Blue-Green Algae in the Charles River

Amy Rothe, CRWA Director of Communications

Have you noticed a green scum while on the Charles River in the last few months? Or perhaps you have read about the recent blue-green algae bloom advisories in the news? This summer, the Charles witnessed several blue-green algae blooms, from Newton down to the Charles River locks. Also known as cyanobacteria, blue-green algae are actually aquatic bacteria that, like algae, produce their own food through photosynthesis. Prolific growths of one or more types of cyanobacteria, or blooms, are typically observed in the Charles when water temperatures rise and river-flow falls. The Charles River has long suffered from excessive amounts of phosphorus, which enters the river through polluted stormwater runoff. The phosphorus acts as a fertilizer for the river: it feeds the cyanobacteria and causes it to grow in abundance. Additionally, the photosynthetic cyanobacteria thrive in warm water, and temperatures this summer have been some of the warmest on record. Charles River Watershed Association has had an active cyanobacteria monitoring program in effect since 2006, and this year is the first time we have observed a bloom in Newton.

When blue-green algae die, they release toxins that may be harmful to humans and animals. The Center for Disease Control and Prevention advises that contact with high levels of cyanobacteria has been found to contribute to eye, ear and skin irritation, and ingestion may lead to more serious health effects. Dogs that drink river water during a blue-green algae bloom are also highly susceptible to adverse reactions, and, in some cases, ingestion may lead to death.

Public health risks are not the only concern, however: blooms of cyanobacteria and other vegetation also can contribute to larger environmental problems. Large blooms can prevent sunlight from reaching submerged aquatic vegetation below. When a large mass of aquatic life (like blue-green algae and invasive species) dies, decomposition can deplete the river of valuable dissolved oxygen, which fish, mollusks and other aquatic animals rely on to survive. Extreme dips in dissolved oxygen levels may result in fish kills. All in all, the presence of blue-green algae can have a profound impact on the river's health and ability to sustain life.

Phosphorus is present in many items that you may use at home, so there are many ways you can help reduce the amount of phosphorus entering the Charles. Test your soil to see if it actually requires any additional nutrients in the form of fertilizers, as many local soils do not. Most fertilizers contain phosphorus as a major ingredient, so if you do require additional nutrients, consider composting instead. Car exhaust also contains phosphorus, and this is deposited on driveways, streets and parking lots. Consider walking, biking or taking the T to nearby destinations instead. Also, be sure to pick up after your dogs and properly dispose of all waste in the garbage or pet waste composter. You can also help by reducing and treating stormwater runoff from your property through the use of rain gardens, rain barrels and permeable pavers.

Cyanobacteria, blue-green algae, growing in the Charles River.

Reducing stormwater runoff pollution not only leads to a healthier Charles but to an economically viable region as well. Larry Smith, the owner of Charles River Canoe and Kayak, states, "Our business depends on a healthy Charles, and we continue to grow and thrive as the water becomes cleaner."

The Charles River Watershed Association's (CRWA) programs address the root causes of blue-green algae blooms. CRWA works to eliminate phosphorus from entering the river and to decrease stormwater runoff by encouraging and implementing green infrastructure development (GI), which captures and cleans water where it lands instead of funneling it off to the river. For more information on CRWA's GI projects or blue-green algae in the Charles, please visit www.charlesriver.org.

Battling Weeds in the Charles River: A Front-Line Report

One hundred years ago, warm summer weekends would have seen the Lakes District of the Charles River dotted with paddlers in their canvas-covered canoes. These days the scene is not that different, with the fiberglass descendants of those canoes joined by colorful kayaks, rowboats, stand-up paddleboards, and pedal craft. Today, however, a major challenge presents itself: keeping the river clear enough to support continued recreational uses. As the

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Charles meanders through an increasingly developed watershed, storm runoff, parking lots, and fertilizers add phosphorus and other nutrients to the river in increasing concentration. These cause havoc with the natural balance of life in the river, which in turn can affect how the river can be used.

The Charles River contains a great diversity of flora and fauna, including many invasive species. The deep sediment and nutrient rich water supports invasive water chestnut, fanwort, and milfoil along with the non-indigenous American Lotus. The rapid spread of these plants has made many coves inaccessible and restricted boating and wildlife movement in the Lakes District of the Charles in Newton, Waltham and Weston. Concerned neighbors, businesses, and users have joined to raise money and prod government officials into action. This summer, over 100 tons of invasive weeds were removed with strong financial support from the neighborhood. Over 500 volunteers were assisted by a small mechanical harvester. Unfortunately, that effort hardly matched the weed growth, and a much larger 3-5 year effort will be required to control the most aggressive species, water chestnut. The management plan proposes that the State fund the initial cleanup effort and then yearly management continue at a much lower level funded through local efforts.

Editor's Note:

You will notice that our newsletter begins with three articles on blue-green algae, each from a different perspective: the bloom in the lake, the bloom in the river, and the river bloom from the perspective of someone who spends a lot of time on the river and whose business depends on its health.

Why so much attention to one topic? Because it is an important one for our city and one that will get worse as the earth's temperatures continue to rise. The cultural solutions suggested at the end of the articles by both Maria Rose and Amy Rothe are similar. The repetition is intentional so that all of us can realize how important it is. Many of us think that we also need to consider further improvements in our storm-drain system, something that will not be popular in this economic climate. Please take the time to read all three articles. Let us know if you have comments or suggestions. Although we publish quarterly, we will publish letters and responses to articles.

Beth Wilkinson

One indication of the nutrients in the river was this summer's blue-green algae bloom. A blue-green algae bloom is a relatively unusual occurrence for the Lakes District. It does not restrict boating but has the potential to release toxins. The algae bloom and surrounding publicity did decrease rental activity at Charles River Canoe & Kayak in Newton. Fortunately, Charles River Canoe & Kayak has four other locations, which enabled classes and other activities that involved lots of contact with the water to be relocated. Rentals continued in Newton, and customers who called were informed of the situation. A few chose to visit the other rental locations in Cambridge, Boston, Nahanton Park, or Natick at Lake Cochituate State Park. No one reported any ill effects from the water, and washing facilities were available for those who were concerned. The algae bloom in the Lakes District cleared within a few weeks, and great boating returned by the last weekend in August.

Larry Smith, President, Charles River Canoe & Kayak

Park Signs Enter the Digital Age

You may have noticed a symbol like this one in a magazine advertisement or on a billboard. It's a QR, or Quick Response, code.

When this particular code is scanned, it takes the user to the web page for Ordway Park, a small park in Newton Corner that's owned by the Conservators. We've installed two QR-enabled signs at the edges of Ordway Park. We hope that passers-by will see a sign, scan the code, and learn more about the park and about the Conservators.

Most smartphones have scanners that can automatically open a particular web page when the phone is pointed at the code. For Android phones, the Google Goggles scanner app is preinstalled on the phone. On the iPhone, Windows phones, Blackberries, and other smartphones, a free scanner app can be installed.

The Conservators plan to install QR-enabled park signs and trail markers in various locations in the city. They will allow walkers to view trail maps on their phones,and to learn more about our parks and conservation areas.

Dan Brody