

Mapping Out the Olentangy

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Question:

What type of issues are relevant to the Olentangy River through Delaware County, Ohio, such as low-head dams, pollution, development, animals and plants? Also, how navigable is the river by foot or canoe and what is its potential as “blueway”?

The Olentangy River is often overlooked by citizens and visitors to Delaware, Ohio and we hope to bring attention to its importance to the community and the viability of using it as a possible attraction to Central Ohio for education and recreation.

Understand your Question:

The intent of our project was to learn:

What is the purpose of the low head dams, what progress has been made in removing these dams, and why did they decide to remove them?

What kinds of pollution are in the river how do the dams and pollution affect the river environment, what can be done to reduce the impact from said hazards?

Is the river heavily developed, is development encroaching or moving away, what kind of wildlife is there on the river, is any wildlife in danger or adversely impacted by dams/pollution/development? Also, can the river be navigated by foot or canoe, is it safe for the community to explore the river, is it already explored by the community, how will the community benefit from this project, how will the river be affected by this project, how does the community currently feel about the river, does the community wish to see anything happen to the river?

To understand these questions we must explore the river, collect data, talk to the community and educate the community about this project.

Data:

Data for the project is readily available and can be accessed online and will be in the form of hydrological data collected by Delaware County or the Department of Natural Resources. There may also be other data collected by individuals for project or research that may be a source of use. Professors from Ohio Wesleyan University will be contacted for help with any biology, hydrology, and geography issues related to the project.

River Facts: The Olentangy River flows 88.5 miles from its headwaters in Crawford and Richland County south into Delaware and Franklin County where it confluences with the Scioto River. The river has a 536 square mile drainage basin. Twenty-two miles of the Olentangy were designated a state Scenic River by the Ohio Department of Natural Resources in 1973. The designation runs from the Delaware Dam, north of the City, to Wilson Bridge Rd in Worthington.

The watershed is home to six state-listed endangered, threatened or special concern aquatic species while providing water resources for agricultural production, some industry, recreation and drinking water for an estimated 250,000 residents within and surrounding the watershed.

Delaware Dam: Delaware Lake was created by the U.S. Army Corps of Engineers with the construction of a flood control dam in 1951, and the reservoir was dedicated as a state park later that year. Authorized by the Flood Control Act of 1938 for the purposes of flood reduction, low-flow control for pollution reduction and water supply, recreation and fish and wildlife management. The Dam controls a drainage area of 386 square miles through the use of five gated sluices and six 25 foot by 32 foot gates. The Army Corp of Engineers continues to regulate the dam discharge rate and subsequent flow in the Olentangy River.

Quality Drinking Water: The Olentangy is an important socio-economic resource providing public drinking water supplies and recreational opportunities for many central Ohioans over 1.5 million of which live within a 30 minutes of the river. It is also the primary source of water for the City of Delaware. The City's Water Treatment Plant pumps about 4 million gallons per day to about 13,000 service connections, 175 miles of water mains, and 1,780 fire hydrants.

In accordance with EPA policy, the Delaware public Water system conducts an evaluation of its distribution system by regulating amounts of disinfectant by-products added to the water during the treating process and outside disinfectants. These include Atrazine added to the river water by herbicide runoff; Barium from drilling waste or metal refineries; Cadmium from corrosive pipes, metal refineries or paint runoff; Nitrate from fertilizer runoff or septic tank leakage. Chlorine and Fluoride, which are added to the water to control microbes and promote strong teeth respectively, are also monitored. 2010 Water Quality Report shows that all regulated chemicals are well below all MCLGs – the maximum containment levels in drinking water below which there is no known or expected risk to health.

Recreation: Parks Bordering Olentangy River (North to South): Delaware State Park located above the dam, offers over 1600 acres of camping, hiking, boating, fishing, swimming and picnic opportunities. Riverview Park a small park off SR 23 offers shelters and grills. Mingo Park located within the city limits

has large pool, skate park, baseball and soccer fields. Finally, Highbanks Park is further south down the river but can also be reached from SR 23 contains over 11 miles of scenic hiking trails as well as river overlooks and Native American burial grounds.

Other note-worthy sites include: White sands Campground and Water Park, Camp Lazarus Boy Scout Camp, Old Carpenters Mill on Chapman Road.

Navigability:

Trip 1- Dist: 7.7 miles Start: Main St south of dam Finish: Olentangy Avenue Bridge

Trip 2- Dist: 7.7 miles Start: Carpenters Mill (Chapman Rd) Finish: Edge cliff Dr off SR 315

Total distance: 15.4 miles (Olentangy through Delaware Co is about 18 miles)

During the spring and summer the water is low and certainly navigable. Rainfall before our second trip made canoeing much faster. The dam is releasing water near the beginning of spring it produces class 3 rapids that experienced river goers may take advantage of. The river is often so low that you must walk long stretches of the river which we experienced during our first trip. We were forced to get in and out dozens of times and the rocks are slick and clunky to walk over. Without rain, long distance trips will be frustrating and time consuming. However, there are many spots on the river perfect for fishing and paddling around and even swimming. The lower part of the river is the most beautiful and serene section, with high banks, less curves, and more time away from roads. The multiple bridges along 315 also provide easy access points to enter the river. It is impossible escape highway noise for more than 15 minutes and although quiet, farms, subdivisions, and stores were always nearby.

Fish Information: The Olentangy River is home to 54 species of Fish, a variety of Mussel Species, and 6 state-listed endangered, threatened or special concern aquatic species. The Fish populations have been reduced mainly because Lowhead dams act as separation barriers and lower the water quality. Despite the lowhead dams, fish are living in the river and fishing is the most popular recreational activity on the river. Common types of fish include smallmouth bass, carp, blue gill, sunfish and channel catfish.

Bird Info: The river below the Delaware Dam and into Worthington County has been a State Scenic River. The primary emphasis of this program is the maintenance and restoration of the forested corridors which cloak the stream banks of Ohio's scenic rivers. Forested riparian corridors, even relatively narrow ones of a few hundred feet, support a rich diversity of breeding birds in Ohio. The most commonly seen species are most definitely ducks, geese and Great Blue Herons but we definitely encourage birding for both novice and experienced birders along the river, especially in Highbanks Park where there several observation points and trails along the river.

Pollution : The primary causes of impairment in this segment of the Olentangy River are habitat alteration, urban and agricultural runoff and failing septic units. These are also high magnitude causes of impairment. Among the most visible and widely publicized threats in the Watershed is the development of agricultural farm land to residential and industrial uses. This is especially evident in Delaware County, the most rapidly growing county in Ohio. Thus in 2007 began efforts to remove lowhead dams in the city of Delaware, replace failing septic units, install agricultural best management practices and more effectively manage storm water runoff.

Lowhead Dam Removal : Lowhead dams are less than 15 feet high but are normally around 5 feet high. Most lowhead dams were built at the turn of the century to provide electricity to mills and factories, to make recreational pools, control the water supply, flood control or as Utility crossings. These dams are being removed at a high cost because they negatively impact the Ecology of rivers and they are major safety hazards, they are known as drowning machines. Lowhead dams on the Olentangy in and around Delaware have been slowly removed starting in the early 2000s so far four of Delaware's six have been removed. The two remaining are located north of Main Street Bridge and below the Route 23 overpass below Delaware City.

Runoff: Stream flow in the Olentangy River consists of typically low flow conditions with occasional short term, high-volume discharge "spikes" resulting from rainfall. The impacts of flood events in the river have been exacerbated by extensive deforestation and by the development of impermeable surface areas associated with urbanization. Major "withdrawals" from this portion of the river include the city of Delaware water plant north of the city and the DelCo Water Company water plant in Liberty Township in southern Delaware County. Places such as the Delaware Wastewater Treatment Plant and the Olentangy Environmental Control Center contribute as much as two-thirds of the stream flow in the lower stretches of the river. The 1999 Ohio EPA biological and water quality study of the Lower Olentangy River, from the Delaware Dam to the river's confluence, rated the river as having a grade of B or B+.

Conservation Projects: The Ohio EPA completed a Total Maximum Daily Load Study for the Olentangy in 2006 in response to the growing threats to the watershed, which calculated the maximum amount of each pollutant that the river can receive and still meet water quality standards. In response to the study a growing partnership of citizen groups and government agencies have joined together to reduce the impacts of pollution within the watershed. The Olentangy Watershed Alliance (OWA) received a grant from the Ohio DNR to partner with the communities and local citizens in the Upper Olentangy River Watershed to develop a program of activities and support for the watershed based on local solutions to water quality problems. State endorsed watershed action plans have also been developed for both the upper and lower sections of the watershed by Friends of the Lower Olentangy (FLOW) and the Olentangy Watershed Alliance.

General Health District embarked upon a project to inspect and evaluate all discharging home sewage treatment systems in Delaware County. This project was completed in 2008 and resulted in the replacement of 126 previously failing home sewage treatment systems.

In 2007 the city completed a \$25 million upgrade to its municipal wastewater treatment facility. Discharges of treated wastewater have improved and will further contribute to the restoration and improvement of the Olentangy River.

Urban runoff is being curbed with help from a revised Olentangy River Construction Stormwater Permit which allows the Ohio EPA to more effectively manage urban stormwater runoff.

Land conservation and preservation initiatives within the watershed are also ongoing in an effort to effectively manage nonpoint source pollution in rapidly developing. Camp Lazarus and the Big Run Preserve are both part of this project.

Agricultural runoff, another contributing nonpoint source of pollution is being addressed by the Scioto River Watershed Conservation Reserve Enhancement Program (CREP). CREP is enrolling vulnerable

riparian corridor and marginal farmlands into 10-year Conservation Reserve Program set-asides under a program administered by the USDA—Farm Service Agency.

Showing Data:

The focus of the project is to provide people with a sense of what the Olentangy River is like and how it affects the lives of Delaware residents. Thus the presentation of the data focuses on first hand pictures and descriptions of our experience/things we learned from our expedition. We also indicated nearby sites of interest such as parks, access points and lowhead dam locations to their approximate locations along the river. Finally researched information on the major topic areas on our map and include informative blurbs about these areas of interest.

Analysis:

We generated an engaging map of the Olentangy River that will encourage Delaware residents and OWU members to explore, appreciate and/or understand more about the river that flows through our county. This was accomplished by collecting data about important and interesting features, changes, and ways to engage with the river. Our focus is on the content and imagery arranged in an approachable manor rather than using an extremely precise measure of the location of these data points.

Presenting the Results:

Our final product is an 11" by 17" two sided map. This size allowed us to increase the scale and see more detail of the river, while still making the map and printable and manageable size. There is also a possibility of an on-line version of our map. The map include photographs that we took during our expedition to give our audience a sense of the river. The data from our expedition and from our research also takes up a large portion of the map and focuses in on 11 areas of interest.

Timeline:

Before break: Decide categories and Decide who we need to get in contact with

March 12: Preliminary trip for expedition 1

March 13-26: Plan trip details including getting access to canoe

March 27: Expedition, 8 miles

April 1-7: Analyzing data, combining research data with expedition

April 18: Preliminary trip for expedition 2

April 21: Expedition 2, 7 miles

April 8-14: Decided on map layout and Construct map

April 15-27: Construct map