

Mercury in New Jersey

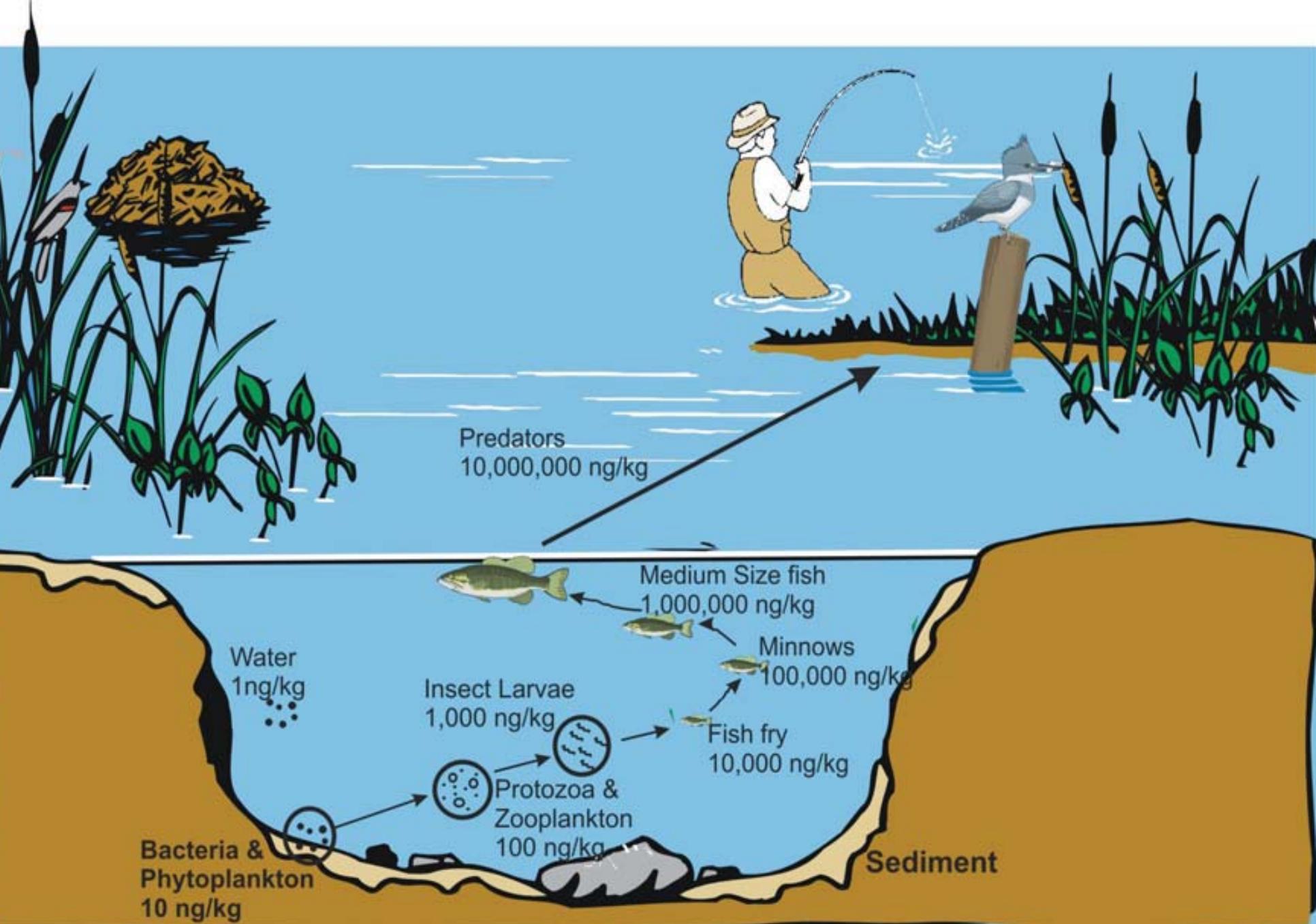
Presentation to Pompton Lake PRIDE

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Mercury - PBT

- Persistent
- Bioaccumulative
- Toxic
- Inorganic Hg \Rightarrow Methylmercury (CH_3Hg^+)
- Food Chain Biomagnification



Biomagnification of Mercury

Bioaccumulation

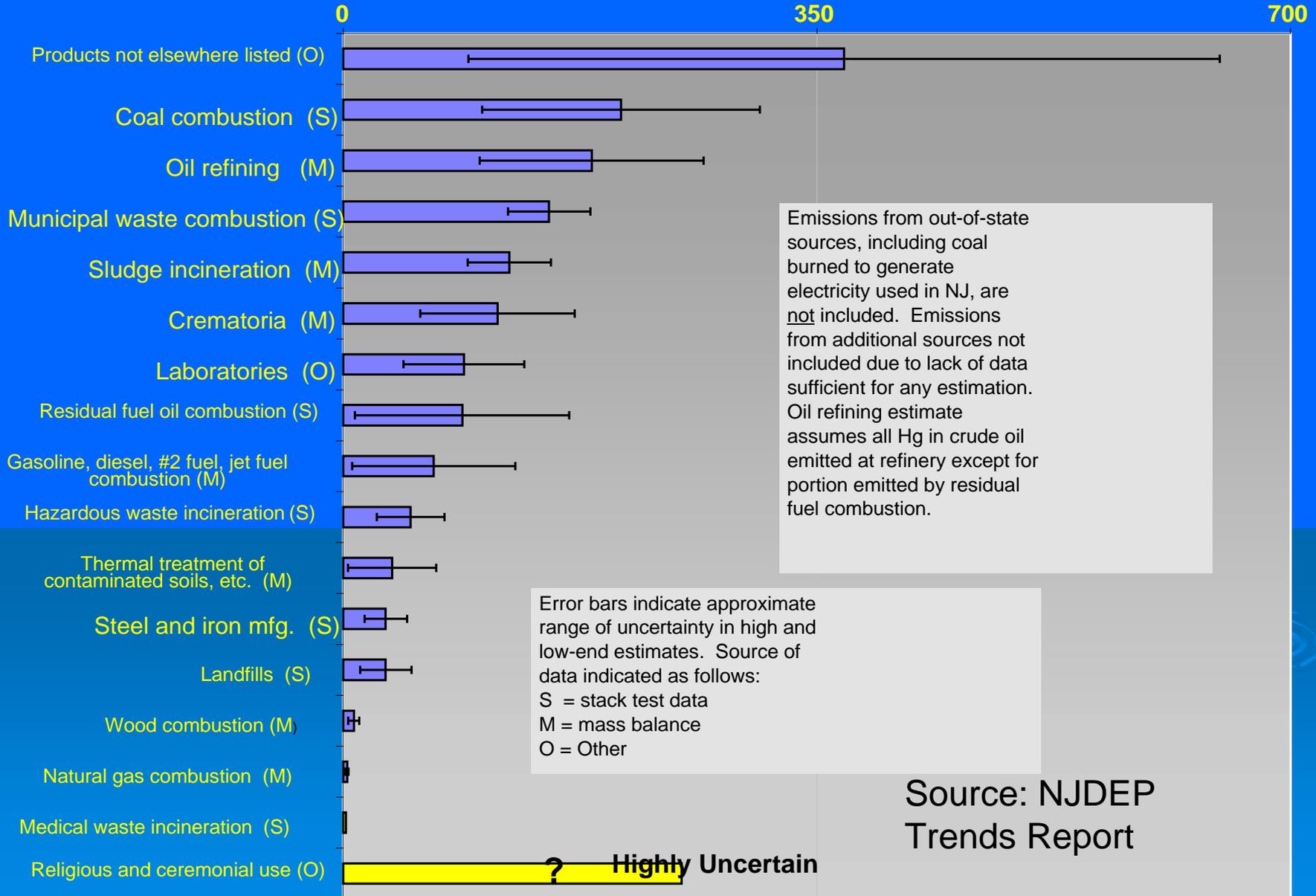
- Accumulation from food, water
- Bioaccumulation Factors (BAFs):
 - Total Hg (EPA, 1995)
 - TL 3 - 27,900 L/Kg
 - TL 4 - 140,000 L/Kg
 - Methyl Hg (EPA, 1997)
 - TL 3 - 1.6×10^6 L/Kg
 - TL 4 - 6.8×10^6 L/Kg

Mercury

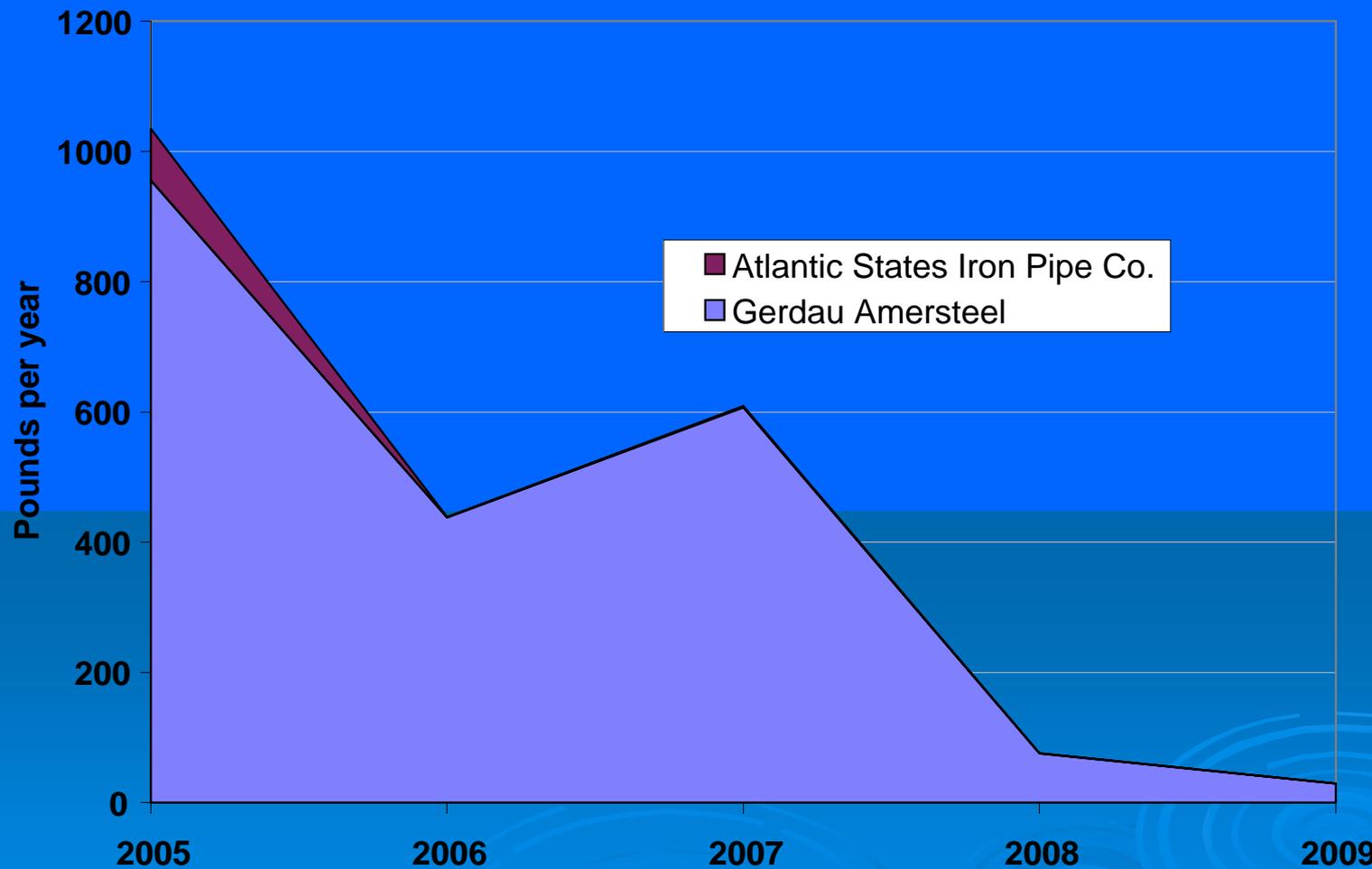
- Concerns with Impacts on Fish and Wildlife
- Concerns with Human Health
- Fish Advisories
- Are Control Efforts Reducing Hg?

Estimated Mercury Emissions to Air NJ Sources, lbs/yr

Based on most recent source-specific data & estimates as of 2009



Annual Mercury Emissions from Active New Jersey Iron & Steel Plants



Source: DRAFT NJDEP Trends Report

Wildlife

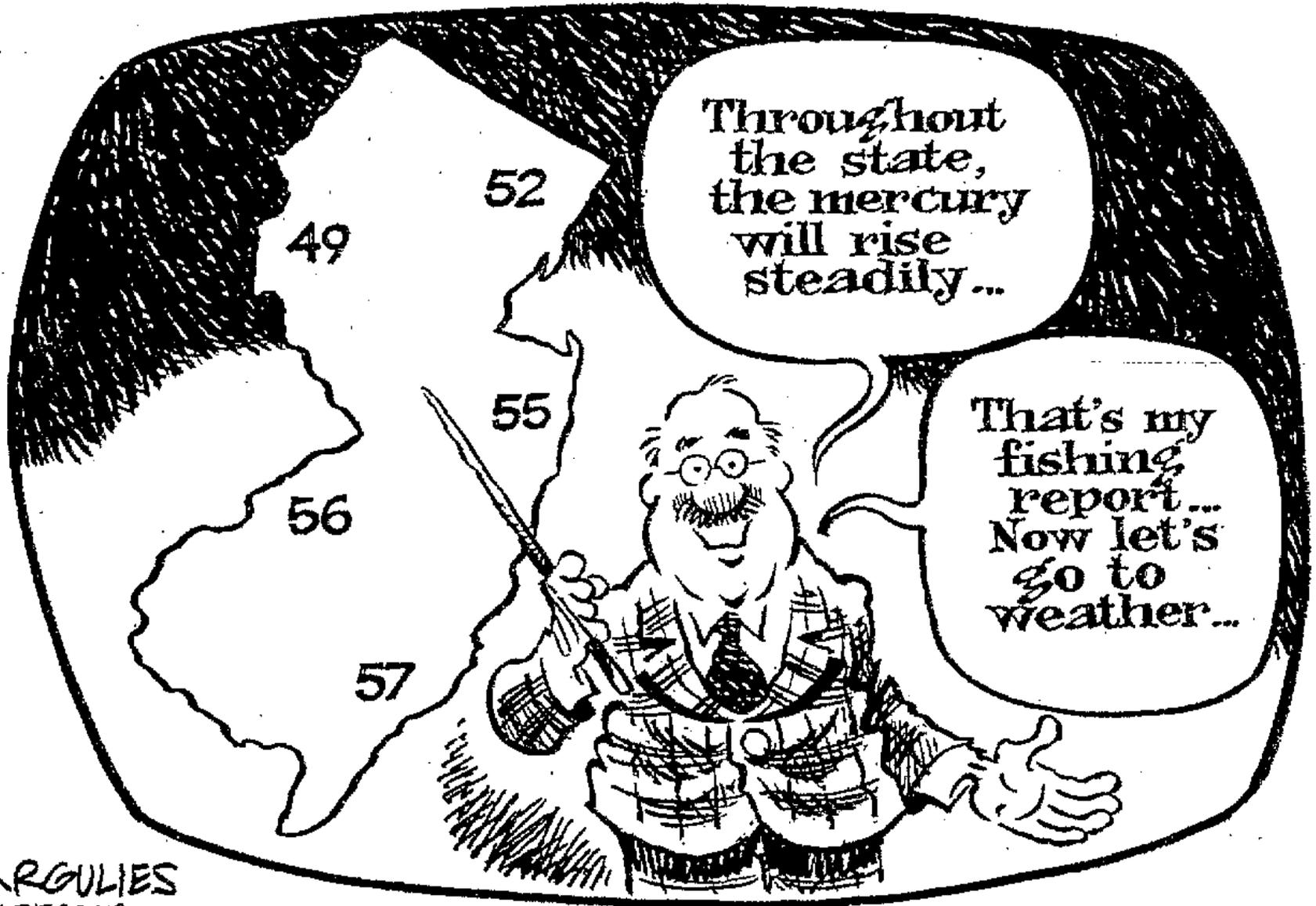
- Top of the Food Chain - greatest exposure = Piscivorous avian and mammalian species
- Neurotoxicity
- Teratogen, mutagen
- Embryocidal, Cytochemical & Histopathological effects (Eisler, 1987)

Human Effects

- Exposure primarily through fish consumption
- Unborn and Young Children
 - Central Nervous System
 - Learning & Developmental Delays
- Older Children and Adults
 - Subtle neurological effects
 - Neurological damage

Background

- **Nationwide (EPA, 2010):**
 - 50 States have Hg Advisories (3,711)
 - 39 have PCB Advisories (1,086)
 - 26 States have Statewide Hg Advisories for freshwaters
 - 16 with Coastal Hg Advisories



MARGULIES
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NJ Fish Consumption Advisories

- **First NJ Hg Advisories - 1994**
 - **Largemouth Bass and Chain Pickerel**
 - **Statewide and Pinelands Advisories**
 - **28 Water Body-Specific Advisories**

Statewide Mercury Advisory for Freshwater Recreational Fish (2011)

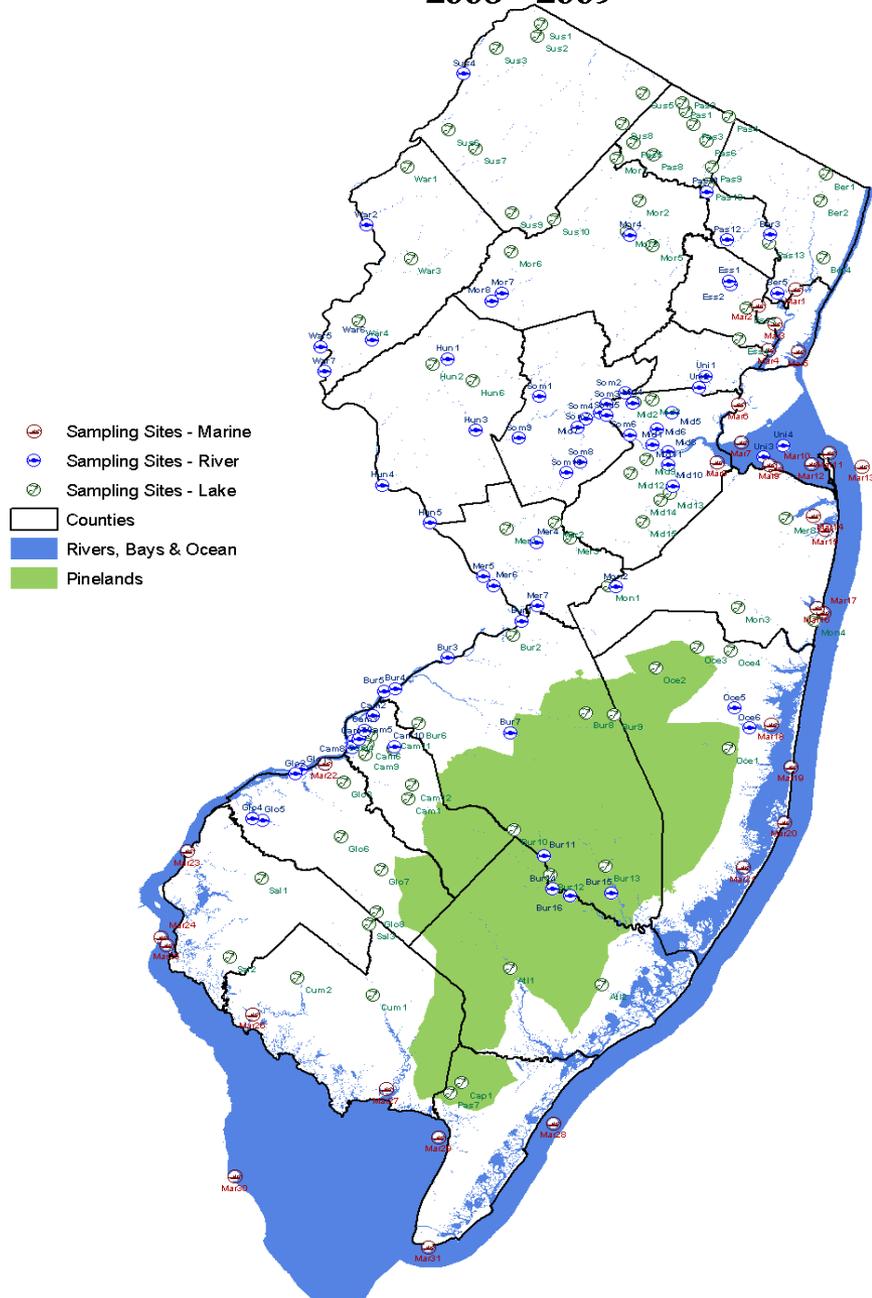
➤ **General Population**

- **Eat No More Than One Meal Per Week**

➤ **High-risk Individual**

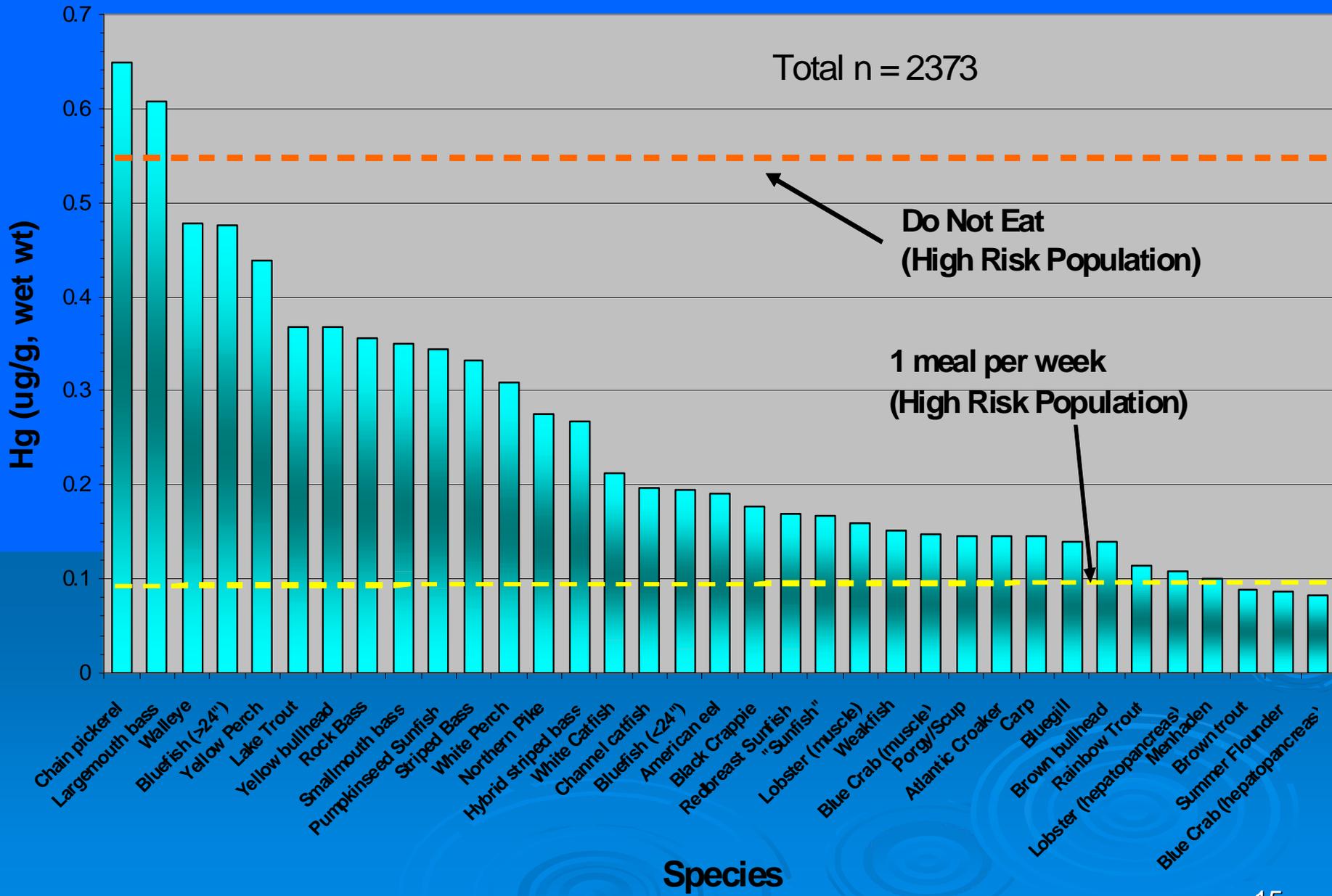
- **Eat No More Than One Meal Per Month**

New Jersey Fish Tissue Sampling Sites 2008 - 2009



Mar20

Average Mercury in NJ Fish



Average Hg Concentrations in Freshwater Fish in NJ

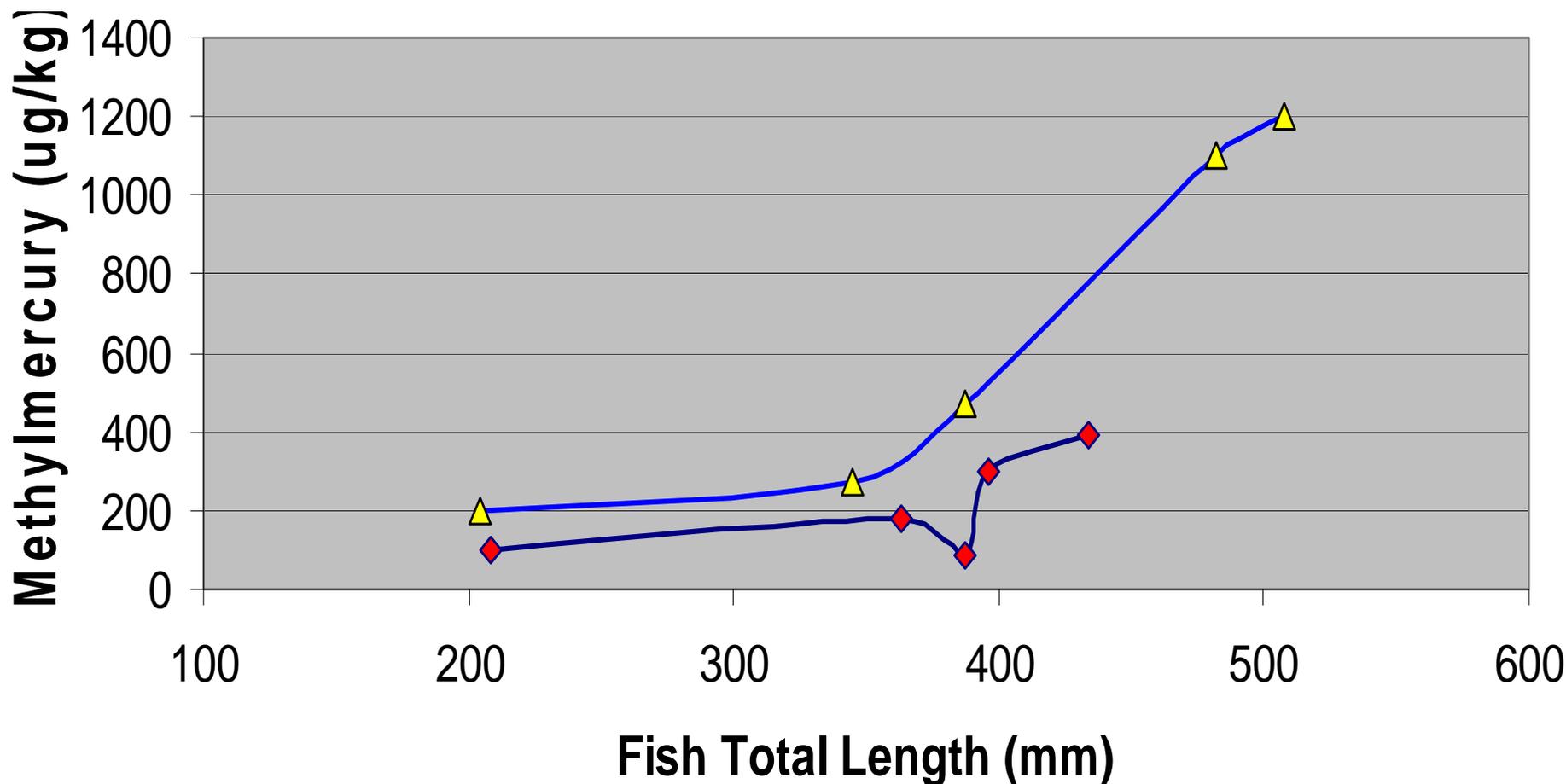
- **Statewide:**
 - 0.36 $\mu\text{g/g}$ (26 Species; range ND - 8.9)
 - 0.35 $\mu\text{g/g}$ (14 freshwater species; n>20)
- **Pinelands: 0.80 $\mu\text{g/g}$ (5 species)**
 - Range 0.05-8.9 $\mu\text{g/g}$
- **Non-Pinelands: 0.23 $\mu\text{g/g}$ (5 species)**
 - Range 0.01-3.9 $\mu\text{g/g}$
- **Nationwide: All Fish: 0.26 $\mu\text{g/g}$**

Table 1. Mercury Concentrations in Largemouth Bass in Pompton Lake, Waters Downstream of Pompton Lake and the Passaic Region. (Data Collected in 2002 as part of the NJDEP Routine Monitoring Program for Toxics in Fish.)

Location	Average Total Length (cm)	Average Mercury (ug/g wet wt)
Pompton Lake (n=5)	41.5	0.86
Ramapo River at Pompton Feeder (n=3)	31.2	0.88
Pompton River at Lincoln Park (n=3)	36.3	0.53
Passaic Region Watershed (n=86)	40.2	0.46

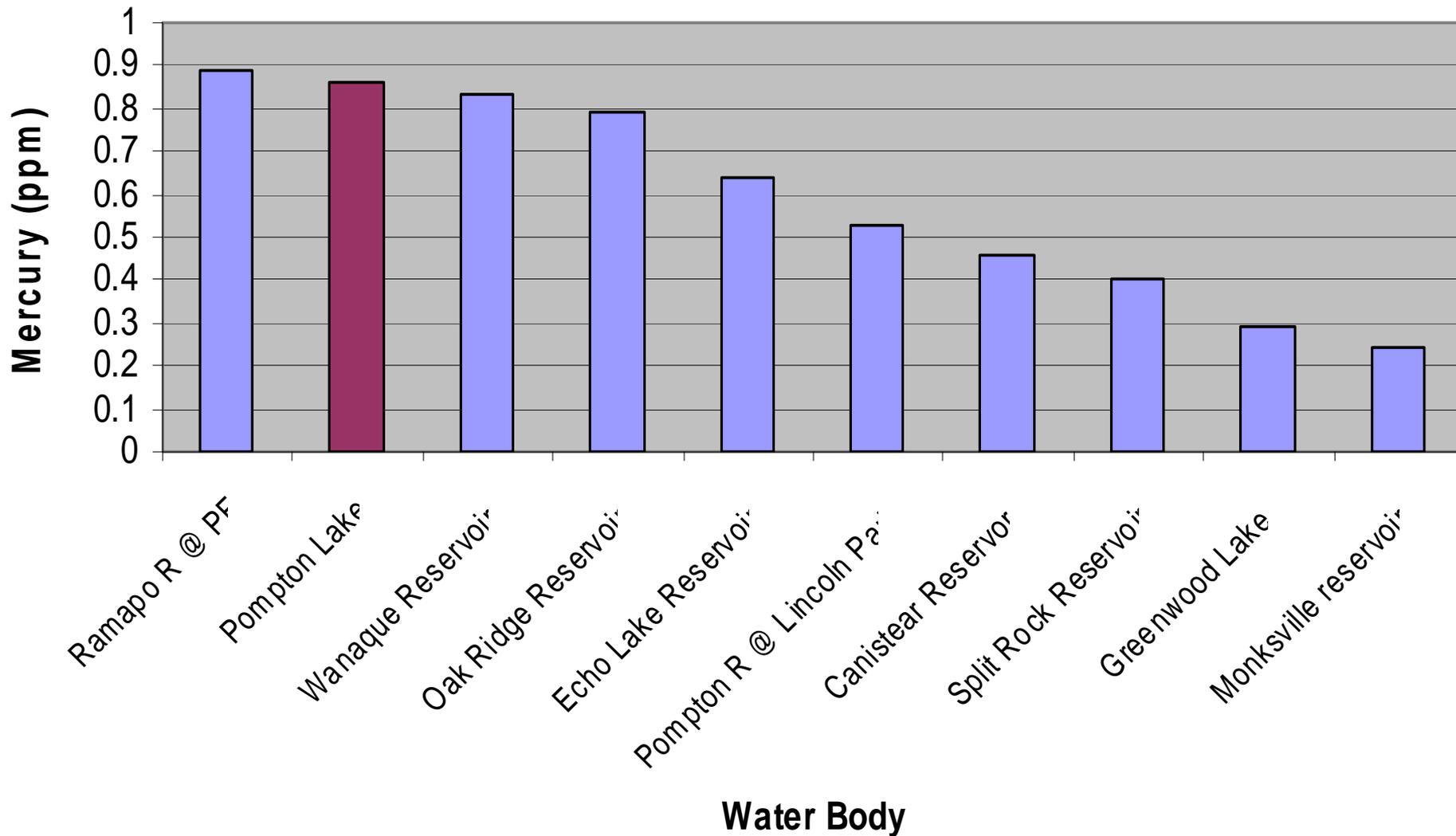
Mercury in Pompton Lake Largemouth Bass

(Exponent, 1999)

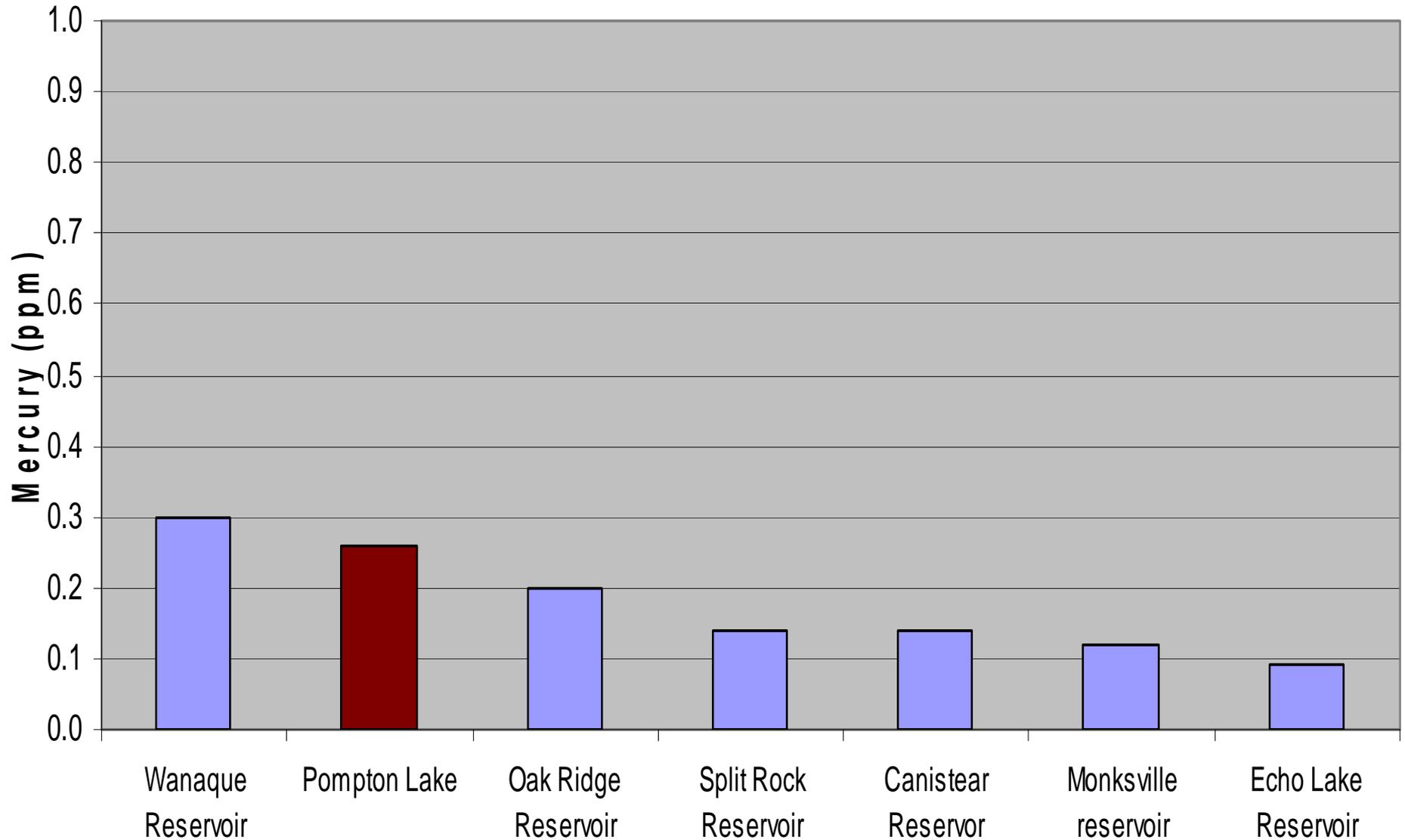


◆ Reference mHg (ug/kg) ▲ Delta mHg (ug/kg)

Passaic Region - Largemouth Bass Mercury Data (ppm) (NJDEP, 2002)



Passaic Region - Mercury in Bluegill (ppm)



Current Pompton Lake Fish Consumption Advisories

Species	General Population Eat no more than:	High-Risk Individual Eat no more than:
Largemouth Bass	One meal per week	Do not eat
Common Carp	One meal per month	Do not eat

Additional Information

➤ Office of Science:

<http://www.state.nj.us/dep/dsr/mercury/>

➤ New Jersey Fish Consumption Advisories:

- www.FishSmartEatSmartNJ.org

➤ NJ Mercury Task Force Report:

- www.state.nj.us/dep/dsr/mercury_task_force.htm

