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Department of Marine Sciences Presents a Seminar By

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What happens in an aquatic food web when you put fish on the birth control pill?

Municipal wastewaters contain complex mixtures of chemicals, including natural estrogens and the synthetic estrogen used in the birth control pill, to which fishes living downstream are continuously exposed. Two decades of research has shown that estrogens and their mimics in these wastewaters are affecting the endocrine system and sexual development of fishes worldwide. More specifically, male fishes become feminized and produce eggs in more severe cases, but it was not known if it threatens the sustainability of fish populations. A whole lake experiment was done at the Experimental Lakes Area (ELA) in northwestern Ontario, Canada, to understand how the estrogen in the birth control pill (17□-ethynylestradiol; EE2) affects reproduction and numbers of fish and other organisms in the food web. The experiment showed that EE2 caused the feminization of male fishes and the near extinction of a fish species from the lake due to its reproductive failure. When the additions of EE2 stopped, mimicking improved treatment of municipal wastewaters, the fish recovered completely. However, the reduced abundances of small-bodied fishes resulted in indirect effects on other trophic levels including a decline in the lake's top predator, lake trout, and an increase in several invertebrate taxa. Overall, results show that estrogens and their mimics have the potential to affect aquatic food webs both directly through changes in the reproductive success of some fishes and indirectly through changes in predation pressure and food supply.

Host: Rob Mason
Time & Date: 11:00 am, Friday, April 15, 2016
Place: Marine Sciences Building, Seminar Room 103

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