

Reproductive Consequences of Exposure to Sediment Extracts from the Potomac River on Japanese Medaka

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Abstract: Recently an intersex condition, defined as the presence of oocytes in the testes of male gonochoristic fish, has been observed in smallmouth bass in the South Branch of the Potomac River, West Virginia, which indicates exposure to exogenous estrogens. Endocrine disrupting chemicals (EDC's) are generally hydrophobic and would tend to be found within the sediment of aquatic environments. Few studies have attempted to show the effects of exposure to EDCs on fish using sediment chemical extracts. We have developed a mass sediment extraction technique to determine the effects of extracted chemicals from three sites (Springfield, Petersburg, and Franklin) on reproductive performance of adult mating pairs of Japanese medaka (*Oryzias latipes*) for 14 days. Sediments were divided, sonicated separately with two solvents (hexane and ethyl acetate:acetone (50:50)), and filtered three times. After solvent exchange with acetone, pairs were subjected to extracts at the ratio of 10g of extracted sediment in 1L of water. Hatching success significantly decreased due to exposure to Franklin (hexane and ethyl acetate:acetone) and Petersburg sediment extract (ethyl acetate:acetone). Vitellogenin quantification using whole livers and histological analysis of a subset of exposed fish will lend further insight into the investigation of endocrine disruption in the South Branch of the Potomac River.

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