



Using Michigan's Fish Contaminant Monitoring Program to Identify Local Sources of Contamination

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Water Division

Fish Contaminant Monitoring Program

- Evaluate the need for sport fish consumption advisories and commercial fishing regulations.
- Identify spatial and temporal trends in water quality.
- Evaluate whether existing programs are effectively eliminating or reducing chemical contamination.

MICHIGAN'S FISH CONTAMINANT MONITORING PROGRAM

- **Edible Portion Monitoring**
 - about 70% of the analytical budget
- **Whole Fish Monitoring**
 - about 20% of the analytical budget
- **Caged Fish Monitoring**
 - about 10% of the analytical budget

Michigan Department of Community Health's "Trigger Levels"

Mercury

Restrict Consumption 0.5 ppm

No Consumption 1.5 ppm

Total PCBs

General Population 2.0 ppm

Women and Children

1 meal per week 0.05 ppm

1 meal per month 0.2 ppm

6 meals per year 1.0 ppm

no consumption 1.9 ppm

Dioxin TEQ

10.0 ppt

Total Chlordane

0.3 ppm

Total DDT

5.0 ppm

Dieldrin

0.3 ppm

Heptachlor +

Heptachlor epoxide 0.3 ppm

Mirex

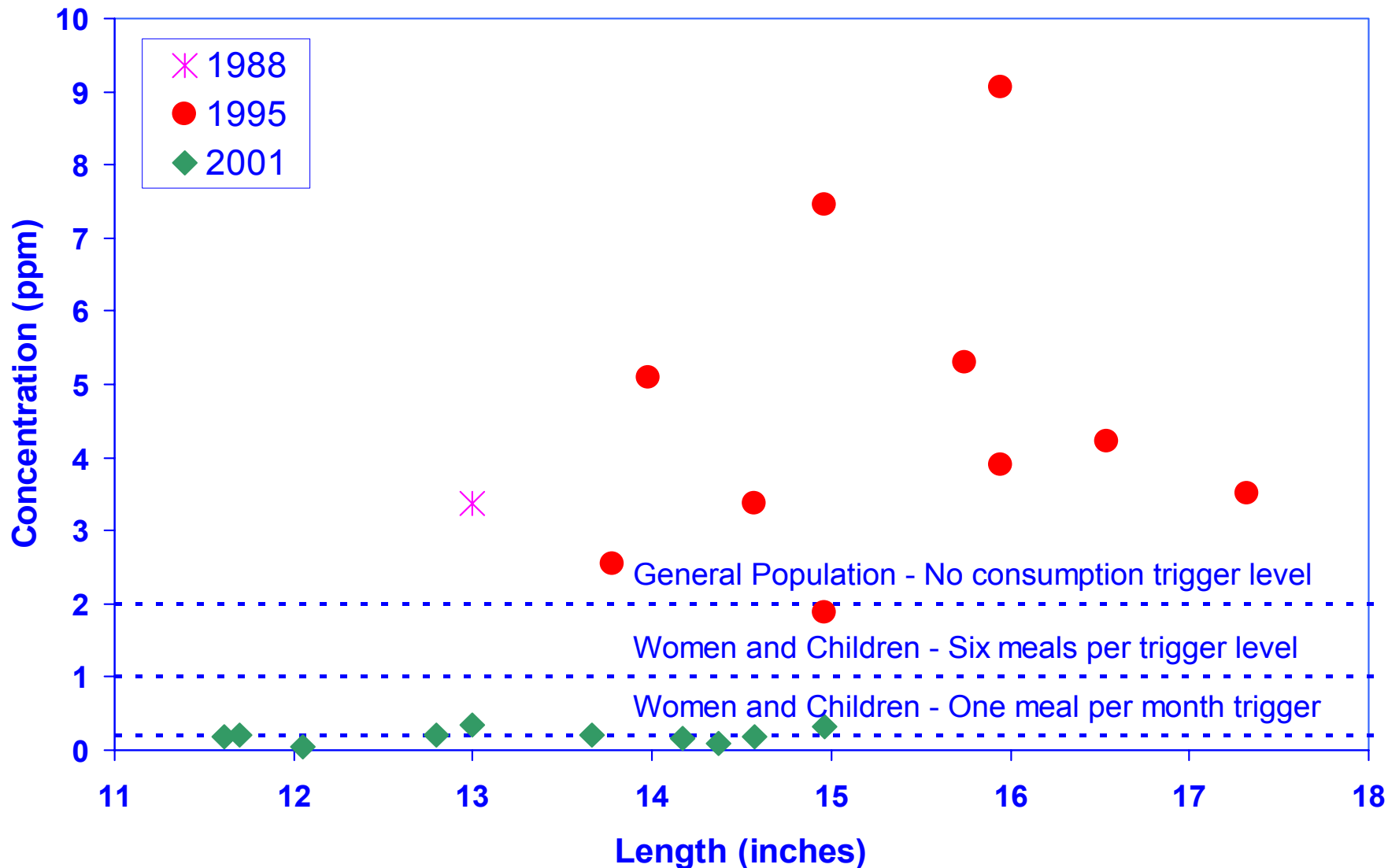
5.0 ppm

Toxaphene

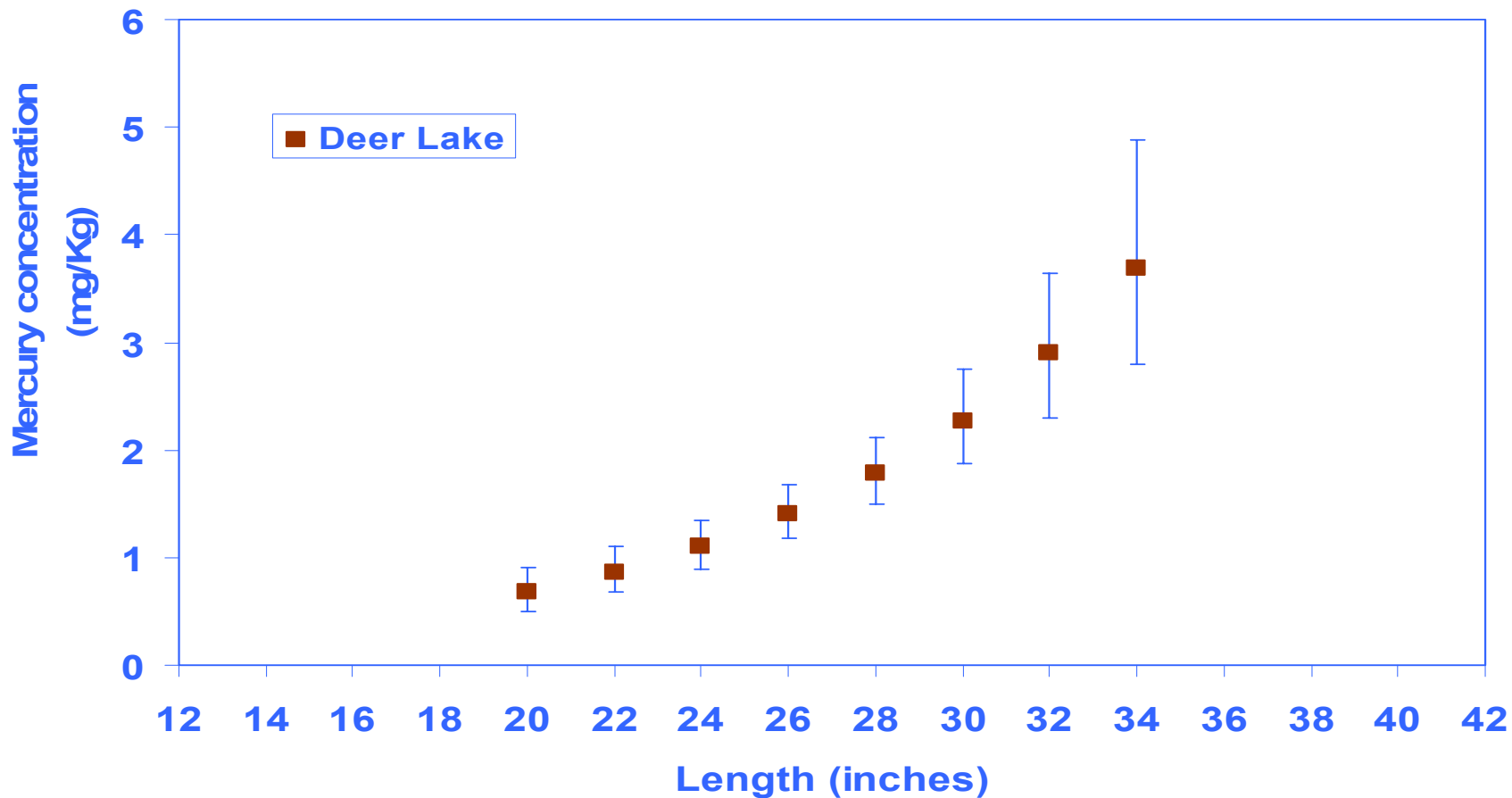
5.0 ppm

Fish Contaminant Criteria for Areas of Concern

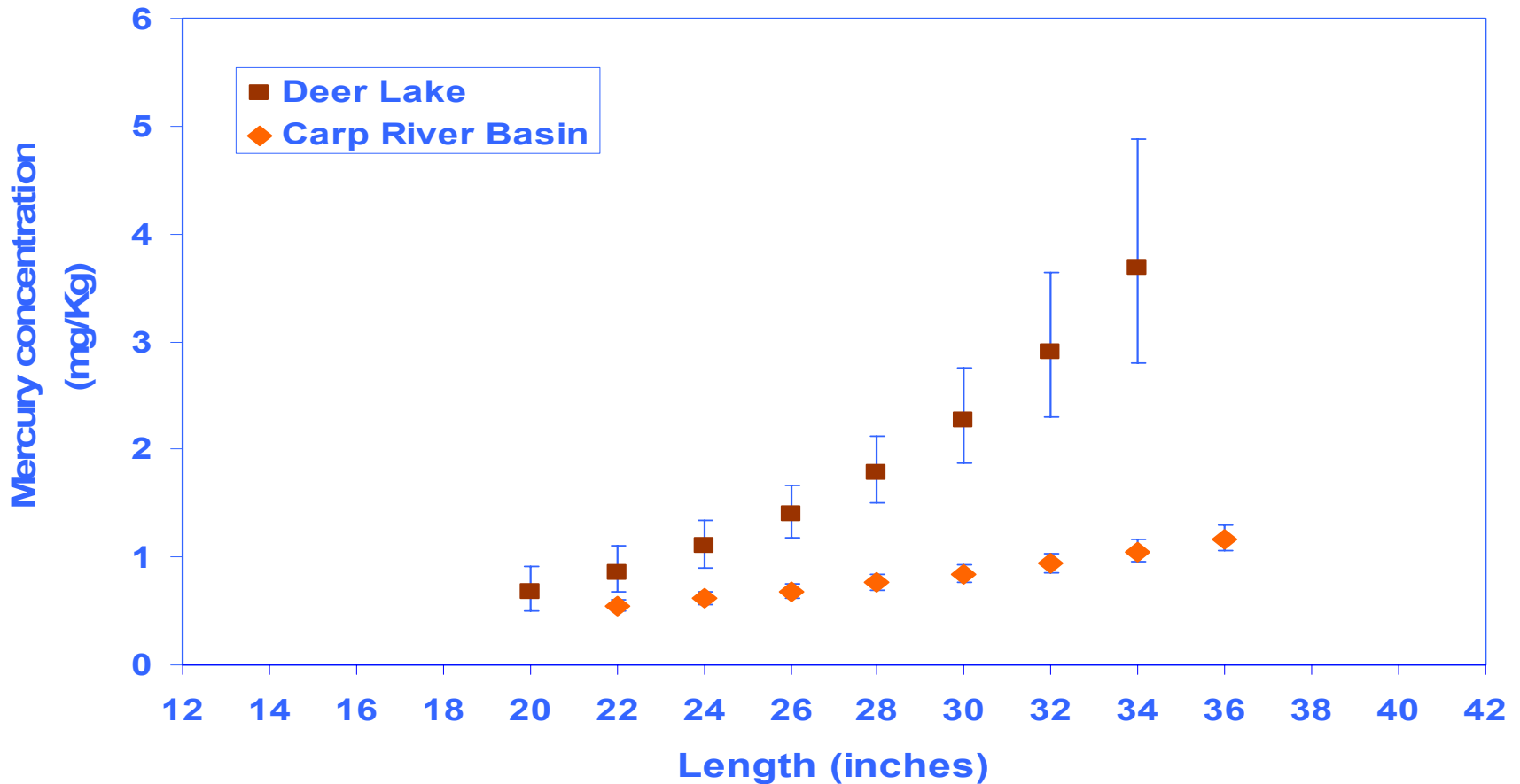
- Comparison to historical data
- Comparison to other “reference” water bodies
- Comparison to control sites within an Area of Concern (AOC)



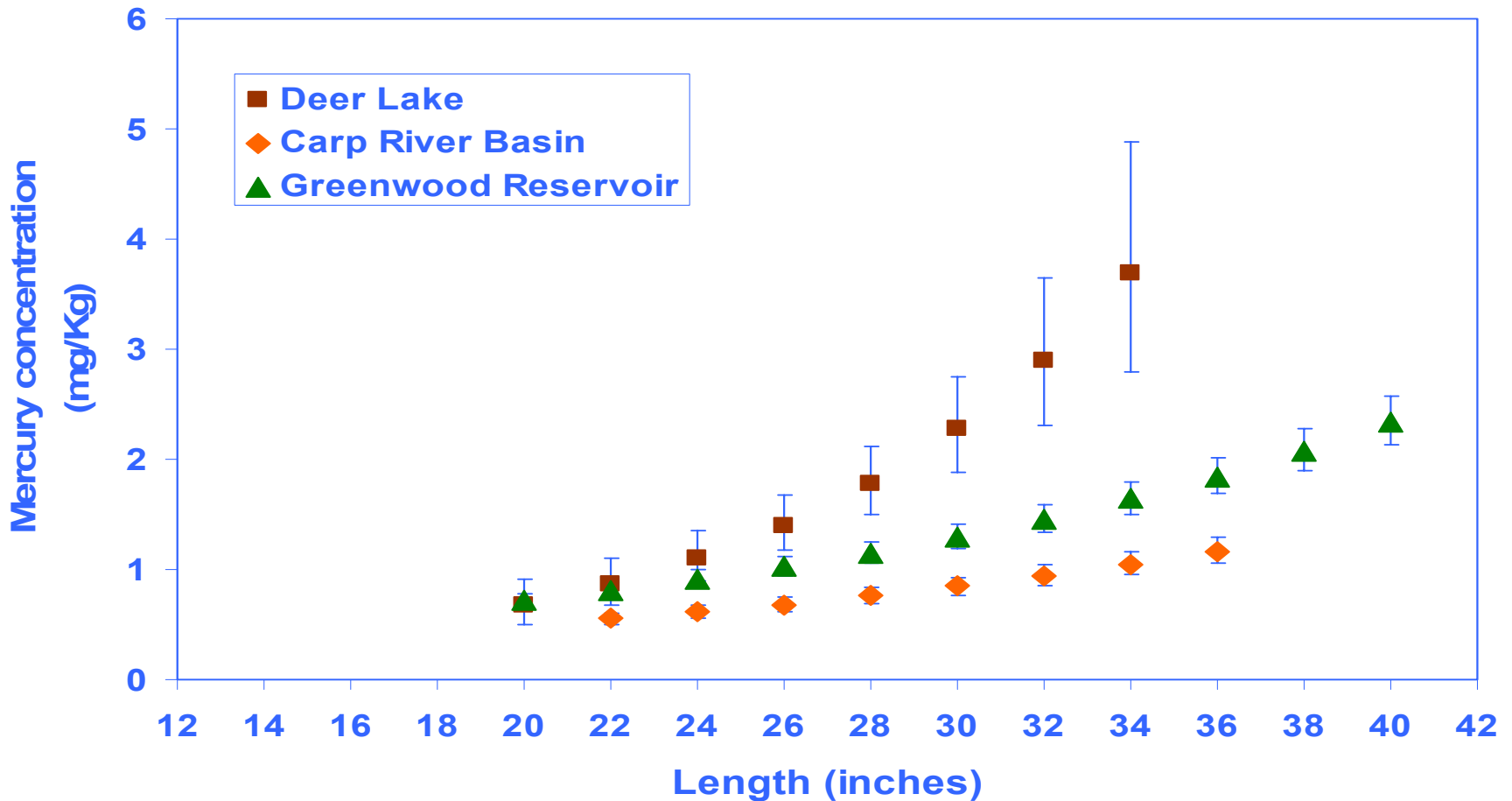
Total length versus total PCB concentration in largemouth bass collected from the Rouge River, Newburgh Lake in 1988, 1995, and 2001.



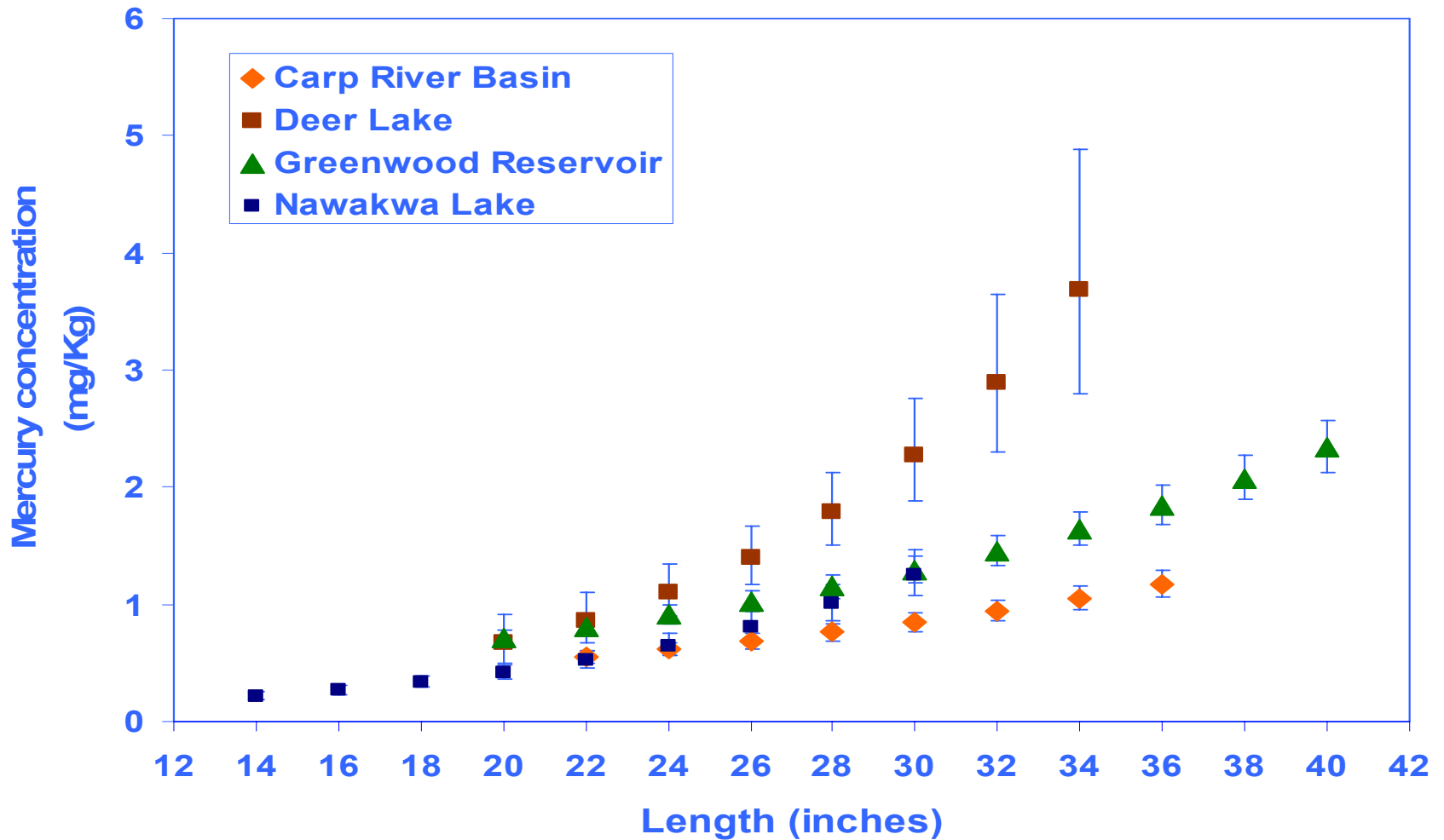
Estimated mercury concentrations and 95% confidence intervals in fillet samples from Deer Lake northern pike collected in 1999.



Estimated mercury concentrations and 95% confidence intervals in fillet samples from Carp River Basin and Deer Lake northern pike collected in 1999.



Estimated mercury concentrations and 95% confidence intervals in fillet samples from Carp River Basin, Deer Lake, and Greenwood Reservoir northern pike collected in 1999.

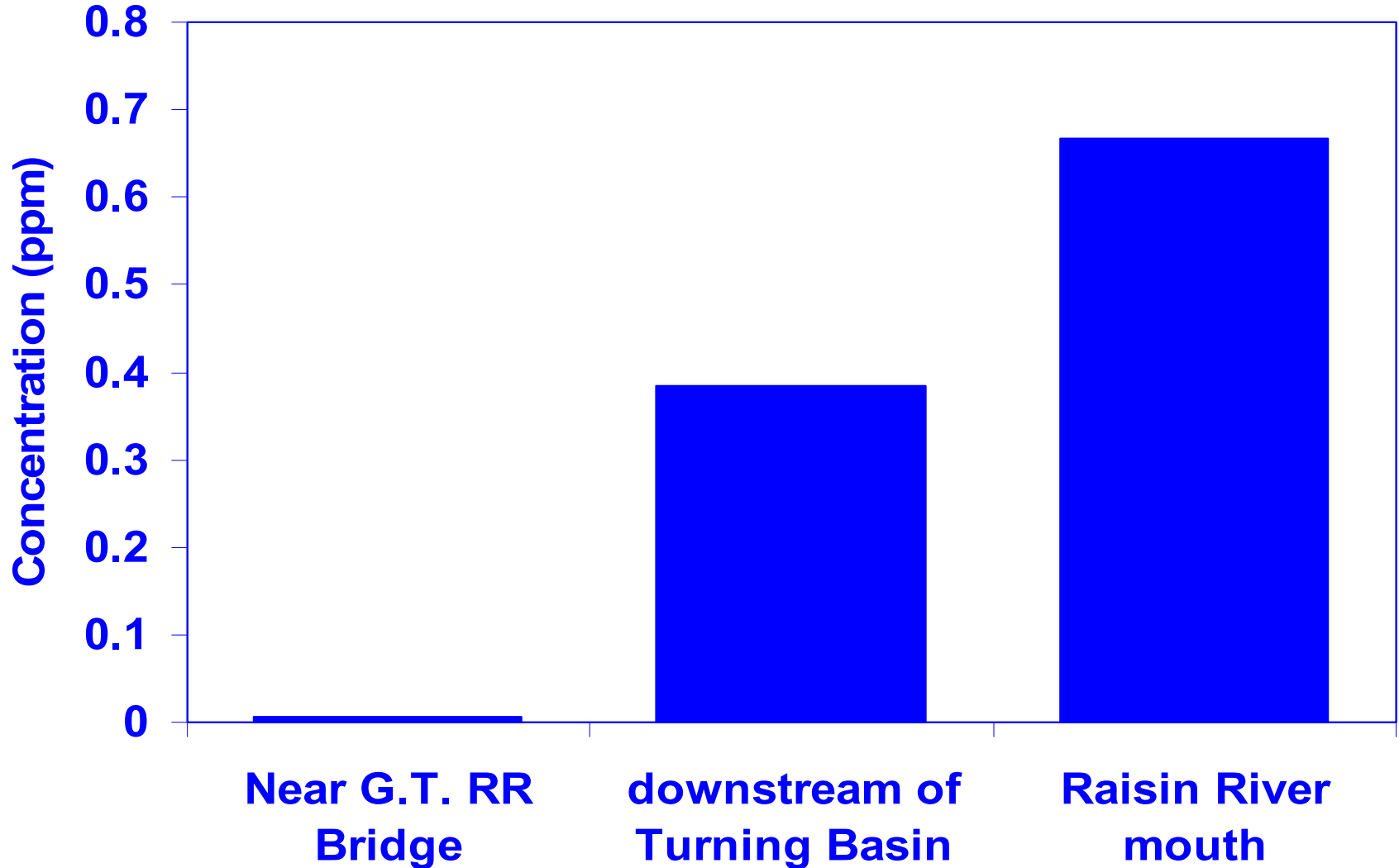


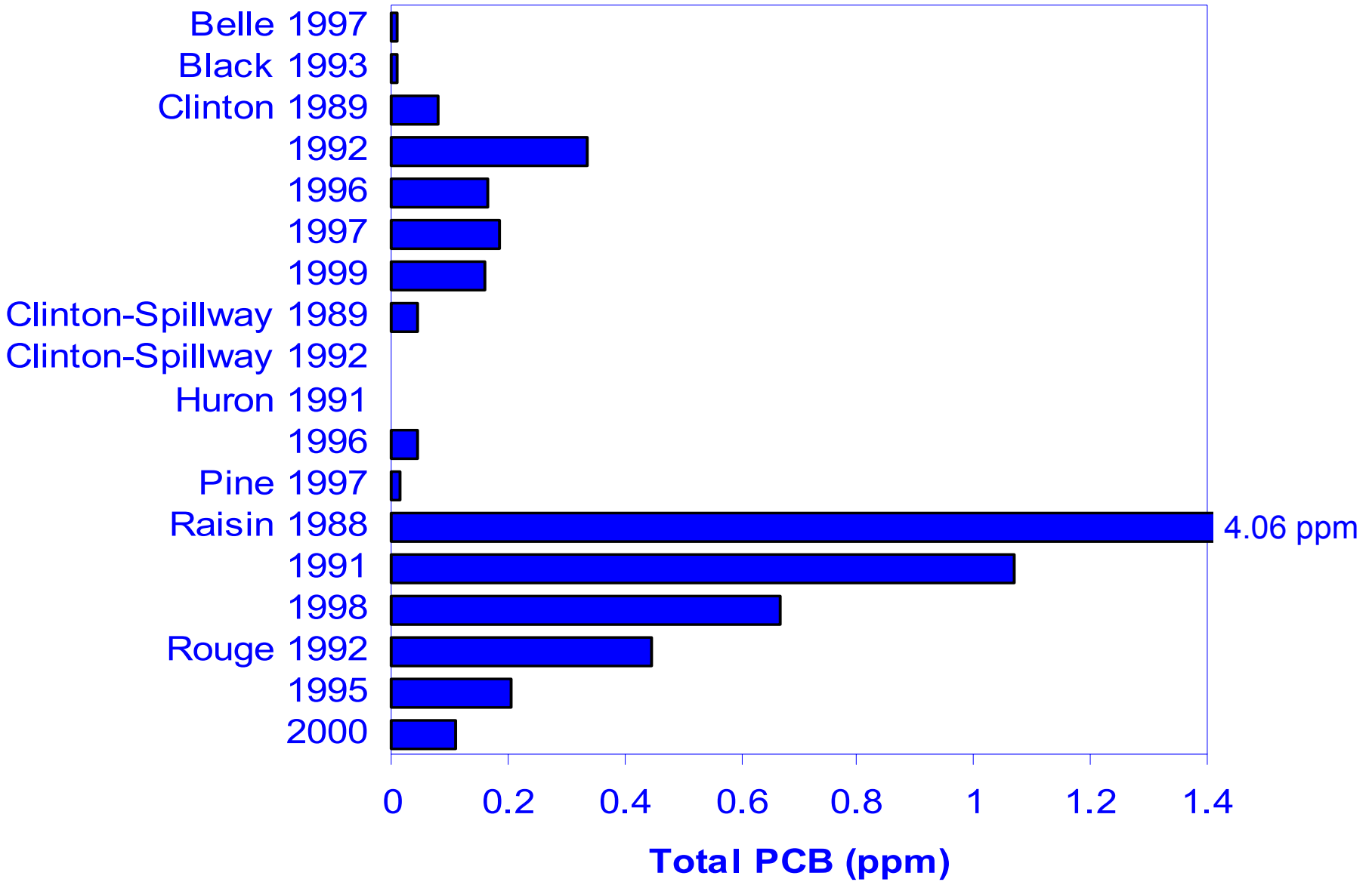
Estimated mercury concentrations and 95% confidence intervals in fillet samples from Carp River Basin, Deer Lake, Nawakwa Lake, and Greenwood Reservoir northern pike collected in 1999.

CAGED FISH MONITORING



Total PCB uptake in caged fish from Raisin River sites monitored in 1998.





Lake Erie Watershed Caged Fish Monitoring

Delisting Criteria

- Historical Data
 - + May be easy to detect change following action.
 - Difficult to develop numeric delisting criteria based on expected change.
- Reference Sites
 - + May be used to define reasonable targets.
 - May be difficult to find perfect reference site and develop numeric criteria.
- Control sites within an AOC
 - + Caged fish studies can be used to control variables that complicate comparisons.
 - Difficult to develop numeric targets for each AOC.