The Gonadal Abnormalities Observed in Male White Perch (Morone americana) of the Detroit River and the Surrounding Areas: A Result of Endocrine Disruption?

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A pilot field study was initiated in the fall of 1998 to determine if endocrine disruption was occurring in feral fish inhabiting locations impacted by the discharge of municipal and industrial effluents. Initially seven species were collected from Coote's Paradise, Hamilton, Ontario an embayment which receives effluent from the Dundas sewage treatment plant. Fish were histologically examined for the presence of an intersex expression identified as testis-ova; a condition in which male fish contain oocytes embedded in otherwise apparently normal testicular tissue. Testis-ova were present in 8 of the 19 male white perch (Morone americana) young-of-the-year (yoy) and not observed in any of the remaining six species. A follow-up investigation was conducted the second year to confirm the continual presence of intersex in Coote's Paradise and to determine if this condition was evident in older fish collected from other locations. Testis-ova were once again present (date: fall 1999) in white perch (yoy) and for the first time were also observed in 8 of the 37 older (age: approx. 1-2 y old) male white perch collected from the Bay of Quinte, Lake Ontario region. Some of the most compelling evidence of endocrine disruption was observed in fish collected within 1 km downstream of the West Windsor sewage treatment plant outflow into the Detroit River during the fall of 2000. These fish not only exhibited testis-ova (3 out of 9 males), but male gonadal tissue was also highly fibrotic and grossly under developed (size and gonadal maturation) in comparison to similar sized fish from other locations. White perch were also sampled in the fall of 2000 from relatively non-impacted locations in the western basin of Lake Erie and the southern shore of Lake St. Clair in an attempt to assess if testis-ova occurs naturally within this species and if so, at what frequency. To date, we have not found any evidence that suggest testis-ova naturally occur in white perch. Work is currently underway to histologically examine the remaining samples collected during these field seasons and to document normal gonadal development within this species. Future plans include an enlarged sampling effort necessary to properly document the frequency of this finding.