

Blue-green algae (Cyanobacteria) in the St. Croix River

Issue: Occurrence of blue-green algal blooms at several sites along the St. Croix Riverway in 2012

Blue-green algae or Cyanobacteria

- ✓ Cyanobacteria or blue-green algae are one of the common types of "algae." As their name implies, the cyanobacteria are very simple organisms without membrane-bound organelles like nuclei or chloroplasts, are usually dark olive-green in color, and range in size from microscopic cells to colonies or growths that can be seen with the naked eye. Some species contain specialized cells called heterocysts where nitrogen fixation occurs – within the cells, nitrogen gas is converted to ammonia.
- ✓ Cyanobacteria are common in most freshwaters and live attached to rocks and plants, floating or suspended in the water, or even grow on moist soil.
- ✓ Several species (upper and lower left) are notorious for forming HABs or "harmful algal blooms" in lakes that suffer from high nutrients. Even more troublesome are that some populations of these species produce neurotoxins (affect the nervous systems) and hepatotoxins (harm the liver) prompting officials to post warnings for people and pets to avoid contact.

Blue-green algae in the St. Croix River

- ✓ Reports of blue-green algae in the St. Croix River date back to the early 1900s. For example, E.G. Reinhard (1931) reported blooms of *Aphanizomenon* in the St. Croix in 1920s. Edlund and colleagues (2009) analyzed algal pigments in sediment cores from Lake St. Croix and showed that blue-greens have been increasing in Lake St. Croix since the 1960s.

Nuisance blue-greens in the St. Croix

- ✓ In late summer 2012, several sites along the Lower St. Croix near Otisville had visible scums of blue-green algal blooms (left). Microscope analysis at the SCWRS showed these blooms to be the alga *Microcystis aeruginosa*, a common bloom-former. Tests to detect the presence of toxins were not run on these samples.
- ✓ Other nuisance blue-greens include floating mats (lower left). In late summer, floating algal mats consisting mostly of a single cyanobacterium called *Oscillatoria limosa* are common near the headwaters of Lake St. Croix. This alga forms dense mats on organic-rich sediments in quiet water.

What can be done about blue-green blooms?

- ✓ Direct contact by people and pets with waters showing visible blue-green growth should be avoided. Efforts to reduce nutrient loading to the St. Croix River are designed to reduce the frequency and extent of blue-green algae blooms. Reports of potential HABs should be directed to Byron Karns, St. Croix National Scenic Riverway, at 715-483-3284, Kelly O'Hara, MPCA, at 651-757-2622, or in Wisconsin to Gina LaLiberte, WDNR, at 608-221-5377.



St. Croix blue-greens
Anabaena, *Woronichinia*, *Aphanizomenon*



Microcystis bloom, Aug 8, 2012



Blue-green mats in the St. Croix

Contact

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