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Agency of Agriculture Will Continue Careful Monitoring of Endocrine Disruption in Vermont Waterways

In January 2016, the Agency of Agriculture, Food and Markets reviewed a research study authored by the US Fish and Wildlife Service and the US Geological Survey¹ entitled "*Evidence of Estrogenic Endocrine Disruption in Smallmouth and Largemouth Bass Inhabiting Northeast U.S.*" The review was undertaken in response to a request from James Ehlers, Executive Director of Lake Champlain International, regarding the current regulation of the agricultural herbicide atrazine in Vermont's waterways.

While the Agency of Agriculture will continue to work closely with researchers to monitor the presence and effects of estrogenic endocrine disruption in Vermont's fish species, at this time the research does not support changes to the state's regulation of atrazine.

The recently released study assessed exposure of smallmouth and largemouth bass to endocrine disrupting chemicals in northeastern surface waters near national wildlife refuges and included three sample sites in Vermont. Fish exposure to these chemicals was primarily measured by signs of 'intersex', the presence immature egg cells, in male fish gonads.

Smallmouth bass collected from 12 locations all over the northeastern U.S., including the two in the Missisquoi River in Vermont, had signs of intersex. Largemouth bass collected in Goose and Gander Bays in Lake Champlain had no signs of intersex. Several smallmouth bass collection sites in other states that had no agricultural influences had higher levels of intersex than those observed in Vermont.

Endocrine disrupting chemicals come from a wide variety of sources and are prevalent in the environment. Some of these chemicals are naturally-occurring, but most are human-made. Examples include: chemicals in birth control, flame retardants, bisphenol A, dioxins, PCBs, and some current and historically used pesticides.²

While the study identified potential sources of these chemicals in the Missisquoi River, including industrial activities, wastewater treatment plant discharges, and agricultural practices, it did not test for or identify specific chemicals in the water.

The use of atrazine, a widely used corn herbicide, is highly regulated in Vermont. Atrazine products must be registered with the Vermont Agency of Agriculture, all users must be certified and all users must adhere to environmental restrictions to protect ground & surface water (*e.g.*, cannot be used within 200' of lakes or reservoirs).

The study conducted by the US Fish and Wildlife Service and the US Geological Survey identified many possible sources and types of endocrine disrupting chemicals in the Missisquoi River, however, a direct causal link between atrazine and intersex in fish has not been scientifically established³. At this time, the Agency will not pursue additional regulatory mitigation measures based on the results of this study.

¹ L.R. Iwanowicz, V.S. Blazer, A.E. Pinkney, C.P. Guy, A.M. Major, K. Munney, S. Mierzykowski, S. Lingenfelter, A. Secord, K. Patnode, T.J. Kubiak, C. Stern, C.M. Hahn, D.D. Iwanowicz, H.L. Walsh, A. Sperry. 2016. Evidence of estrogenic endocrine disruption in smallmouth and largemouth bass inhabiting Northeast U.S. national wildlife refuge waters: A reconnaissance study. *Ecotox. Environ. Safety*. 124, 50-59.

² National Institute of Environmental Health Sciences. accessed Feb 2016.
http://www.niehs.nih.gov/health/materials/endocrine_disruptors_508.pdf

³ US EPA, 2015. Memo: EDSP Weight of Evidence Conclusions on the Tier 1 Screening Assays for the List 1 Chemicals. Washington DC.

Protecting Vermont's waterways, and the fish and wildlife that depend on them, is a top priority for Agency of Agriculture, Food and Markets. Our pesticide and water quality regulators will continue to work closely with researchers, Vermont's agricultural community, and other state Agencies to better understand the sources and impacts of chemicals on the environment and continue to improve practices and regulations that will help preserve the health and sustainability of Vermont's waterways for generations to come.
