The Ipswich River for Kids!

A watershed is the land that “sheds water,” or drains, into a river or other water body.

Only miles outside of Boston, the Ipswich River is one of the best areas along the North Shore to experience firsthand the beauty, serenity, and excitement that nature has to offer. The river meanders along miles of undeveloped wetlands filled with all sorts of different native birds and wildlife that can easily be spotted from the river. The river is a favorite place among locals to spend a day canoeing, kayaking, or fishing. The river also serves a very important role to the area as the water supplier for fourteen different communities. Unfortunately, due to a combination of different problems the river is currently in a very vulnerable position, as each year the river drops to such low levels that it endangers the river’s ecosystem. To help prevent these problems from escalating, the river needs help from people like you! Educating yourself and finding ways to stay active within the river community will help ensure that the Ipswich River remains a healthy and thriving place for people to enjoy for years to come. Here are a few basic facts about the river and the issues affecting it today:

**Dams:** The construction of dams along the river has changed the river’s natural flow, transforming its flowing water into ponded areas and making it difficult for many native river fish to move freely within the river. Dams are also usually built on top of areas called riffles (shallow steep areas of the river that have faster flow rates) which naturally provide a great habitat for native river fish.

**Pollution:** The Ipswich River is relatively clean compared to many rivers in eastern Massachusetts; this is mostly because a lot of land is protected from development, and because efforts to clean up and prevent pollution and protect the river’s water quality have been fairly effective. However, there are some problems and parts of the river which frequently fall below the state’s water quality standards. One big problem is low dissolved oxygen levels in the summertime; fish and other river life need enough oxygen, just as we do. The other big problem is pollution that is carried into the river by rainfall.
Drinking Water:
If the river is polluted, then why are we still drinking its water? Like most water sources, the Ipswich River has some contamination issues, but through the help of water treatment plants, the water found in the river is able to be processed to become safe drinking water. (Some groundwater supplies are clean enough to use without treatment.) Before reaching your sink, the river water undergoes purification, which transforms the river water into quality tap drinking water. Water is pumped from the Ipswich River and carried through pipes to water treatment plants throughout the watershed. When the water reaches the treatment plant, it typically contains small organic material, soil and of other contaminants. Chemicals, called coagulants, are added to the water, causing contaminants to form clumps which sink to the bottom of the tanks. The water is moved very slowly through the tanks to allow enough time for the chemicals to act on the water. The water then travels through a filter which ensures that even the smallest bits of dirt and contamination are not allowed through. Based off where your drinking water comes from, different disinfection methods are used. Check out http://cfpub.epa.gov/surf/locate/index.cfm to find out where your house’s water is coming from. Visit the Ipswich Water website to learn more about the drinking water available within the river. http://www.ipswichwater.com.au/education/for_students/index.php or http://www.epa.gov/ogwdw000/dwh/where.html to learn more about how river water gets treated to become your drinking water.

Floods: The Ipswich River is experiencing more frequent, extreme floods over the past 20 years. Similar to how a tub overflows if you leave the water on too long, the water from the river overflows and spills out. Under natural conditions, this water would go onto undeveloped wetland areas along the river, called floodplains, but many floodplains have been developed with buildings, roads and bridges. Now, they are in harm’s way during a flood. Adding to the problem, with more roads and buildings covering the land, water can’t soak into the ground and instead rushes off quickly, making flooding worse. Adding to this are the effects of global warming, with more frequent intense storms.

Natural Floodplains allow water to overflow during high levels onto the river banks

Construction along the Ipswich River has led to an increase in flooding, because the river has lost natural floodplains and surrounding wetlands that would naturally absorb the overflowing water. This photo shows EBSCO Publishing’s parking lot in downtown Ipswich, underwater during the March 2010 floods.)
Low Flows: Low flows are the most pressing issue facing the Ipswich River today and their frequent recurrence resulted in the river being categorized as one of the most endangered rivers in America (American Rivers, 2003). Low flows increase pollution rates and severely disrupt the river’s natural ecosystem as they cause portions of the river to completely dry up, often killing hundreds of fish at once.

The primary cause of unnatural low flows is water withdrawals. Water is taken from the river in such large quantities that it can leave the river at very low levels, or even completely dried up in some areas. To make matters worse, the river is naturally at its lowest levels during the summer months, which increases the problem because many towns use double to triple the normal amount of water during dry summer periods.

Another reason for low flows is a decrease in groundwater. Groundwater is water that soaks into the ground during rain storms or snowmelt. It is stored beneath the ground surface in rock and soil layers. Groundwater provides the “base flow” that keeps the river flowing, even during dry periods. Groundwater also helps keep the river temperature cool in summer and warm in winter (groundwater is about 50-55°F). Typically, groundwater plays a major role in maintaining a healthy river environment. Unfortunately for the Ipswich River, increased construction and extensive pavement in developed areas deplete groundwater because rainwater can’t soak into the ground through the pavement. Combined with groundwater pumped out of the ground by wells, this lack of groundwater adds to the low flow problem.

http://www.groundwater.org/kc/whatis.html
Effects of low flow:
In addition to the direct effect of having little or no water in parts of the river, extreme low-flows also cause the level of dissolved oxygen in the water to plummet. Dissolved oxygen is essential for fish survival; this is what they breathe. Even a very small change in levels of dissolved oxygen can be extremely harmful for native fish like brook trout, which can’t survive in low-oxygen conditions. The fish need to exert more effort in an attempt to breathe and can suffocate from the lack of oxygen in the water. Pollution can also cause a drop in dissolved oxygen. For more information on how dissolved oxygen affects fish and other water dwelling species, visit http://bcn.boulder.co.us/basin/data/BACT/info/DO.html and http://www.state.ky.us/nrepc/water/wcpdo.htm

Endangered:
The Ipswich River is one of the most threatened rivers in North America and there is a lot of concern about the future of the river and its ecosystem. In 2003 the river was listed as one of the top ten most endangered rivers in America! While progress is being made, low flow problems still affect the river. The river has experienced a significant decline in native fish species and has seen an increase in extremely low-flows, leaving parts of the river completely drained at times and stranding fish. The frequent drops in water levels have severely impacted the river’s ecosystem, changing the types of species that originally called the river home. River fish, fish that require running water for survival, should make up the majority of the fish in the river. However, due to the human activity in and around the river which has changed the river’s natural flow and water quality, today over 90% of the fish are “generalists” or pond fish (which do not need flowing water for survival).

Here are a few ways you can get involved within your community and help protect the river!

- Don’t waste water:
  - Let your lawn go brown during dry summer periods; it will green up again in the fall.
  - Help your parents put in an efficient showerhead – you’ll save water, energy and money!
  - Replace an old toilet with a high-efficiency one, or retrofit your old one with a dual-flush adaptor.
  - Be on the lookout for leaks, and fix them fast.
  - Turn off the faucet while you brush your teeth or clean the dishes.
  - Make sure the hose is always completely turned off after you use it.
  - Take the 5-minute challenge! Give yourself a challenge and conserve water at the same time. Grab a timer and see if you can take a quick five minute shower instead of wasting water by taking a bath. Efficient showers can use 50 gallons less water than a bath! To calculate how much water you use when you shower, visit http://pbskids.org/zoom/activities/sci/showerestimation.html.
Protect Groundwater - Avoid dumping toxic chemicals down the drain or outside on the ground. Try to use all the contents within the cleaners so you are only left with the container to throw away rather than having to dump out some of the cleaner.

Tell others what you’re doing! - Become an advocate for water conservation in your own neighborhood. Talk to your family, friends, teachers and neighbors about the importance of water conservation.

Start an environmental club at your school or within your neighborhood

Organize a canoe trip and get out to enjoy the river firsthand! - Ask your parents to take you out so you can see first hand the beauty and fun that is out on the Ipswich River. Getting out and enjoying the river will help you and your family and friends understand why the Ipswich River is such an important piece of our region and why we are fighting so hard for its protection.

Other sites for kids to explore to get involved in protecting their environment
  - http://www.epa.gov/kids/
  - http://pbskids.org/zoom/activities/action/way04.html
  - http://library.thinkquest.org/6076/
  - http://www.dnr.state.wi.us/org/caer/ce/eek/earth/conserve.htm
  - http://www.meetthegreens.org/

Visit ipswichriver.org to join or learn more

IPSWICH RIVER WATERSHED ASSOCIATION
The Voice of the River