Update on the Anacostia

Chesapeake Bay Field Office

Osprey chick in nest before blood samples are taken. Photo, Peter McGowan, USFWS

Since 1987, the U.S. Fish and Wildlife Service Chesapeake Bay Field Office, Environmental Contaminants Program has conducted field studies investigating the effects of environmental contaminants on fish and wildlife in the Anacostia River.

Recently, we have also been active in restoration activities. The health and recovery of the Anacostia is critical because it serves as an important nursery area for anadromous fish and provides habitat for wading birds, waterfowl and neotropical migrant birds.

• **Working with the Anacostia Watershed Toxics Alliance (AWTA)**: In 1999, the Anacostia Watershed Toxics Alliance (AWTA) was formed as a public/private partnership aimed at cleaning up the Anacostia River. The Chesapeake Bay Field Office has played a leading role in AWTA by contributing expertise in compiling existing data, conducting field studies to fill data gaps and working with partners to develop a cleanup plan.
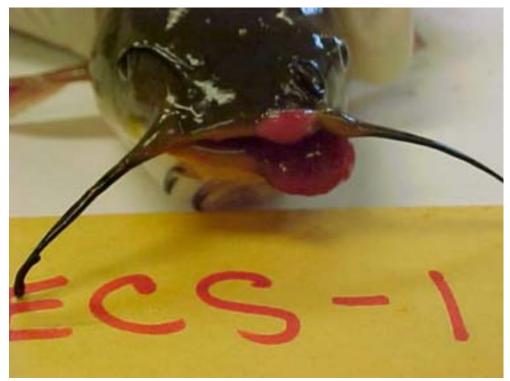
• **Tumors in Brown Bullhead Catfish**: Because they are bottom feeders and burrow into the mud during winter, brown bullhead catfish are exposed to contaminants in aquatic sediments. In 2000/2001, Chesapeake Bay Field Office biologists collected bullheads from three locations in the Anacostia and a reference in the Tuckahoe River. Liver tumors were found in 50-68% of the Anacostia fish, a rate equivalent to the most contaminated areas in the Great Lakes. The percentage of Anacostia fish with skin tumors was also high (10-23%). An analysis of DNA in the livers of the fish showed that polynuclear aromatic hydrocarbons (PAHs), present in burnt and unburnt fossil fuels and petroleum products, are playing a role in tumor formation. The Chesapeake Bay Field Office will continue monitoring tumor rates to track the health of the river.

• **Movement of Brown Bullheads**: Movements of brown bullheads were tracked over the spring, summer, and fall/winter seasons. Fish captured from the river were implanted with ultrasonic transmitters and released near the CSX Railroad Bridge. By wearing headphones and submerging a hydrophone into the water, we could hear and track individual fish. Adult bullheads remained in the Anacostia, staying within 0.5 to 2.1 kilometers (0.3-1.3 miles) of the release point. Since adult bullheads are relatively stationary, they can be used as a monitoring tool for habitat quality in the Anacostia.

• **Toxicity of Anacostia Water to Larval Fish:** In 2001, we conducted laboratory toxicity tests on water samples collected after rain events and during dry periods from four locations in the river between Bladensburg and the mouth. We found that heavy rains (>1.5 cm=0.6 inch) cause conditions that reduce the growth and survival of larval fish at some upstream locations.

• **Sediment Quality Study**: Biologists also measured sediment chemical concentrations, toxicity of sediments to laboratory organisms, and the health of bottom-dwelling macroinvertebrates at 20 stations from Bladensburg to the river mouth.

Brown bullhead from the Anacostia River with skin cancer on lower lip. Photo, Fred Pinkney, USFWS

This approach, known as the Sediment Quality Triad, is used to measure the degree of pollution-induced degradation in aquatic systems. Results of the study serve as a baseline for tracking future improvements in the quality of the water and sediments.

• Fish Contaminant Analysis: In 2001, the Chesapeake Bay Field Office coordinated the analysis of chemical contaminants in fish collected by the District of Columbia Department of Health as part of their program to update the fish advisory.

• Ichthyoplankton Analysis: The Chesapeake Bay Field Office also coordinated the identification of fish egg and larvae (ichthyoplankton) collected by the District of Columbia Department of Health between 1999 and 2001. This information can be used to monitor the use of the Anacostia as a spawning and nursery area for fish.

• Kingman Lake Marsh Restoration Monitoring: In 2001, the Service monitored the contaminant concentrations in sediments, invertebrates and fish collected from the newly restored marsh in Kingman Lake to evaluate the potential risks to fish and wildlife.

• Contaminants and Reproductive Success in Osprey: During the spring and summer of 2000, ospreys nesting in the Anacostia/Potomac Rivers were studied to determine if contaminants were affecting reproduction. Eggs, blood and feathers from nestlings were analyzed for pesticides, polychlorinated biphenyls (PCBs) and metals. Weekly monitoring of nests tracked hatching and fledging success. Results showed that several contaminants were higher in eggs, blood and feathers collected from the Anacostia/Potomac sites than a reference area. However, the concentrations were below levels known to adversely affect osprey. Nesting success in the Anacostia and Potomac were low compared to the reference area. Still the number of fledglings per active nest exceeded the value required to maintain a stable population. Overall, it appears that available nesting substrate and predation are the primary causes for the reduced nesting success.

Anacostia River at CSX Railroad Bridge sampling location. Photo, Fred Pinkney, USFWS