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Intersex (Testicular Oocytes) in Smallmouth Bass from the Potomac River and Selected Nearby Drainages

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Abstract.—Intersex, or the presence of characteristics of both sexes, in fishes that are normally gonochoristic has been used as an indicator of exposure to estrogenic compounds. In 2003, during health assessments conducted in response to kills and a high prevalence of skin lesions observed in smallmouth bass *Micropterus dolomieu* in the South Branch of the Potomac River, the presence of immature oocytes within testes was noted. To evaluate this condition, a severity index (0–4) was developed based on the distribution of oocytes within the testes. Using gonad samples collected from 2003 to 2005, the number of histologic sections needed to accurately detect the condition in mature smallmouth bass was statistically evaluated. The reliability of detection depended on the severity index and the number of sections examined. Examining five transverse sections taken along the length of the gonad resulted in a greater than 90% probability of detecting testicular oocytes when the severity index exceeded 0.5. Using the severity index we compared smallmouth bass collected at selected sites within the South Branch during three seasons in 2004. Seasonal differences in severity and prevalence were observed. The highest prevalence and severity were consistently noted during the prespawn–spawning season, when compared with the postspawn season. In 2005, smallmouth bass were collected at selected out-of-basin sites in West Virginia where fish kills and external skin lesions have not been reported, as well as at sites in the Shenandoah River, Virginia (part of the Potomac drainage), where kills and lesions occurred in 2004–2005. The prevalence of testicular oocytes is discussed in terms of human population and agricultural intensity.

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