Monitoring Contaminants in Fish at Pictured Rocks

- Environmental contaminants have been demonstrated to adversely impact wildlife reproduction and cause developmental deformities in the Great Lakes region.

- Many of these chemicals are known to or may cause similar reproductive and developmental problems in humans. The chemicals of greatest risk to both wildlife and humans are persistent, bioaccumulative, and toxic (PBTs).

- A fraction of the PBTs found in park waters may have come from past use or emissions in or near park boundaries, but long-distance airborne transport and deposition accounts for a significant proportion of current contaminant levels.

Long-term and Regional Comparisons

This monitoring program, which is occuring in six Great Lakes Network national parks, provides park managers with information about contaminant levels and patterns of distribution in the environment. We do this by collecting representatives from three levels of the aquatic food web: predator (northern pike) and prey (one-year-old yellow perch) fish and dragonfly larvae, and then analyzing tissue samples from them for methyl-mercury, alkyl-lead, DDT and its derivatives, PCBs, perfluorooctanesulfonates (PFOS), perfluorooctanoic acid (PFOA), and polybrominated diphenyl ethers (PBDE). Combining the data from this project with that from our water quality monitoring, we can better understand the interactions of water quality, toxins, and wildlife and human health. Collection of fish and invertebrates for the contaminants monitoring program is accomplished through a contract with the University of Wisconsin-La Crosse, River Studies Center. Sampling began at Pictured Rocks in 2008 and will be repeated annually. The four lakes chosen for this program overlap with the water quality monitoring project: Beaver, Chapel, Grand Sable, and Miners lakes.

What We Are Finding at

Laboratory analysis to determine toxin loads is still occurring, but we can provide a summary of what was caught in each lake. Other fish were taken when insufficient numbers of pike and perch were caught.

- *Miners Lake* – Seven adult northern pike; approximately 40 adult yellow perch, eight of which were retained for possible analysis; one rainbow trout (released); six mottled sculpin; five sea lamprey; and 77 dragonfly larvae from three families.
- *Beaver Lake* – Two northern pike; one walleye; >100 small yellow perch, 31 of which were retained for analysis; 23 Iowa darters; 16 johnny darters; 36 mottled sculpin; and approximatley 180 dragonfly nymphs representing four families.
- *Grand Sable Lake* – Six northern pike, one smallmouth bass, several large white suckers (released), five adult yellow perch (released), 17 mottled sculpin, 25 Iowa darters, 25 johnny darters, six rock bass (all released), and about 120 dragonfly nymphs representing four families.
- *Chapel Lake* – 10 Iowa darters, four johnny darters, 24 yellow perch, about 75 cyprinids (not identified to species), and four white suckers (released). No predatory fish were caught. We netted 79 dragonfly nymphs representing five families.
- *Legion Lake* – 31 central mudminnows, which is the only fish species known to be in the lake, and about 50 larval dragonflies (not yet identified).

The Great Lakes Inventory and Monitoring Network is a group of nine national parks in Minnesota, Wisconsin, Indiana, and Michigan that share similar management issues. The Great Lakes I&M Program office is in Ashland, Wisconsin. Program staff work with managers at each of the nine parks to develop long-term scientific monitoring programs that help to track the "health" of natural resources and provide information for making management decisions. Visit us online at http://science.nature.nps.gov/im/units/glkn/.