



## *Patuxent Science Meeting 2004 Poster Abstract*

---

### **A Comprehensive Evaluation of Contaminant Exposure and Reproduction in Delaware Bay Ospreys**

B.A. Rattner, P.C. Toschik, P.C. McGowan, R.C. Hale, N.C. Christman, M.A. Ottinger and D.B. Carter

Despite serious water quality problems, contaminated sediments, and considerable pollutant loading and retention, Delaware Bay and River provide important habitat for wildlife. In 2002, we conducted a comprehensive evaluation of contaminant exposure and reproduction of ospreys breeding along 3 segments of a 200 km stretch of the Delaware Bay and River, and in a coastal reference area (Delaware Inland Bays). A sample egg was collected from each of 39 nests and analyzed for organochlorine pesticides, PCBs, and mercury; a subset of these eggs was analyzed for perfluorinated compounds and polybrominated diphenyl ethers. The fate of eggs remaining in each nest was monitored at weekly intervals through fledging. Concentrations of 10 organochlorine pesticides or metabolites (e.g., p,p'-DDE, dieldrin, heptachlor epoxide, chlordane), total PCBs, and several Ah receptor-active PCB congeners were greater ( $p < 0.05$ ) in eggs collected between the C&D Canal and Trenton compared to eggs collected from other sites. Concentrations of p,p'-DDE (0.785-3.84 &#956;g/g ww) and total PCBs (5.50-14.5 &#956;g/g ww) in eggs collected between the C&D Canal and Trenton were similar to levels recently found in the Chesapeake Bay regions of concern. The ratio of Aroclor 1254 to Aroclor 1260 was consistent among all sites, suggesting a common source of PCBs. In all study segments, at least 1 young was fledged from 66-75% of the nests. Average productivity for Delaware Inland Bays and southern Delaware Bay was 1.17 and 1.42 fledglings per active nest; north of the C&D Canal productivity averaged 1 fledgling per active nest, which is marginally adequate to maintain the population. A logistic regression model found that organochlorine contaminant concentrations (p,p'-DDE, heptachlor epoxide, chlordane and metabolites, and total PCBs) were predictive of hatching success. These findings indicate environmental contaminants continue to be a significant stressor on osprey productivity in the northern Delaware Bay and River.