

**Using Field Data on Fish Pathology to Assess the Effectiveness of Remedial Dredging in the Black River, Ohio.** Paul Baumann, USGS Field Station, OSU, 2021 Coffey Road, Columbus, OH, T: 614-469-5701, F: 614-292-7432, Email: baumann.1@osu.edu

A series of studies from 1980 through 1998 examined sediment contamination and pathology of brown bullhead in the Black River, Ohio. Sediment in the lower reach of the river was contaminated by polynuclear aromatic hydrocarbons (PAHs) from a steel and coking facility. In 1982 the liver cancer prevalence in mature fish (age 3 and older) was almost 40% and the total neoplasm prevalence was 60%. Tumor prevalence increased with age, and age distribution was truncated. Just over 5% of brown bullhead captured were age 5, and no bullhead of age 6 or older were caught in 1981 and 1982 (N = 522). During this same period total PAHs in the sediment just downstream from the US Steel coking facility were at a parts per thousand level. In 1983 the coking plant was closed, and by 1987 PAH levels in sediment had declined by about two orders of magnitude. Coincidentally the liver cancer prevalence in 1987 had declined to 10% with a total neoplasm prevalence of 32.5%. In 1990, following a USEPA Consent Decree, the area with the most contaminated sediments was dredged with an open clamshell. In 1992 and 1993 liver tumor prevalence in mature bullhead increased dramatically. Liver neoplasm prevalence in age 3 fish in 1992 and 1993 (which would have been age 1 and young-of-the-year fish, respectively, when the dredging occurred) averaged over 50% (N=93). However age 3 fish captured in 1994, the first age group not present during the dredging, had zero neoplasms (N = 27). Liver cancer prevalence in all mature bullhead had declined to 6.7% by 1998, even though the percentage of age 5 and older fish increased dramatically to over 60%. These data indicate that the Black River remedial dredging resulted in a short-term increase but a long-term decline in benthic fish tumors. They also suggest that the method of dredging may determine the extent of subsequent fish pathology.