

Abstract of the Thesis

Endocrine Disruption In Winter Flounder (*Pleuronectes americanus*): In Jamaica Bay, NY

by

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Jamaica Bay, NY is an urban estuary that receives millions of gallons of sewage effluent daily making sewage effluent its primary source of freshwater. Extremely high levels of xenobiotic compounds (e.g., nonylphenol, estradiol, estrone) observed in sediments led us to postulate that benthic fish residing in Jamaica Bay, NY are likely targets for endocrine disruption and potentially, reproductive impairment. We collected winter flounder, *Pleuronectes americanus*, from multiple sites in Jamaica Bay and a

reference site off the east coast of Long Island, Shinnecock Bay, in the spring of 2002 and 2003. Levels of circulating 17α -estradiol (E2), vitellogenin (VTG) and 11-ketotestosterone (11-KT) showed that the hormonal status of the fish from Jamaica Bay has been altered relative to the reference fish population. Females from the most contaminated site showed significantly higher levels of VTG and males showed decreased levels of E2 and 11-KT, but not elevated VTG. We were able to catch very few male fish at the site with the highest levels of endocrine disrupting chemicals, Grassy Bay. Our data indicates that although female fish appear to be responding to estrogenic compounds, hormone levels in male fish appear to be suppressed, indicating a more complex pattern of endocrine disruption than has previously been observed in sewage impacted estuaries in the United Kingdom and in some areas of the United States.