



What is your name?

Michael Twiss

What is your job description?

I am a limnologist and Professor at Clarkson University. My colleague kids me and says that I am someone who studies arms and legs but a limnologist is actually a scientist who studies lakes, rivers, and wetlands. You could call me a “freshwater oceanographer.”

What do you study now? I study things we cannot see but that are

extremely important. There is no favorite organism that I study but instead I study phytoplankton, a group of microscopic organisms that are autotrophic – they make their own food by photosynthesis. My work also involves the study of chemicals and elements in water, both nutrients and toxicants.

Why study it? Just like grass supports herbivores and herbivores support carnivores, phytoplankton in lakes and rivers ultimately provide the food for fish in these waters. By extension, phytoplankton support the birds that eat fish near these waters (loons, eagles, osprey, kingfishers) and the insects that are eaten by many different types of birds near waterways. Because bats eat insects, phytoplankton even support bats!

Where do you study it? My research focuses on the Great Lakes and the mighty St. Lawrence River. I also work in local wetlands and lakes in the Adirondack Mountain region.

What fascinates you the most about North Country ecology? The variety of freshwater environments here in northern New York is a stimulating place for a limnologist to be. There are mountain streams, wetlands, many rivers and small lakes. In addition, water from the Great Lakes, which contain 20% of all surface freshwater on Earth, flows through the St. Lawrence River on its way to the ocean.

What is the best thing about your job? Occasionally I get to do research using large ships, like the USEPA *Lake Guardian* as a base. To me it's like going on the space shuttle because we carry out numerous experiments and get a limited amount of time to do them in. Plus, I like being out on lakes so big that you cannot see shore – it's a special feeling.

What is the worst part about your job? Like many researchers, I am constantly applying to government agencies to provide financial support for our projects. Research can be expensive.

What inspired you to first study science? I grew up in northern Ontario, which looks a lot like northern New York. On the lake where my family had a camp I used to fish a lot. My father brought home an aerial photograph of the lake one day. Since I know how to copy pictures to make them larger by drawing a grid on the smaller original and then a larger grid on another piece of paper I was able to draw my own large map of this lake. (It helped that there was a paper mill in our town so kids could get really large sheets of paper!) On this map I added sunken logs, weed beds and shoals that I could see from my canoe and I enhanced it by including places where there were lots of fish to catch. Then I started to wonder what was in the rest of the lake that I could not see.

What do you do in a typical day?

I spend a lot of time writing reports, meeting with students and colleagues, and trying to manage all of the information and requests for my time that comes over the Internet to me. My work has me in my office most of the day, in the laboratory for only a brief period. I used to spend more time in the lab when I was a student. Occasionally, my work takes me afield to do study from boats or ships. About one week per year I attend conferences where scientists from all over the world meet in one place to talk about their research.

What was your first science project/experience as a child?

My map exercise that I describe above that made me wonder what was in deep parts of the lake that I could not see.

What advice would you give to someone interested in becoming an ecologist?

Just like some people are really good at sports because they practice a lot, an ecologist can be excellent by reading a lot and observing a lot. Find another classmate that is interested in ecology and talk to each other about your findings.