

**Contact:**

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About the Ipswich River and IRWA

The Ipswich River flows through 21 communities in northeastern Massachusetts and supplies drinking water to more than 330,000 people before flowing into the Gulf of Maine. Historically, the river supported a productive fishery comprised of migratory and resident species, and contributed to the ecologically and economically vital Gulf of Maine fisheries.

However, the Ipswich River is now recognized as one of the ten most endangered rivers in America (American Rivers 2003), one of the most stressed rivers in Massachusetts (MA Water Resources Commission 2001), and impaired under section 303(d) of the Clean Water Act. It frequently runs dry and experiences fish kills during summer and early fall, due to a combination of excessive water withdrawals, wastewater export from the basin via the sewer system, and increased impervious surfaces, which reduce natural aquifer recharge. Approximately 70 dams and more than 500 bridges and culverts in the watershed further degrade habitat quality by altering natural flow patterns, drowning critical riffle habitats, and creating impediments to fish passage. The combined effect of extreme low flow conditions and the impoundments of dams and poorly designed culverts has been to transform the Ipswich River from a healthy, freeflowing river to a series of stagnant ponds, particularly during low-flow periods.

The Ipswich River Watershed Association (IRWA) is a non-profit organization incorporated in 1977. IRWA serves as the voice of the Ipswich River and the ecosystems it supports by working for the protection, restoration, and sustainable management of the vital natural resources within the river's watershed. Our accomplishments include developing the *Ipswich River Watershed Management Plan* and *Ipswich River Regional Water Conservation Plan*; monitoring the health of the Ipswich River through a long-term volunteer water quality monitoring program; and leading statewide efforts to improve water policy and implementation of state laws through a series of permit appeals.

Funding:

No funding is yet allotted, but IRWA will work with a summer intern to provide grant support for a research project.

PROJECT IDEAS**Environmental science student:**

- Survey dams and problem culverts in the watershed, assess potential for fish passage or removal, and write report identifying restoration priorities.
- Assess ecological damage and make recommendations for "keeping water local" based on field surveys (ecological, geomorphological) and data review of highly impacted subwatersheds, such as Egypt River and Bull Brook (used for Town of Ipswich Water Supply). Perhaps incorporate field surveys of Gravelly Brook and/or other less impacted reaches as reference streams. *Possible project for graduate school team.*

- Assist with development of restoration GIS and GIS-based analysis to determine restoration project priorities.

Aquatic ecology student:

- Conduct pre- and post-project monitoring of macroinvertebrates and/or fish at dams and culverts where restoration work is planned (possible collaboration with Marine Biological Lab at Plum Island).

Aquatic chemistry student:

- Monitor nutrient loading or pathogen impairment at key sites in the watershed (possible collaboration with Marine Biological Lab at Plum Island).

Statistics student:

- Analyze trends in water quality data collected since 1998 for 29 sites in the Ipswich River watershed.
- Review data for multivariate regression analysis of dissolved oxygen and redo analysis to see if low-flow is a causal factor.

Environmental policy student:

- Develop a revised version of the regional Water Conservation Report Card.
- Research regulatory requirements for 40B affordable housing developments that are often exempted from most local land use laws. Assemble case studies of 40B developments, and outline a campaign to address on a comprehensive watershed basis.
- Collect data on the scope of private wells in the Ipswich River Watershed, and identify areas where private wells significantly impact flows.
- Investigate process for and benefits of designating freshwater portions of the watershed as an Area of Critical Environmental Concern, Wild and Scenic River, or American Heritage River. Would these designations provide additional protection or access to funding?

Social science student:

- Based on surveys, focus groups, and other social science research techniques, evaluate social perceptions of water conservation/outdoor water use, restoration, dam removal, or other controversial topics and design social marketing strategy.

Economics student:

- Perform ecological benefit valuation study, such as travel cost study of canoeing on the Ipswich River.
- Conduct surveys of watershed residents to assess willingness-to-pay for river protection and restoration.

Legal student:

- Investigate legal underpinnings for water banks, stormwater utilities, and other programs to charge fees for environmental services. Likely work with Conservation Law Foundation or Charles River Watershed Association.