

Black River Area of Concern Beneficial Use Impairments

Restrictions on Fish and Wildlife Consumption:

Around 1983, fish consumption advisory was issued for the lower 5 miles of the Black River mainstem. The advisory warned against eating any fish species from that part of the river. At the time, it was issued because of a concern over the high incidence of liver and lip cancers found in the river's resident fish communities. In the early 1990s, fish consumption advisories were based more on a health protection basis and the mainstem advisories were amended to only include smallmouth and largemouth bass, brown bullhead catfish, buffalo, freshwater drum and common carp, due to PCB tissue contamination. Then, in 1997, the Black River fish consumption advisories were further revised to only include brown bullhead catfish, freshwater drum and common carp. The Black River AOC remains impaired for the fish and wildlife consumption beneficial use. Over the past decade, more species, including snapping turtles, have been added to the advisory list due to mercury contamination. Currently, there are consumption advisories for the mainstem, both the East and West Branches and Findley Lake. The Ohio Sport Fish Consumption Advisories are available at: <http://www.epa.state.oh.us/dsw/fishadvisory>.

Tainting of Fish and Wildlife Flavor:

The Black River RAP plans to re-assess this beneficial use, according to the guidelines set forth in [Delisting Targets for Ohio Areas of Concern](#).

Degradation of Fish and Wildlife Populations:

Fish Populations:

Evaluation of fish communities is based on Ohio Environmental Protection Agency (Ohio EPA) Index of Biotic Integrity (IBI) and the Modified Index of Well-Being (MIwb). While the entire Black River AOC remains impaired for fish populations, there are some improvements. Fish communities in the free-flowing portion of the mainstem improved in 1996, relative to 1992, 1982 and 1977 Ohio EPA data. A general absence of intolerant species is considered to be a point source pollution legacy and a symbol of continued watershed-wide habitat impairment. In the East Branch sub-watershed, an upgrade to a small municipal treatment plant and improvements to the City of Elyria's sewage collection system has led to a dramatic improvement to benthos. Macro-invertebrates, with several reproductive cycles in a season, respond more quickly to water and habitat improvements than fish. The Black River RAP hopes the improvements to the East Branch benthic communities will lead to improvements in the sub-watershed's fish communities.

Wildlife Populations:

Some improvements have also been noted in wildlife sentinel populations. The number of active Great Blue Heron nesting sites in the 'rookery' located on the banks of the Black River mainstem have increased by a factor of six since 1993. A few nesting Bald Eagles now reside in the Black River AOC. Only a few years ago there were no Bald Eagles, according to the Ohio Department of Natural Resources bald eagle surveys. Unofficial river otter sightings have been noted. The Black River RAP plans to re-assess this portion of the beneficial use, according to the new document, [Delisting Targets for Ohio Areas of Concern](#).

Fish Tumors or Other Deformities:

Historically, this beneficial use has been impaired only in the lower mainstem areas. Extensive studies over the years have established a link between high sediment PAH concentrations and liver cancers in bullhead and external deformities in other fish populations. The river sediments had been contaminated by discharges from a coking plant that closed in the early 1980s and remedial dredging of those sites occurred in 1989-1990. Since that time, studies have shown a dramatic decrease in both external tumors and liver cancers. The health of Black River fish are now approaching what would be expected at other urban rivers. In the 2004, the Black River Remedial Action Plan Coordinating Committee determined sufficient progress had been made in the health of the fish communities of the Black River and applied to the USEPA for a change in

designation for this beneficial use impairment from 'Impaired' to 'In Recovery Stage.' The change in designation was accepted with an Earth Day press conference on April 22, 2004.

Bird or Animal Deformities or Reproductive Problems:

The Black River RAP plans to re-assess this beneficial use, according to the guidelines set forth in [Delisting Targets for Ohio Areas of Concern](#).

Degradation of Benthos:

Evaluation of this beneficial use is based on Ohio EPA's Invertebrate Community Index (ICI) for the benthic communities. The Black River AOC remains Impaired for this beneficial use. Low dissolved oxygen and sediment are the major causes of impairment in the mainstem and high turbidity and sedimentation appear to be the major causes in the rest of the AOC.

There have been dramatic improvements in the East Branch benthic communities. Many areas that were impaired are now exceeding Ohio's warm water habitat water quality criteria (ICI=34) and are now approaching exceptional warmwater habitat criteria (ICI=46). According to the Delisting Targets for Ohio Areas of Concern, a warm water habitat level is the target for delisting the Degradation of Benthos beneficial use impairment. The Black River RAP decided a formal US EPA delisting of this impairment in this sub-watershed would be the best method to publicize the improvement and garner local support to protect the waterways. In 2005, the delisting of the Degradation of Benthos beneficial use impairment was accepted and the Black River RAP is working to mobilize protection efforts.

Restrictions on Dredging Activities:

Sediments are routinely sampled, analyzed, and dredged from the ship channel and are disposed of in an Army Corps of Engineers Confined Disposal Facility located adjacent to the East Breakwater Shorearm of Lorain Harbor. Currently, the Corps dredges about every two years, pulling approximately 160,000 cubic yards of sediment from the harbor and ship channel. Recent Corps sediment data has showed a marked improvement in the concentrations of pollutants in some areas of the ship channel.

Eutrophication or Undesirable Algae:

Low dissolved oxygen in the lower mainstem, especially in the dredged ship navigation channel, has a strong impact on the biological communities. Recently, Republic Technologies International and the cities of Elyria, Lorain, and North Ridgeville undertook a two year modeling study of the problem. During this study, more than 1500 water and sediment samples were collected and analyzed. Increased nutrient loadings remain a problem in the remainder of the AOC. The excess nutrients come from sewage treatment facilities, over-fertilization of lawns, from areas with failed, failing, and direct discharge HSTS systems and from agricultural runoff. One of the areas severely impaired for this beneficial use was immediately downstream of the Grafton Village water treatment facility. A recent upgrade to the facility included phosphorus removal and this has had a dramatic effect in lessening the algal growth downstream of the facility. The Black River RAP will continue to monitor this area and work to control nonpoint source nutrient runoff throughout the AOC.

Restrictions on Drinking Water Consumption, or Taste & Odor:

There are no public water supply intakes in the mainstem of the Black River. However, there are two communities that obtain their water from the West Branch sub-watershed. While there are no 'restrictions' on drinking water consumption, the source water for these communities may be seasonally impacted due to excessive sediment loads from upstream sources. Source Water Assessment Plan Reports (SWAP) have been written by the Ohio EPA for each water supplier. Each SWAP report assesses the source water and the potential for contamination and then offers remedial measures.

Beach Closings:

A 21-year Ohio Department of Health contact advisory on the lower 6 miles of the Black River mainstem was lifted in April 2004. The contact advisory warned against swimming or wading and was associated to the elevated levels of PAH in river sediments and the high incidence of fish tumors. A 1989-1990 dredging of the contaminated stretch of the river removed the contaminated sediments. The Beach Closing beneficial use impairment remains in effect for one of two Lake Erie public swimming beaches in the AOC. While Century Park Beach, located east of the Black River mouth, has been relatively free of bacterial contamination, high bacteria levels have impaired public use of Lakeview Beach, located west of the Black River mouth. In 2004, a study team was convened by the Lorain City Health Department. The team consists of the Health Department, Black River RAP members, USGS, and Ohio Department of Health. The team has been collecting additional water samples as well as data on groundwater, bird populations, and Multiple Antibiotic Resistance tests. The studies should be completed in 2005, but preliminary data may suggest the problem is largely caused by sea gulls.

Degradation of Aesthetics:

Aesthetics are considered impaired throughout the AOC. Causes of impairment are streambank erosion and trash, oils, detergents, solids and odor in the stream network. Sources range from poor stream stewardship at a local level to failing home sewage treatment systems (HSTS) and combined sewer overflows. One positive note, as witnessed by the improvements to the East Branch benthic communities, the City of Elyria has been working on reducing the impacts from their CSOs. An inspection, operation and maintenance program for HSTS has been started by the Lorain County Health Department and the Black River RAP has been trying to develop small sub-watershed groups to help with proper stewardship of the local waterways.

Degradation of Phytoplankton & Zooplankton Populations:

The RAP has evaluated this category as "UNKNOWN" rather than "IMPAIRED" due to lack of information and plans to re-assess this beneficial use, according to the [Delisting Targets for Ohio Areas of Concern](#).

Added Cost to Agriculture & Industry:

The RAP has determined that a low potential exists for impairment, based upon Water Quality Standards for agricultural water use and industrial water use. These standards are based on the assessment of the frequency and duration of the presence of adequate flow volumes to meet withdrawal needs.

Loss of Fish & Wildlife Habitat:

Fish Populations:

Evaluation of fish habitat is based on Ohio EPA's Qualitative Habitat Evaluation Index (QHEI) and the data shows the entire Black River AOC is impaired. The low to moderate QHEI values from around the AOC result from channel modifications due to bank protection work, disruption of riparian corridor integrity, excessive sedimentation, channelization and poor riffle-pool-run sequences. In-stream sedimentation is problematic throughout the basin as evidenced by degraded fish and benthic macro-invertebrate communities. Wetland, riparian and upland habitats have been affected or eradicated by land use alterations through agricultural and developmental practices. The Black River RAP has been instrumental in the development of a Fish Habitat Shelf on the Black River mainstem as well as other in-stream habitat improvements throughout the AOC.

Wildlife Populations:

The Black River RAP plans to re-assess this beneficial use, according to the [Delisting Targets for Ohio Areas of Concern](#).