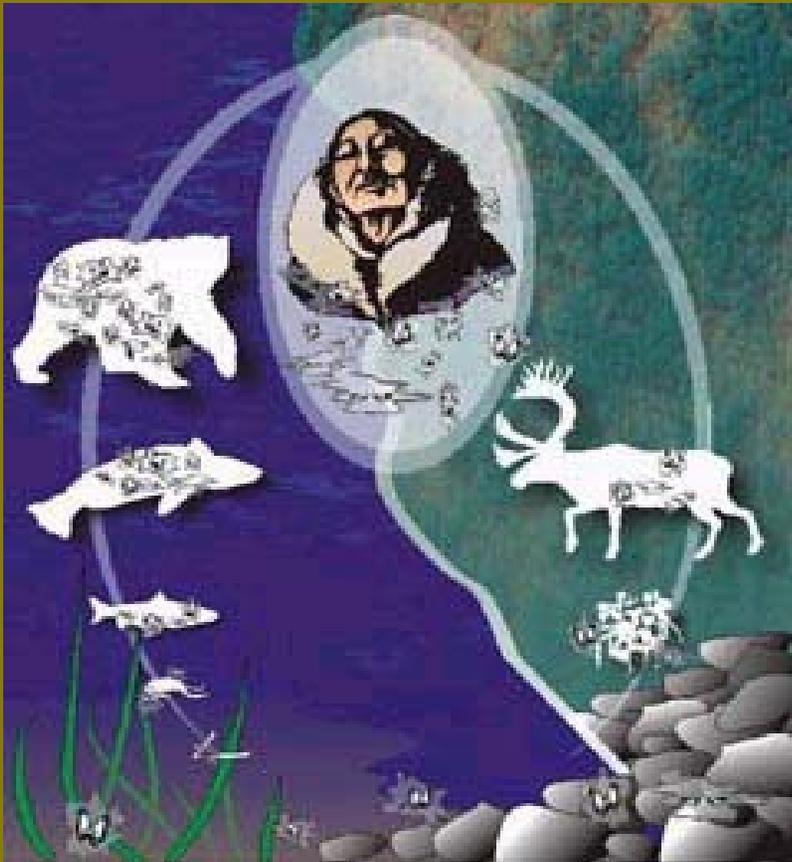




Food Safety Initiative

By: John Persell, D.A. Birkholz, Shirley Nordrum and Stephanie Ogren

Food Sources



- Fish
- Waterfowl
- Deer, moose, bear
- Traditional foods, herbs, medicines
- Commercial foods
- What is the risk associated with such consumption?
- May Tribal Governments best balance food consumption benefit and risk by considering both western science and traditional knowledge?

Contaminant Research in Foods

- US FDA conducts some monitoring of commercial foods
- USEPA, States, Tribes assess wild fish and game
- 2003, National Academies Institute of Medicine published “Dioxin and Dioxin-like Compounds in the Food Supply”

MCT's Current Initiative

- Hg research began in 1992; Assessment of food contaminants other than Hg began with literature review in 1996
- Paucity of data usable for a comprehensive Tribal food guide
- Canadian research identified burbot (*Lota lota*) liver as a screening tool
- 1998 funding identified, USEPA approved QAP prepared for screening study using methods 1613b (D/F), 1668a (PCBs) and 8081b for OC pesticides
- Burbot collected and analyzed in 1999

Screening Study Results

- Both burbot muscle and liver analyzed as discrete samples from five Mille Lacs Lake burbot
- Average muscle D/F = 0.10 pg/g TEQ (ND = 0)
- Average liver D/F = 2.8 pg/g TEQ (ND = 0)

Burbot Screening Study Results

- Average muscle PCBs = 0.18 pg/g TEQ
- Average liver PCBs = 14.3 pg/g TEQ
- Average muscle DDT = 9 ppb
- Average liver DDT = 379 ppb

MCT's Discrete Analyses

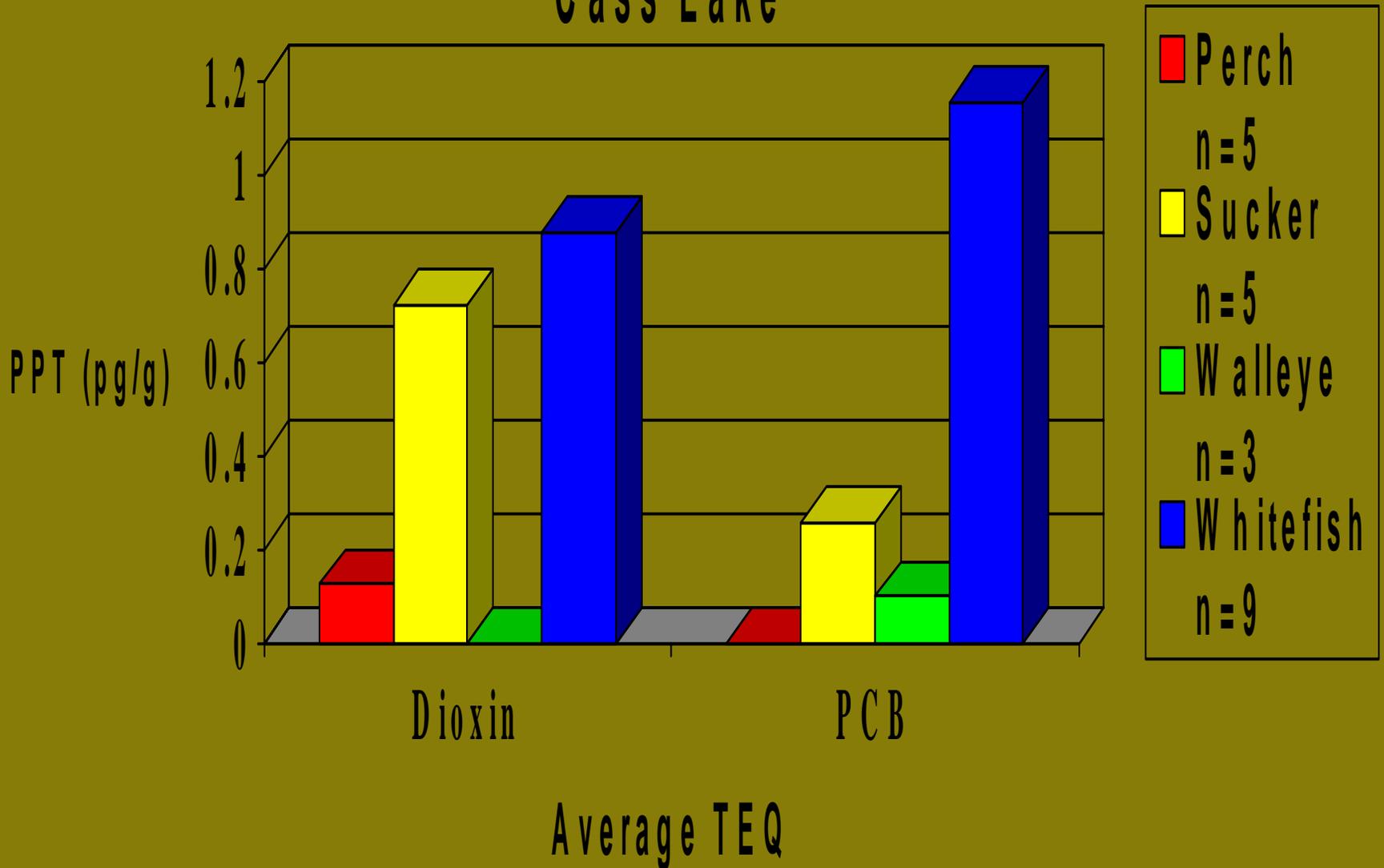
- 905 FISH MUSCLE: MERCURY
- 276 FISH TISSUE ORGANIC ANALYSES: MUSCLE, LIVER, EGGS (30 lakes)
- 10 DEER TISSUE ORGANIC ANALYSES: MUSCLE AND LIVER
- 10 DUCK MUSCLE, LIVER: ORGANICS
- 14 SNAPPING TURTLE: MERCURY
- 2 MOOSE MUSCLE, LIVER: ORGANICS
- 1 BEAR MUSCLE, FAT: ORGANICS
- 1 WILD TURKEY MUSCLE: ORGANICS

WHAT WE FOUND

- MERCURY (0.01 to 1.6 ppm) and DDT (<0.5 to 379 ppb)
- PCBs (<0.1 to 40 ppt TEQ [1.1ppm])
- DIOXIN/FURANS (0 to 6.0 ppt TEQ, WHO 1998)
- BEAR, DEER, DUCKS, MOOSE, TURKEY, PERCH AND PANFISH NO CONTAMINANTS FOUND AT LOC

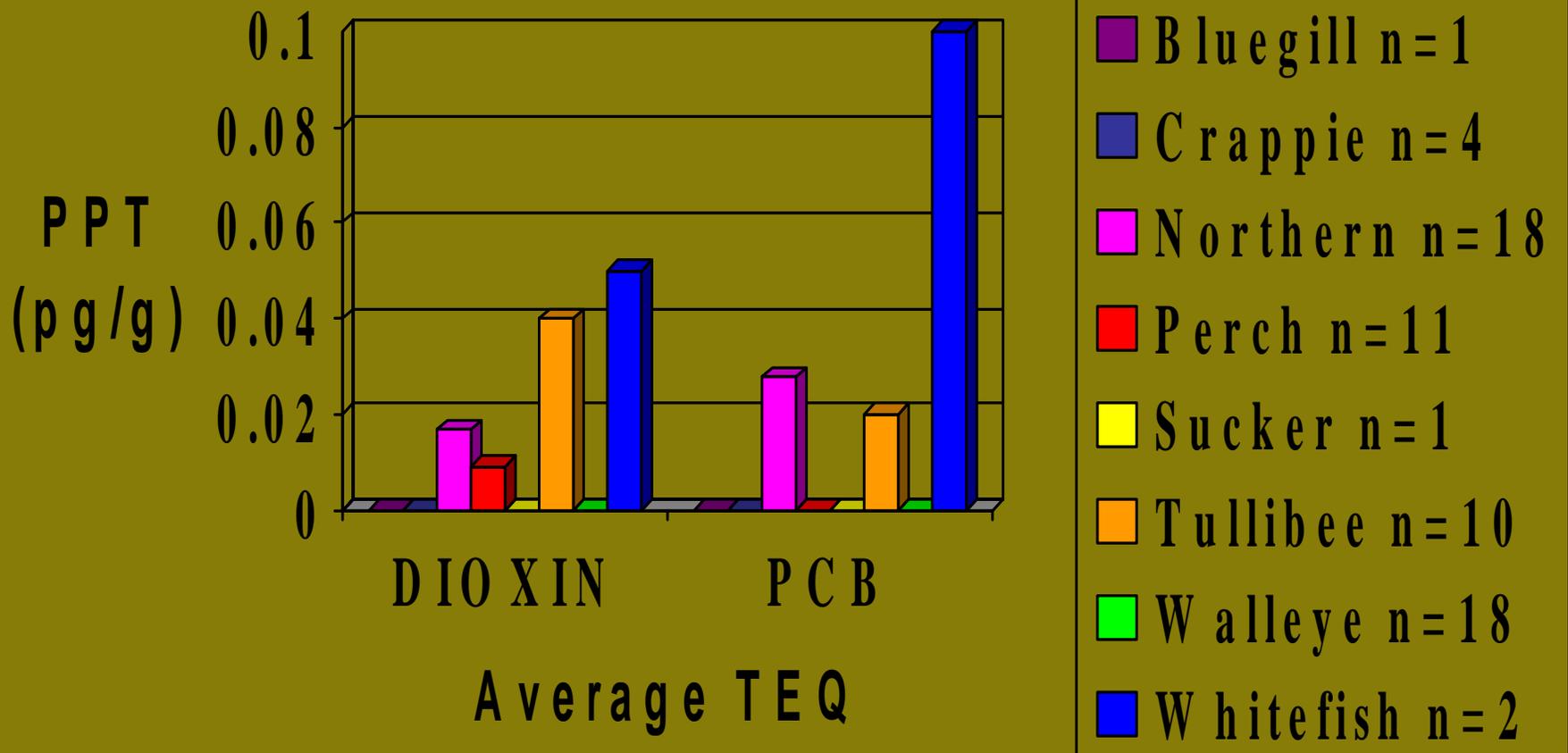
Minnesota Chippewa Tribe Food safety Initiative

Cass Lake

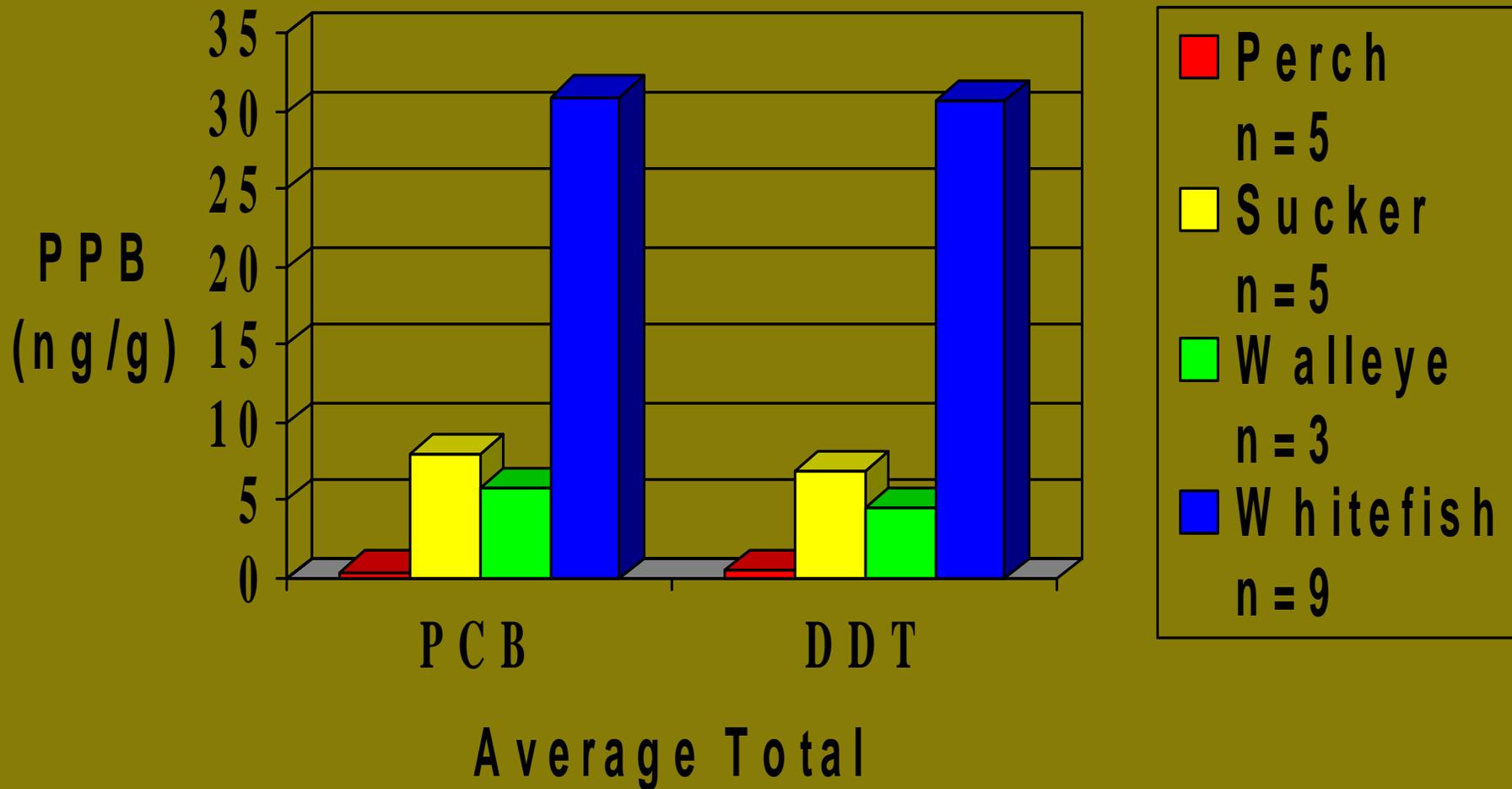


Minnesota Chippewa Tribe Food safety Initiative

Leech Lake Band Area reference Lakes

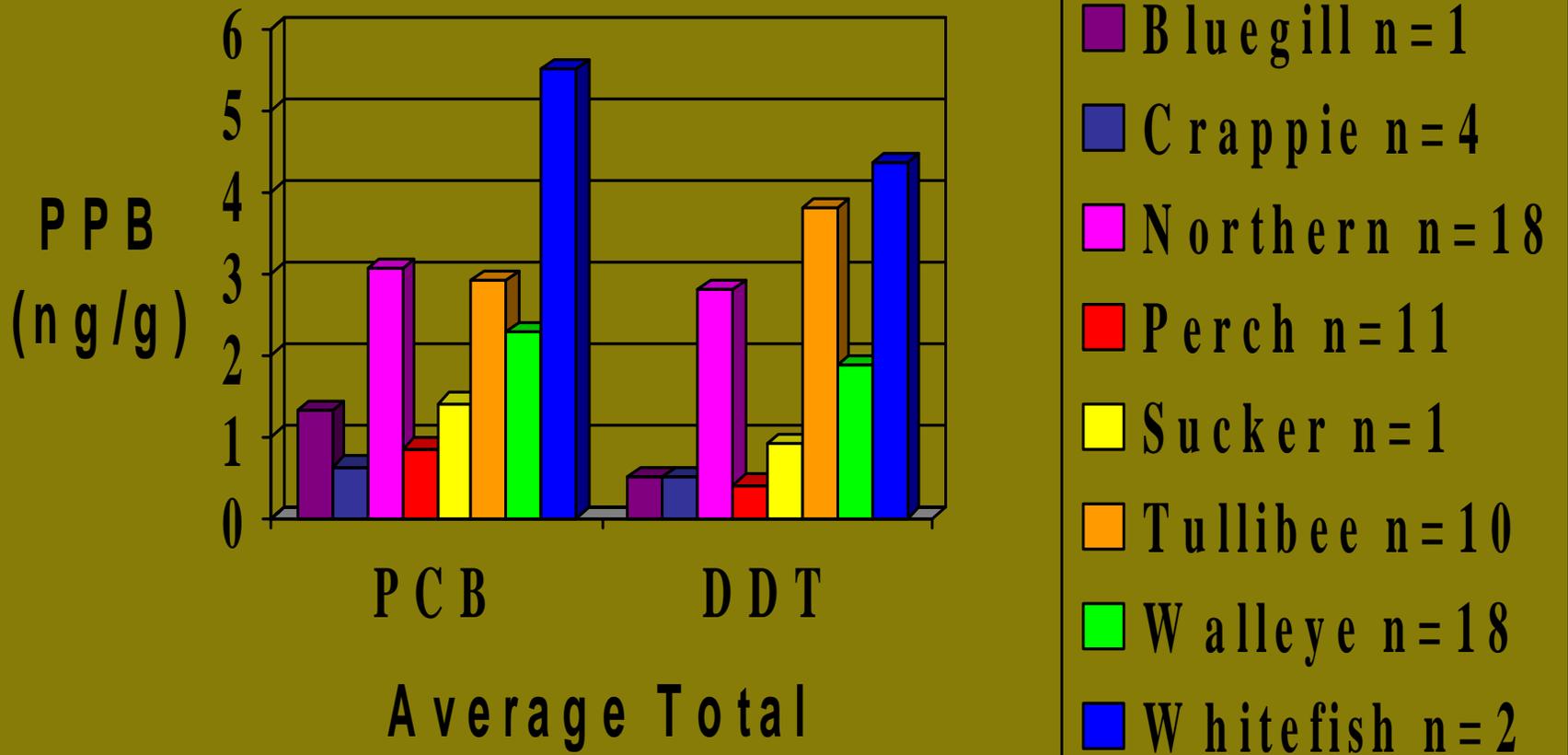


Minnesota Chippewa Tribe Food Safety Initiative Cass Lake



Minnesota Chippewa Tribe Food Safety Initiative

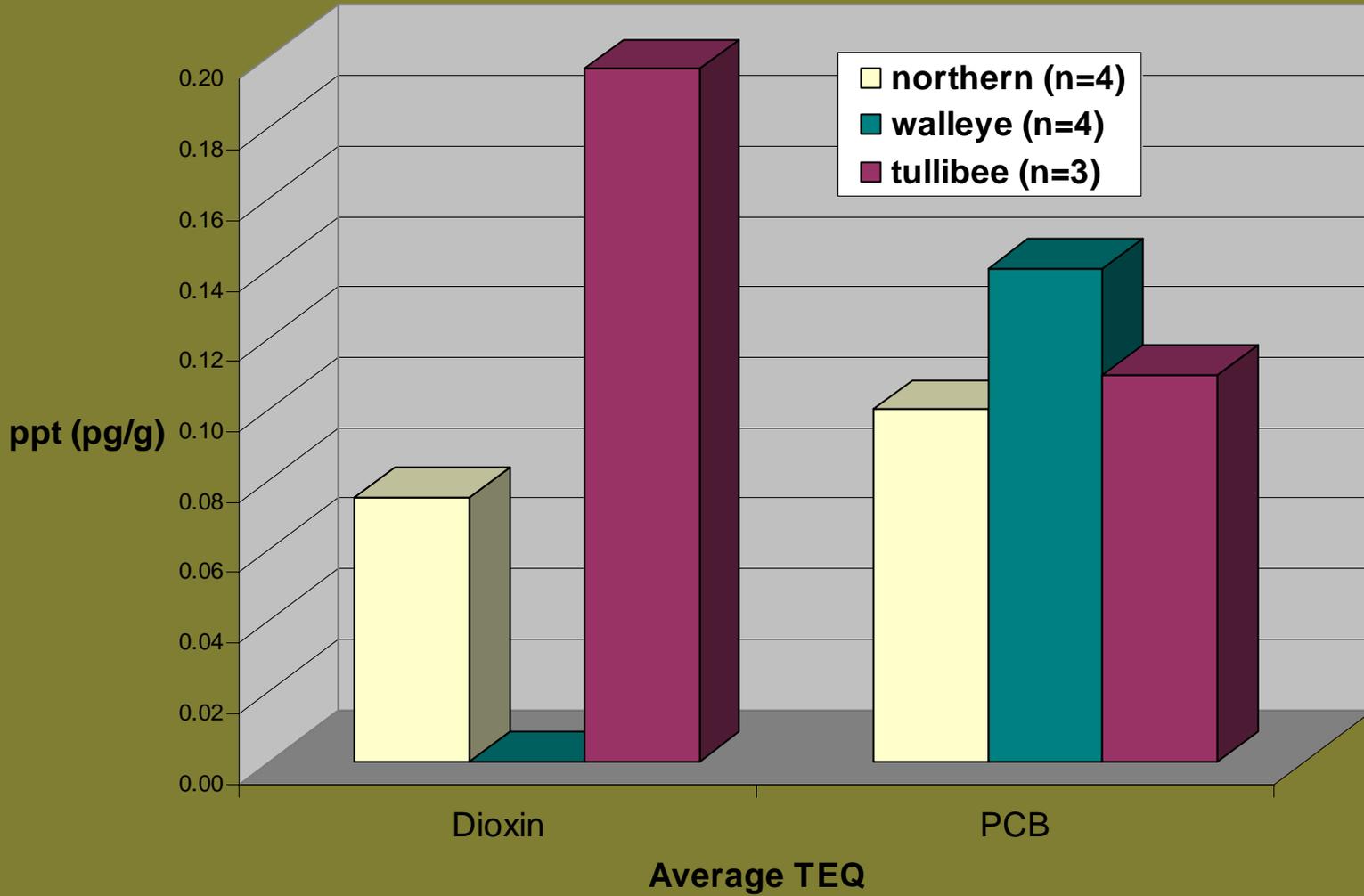
Leech Lake Band Area Reference Lakes



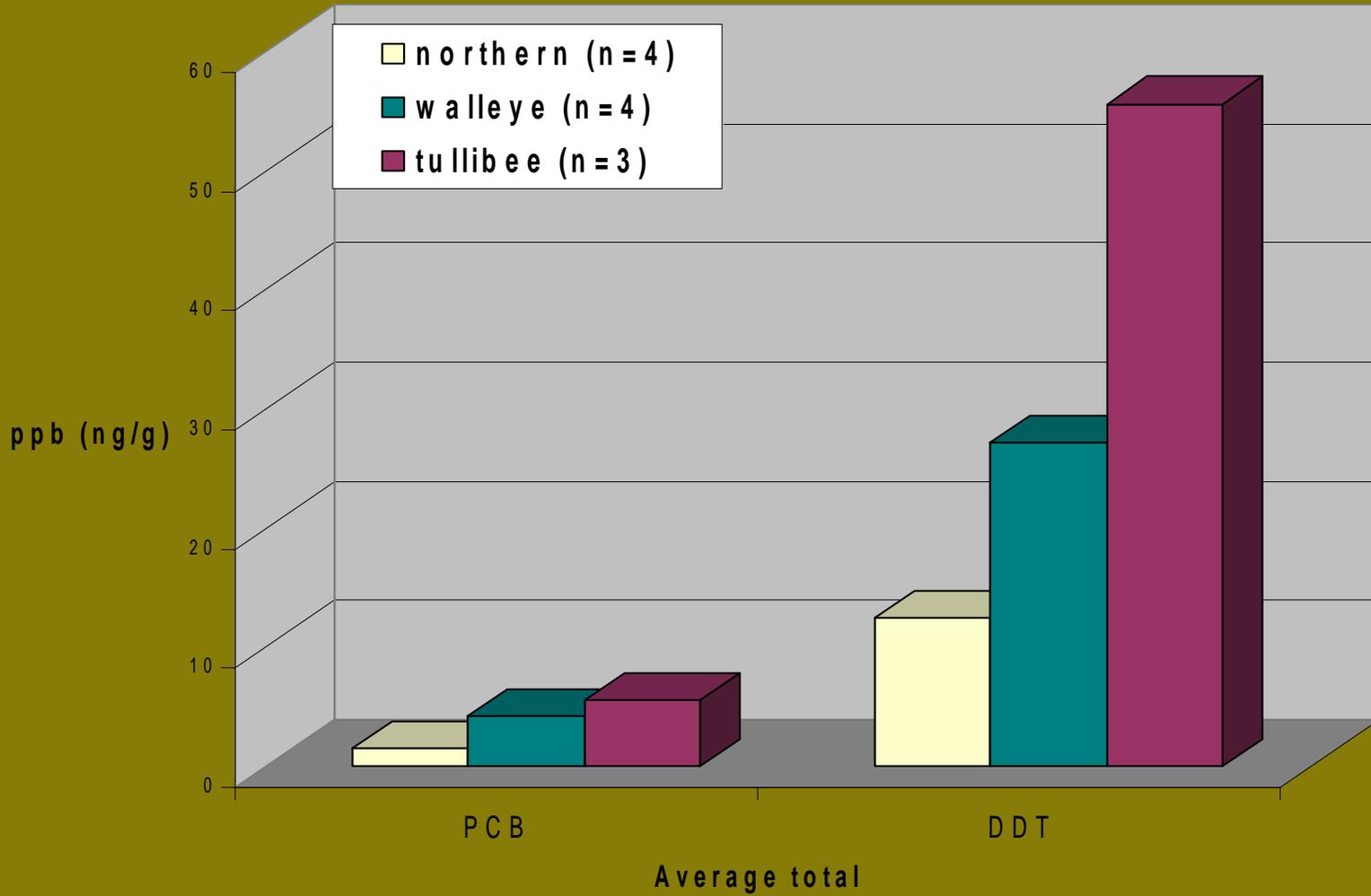
LEECH LAKE RESERVATION

- Boy Lake Tulibee
(n=3)
- DDT = 12 ppb
- D/F = 0 ppt TEQ
- PCBs = 0.12 ppt TEQ
- Six Mile Lake Tulibee
(n=3)
- DDT = 4 ppb
- D/F = 0.02 ppt TEQ
- PCBs = 0.02 ppt TEQ

Long Lake, Leech Lake Reservation



Long Lake, Leech Lake Reservation



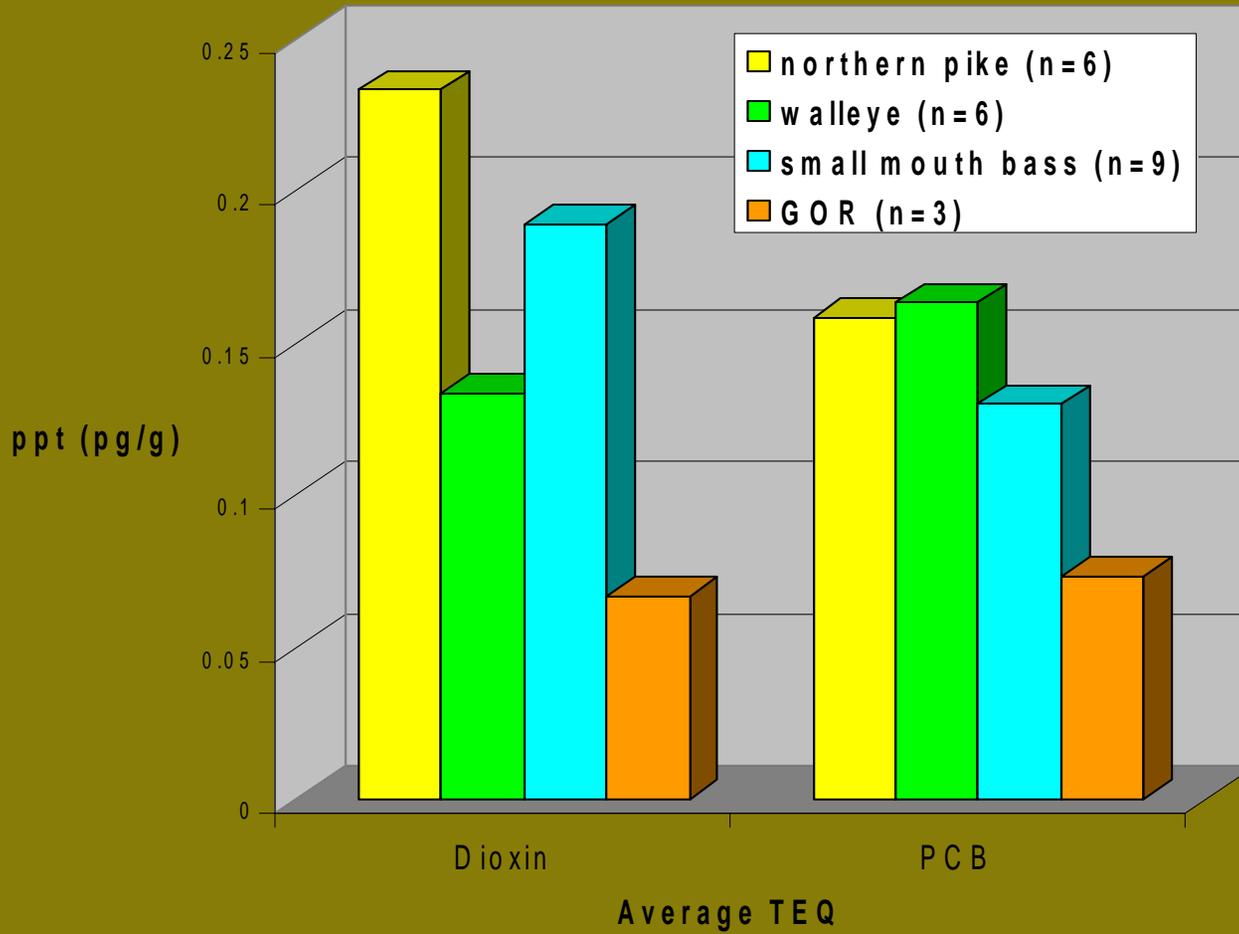
White Earth Reservation

Lakes: White Earth, Many Point,
Big Elbow, Bass, McKenzie,
Snider, South Twin, Strawberry

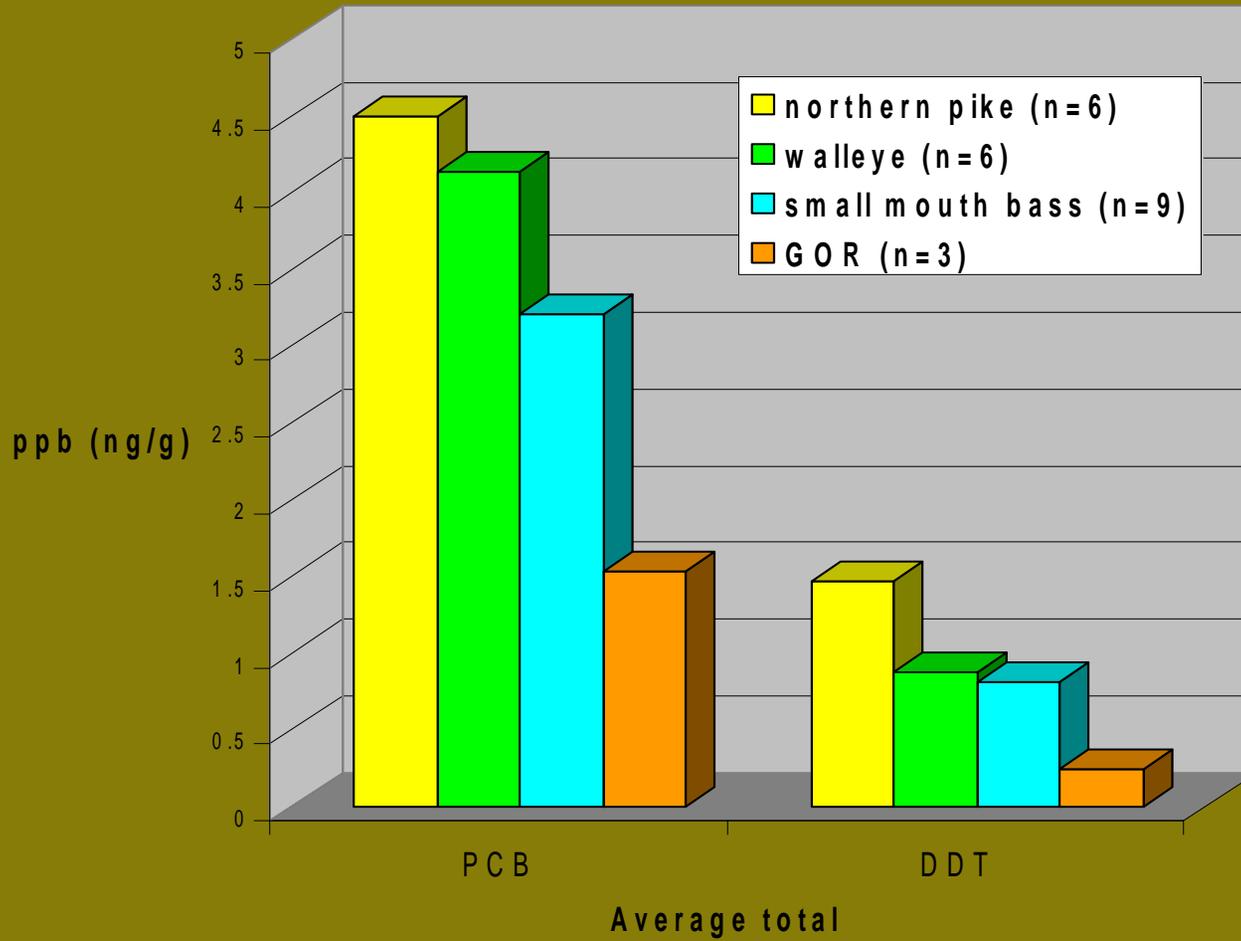
Fish Muscle (n=53)

DDT	PCBs	D/F
Range = <0.5 to 38 ppb	Range = 0 to 0.1 ppt TEQ	Range = 0 to 0.1 ppt TEQ

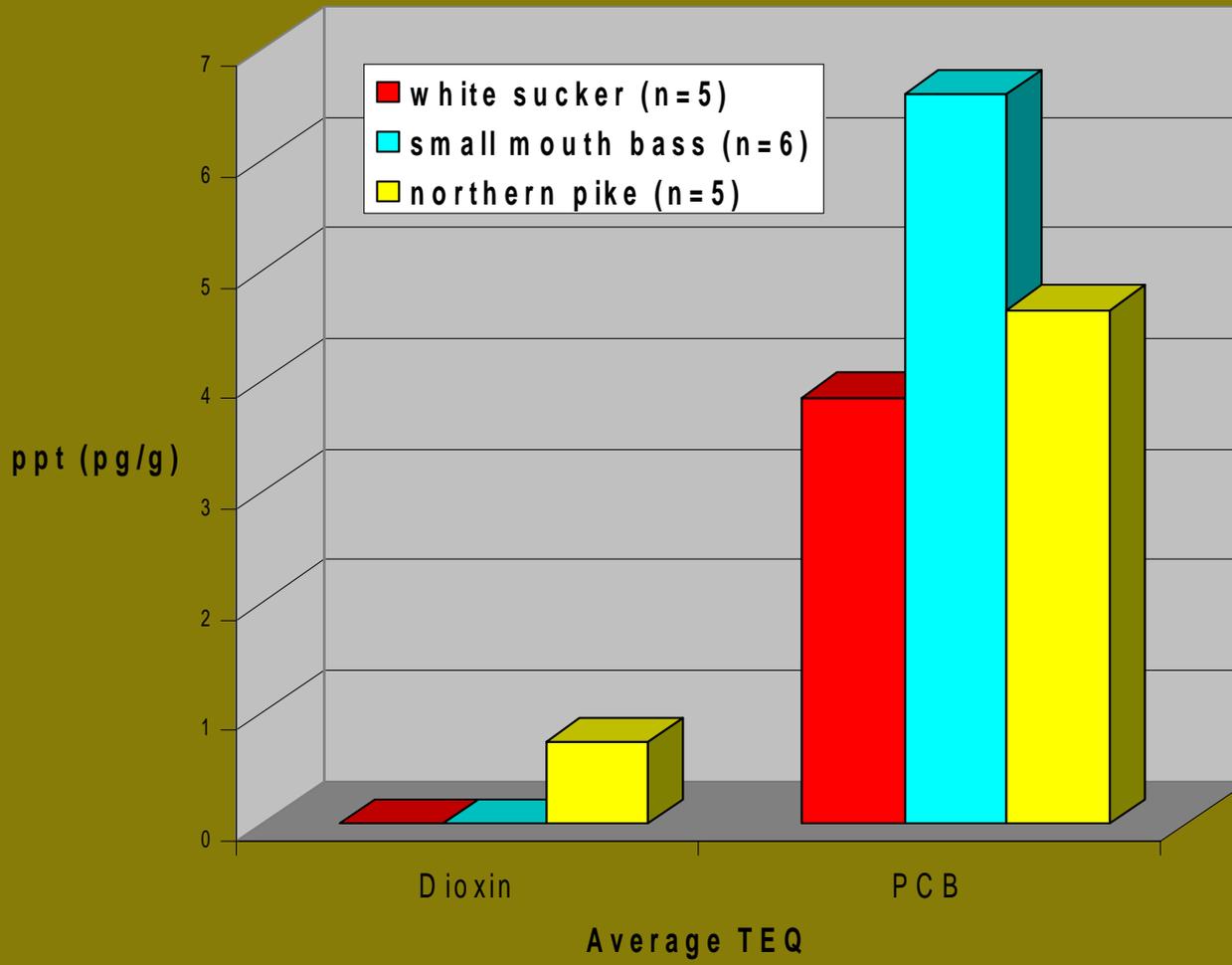
Tippy Pond 2004 (Little River Band)



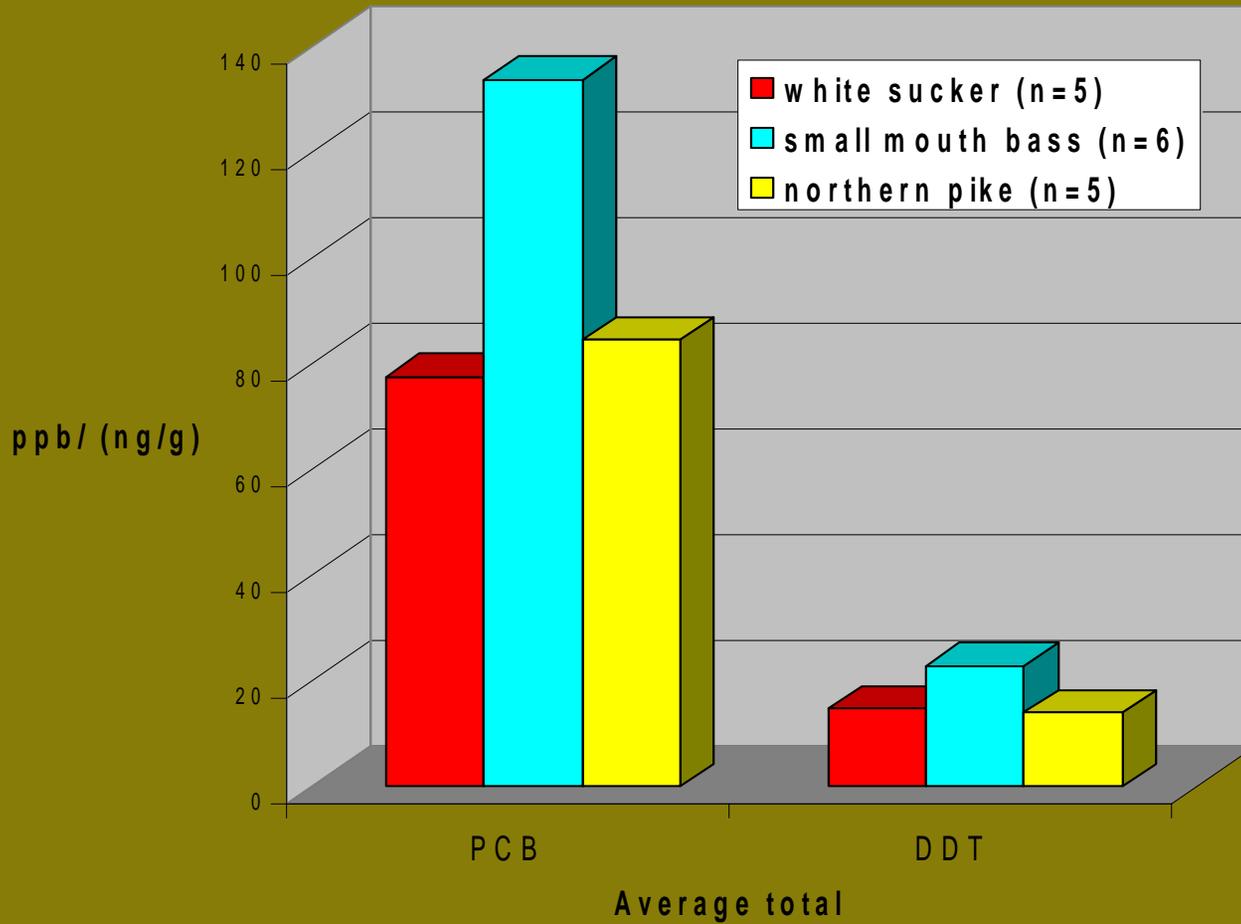
Tippy Pond 2004 (Little River Band)



Manistee Lake 2004 (Little River Band)



Manistee Lake 2004 (Little River Band)



LAKE SUPERIOR LAKE TROUT (Swackhamer, 2004)

- PCBs = 784 ppb
- DDT = 567 ppb

LAKE MICHIGAN LAKE TROUT (Swackhamer, 2004)

- PCBs = 1614 ppb
- DDT = 1056 ppb

Little River Band 2005 Chinook Salmon (n = 3)

- DDT = 83, 113, 154 ppb
- D/F TEQ = 0.2, 0.7, 1.8 ppt
- PCBs TEQ = 12, 20, 39 ppt
- PCBs Total = 334, 488, 769 ppb

CONSUMPTION GUIDANCE

WCBAC (Inland Waters)

- Perch, Panfish, Whitefish, Tulibee, Sucker, Bullhead unlimited (hotspots identified)
- Deer and moose muscle unlimited
- Walnuts, hazelnuts unlimited
- No walleye over 20 inches (smaller 1/mo)
- No Northern over 30 inches(smaller 1/mo)
- Fish eggs and liver ceremonial use only
- Limit beef and cheese servings to one meal per week (exceptions: cottage and American cheeses unlimited); avoid Tuna

Conclusions



- This data supports previous studies demonstrating the need to know the overall quality of major Tribal traditional and commercial foods.
- Many traditional and commercial foods may be consumed without limitations due to contaminants.
- Mercury is ubiquitous but hot spots do exist and hot spots exist for DDT, PCBs and Dioxins/Furans (perhaps others).
- Knowing the contaminants present in traditional Tribal foods will allow Tribal governments to : 1) inform Tribal members regarding safe food consumption decisions, 2) advocate for remediation where necessary and 3) advocate for Tribally protective environmental quality management.

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LEECH LAKE TRIBAL
GOVERNMENT

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