Freshwater male fish exposed to chemicals in water becoming more feminine

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A school of sardines in Italy. Credit: Wikimedia / Alessandro Duci

(Phys.org)—Professor Charles Tyler of the University of Exeter in Britain (and colleagues) has conducted a study of the impact of chemicals from human waste treatment plants in rivers and streams on the fish that live in them. He has told the press before presenting the findings formally that they have found a very large number of male fish

exhibiting female characteristics.

Tyler and his team are scheduled to offer a lecture at this year's Symposium of the Fisheries Society in the British Isles at Exeter University outlining their findings. Among other things, they have observed male fish laying eggs and signs of other male fish becoming transgender.

The problem, he said, is the chemicals that flushed down the toilets, many of them in our urine. One source in particular has become a major concern—birth control pills. They have a major impact on creatures living in the water systems where chemicals removed from wastewater are dumped. Another group of chemicals causing a lot of problems for underwater creatures is antidepressants. Just as in humans, they cause behavioral changes in fish—making some less shy, for example, which makes them easier for prey to catch. Other chemicals in cleaning agents, plastics and cosmetics are also causing problems for fish and other wildlife.

To learn more about the impact of chemicals dumped into rivers and streams, the researchers captured many healthy and non-healthy samples and brought them back to their lab for close study. There, some of the specimens were monitored, others dissected and yet others were subjected to the same chemicals that other fish encounter in their environment. The team reports finding males with female sex organs, reduced sperm counts, less competitive mating behaviors, and in some cases, actually producing eggs. They also found estrogens commonly found in plastics cause defects in fish heart valves. The team reports also that offspring of fish exposed to such chemicals were more sensitive to the chemicals in general in subsequent exposures.

Water samples collected at 50 different sites around Britain showed that 20 percent of those tested positive for chemicals believed to be harmful

to fish and other water creatures. They found over 200 chemicals in the water that have been identified as having a negative impact on marine life.