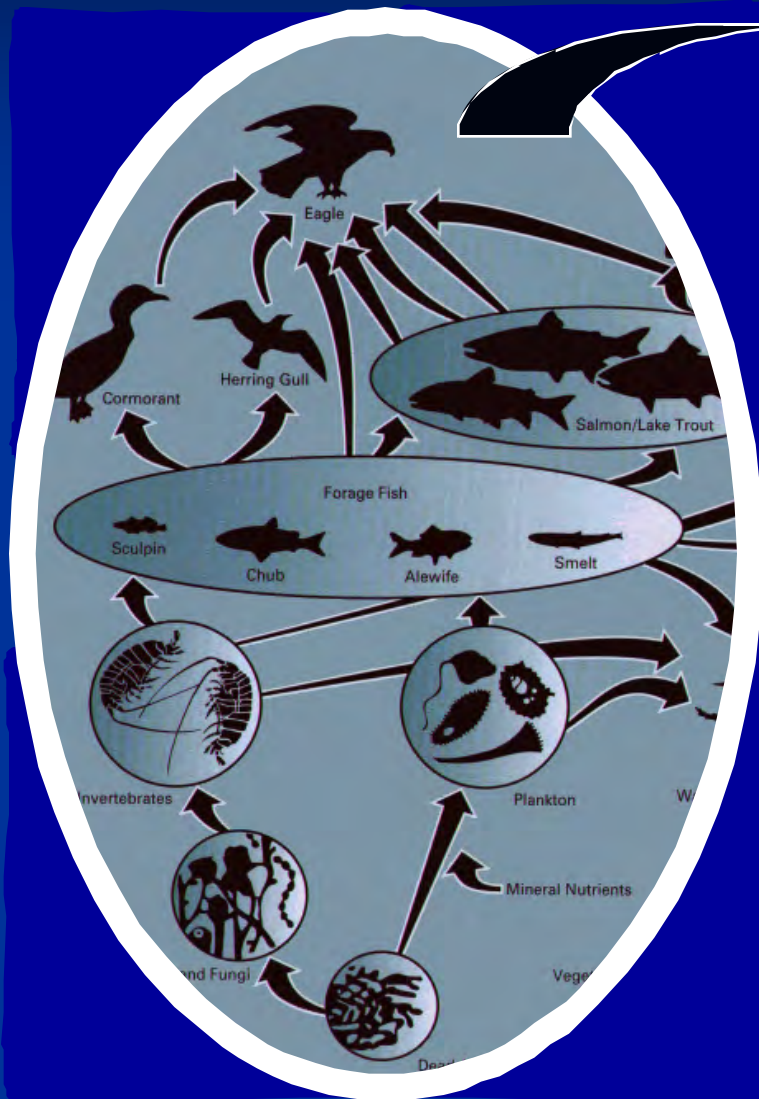
- PCBs (75 congeners)
- DDT (DDE & DDD)

New & Emerging

- Brominated flame retardants PBDEs (9)
- Fluorinated compounds
 - PFOS (ex. Scotchgard)
 - PFOA (ex. Teflon)



Bald Eagle Nestlings as Sentinels



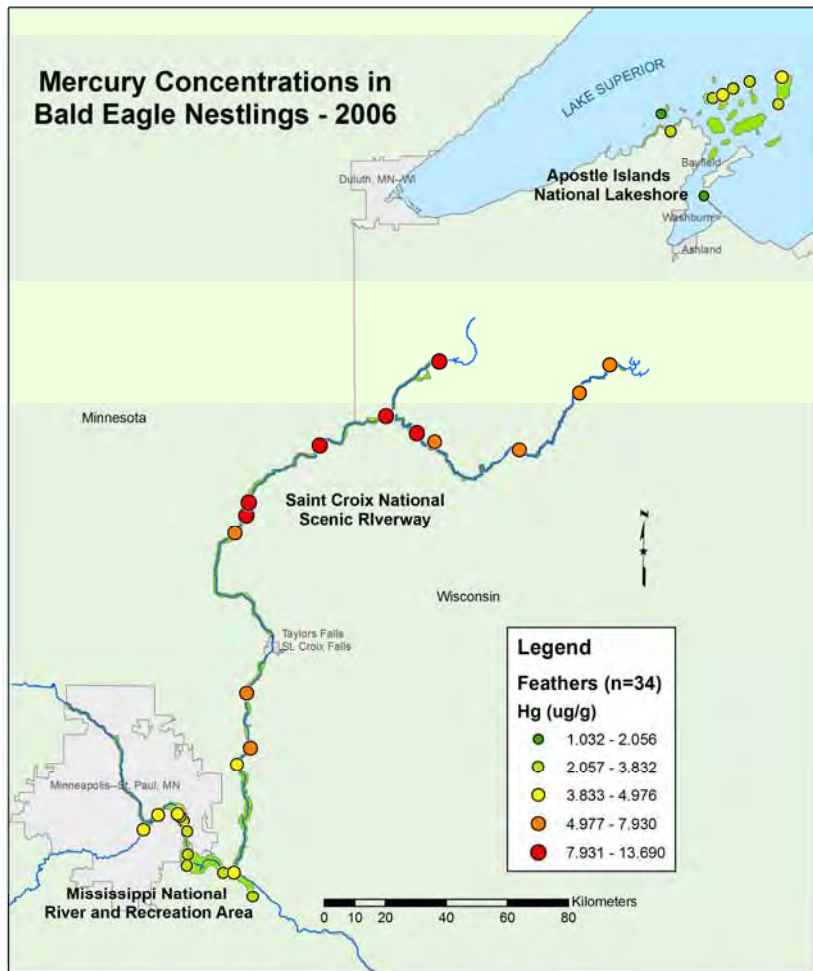
Eaglets are captured in the nest and brought down for processing



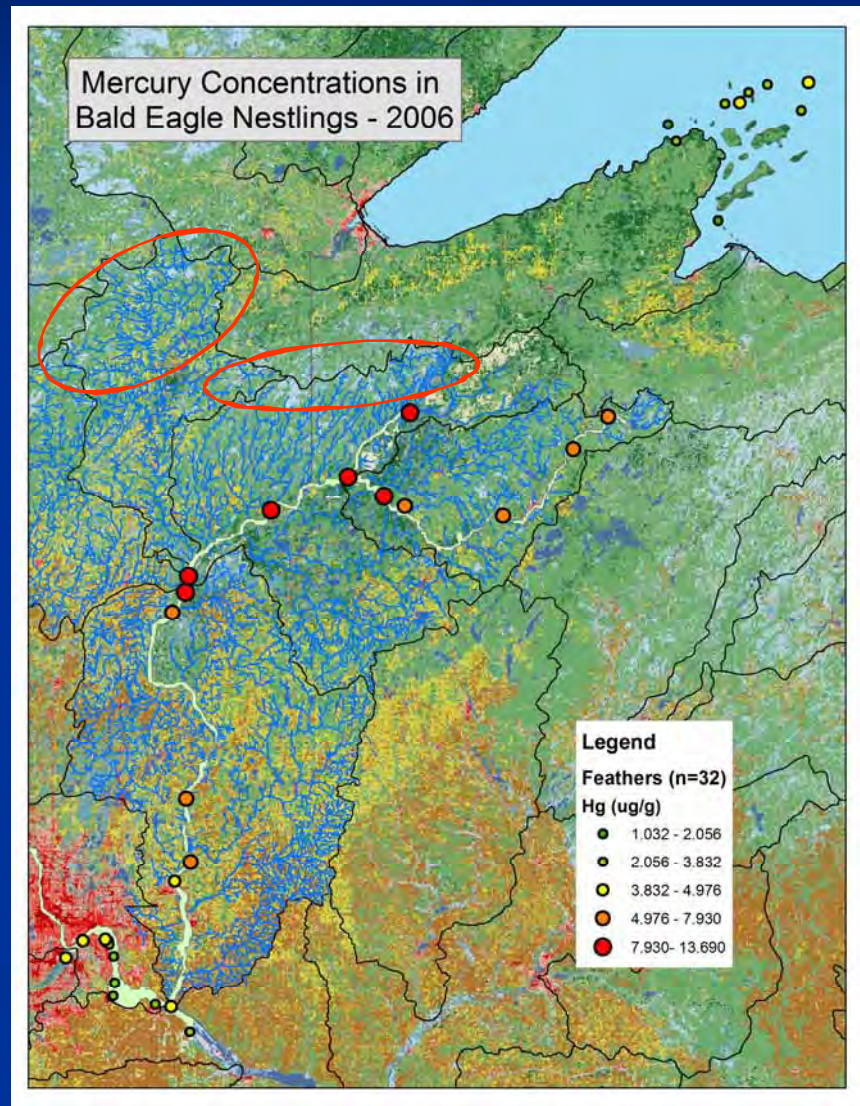
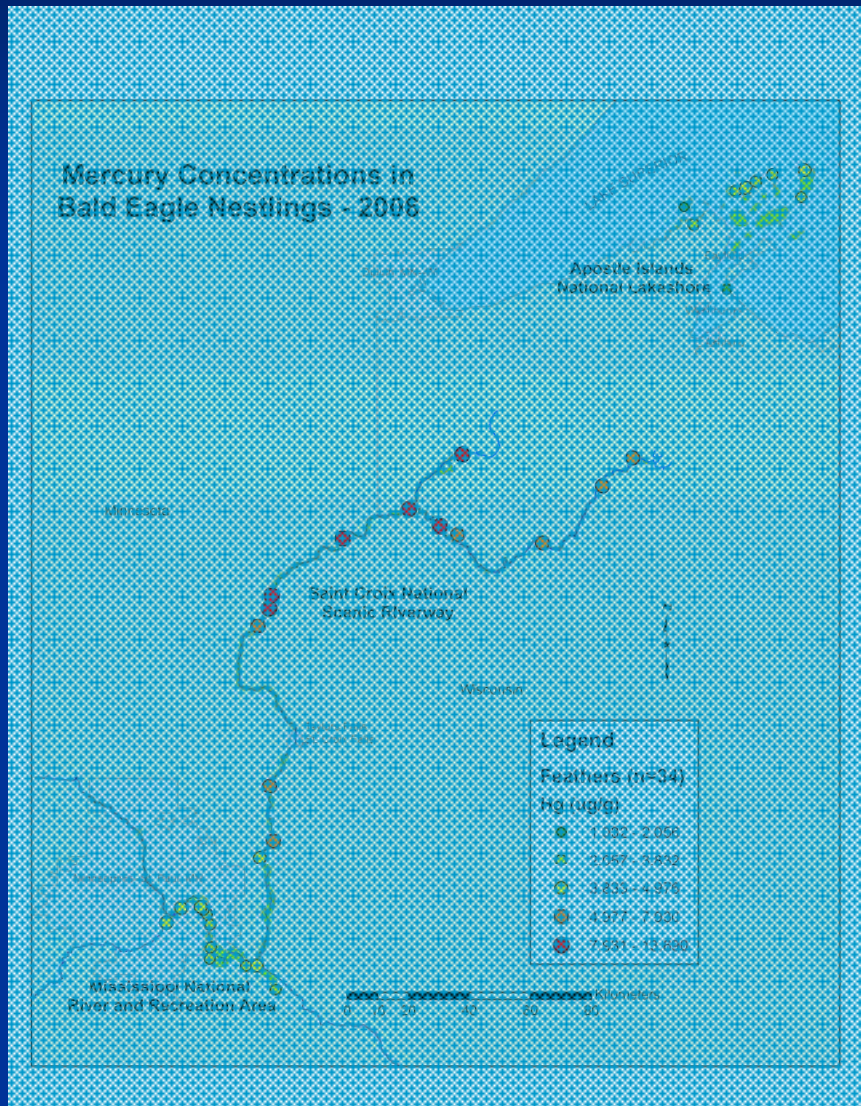
They are then weighed, banded, and sampled



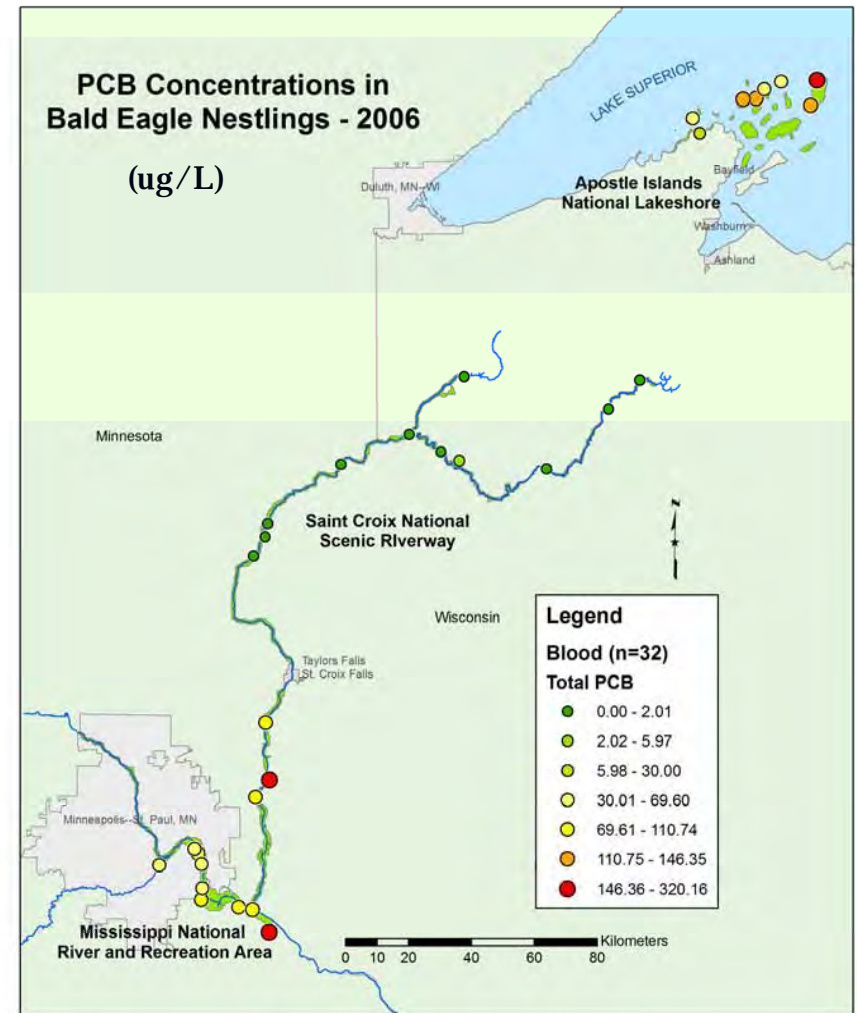
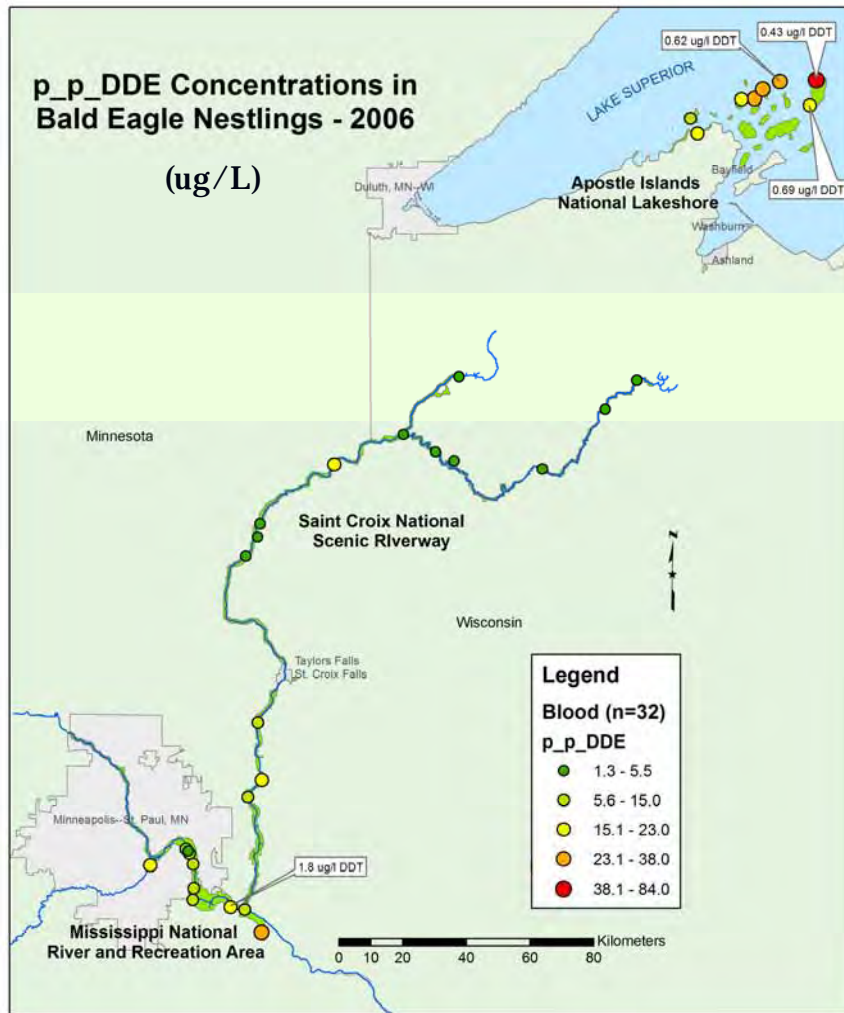
Distribution and Relative Concentrations of Mercury



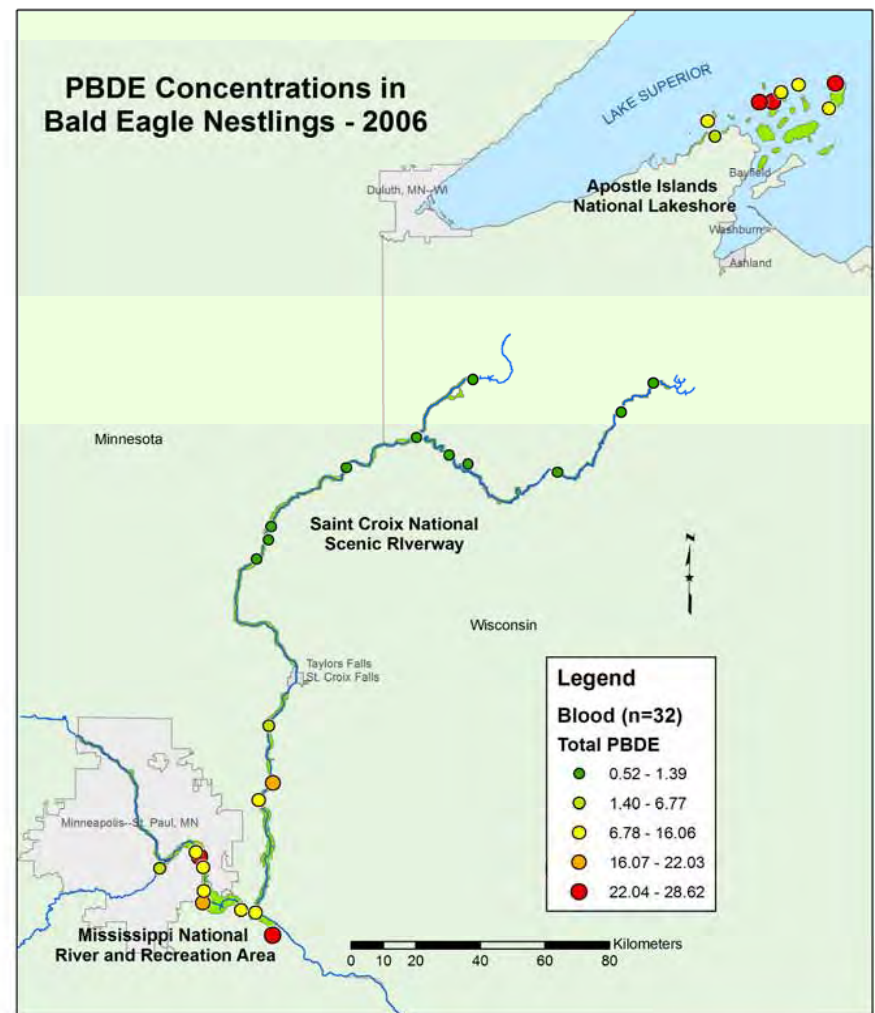
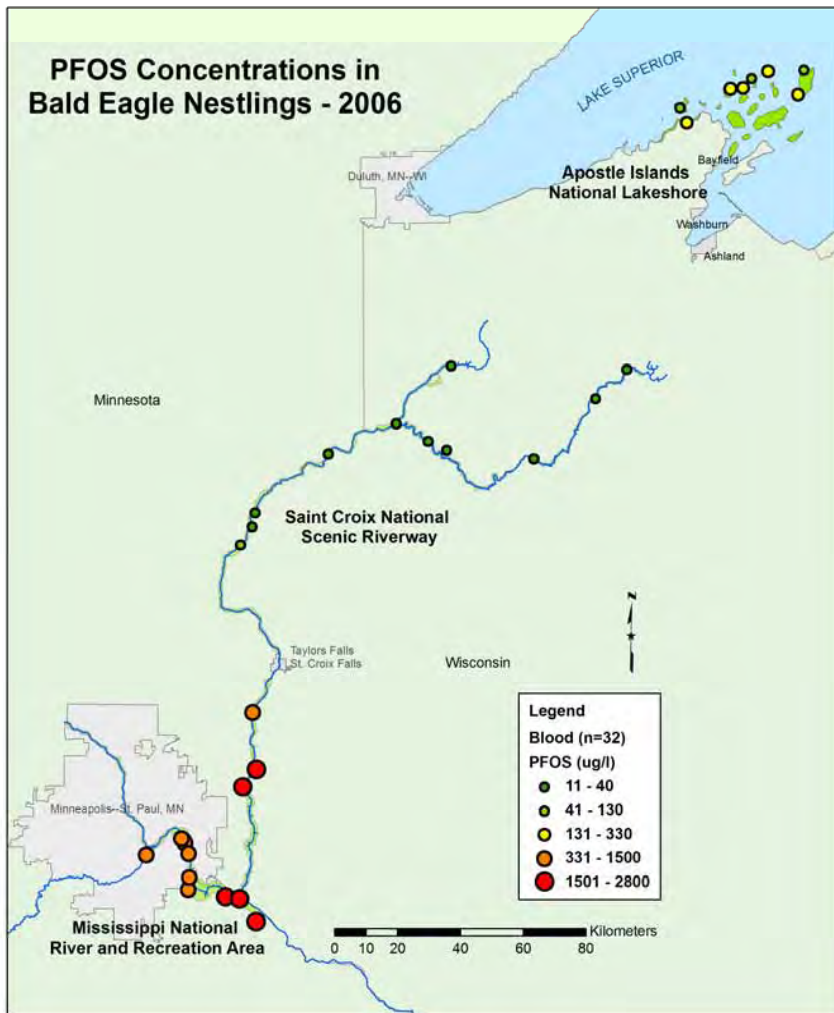
Distribution and Relative Concentrations of Mercury



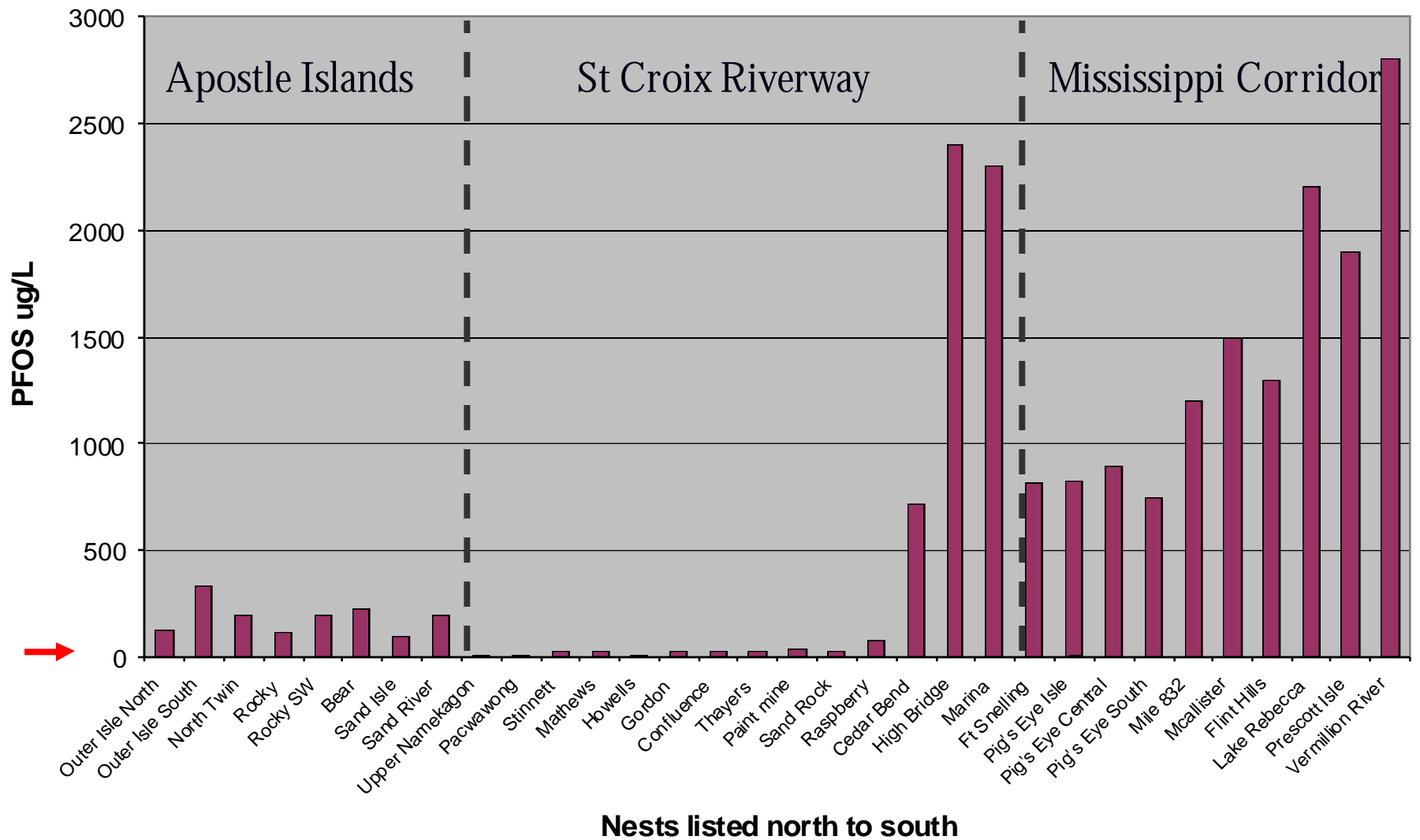
Distribution & Relative Concentrations of PCBs & DDT



Distribution & Relative Concentrations of PFOS & PBDEs

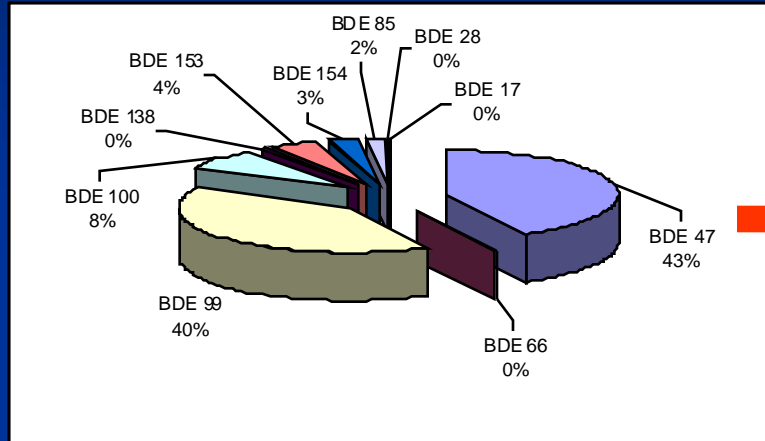


2006 PFOS Concentrations

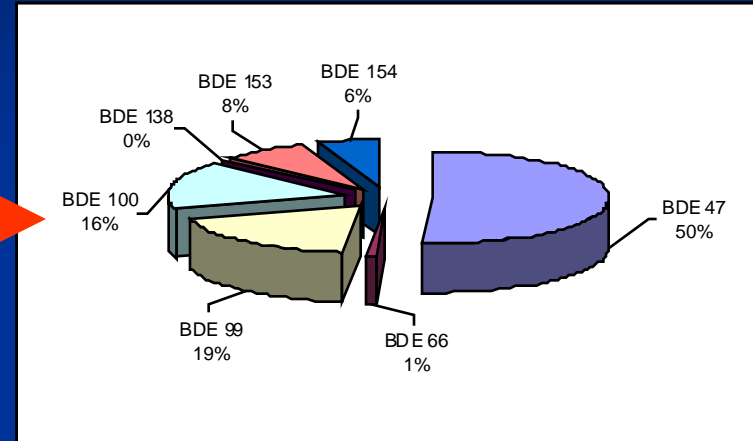


PBDEs

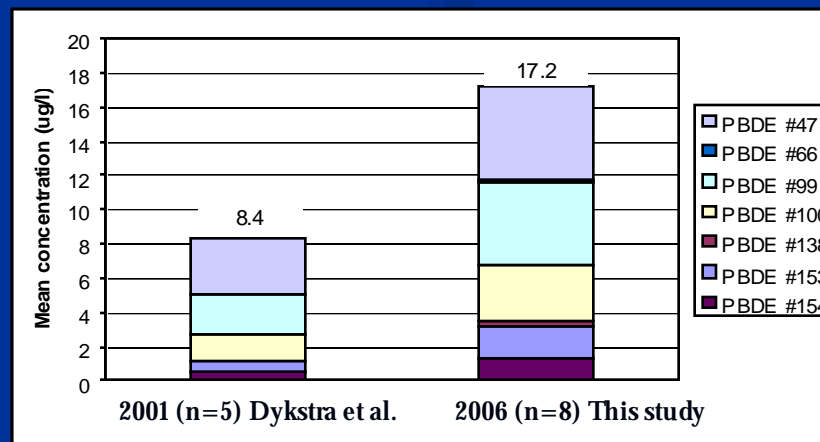
Persistent & Cumulative



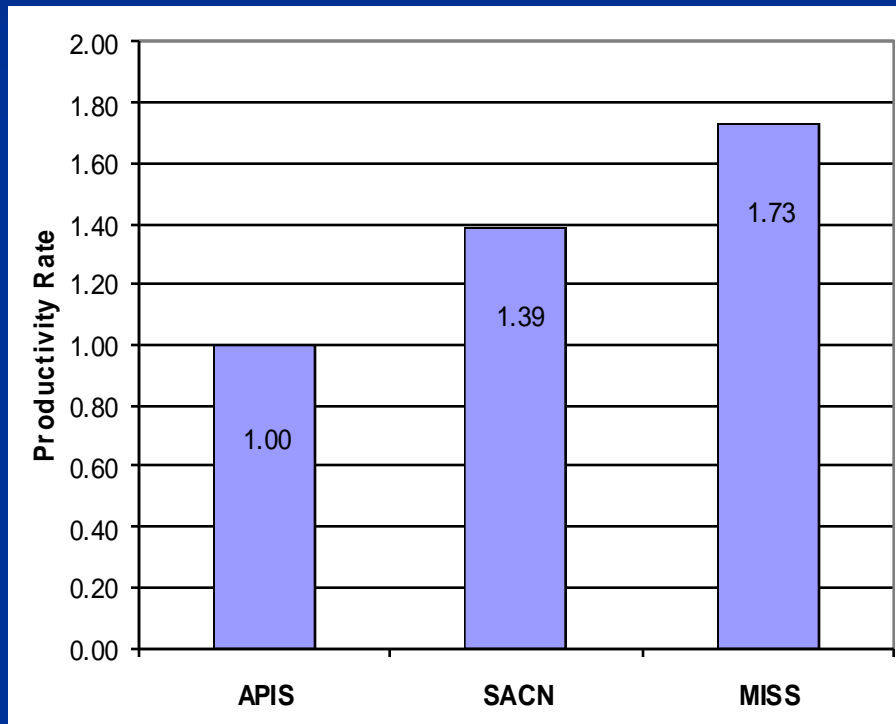
Common Flame Retardant



Bald Eagle Blood Samples



Productivity is high, but...?



Sub-lethal effects

- Endocrine disruption
 - Growth, development, cognitive skills
- Hyperthyroidism
- Altered immune system
- Synergistic effects unknown

Acknowledgements

- Funded by the NPS Great Lakes Network
- Collaboration with the WI DNR
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- Logistical support at APIS by U.S. FWS
- Tree climbing by Eco-ascension