



Hudson River PCBs Superfund Site

Community Advisory Group Meeting

Thursday, June 3, 2021

Virtual Meeting

Since Last CAG Meeting (May 2020)

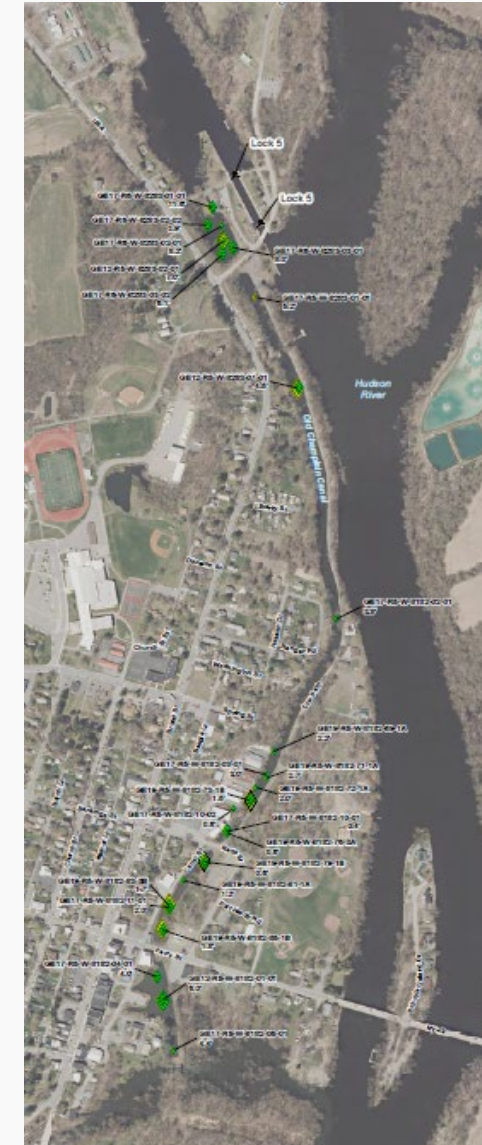


- COVID – EPA has managed to keep all work going without adjustment or significant delay
 - Continue to meet virtually
 - Oversight of field work has followed NYS and CDC protocols
- What's new!
 - Added new remedial project manager to EPA Hudson Team (Matt Wiener)
 - EPA Hudson Team (Albany): director, 3 project managers and community involvement coordinator
- EPA primary focus (in close coordination with NYS DEC/DOH):
 - Long-term monitoring programs - analysis to inform scopes of work (fish, sediment and water)
 - Floodplain – various additional sampling, response actions, screening level human health and ecological assessments, refining understanding of distribution of PCBs in floodplain
 - Lower Hudson – advance supplemental studies (scoping of sampling work – internal discussions and planning)
 - Analysis of 2020 data (fish and water) (next sediment sampling round is this year)
 - Habitat – pilot studies, increasing scope of planting/seeding and assess recovery
 - Other – properties/waterline transfer, Old Canal (coordination with municipalities), community inquiries
- (moved up - DEC) GE plant site work update (Hudson Falls and Fort Edward)

(moved up) Old Champlain Canal – Schuylerville



- Municipalities have plans for portions of the historic Old Canal
 - Removal of sediment to facilitate better drainage
 - Removal of sediment to enhance recreational use
- Various agencies involved: EPA, NYSDEC, NYSDOH and NYSCC
 - Other parties involved as contacted by the municipalities
- EPA continues coordination with municipalities
- Multiple sampling events conducted by GE and overseen by EPA
- Various materials provided to the municipalities (analytical testing results map, water depth map, summary tables of results compared to regulator criteria, sediment profile and a data summary report)
- Additional sampling in select areas planned associated with floodplain studies and as municipalities project plans progress
- Agencies are checking into other potential ways to assist the municipalities



Fish Data Update



Long-Term Monitoring – Fish - 2020 Update



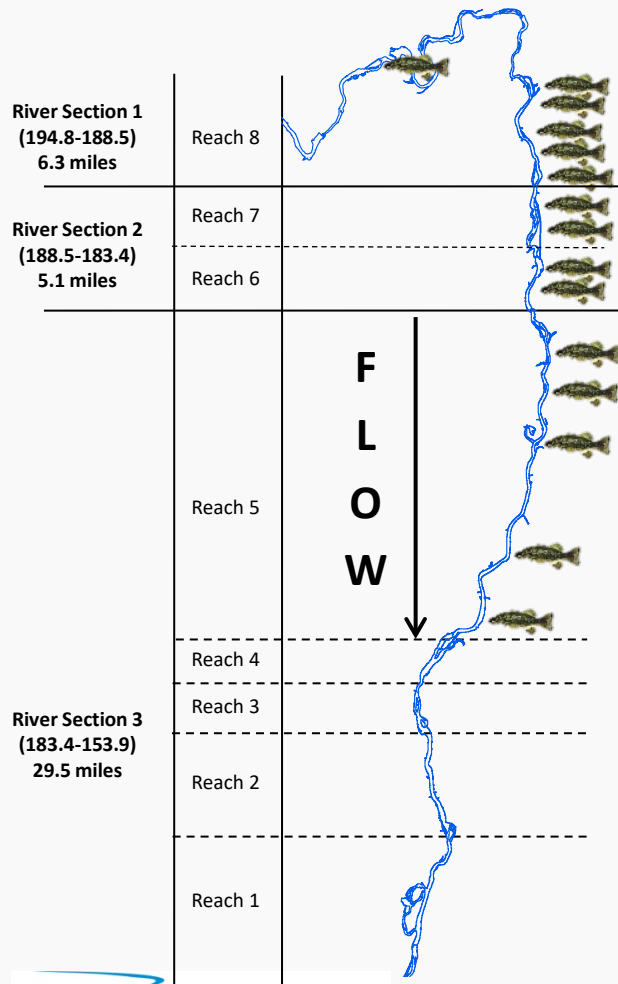
- Purpose: Track post-dredging recovery of fish in the Upper and Lower Hudson River
- Last update – May 2020 CAG meeting
- Program is transitioning from scopes designed for monitoring during dredging to monitoring post-dredging recovery
 - To make the transition - EPA is doing extensive analysis that considers:
 - Number of fish tissue samples needed to detect recovery trends
 - Species availability and selection at each station
 - Frequency/need for upstream baseline sampling and Reaches 1 – 4
 - How well whole-body pumpkinseed can be used to represent sport fish fillet
 - These analysis will result in slight adjustments (refinement) to existing program
 - EPA plans to phase in these adjustments
- Fish collection status
 - 2021 data collection underway
 - Lower river - collection mostly complete - primarily striped bass
 - Upper river – June
 - Fall – pumpkinseed and forage fish
 - EPA oversees fish collection, processing and analyses
 - DEC also collects Hudson River fish and shares data with EPA – data is used by EPA as it's made available

Hudson River Fish Monitoring Program



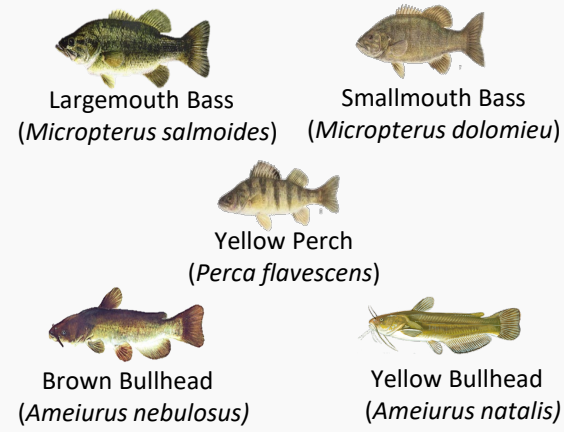
Hudson River Fish Program
Monitoring Station

Upper Hudson Locations and Species



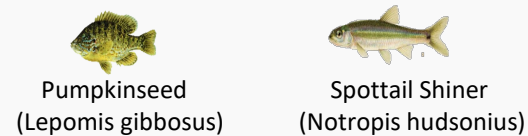
Spring Collection:

315 Sport fish Fillet Samples



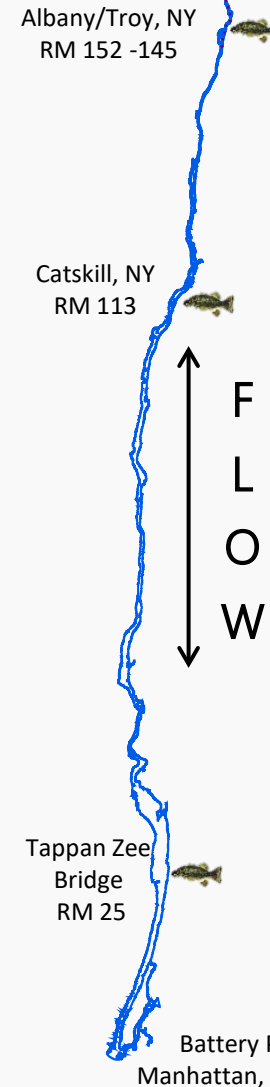
Fall Collection:

105 Whole body pumpkinseed samples
40 Whole body composite forage samples



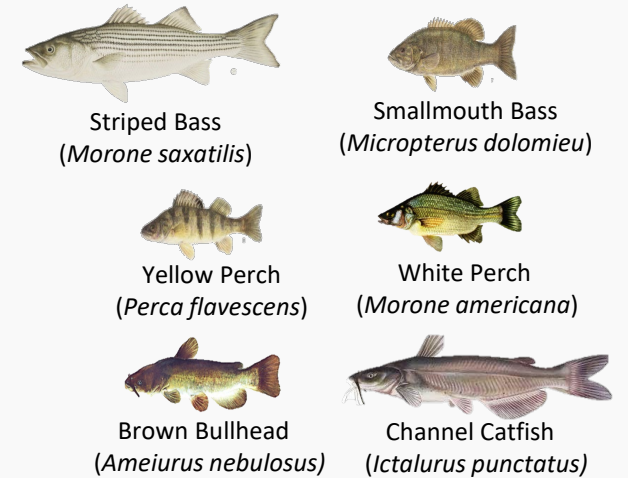
Not all species collected at all stations

Lower Hudson River Locations and Species



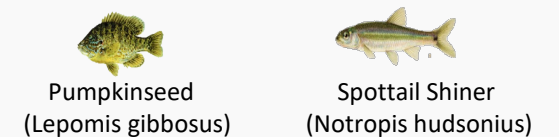
Spring Collection:

160 Sport fish Fillet Samples



Fall Collection (Albany/Troy only):

20 Whole body pumpkinseed samples
10 Whole body composite forage samples



Hudson River Fish Program



- Key consideration of the program:
 - Primary data evaluation is done as described in Record of Decision (species-weighted average by river sections) and compared to:
 - 0.4 mg/kg – target- protective based on half-pound fish meal every two months
 - 0.2 mg/kg – target - protective based on half-pound meal every month
 - 0.05 mg/kg - goal - protective based on half-pound fish meal every week
 - Ongoing evaluations by EPA (species, station, river reach, lipid-normalized) in relation to trends over time
 - Continued consistent data treatment
 - Consistency in PCB Aroclor (Method 8082) identification and quantitation
 - Regular use at defined frequency of more detailed congener (Method 1668) analysis (5% - alternating years)
 - Coordination with NYSDOH - data needs for fish advisory considerations
 - National Institute of Standards and Technology (NIST) standards used to maintain precision over time
 - Certified for certain congeners - project approach is to compare by total PCBs
 - Analyses over time compare well for the NIST 1946 and NIST 1947 (certified fish tissue)



- Data considerations (data presentation):
 - Fish exposure to PCBs
 - Varies by species
 - Can be highly localized
 - Available prey (relates to what they feed on)
 - Other factors
 - Lipid normalized (adjusted for fat content in fish)
 - Can vary over time
 - Wet weight (NYS Standard fillet)
 - Rib-out 2007 – 2013

Upper Hudson Species-Weighted Average Calculation

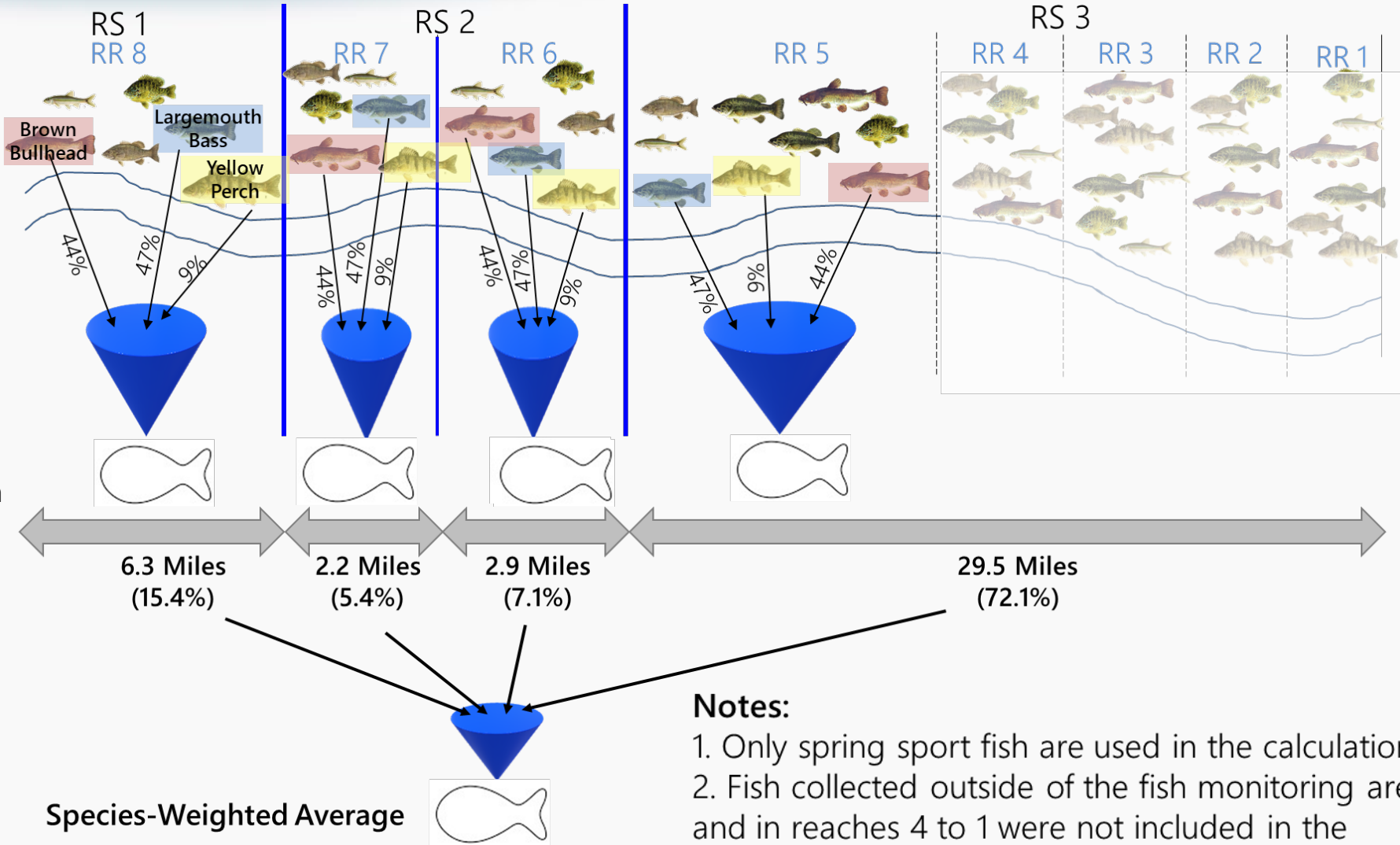


Average PCB concentration by species

Species weight based on typical angler catch

Species-Weighted Average by River Section or River Reach

River Section or River Reach weight based on length



Notes:

1. Only spring sport fish are used in the calculation
2. Fish collected outside of the fish monitoring areas and in reaches 4 to 1 were not included in the calculation



Upper River

Sport Fish - Fillet

- Graphs presented by species
- Alternating between wet weight and lipid normalized

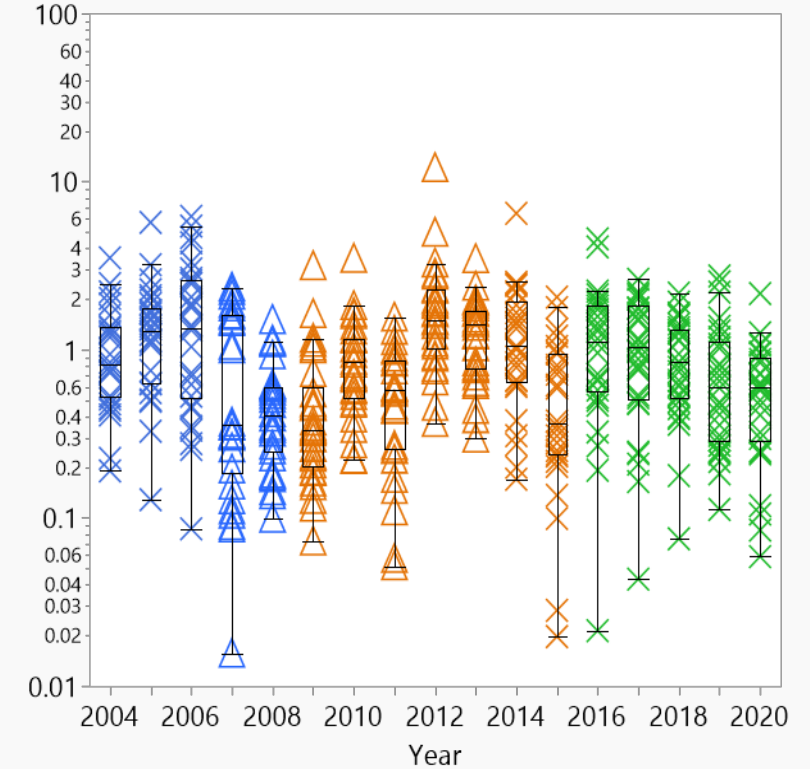
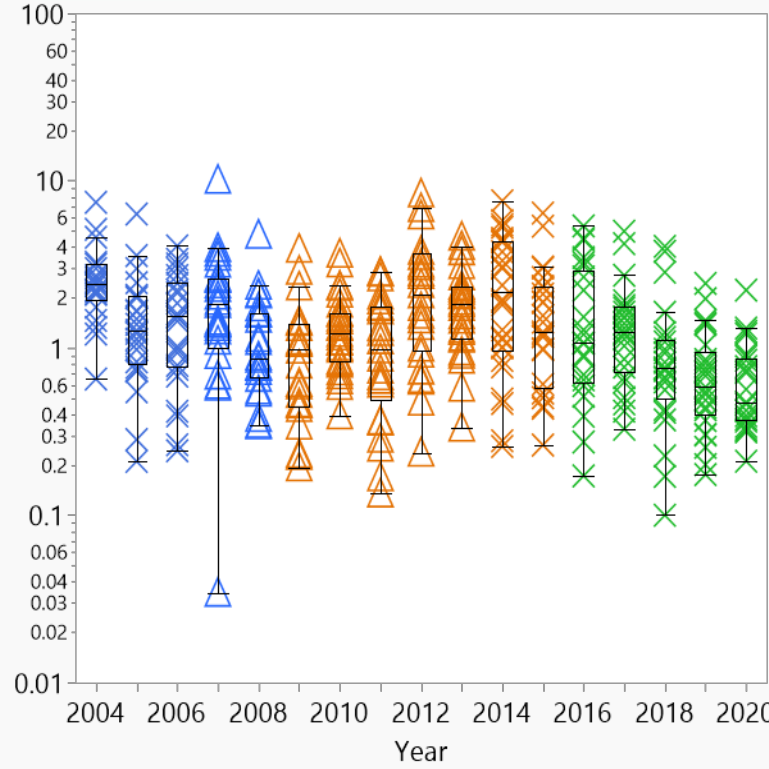
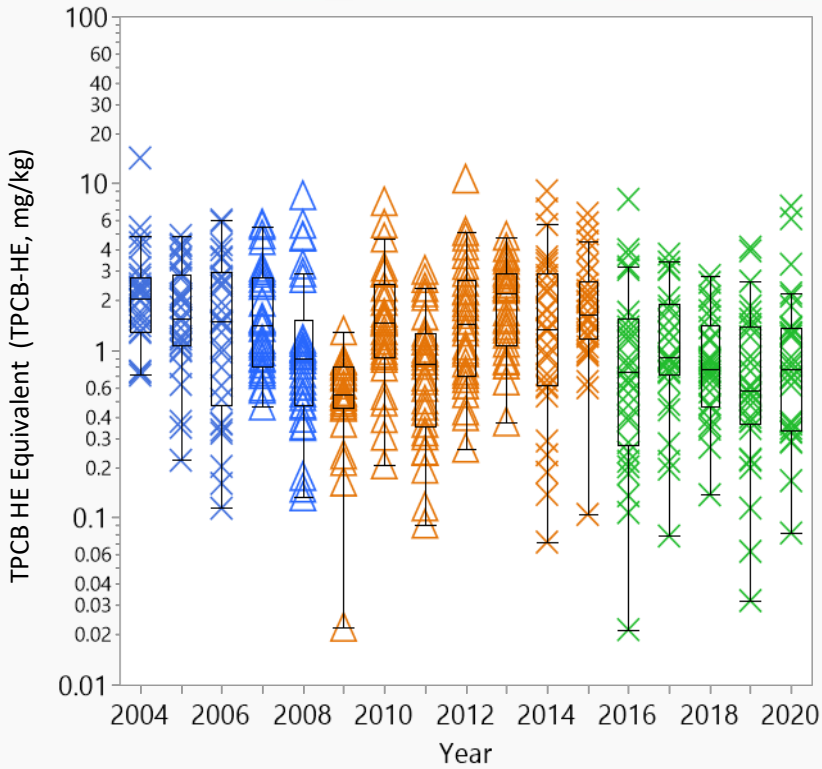
Upper Hudson Black Bass (Largemouth and Smallmouth) –Wet Weight, TPCB-HE, by River Section



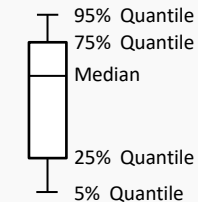
River Section 1

River Section 2

River Section 3



- Before Dredging (2004-2008)
- During Dredging (2009-2015)
- After Dredging (2016-2020)
- × Standard Fillet
- △ Rib-out Fillet



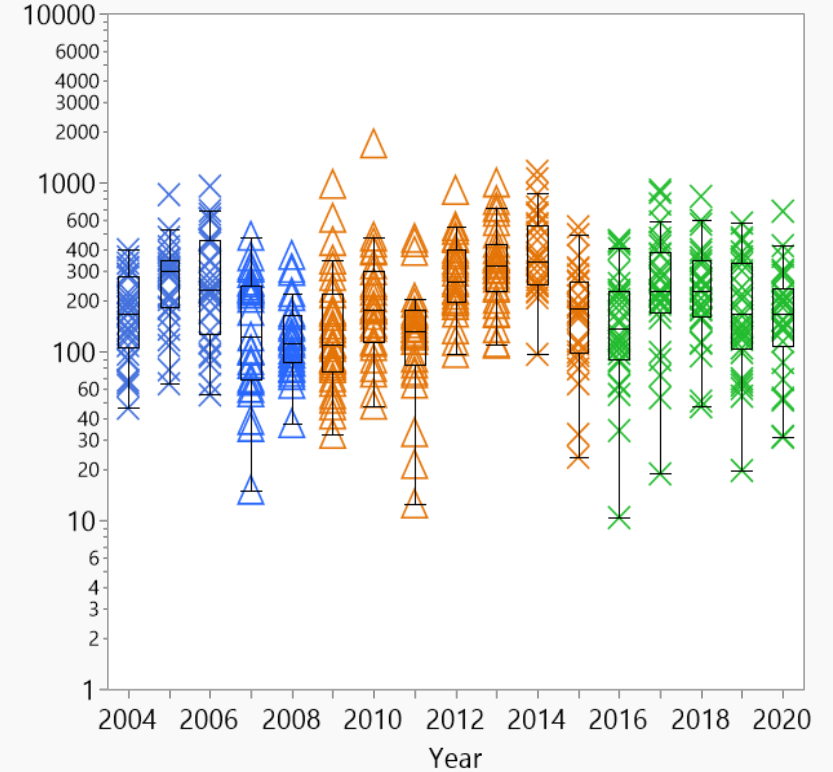
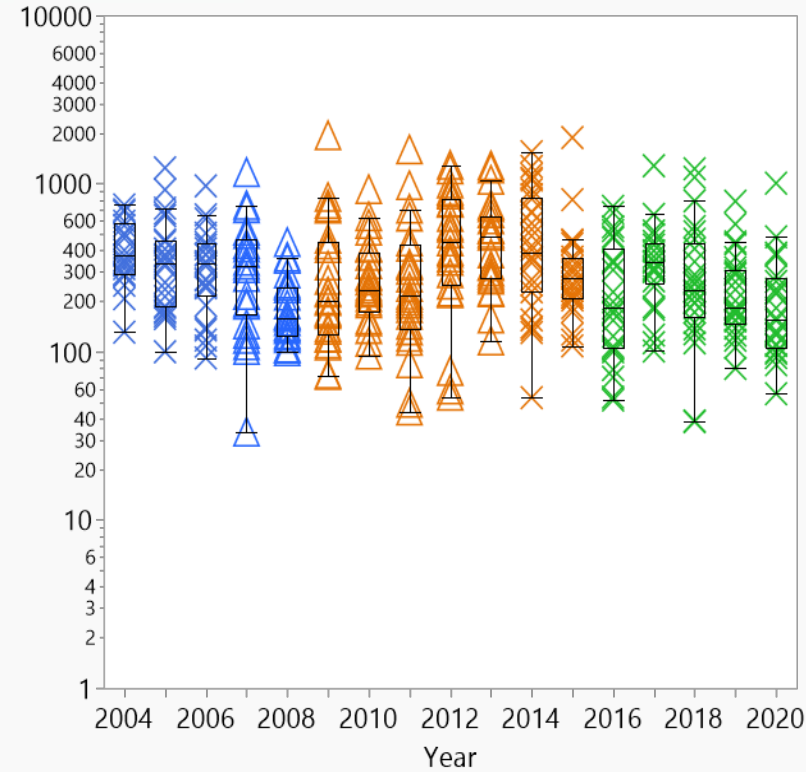
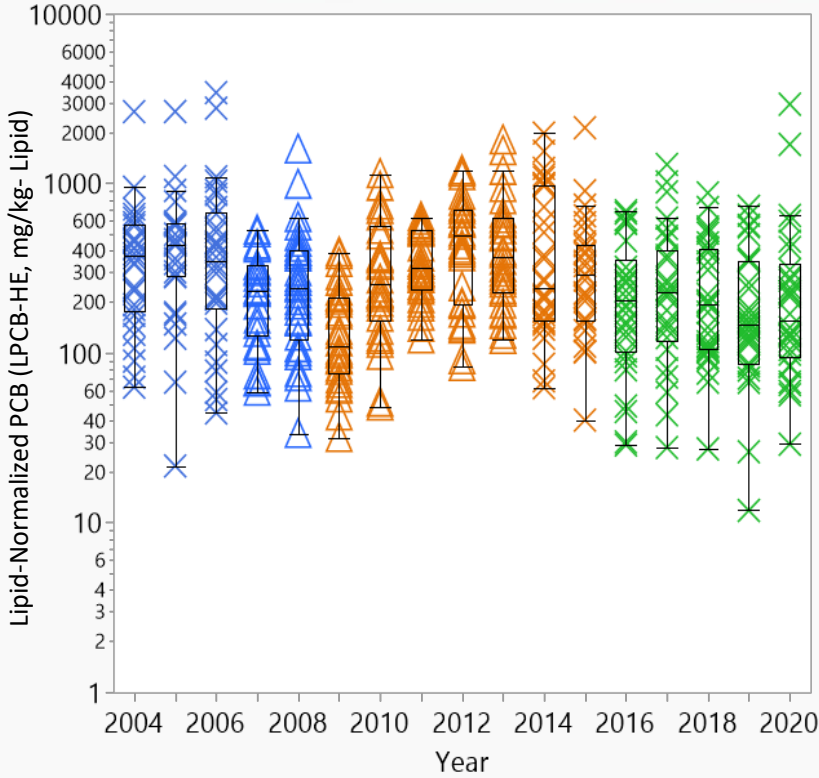
Upper Hudson Black Bass (Largemouth and Smallmouth) –Lipid-Normalized, LPCB-HE, by River Section



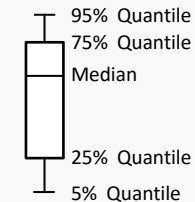
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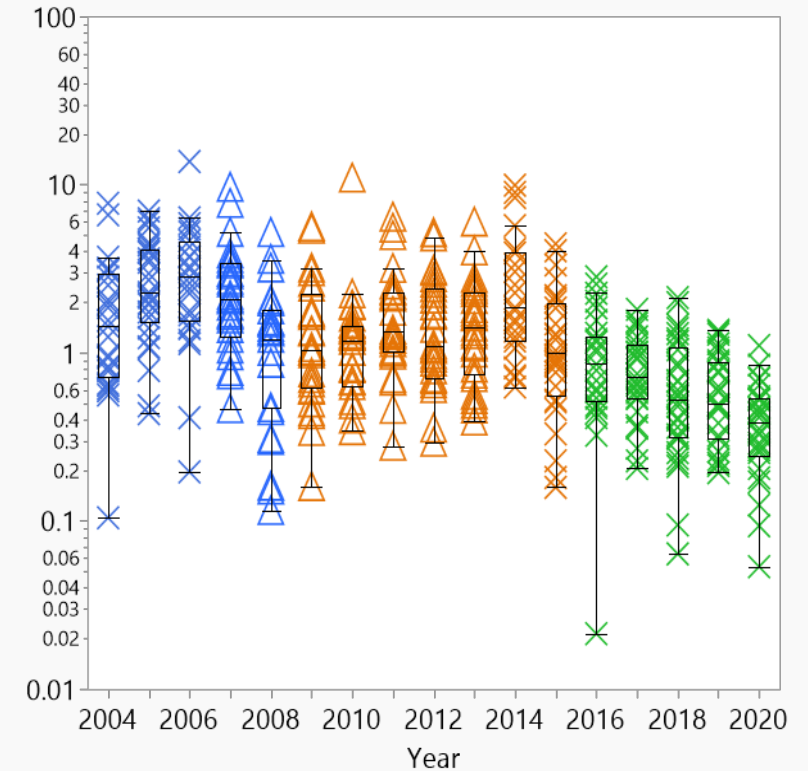
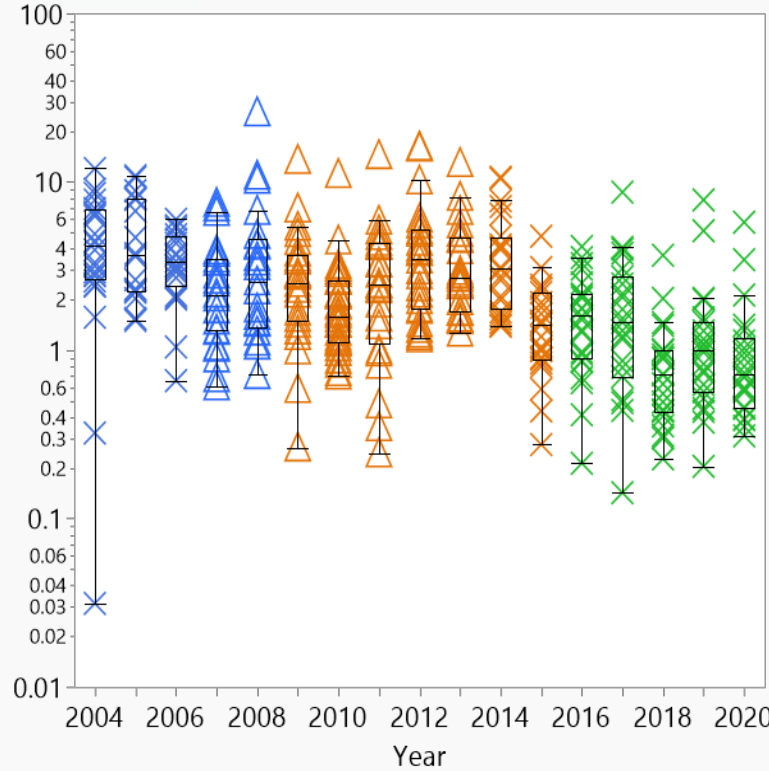
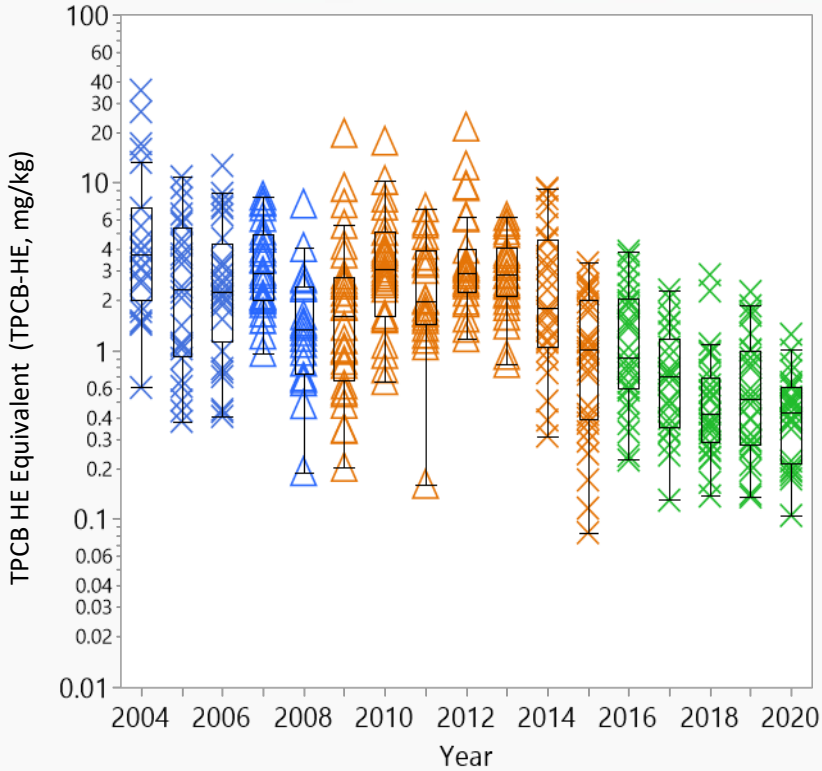
Upper Hudson Brown Bullhead –Wet Weight, TPCB-HE, by River Section



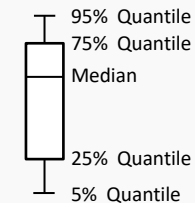
River Section 1

River Section 2

River Section 3



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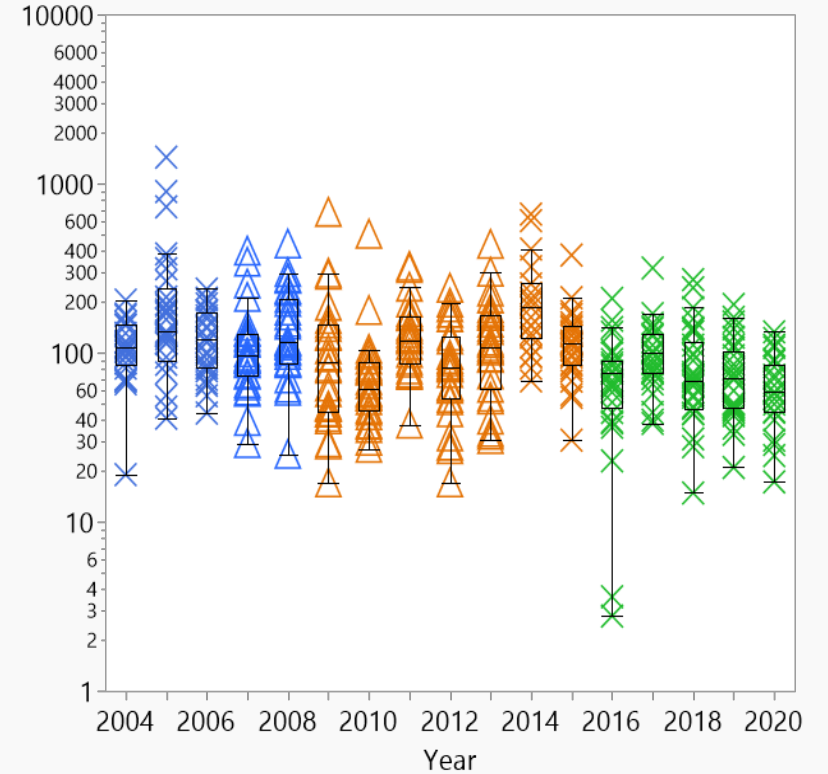
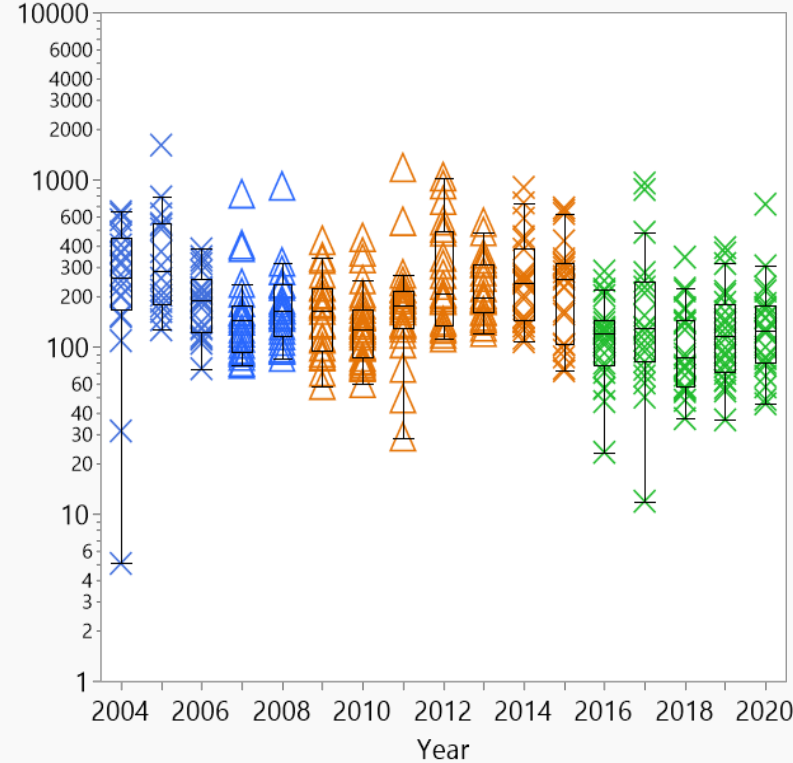
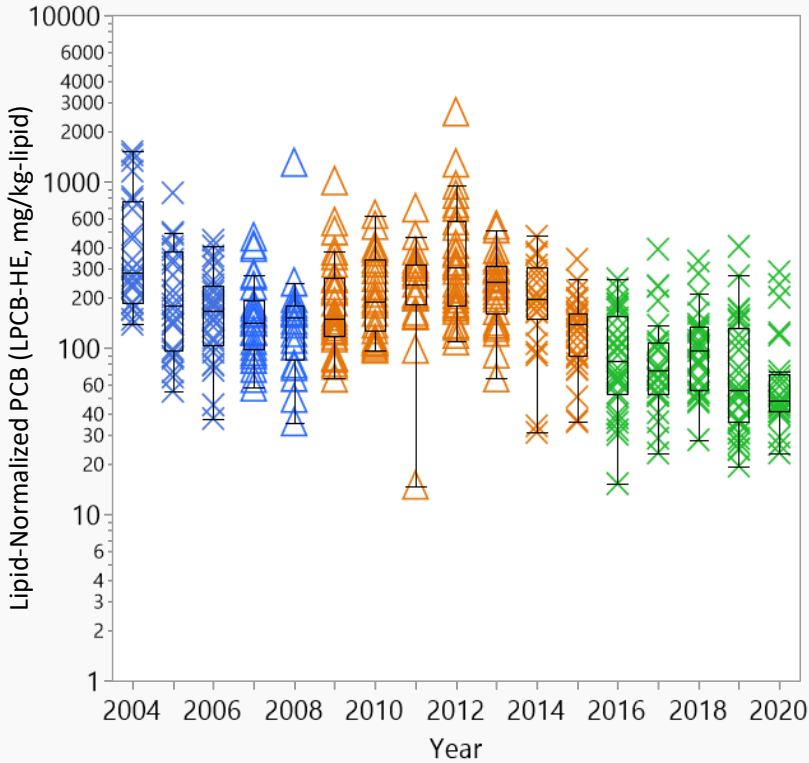
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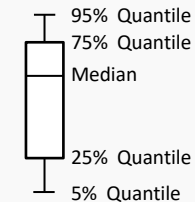
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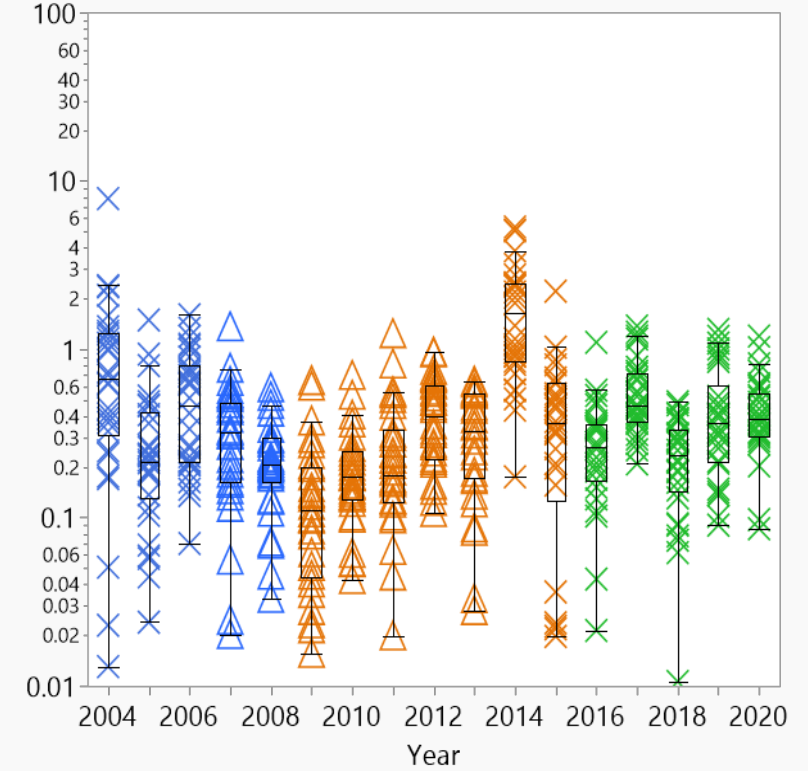
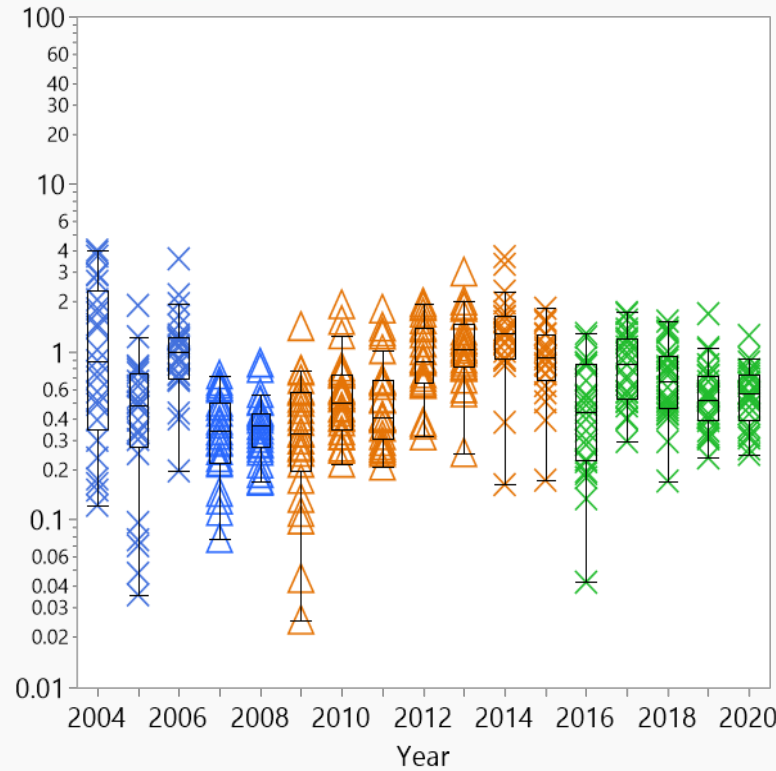
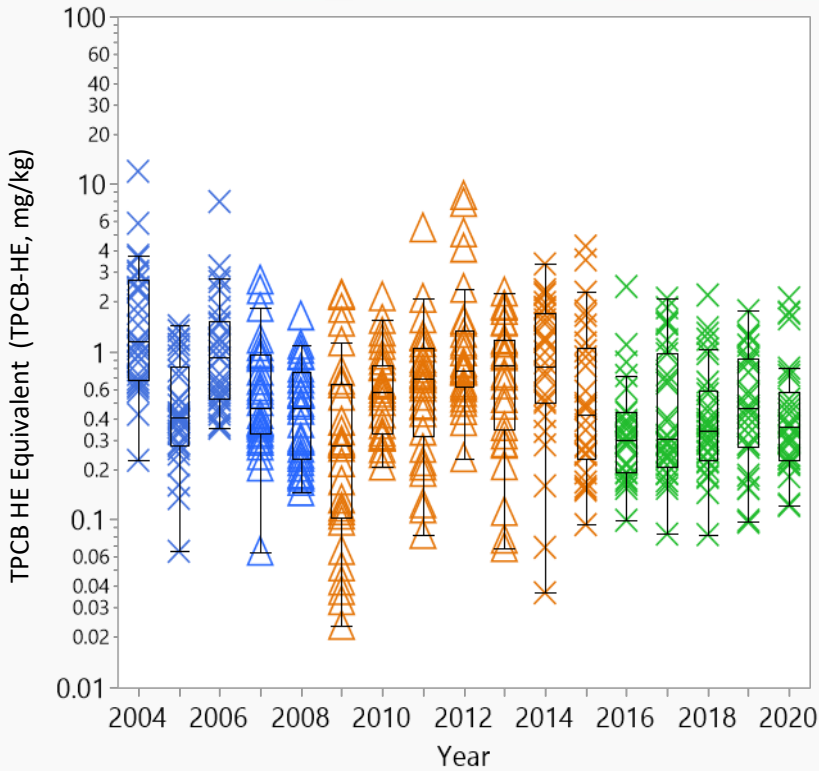
Upper Hudson Yellow Perch –Wet Weight, TPCB-HE, by River Section



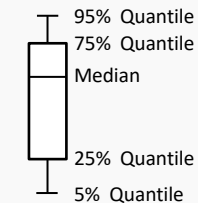
River Section 1

River Section 2

River Section 3



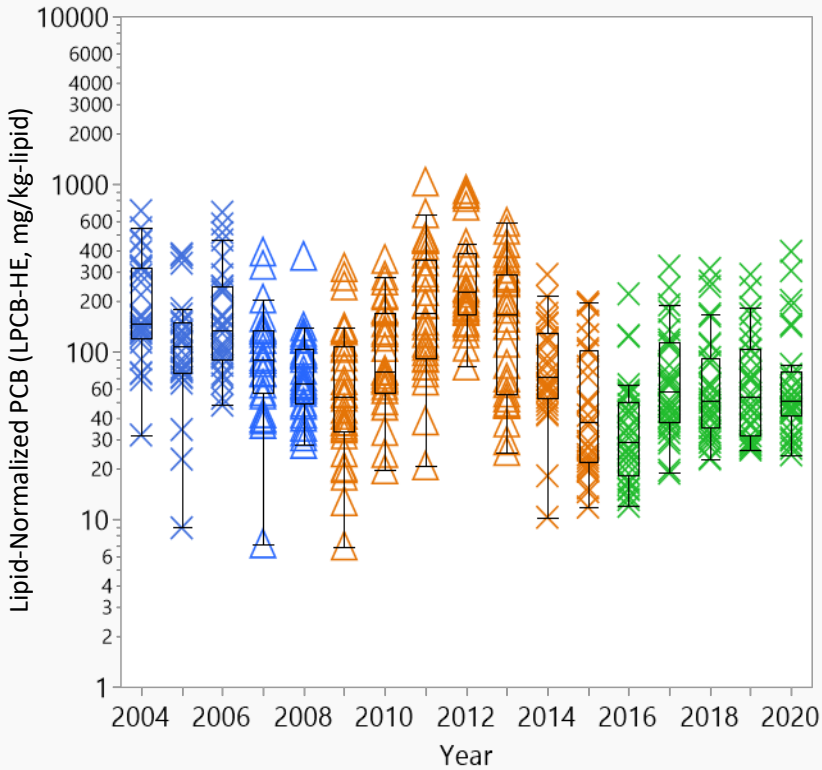
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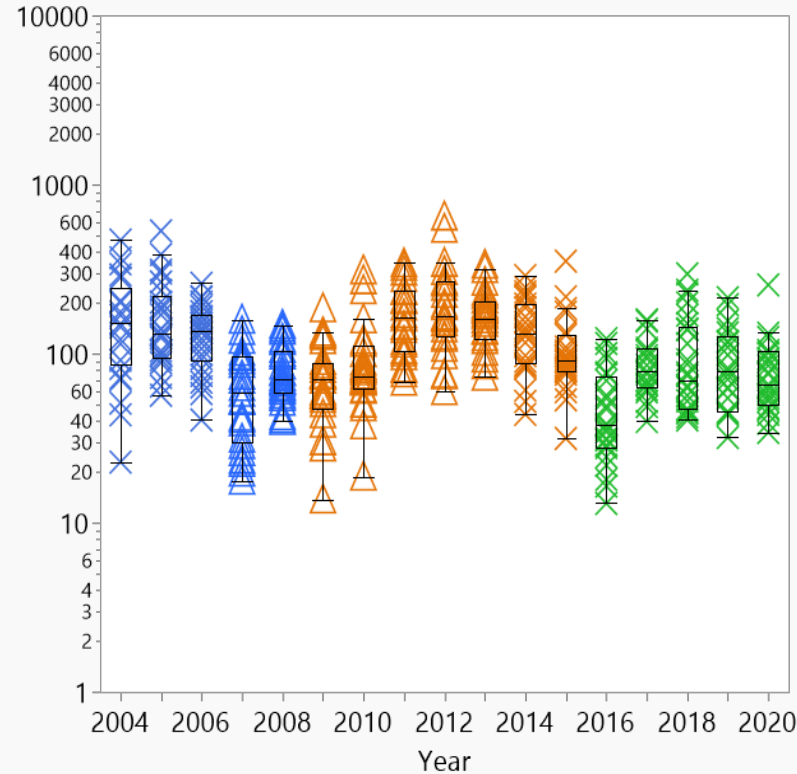
Upper Hudson Yellow Perch –Lipid-Normalized, LPCB-HE, by River Section



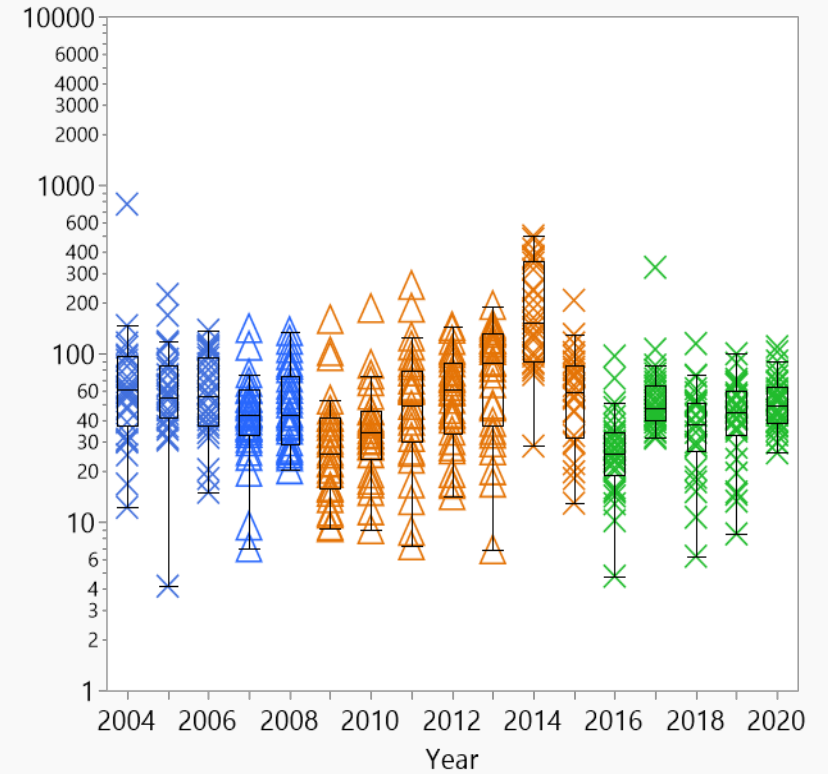
River Section 1



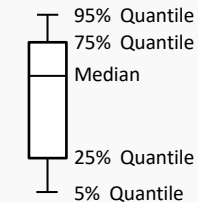
River Section 2



River Section 3



- Before Dredging (2004-2008)
- During Dredging (2009-2015)
- After Dredging (2016-2020)
- × Standard Fillet
- △ Rib-out Fillet



Hudson River TPCB-HE Species-Weighted Average over Time



**2004-2020 Total PCB_{HE} Species-Weighted Averages by River Section
(wet weight, mg/kg)**

Monitoring Period	Year	Upper River Average		River Section 1		River Section 2		River Section 3	
		River Section 1-3 Mean	Confidence Interval	River Section 1 Mean	Confidence Interval	River Section 2 Mean	Confidence Interval	River Section 3 Mean	Confidence Interval
Baseline (Pre-Dredge) Monitoring Period (BMP)	2004	2.1	1.8 - 2.4	4.3	2.9 - 5.7	3.4	2.8 - 4.0	1.4	1.1 - 1.7
	2005	2.1	1.8 - 2.4	2.3	1.8 - 2.8	2.9	2.2 - 3.5	2.0	1.6 - 2.3
	2006	2.4	2.0 - 2.7	2.5	2.0 - 3.1	2.4	2.1 - 2.8	2.3	1.8 - 2.8
	2007*	1.8	1.5 - 2.1	2.5	2.0 - 2.9	2.2	1.7 - 2.7	1.6	1.2 - 1.9
	2008*	1.1	0.95 - 1.3	1.5	1.1 - 1.9	2.5	1.6 - 3.5	0.83	0.63 - 1.0
Dredging (2009, 2011-2015) Remedial Action Monitoring Program (RAMP)	2009*	1.1	0.93 - 1.4	1.5	0.89 - 2.1	1.9	1.4 - 2.4	0.93	0.68 - 1.2
	2010*	1.4	1.1 - 1.6	2.6	2.0 - 3.3	1.6	1.3 - 1.9	1.1	0.74 - 1.4
	2011*	1.3	1.1 - 1.5	1.5	1.2 - 1.9	2.0	1.4 - 2.5	1.1	0.88 - 1.4
	2012*	2.2	1.8 - 2.5	3.0	2.2 - 3.7	3.3	2.5 - 4.1	1.8	1.4 - 2.2
	2013*	1.7	1.5 - 1.9	2.4	2.1 - 2.7	2.6	2.1 - 3.1	1.4	1.1 - 1.6
	2014	2.1	1.8 - 2.5	2.3	1.7 - 2.8	3.0	2.5 - 3.6	1.9	1.5 - 2.4
	2015	1.1	0.94 - 1.3	1.7	1.3 - 2.0	1.6	1.2 - 1.9	0.90	0.70 - 1.1
OM&M Monitoring (on-going)	2016	1.2	1.0 - 1.3	1.3	0.95 - 1.6	1.6	1.3 - 1.9	1.1	0.88 - 1.3
	2017	1.0	0.92 - 1.2	1.0	0.84 - 1.3	1.6	1.2 - 2.0	0.95	0.80 - 1.1
	2018	0.80	0.70 - 0.89	0.81	0.65 - 0.97	0.94	0.71 - 1.2	0.77	0.64 - 0.89
	2019	0.75	0.65 - 0.86	0.82	0.62 - 1.0	1.0	0.73 - 1.4	0.69	0.56 - 0.82
	2020	0.61	0.53 - 0.69	0.87	0.58 - 1.2	0.84	0.61 - 1.1	0.52	0.43 - 0.60

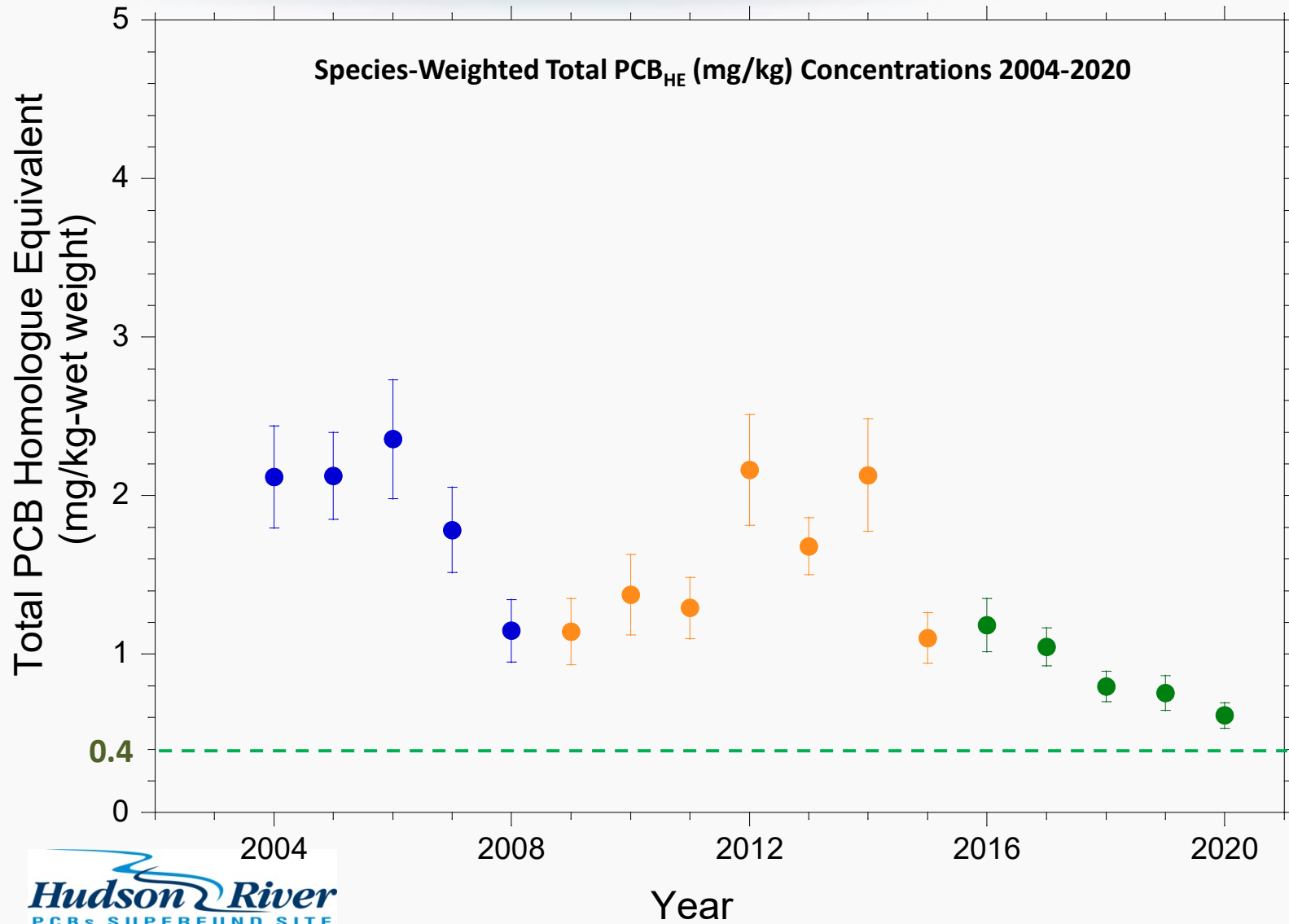
* Rib-out fillet

Notes:

1. Reach and River Section fish tissue PCB concentrations are weighted by species. Black bass = 47%, bullhead = 44%, yellow perch = 9%.
2. Upper Hudson River average is weighted by both species and river reach length. Reach 8 = 6.3 miles (15.4%); Reach 7 = 2.2 miles (5.4%); Reach 6 = 2.9 miles (7.1%); and Reach 5 = 29.5 miles (72.1%). There are not currently fish sampling locations in river reaches 4-1. Reach 5/River Section 3 is weighted to reflect all 29.5 miles of River Section 3, while the fish monitoring stations representing River Section 3 are all located in Reach 5, which is 14 miles long.
3. Fish data were not available for Reach 7 in 2008.
4. Dredging was not performed in 2010 so that a planned peer-review of the project could be convened for the purpose of refining the selected remedy.
5. The Confidence Interval is equal to plus or minus 2 Standard Errors on the mean

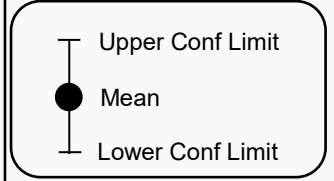
Upper Hudson River Species-Weighted Average over Time

- Combined River Sections 1, 2 and 3



Legend

- Before Dredging (2004-2008)
- During Dredging (2009-2015)
- After Dredging (2016-2020)



Notes

1. River Section fish tissue PCB concentrations are weighted by species. Black bass = 47%, Ictalurid = 44%, yellow perch = 9%.
2. Upper Hudson River average is weighted by both species and river section length. River Section 1: = 6.3 miles (15.4%); River Section 2= 5.1 miles (12.5%); and River Section 3= 29.5 miles (72.1%). There is no regular fish sampling in river reaches 4-1 (of River Section 3). Reach 5 in River Section 3 is taken to represent all 29.5 miles of River Section 3. Reach 5 is 14 miles in length.
3. Fish data were not available for Reach 7 of River Section 2 in 2008.
4. Dredging was not performed in 2010 so that a planned peer-review of the project could be convened for the purpose of refining the selected remedy.
5. The confidence Interval is equal to the mean plus or minus 2 standard errors on the mean



Upper River

Pumpkinseed – Whole Body

- wet weight and lipid normalized

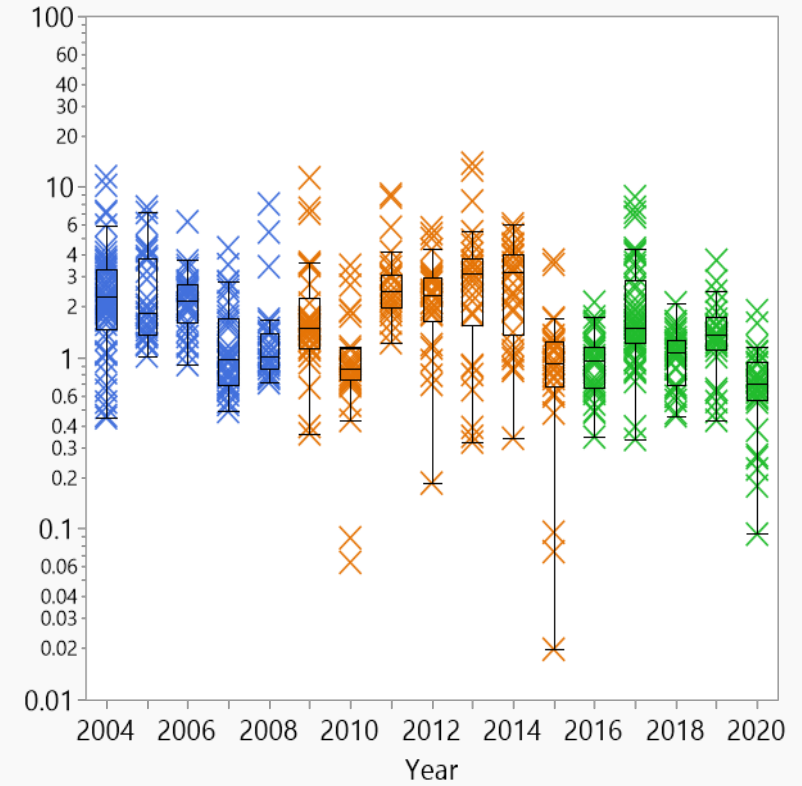
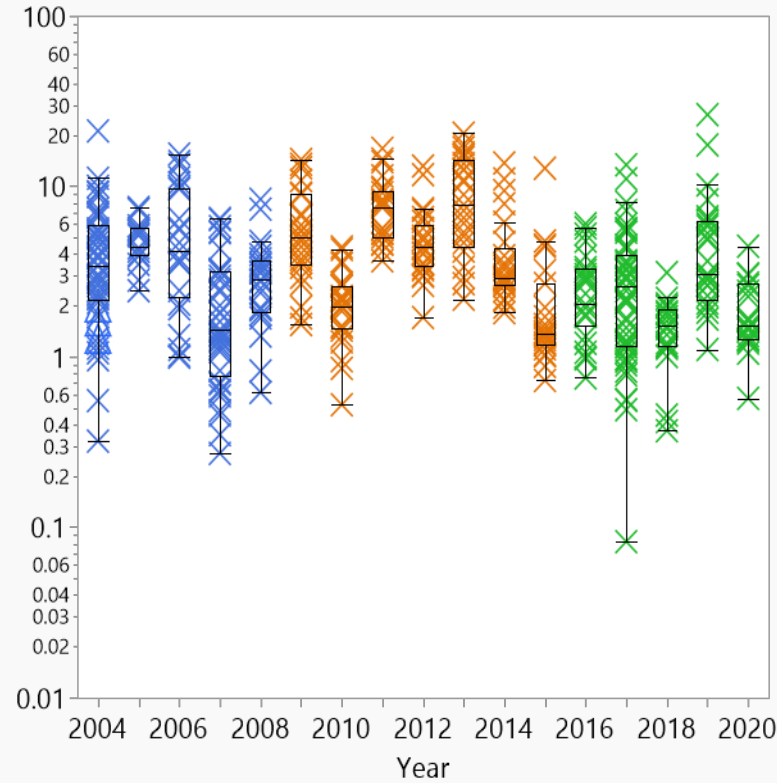
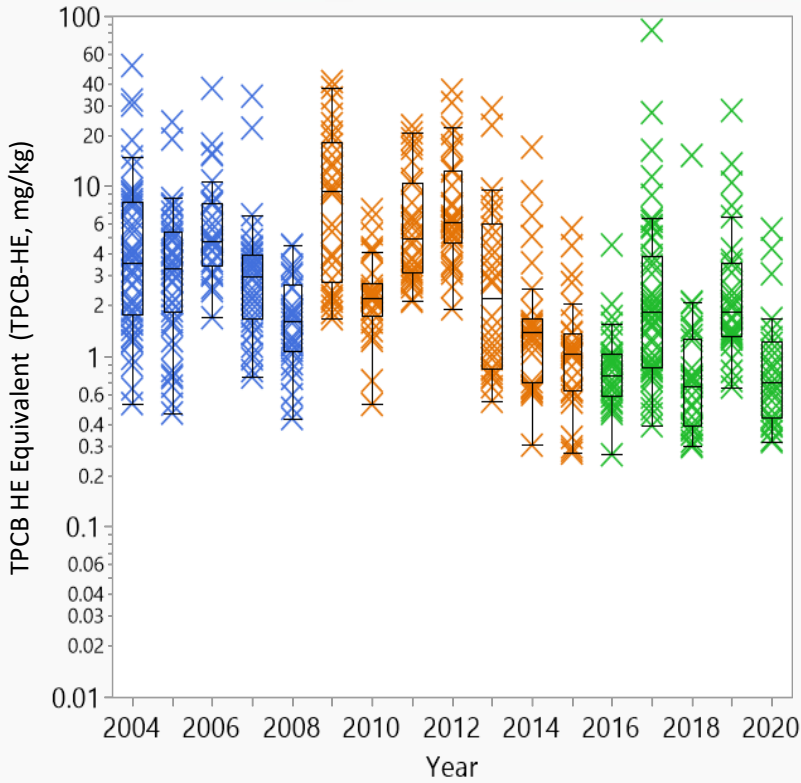
Upper Hudson Pumpkinseed –Wet Weight, TPCB-HE, by River Section



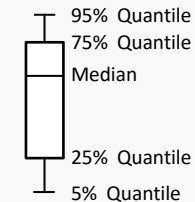
River Section 1

River Section 2

River Section 3



- Before Dredging (2004-2008)
- During Dredging (2009-2015)
- After Dredging (2016-2020)
- × Whole Body
- △ Rib-out Fillet



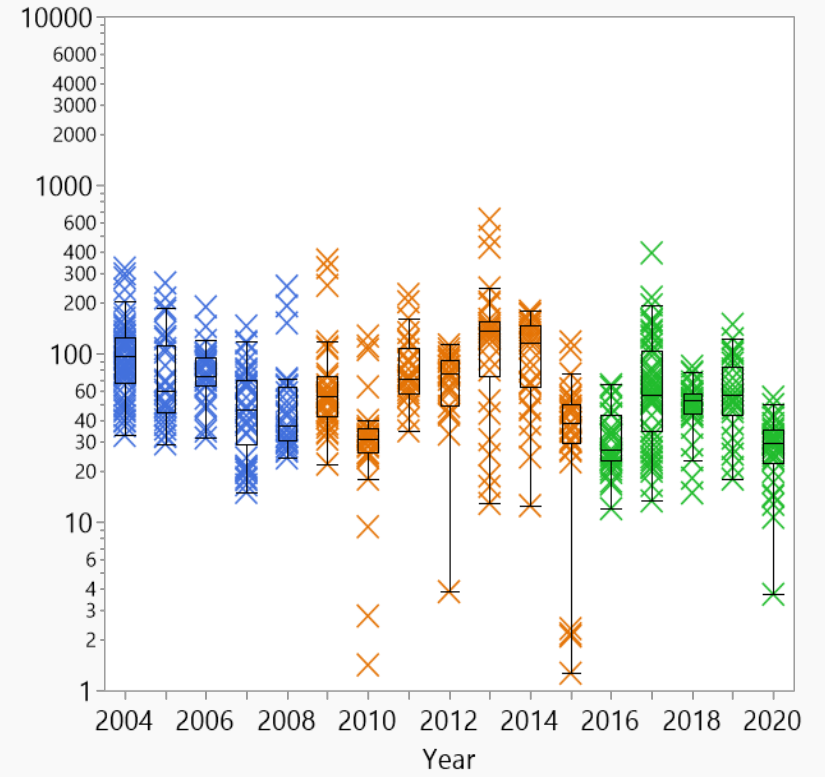
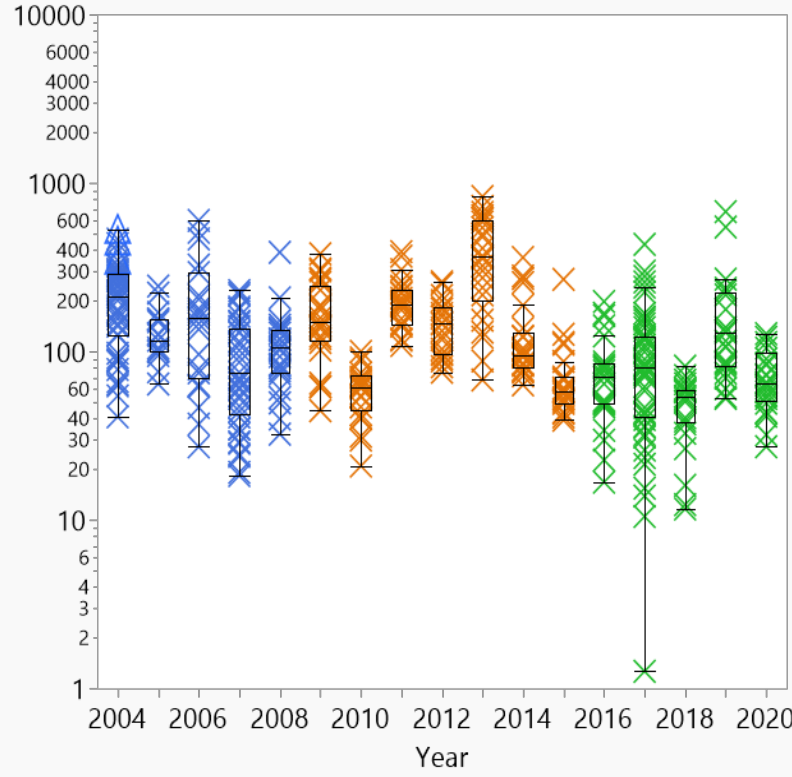
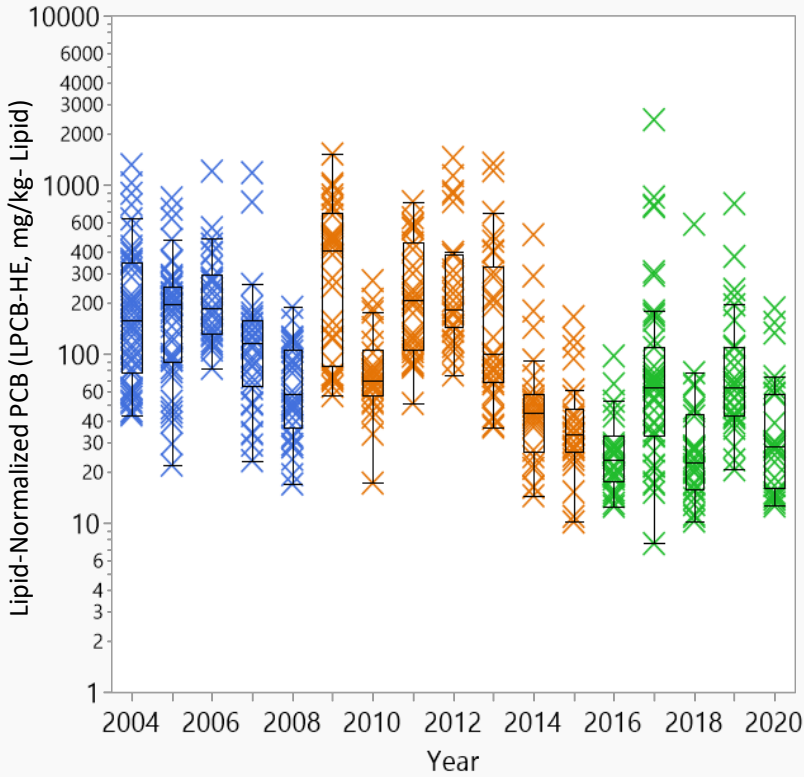
Upper Hudson Pumpkinseed –Lipid-Normalized, LPCB-HE, by River Section



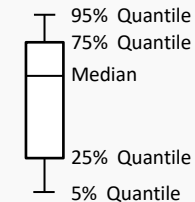
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Lower River

Sport Fish - Fillet

- Graphs presented by species
- Alternating between wet weight and lipid normalized

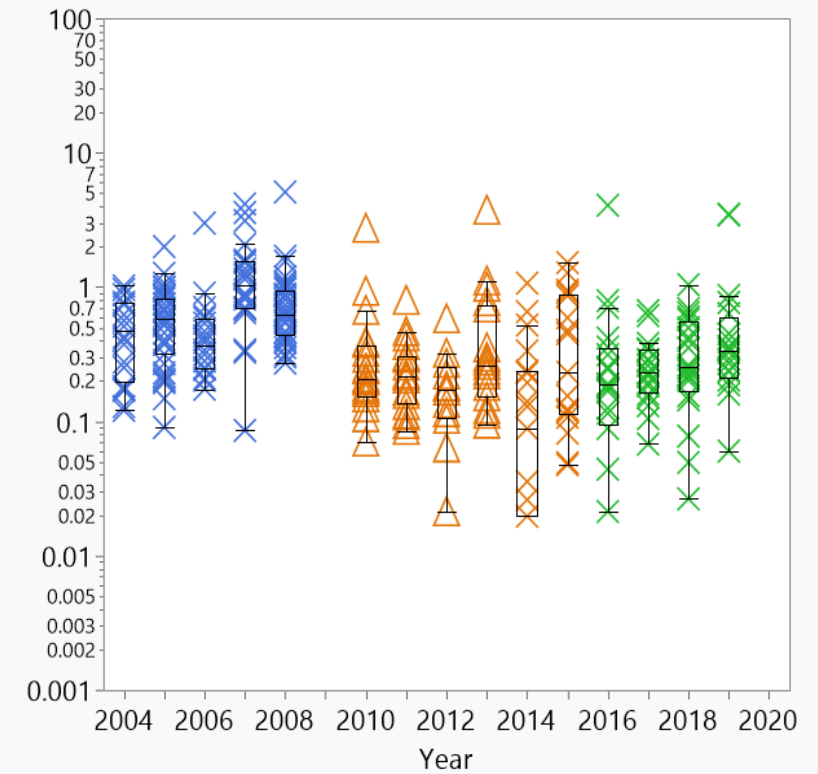
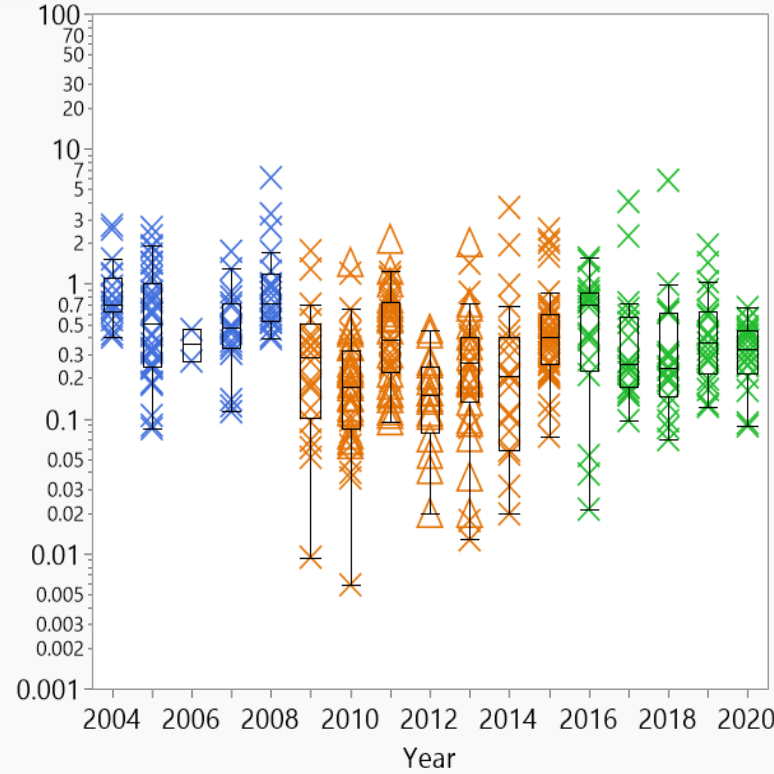
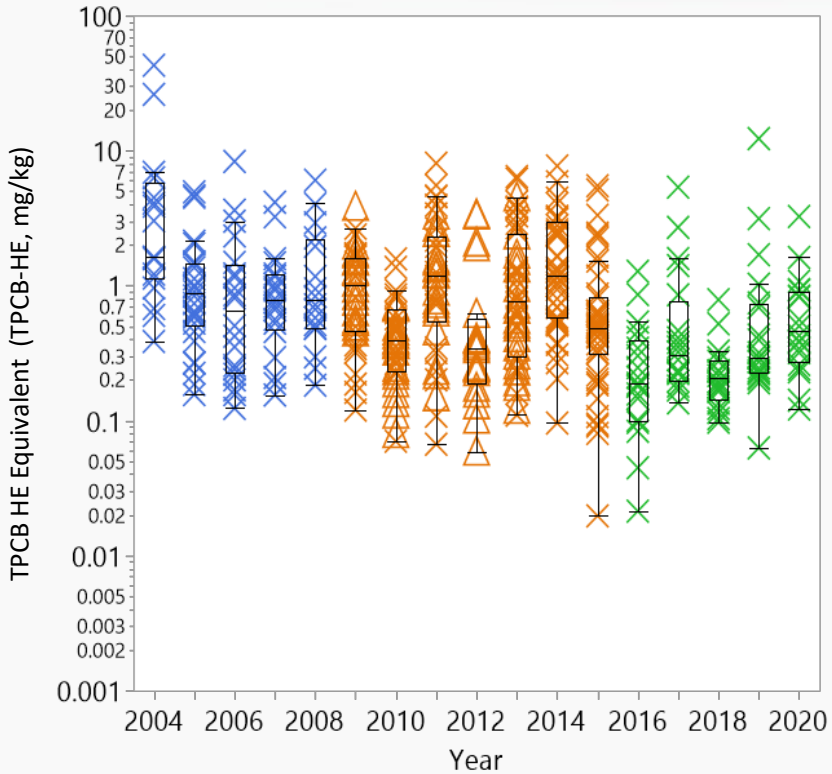
Lower Hudson Striped Bass -Wet Weight, TPCB-HE, by Station



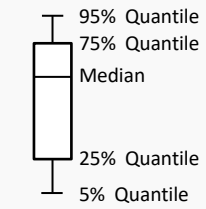
Albany/Troy (RM154)

Catskill (RM113)

Tappan Zee (RM27)



- Before Dredging (2004-2008)
- During Dredging (2009-2015)
- After Dredging (2016-2020)
- × Standard Fillet
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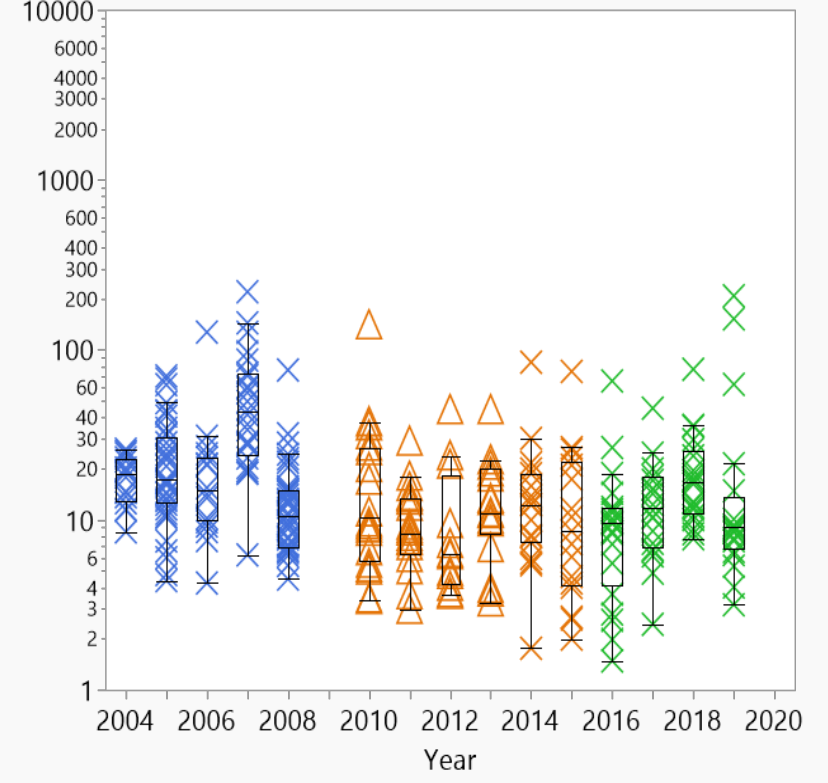
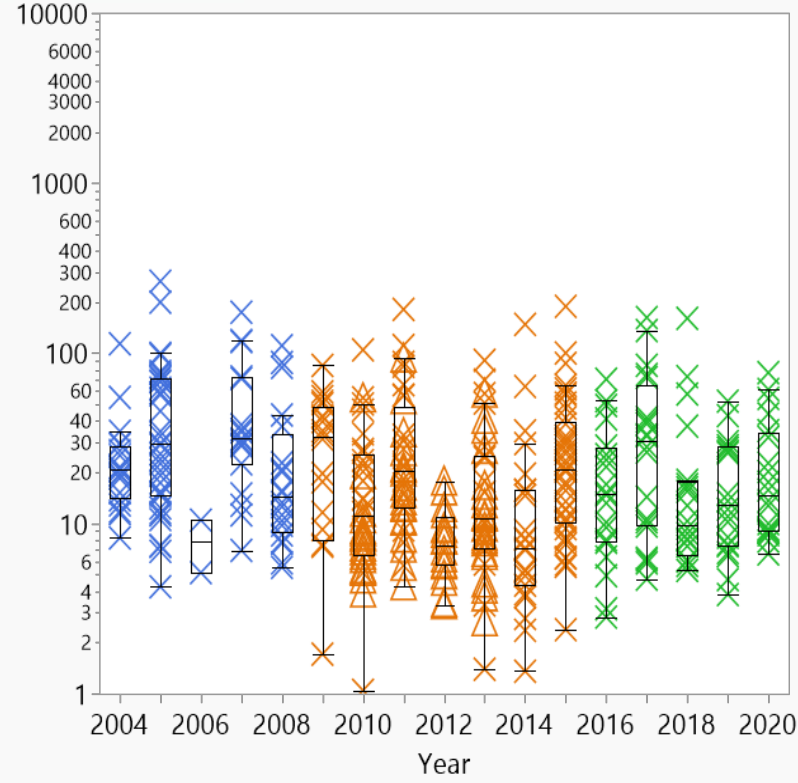
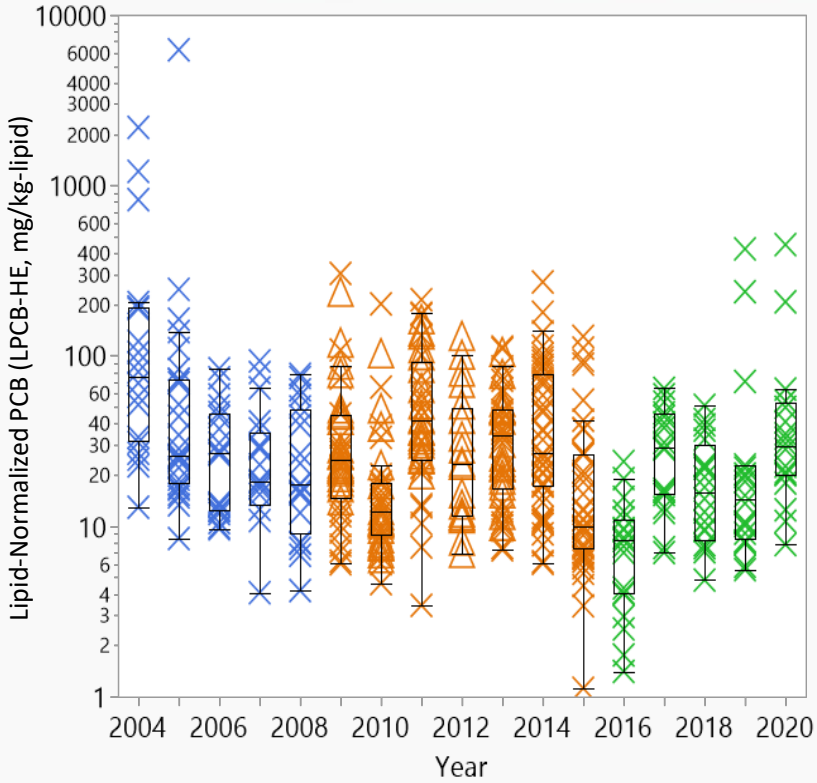
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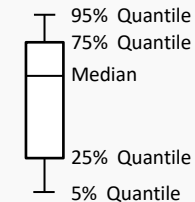
Albany/Troy (RM154)

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- × Standard Fillet
- △ Rib-out Fillet

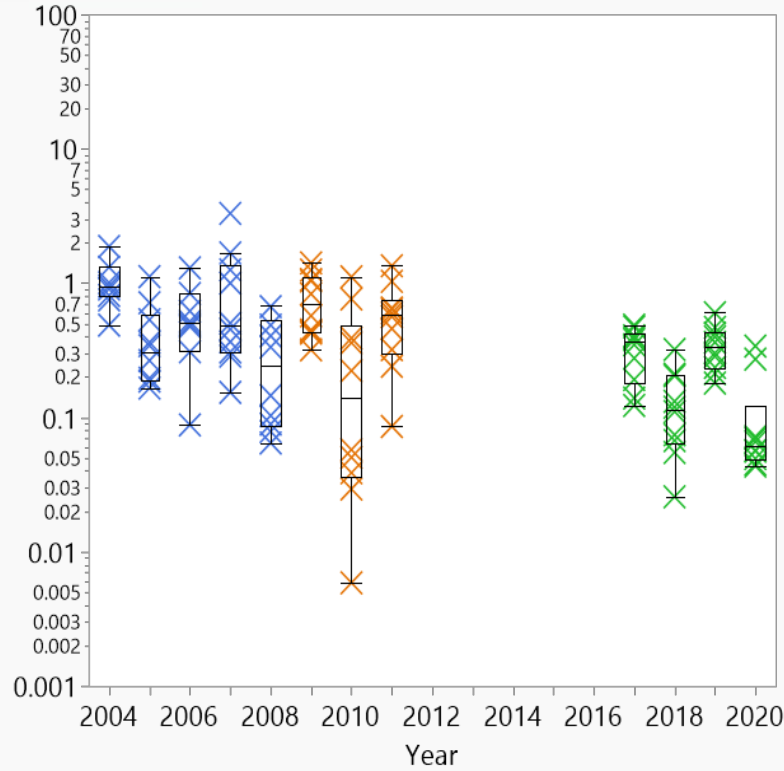
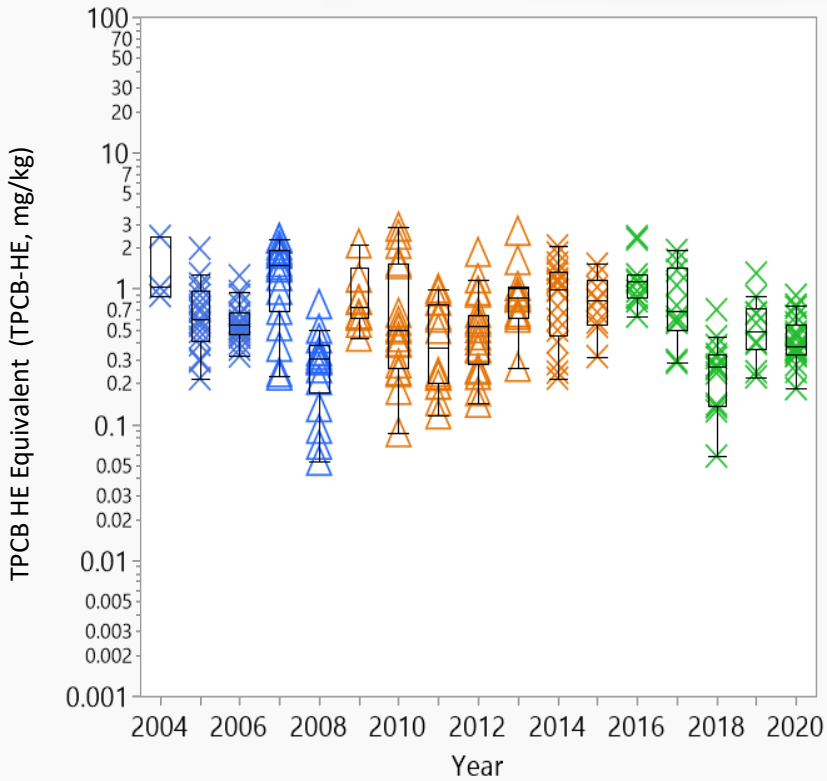


Lower Hudson White Perch -Wet Weight, TPCB-HE, by Station

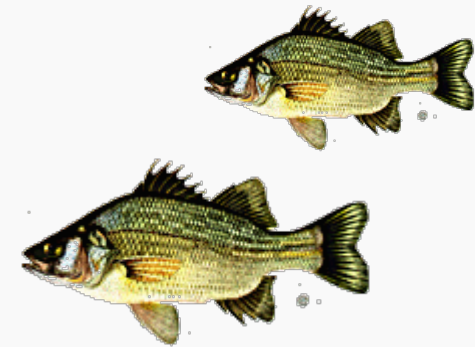
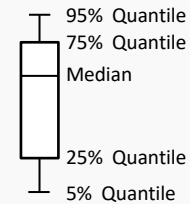


Albany/Troy (RM154)

Catskill (RM113)



- Before Dredging (2004-2008)
- During Dredging (2009-2015)
- After Dredging (2016-2020)
- × Standard Fillet
- △ Rib-out Fillet

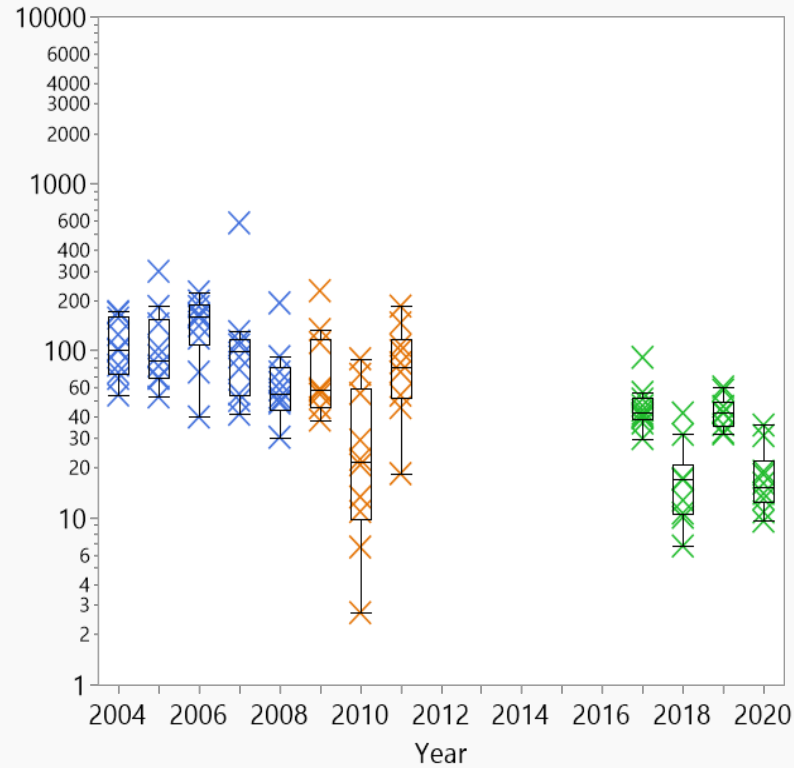
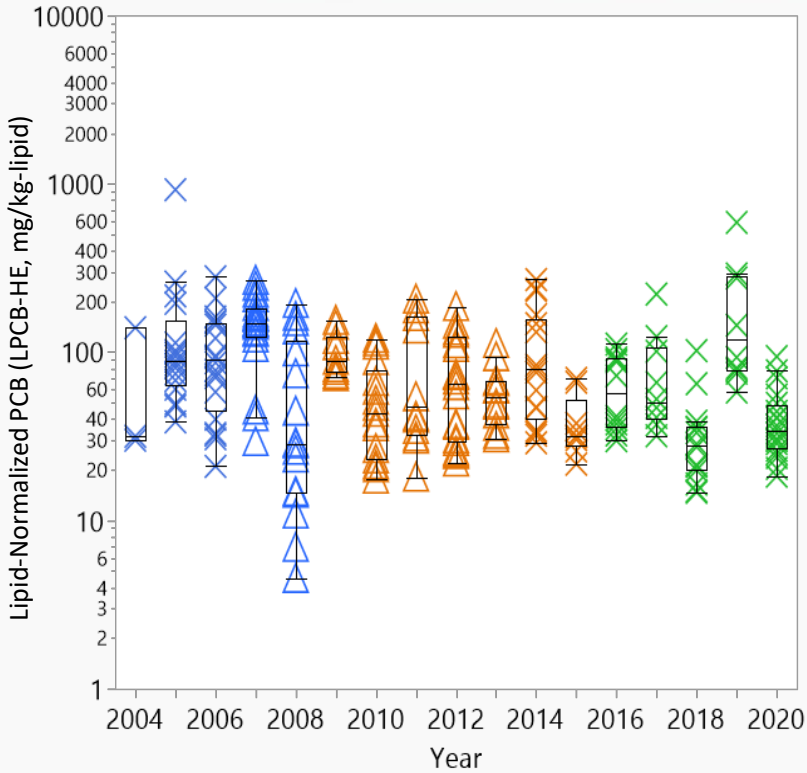


Lower Hudson White Perch -Lipid-Normalized, LPCB-HE, by Station

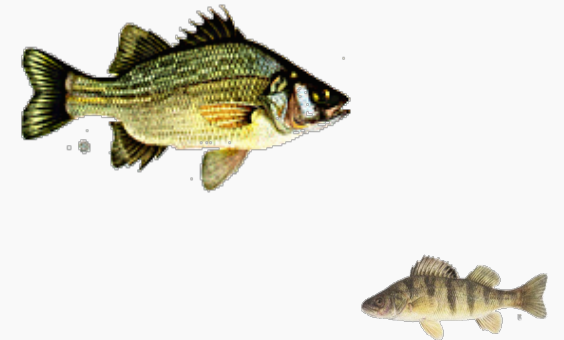
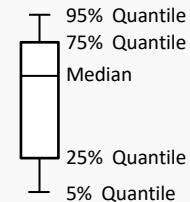


Albany/Troy (RM154)

Catskill (RM113)



- Before Dredging (2004-2008)
- During Dredging (2009-2015)
- After Dredging (2016-2020)
- × Standard Fillet
- △ Rib-out Fillet



Upper Hudson River Fish Summary



- PCB concentrations in fish have recovered from dredging impacts and are now observed to be trending below baseline conditions
- 2020 results compared to 2019 show continued overall recovery in fish (downward trend)
- Analysis of NIST standards shows good precision through first several years of use
- EPA is continuing its oversight of fish collection, processing and analysis – looking for reasonable opportunities to make additional improvements
- More years of data are needed to assess trends over time
 - As noted in the last five-year review, as many as 8 or more years of post-dredging fish data will be needed – we now have 5 years of data
- 2021 spring fish data collection is underway – improvements to program are being phased in
- EPA is developing format for the future fish data technical memorandum (detailed reporting of data)
- EPA is finalizing the long-term monitoring fish collection scope - GE's associated work plan is expected in next few months
- EPA is planning to expand fish sampling in Lower Hudson
- Incorporate data from DEC into EPA's analysis (as it is made available to EPA)
- Continued close coordination with NYS DEC and DOH

Questions?

