

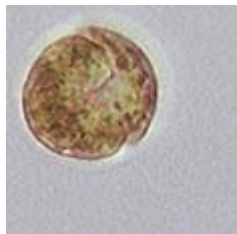
“The Whole River is Red”

“The whole river is red,” said Chrissy Word on the afternoon of August 14th, 2007. Chrissy and her students at Rocking the Boat had gone out on the water to fish when they noticed that almost the entire river appeared “red”. A couple of the students rowed up river and out towards the East River and found that the somewhat foul smelling suspension stretched from Concrete Plant Park and out at least a ½ mile south of Hunt’s Point Riverside Park. Had there been a spill? Was this the result of upstream contamination or had some pollution been brought in with the tide? There are always those that point to the End Times from the Book of Revelations. The unusual occurrence was immediately reported to the DEP and the DEC, but as citizen scientists, it is our job to follow all of the facts available and neither accept nor make assumptions, but find truths. Over the years, The Bronx River Alliance has built up a cadre of interested citizens and scientists that are willing to take the time to look at an issue as it happens and follow it through until it is finished. In this specific case, it was impressive to follow the conversation that began with that one call filled with questions, and eventually led to a definitive identification, but still many questions.

The DEP and the DEC both gave the immediate response of it being some sort of a “red tide”. These tides, now preferably referred to as Harmful Algal Blooms (HAB), can be toxic or non toxic. The blooms are believed to come when there is an over abundance of some fertilizer which gives the algae the energy to bloom. Then, just as quickly as they bloom, they die and their decomposition takes up huge quantities of Dissolved Oxygen leaving a hypoxic area deadly to marine life. These tides are tracked at some hot spots on the NOAA website due to the danger they pose.

A Park’s Natural Resource Group researcher recognized the water as a possible “Brown Tide” which she had seen in earlier studies out on Long Island. The HAB referred to is tiny brown alga, *Aureococcus anophagefferens*, which blooms and can have long term effects on benthic life such as eel grass which is an important habitat for shellfish reproduction. The bloom, though not generally toxic, can block out the sunlight to the lower depths of the water column, causing an artificial night for the plant life below. Of concern at the time were the oyster reefs that are presently monitored by NRG. A professor from Stonybrook University who studies brown tides, however, wrote that, “Based on temperature, salinity, and nutrient levels,” in the Bronx River estuary, such an HAB was highly unlikely.

Chrissy and one of her students, Marcus Caceres went out on the river on August 21st and took some samples. The red or brown color had dissipated quite a bit, but there was evidence of the occurrence closer to the banks. The stroke of an oar would stir up the material, and offer at least a semblance of what had been filling the river. They took the samples to the Lab of Marine and Estuarine Research at Lehman College and Dr. Joe Rachlin and Dr. Barbara Warkentine helped to analyze them (The samples, that is). The Drs. found that the river was experiencing a dinoflagellate bloom of *Gymnodinium* sp. A similar bloom had been seen in 2002 and lasted about one week; about the same as the present bloom. The short term nature of the bloom reduces the probability of any long term, detrimental effects, though the consumption of shellfish caught at the time of the life of the bloom could make a body ill.



Gymnodinium sp under an electron microscope

Though the bloom has been named, the cause remains a mystery. Missing from the summary of events above is the search and for the data that would present the conditions of the river at the time of the bloom. It was historic data that helped to narrow the possible identification of the bloom, but present

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data would serve to show what possible conditions at least permitted the current situation to occur. What was the DO or pH in the days prior to the event? After? It is of utmost importance to not only test for the various parameters, but also to have the data available to those with an interest in trying to make sure that our own actions did not have a hand in causing or somehow catalyzing this event. It also serves as a part of the historic record of the event and the contemporary conditions, and could help to predict or prevent another such event.