



The Spring Bloom Awakens the Waters of Long Island Sound

Recently the waters of Long Island Sound awoke with new life. The spring bloom has begun - an ecologically important annual occurrence in the temperate North Atlantic Ocean, sub-polar regions, and coastal waters.

As the days begin to grow longer, more light is available and surface waters warm. This stratifies the water column, holding phytoplankton in the layer of water most exposed to sunlight. The nutrients that phytoplankton need have recently been replenished due to winter's churning effect on the water. As they convert sunlight into food using photosynthesis, these are perfect conditions for phytoplankton to grow, and the plant-like organisms flourish in their newfound abundance.

The spring bloom is a relatively brief pulse that fuels much of the productivity of temperate marine ecosystems. In fact, the bloom can be tracked at the macro scale via changes in ocean color detected by satellite imagery. Phytoplankton are the base of most aquatic food webs. In the late winter/early spring, marine grazers, including copepods and other zooplankton, haven't yet entered the scene to eat them. Eventually, grazing zooplankton will begin to feast on the phytoplankton and multiply.

As the water warms, filter feeders such as oysters and clams come out of dormancy and feed on phytoplankton. Forage fish such as Atlantic herring will chow down on zooplankton, and

soon enough, larger fish such as striped bass will arrive to eat those forage fish. Some of these fish and shellfish will find their way onto our dinner plates. All of this life depends on mighty phytoplankton, single-celled organisms too tiny to see with the naked eye!

Diatoms dominate the spring bloom in Long Island Sound.

They move with water currents, and live in houses made of glass. These 'glass houses' are actually hardened cell walls made out of silica (a major component of sand and glass) called "frustules."

Diatoms come in a large variety of shapes and sizes; some having frustules with very ornate and intricate patterns. These patterns are symmetrical and geometric, allowing species to be identified and inspiring both nanotechnology and art. While diatoms are single-celled, some varieties form colonies (such as *Asterionellopsis glacialis*)

or chains (such as *Skeletonema* sp.).

The photo at the top of the page, taken by Research Ecologist Dr. Judy Li with a light microscope, shows the contents of a water sample taken from Long Island Sound on January 29th, which was teeming with photosynthetic life. Dr. Li specializes in phytoplankton dynamics at the Science Center's Milford Lab.

For more information, see [A Student's Guide to the Phytoplankton of Long Island Sound](#).



Phytoplankton from water sample taken from Long Island Sound during the spring bloom under microscope.

TWO OLD SALTS (from page 38)

In the [March RISAA newsletter](#), **Dave Monti** wrote, "According to a study released January 16, 2019 in *Advances in Atmospheric Sciences*, 2018 set a new record of ocean heating, surpassing 2017, which was the previous warmest year ever recorded. This level of heat places 2018 as the hottest year ever recorded. In fact, according the study, the past five years are the warmest years on record.

Peter noted they've seen a big difference in water temperatures rising not just at the surface, but down on the bottom." Things are changing and the fishing is changing.

These two have enjoyed a wonderful life catching, releasing, weighing, winning and enjoying each other's company. Maybe all those years tied to a bridge, fishing rivers and seas as young

men in small boats blessed them with a wide-eyed approach to understanding all they were fortunate enough to see.

Our waters are changing and these two have been saying it for years. Maybe it's like looking at art; water speaks differently to people who listen. Don Smith and Peter Vican clearly are listening and it was a treat to listen to them.

RISAA member Todd Corayer is a lifelong fisherman who lives not far from the Saugatucket River with his wife, who supports his fishing mainly to get him out of the house and a young son who regularly catches more fish than him.