Evaluation of Polychlorinated Biphenyls in Fish from Virginia Watersheds in 2023

Multiple Watersheds Statewide

VIRGINIA

February 28, 2025

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February 28, 2025

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Dear Gabriel Darkwah,

Thank you for providing the polychlorinated biphenyls (PCBs) fish tissue concentrations results for fish collected in 2023 from multiple waterways in Virginia. The Virginia Department of Health (VDH) has finished reviewing the results for public health implications as requested.

BACKGROUND

The 2023 dataset reviewed includes 357 edible fish tissue fillet samples which were tested for PCBs as part of the Virginia Department of Environmental Quality's statewide sampling and analyses of residual chemical contaminants in fish tissue. The 2023 annual routine statewide fish tissue monitoring primarily targeted the following watersheds: Rappahannock River (Mountain Run, Rapidan River, etc.,), Chowan River (Blackwater River, Nottoway River and Meherrin River), Big Sandy River (Levisa Fork, Knox Fork, etc.,), and Upper Roanoke River. Follow-up locations were also sampled in other watersheds including Dan River, Roanoke River, and James River.

DISCUSSION

The 2023 fish tissue data that exceeded VDH's lower screening value (100 parts per billion (ppb)) is presented in Table 1 and were evaluated further. The number of fish, size, species, and frequency of exceedance of the screening value were considered in determining the need for a PCBs fish consumption advisory. Some fish species tested already have a consumption advisory in effect for the sampling location.

Cranes Nest River flows into the John Flannagan Reservoir (See Image 1). These two sampling locations provide insight into contaminants in fish from different ends of a larger body of water with multiple influent waterways. Walleye sampled from the John Flannagan Reservoir are a popular food and more specimens are expected to be collected this Spring.[1]

[1] Personal communication with Andrew Garey November 2024.

Table 1. 2023 Fish tissue results exceeding VDH lower screening value*.

Station location and description	Species Name	No. of fish	Length (cm)	PCBs (ppb)	Advisory exists
Mountain Run near Rt. 663 (Stevensburg Rd)	American Eel	12	26.5 - 42.5	146	Yes
Mountain Run near Rt. 672 (Stones Mill Rd)	American Eel	13	29.8 - 32.6	114	Yes
Rappahannock River near 100 yards below FMC discharge	Carp	3	76.9 - 83.2	122	Yes
Mount Landing Creek near Rt. 716	Longnose Gar	2	82.2 - 85.7	127	No
Three Creek near Rt. 617 Bridge below Slagle	American Eel	3	39.7 - 56.2	1892	No
Cranes Nest River near Fishtrap Branch	Largemouth Bass	3	38.5 - 39.5	224	No
Cranes Nest River near Fishtrap Branch	Largemouth Bass	4	35.6 - 37.7	243	No
Cranes Nest River near Fishtrap Branch	Black Crappie	3	25.5 - 34.7	134	No
Cranes Nest River near Fishtrap Branch	Redear Sunfish	4	23.7 - 27.8	147	No
John Flannagan Reservoir	Largemouth Bass	5	37.6 - 41.5	417	No
John Flannagan Reservoir	Walleye	2	48.2 - 50.0	521	No
John Flannagan Reservoir	Walleye	2	48.7 - 51.5	280	No
John Flannagan Reservoir	Bluegill Sunfish	7	13.5 - 16.8	105	No
Levisa Fork near Rt. 460 near State Line	Channel Catfish	1	45.4	347	Yes
James River near Rt. 150 downstream Boshers Dam	Blue Catfish	1	82.6	258	No
James River near Rt. 150 downstream Boshers Dam	Flathead Catfish	1	103.0	561	Yes
James River near Pony Pasture Park Sta. 1 at Fall Zone	Flathead Catfish	1	97.2	485	Yes
James River near Pony Pasture Park Sta. 1 at Fall Zone	Flathead Catfish	1	92.1	329	Yes
James River near Tredegar Iron Works	Flathead Catfish	2	73.1 - 87.5	635	Yes

*PCBs results are truncated. Fish analyzed individually or as composite samples. **ppb** = parts per billion **cm** = centimeters

CONCLUSIONS

The levels of polychlorinated biphenyls in American Eel collected from Three Creek near the Route 617 bridge below Slagle are above the VDH's screening level for issuing a fish consumption advisory; additional sampling would confirm the need for an advisory.

The levels of polychlorinated biphenyls in Redear Sunfish, Black Crappie, and Largemouth Bass from Cranes Nest River near Fish Trap Branch are above the VDH's screening level for issuing a fish consumption advisory; additional sampling would confirm the need for an advisory.

The levels of polychlorinated biphenyls in Walleye, Largemouth Bass, and Bluegill Sunfish from John Flannagan Reservoir are above the VDH's screening level for issuing a fish consumption advisory; additional sampling would confirm the need for an advisory.

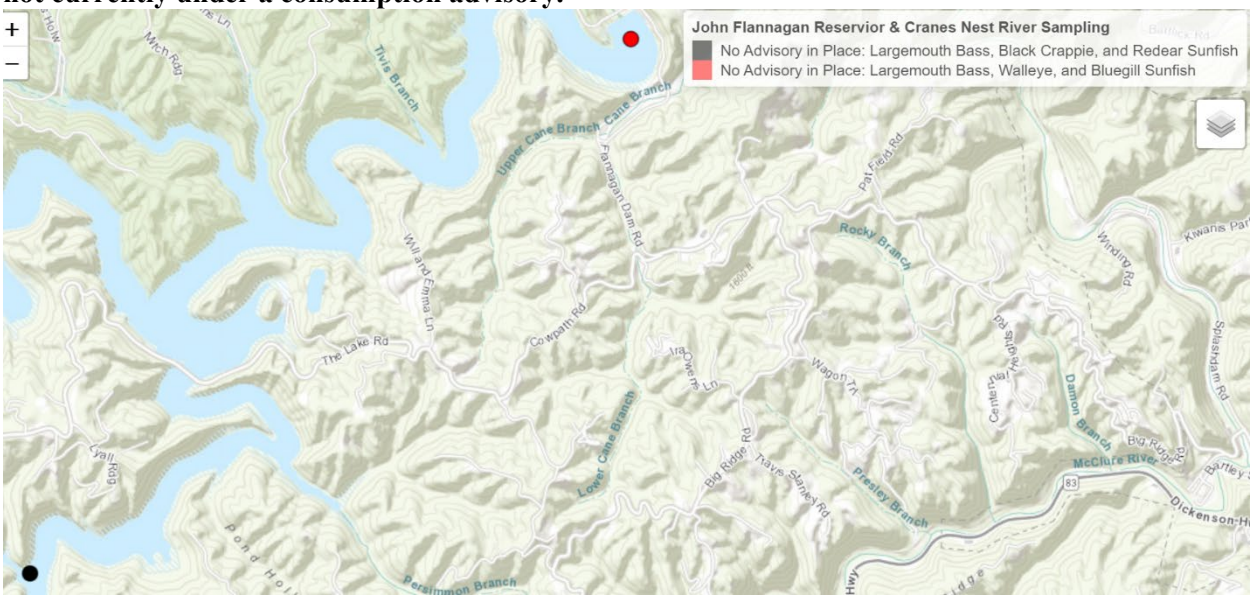
RECOMMENDATIONS

Additional testing of American Eel in Three Creek is recommended. Furthermore, sampling and testing of other fish species from Slagle should be conducted, provided there are no barriers preventing their movement from Three Creek.

Additional testing of Redear Sunfish, Black Crappie, and Largemouth Bass in Cranes Nest River near Fish Trap Branch is needed to determine if an advisory is warranted.

Additional testing of Bluegill Sunfish, Largemouth Bass, and Walleye from John Flannagan Reservoir is needed to determine if an advisory is warranted. Fish should also be sampled from influent waterways of John Flannagan Reservoir where the public has access to edible-sized fish.

Image 1. Sampling locations at John Flannagan Reservoir and Cranes Nest River, where fish are not currently under a consumption advisory.



John Flannagan Reservoir sampling location. Cranes Nest River sampling location.

Please let us know if you have any questions or other information to consider.

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