

Sound Scholars and Stewards

NYSG's Communications staff caught up with former Sea Grant Scholar **Sean Bratton** who was last seen on the pages of NY Coastlines back in 2011 during NYSG's 40th Anniversary when former NOAA Administrator **Jane Lubchenco** visited Stony Brook University (see photo).

Says Sean of his experience with NY Sea Grant, "Being a Sea Grant Scholar was a tremendously rewarding experience. I received continuous support to complete my thesis and research. It was truly wonderful to work and collaborate with such a diverse and knowledgeable group of scientists. These experiences have continued to guide me in a successful career as a science teacher."

Since leaving Stony Brook University, Sean went back to grad school for a Master of Arts in Teaching from Sacred Heart University in 2013, then moved to Chicago where he's teaching 7th grade science at a charter, Intrinsic School, while also teaching weather-related courses as an adjunct at the College of DuPage, the second largest provider of undergraduate education in Illinois.

At Stony Brook's School of Marine and Atmospheric Sciences, professors **Brian Colle** and **Robert Wilson** were his mentors. With them he recently published a journal article based on their collective research on *Long Island Sound hypoxia: Evidence for Directional Wind Response in Controlling Inter-annual Variations in Duration and Areal Extent of Summertime Hypoxia in Western Long Island Sound*.

Now that Sean has newfound expertise in communicating science, we collectively wrote a brief synopsis of the research, putting it in terms everyone can understand!

Summertime hypoxia (low-oxygen water conditions) in Long Island Sound is correlated with local wind forcing. Winds can significantly modify stratification different layers of water at different temperatures within the Long Island Sound estuary. If wind mixes or churns up the water, then there is less chance that a low-oxygen or hypoxic layer would remain undisturbed at the bottom.



Sean Bratton, former Sea Grant Scholar discusses hypoxia with Jane Lubchenco, former Under Secretary of Commerce and administrator for NOAA. Photo by Barbara A. Branca

Specifically this research found that winds out of the east-northeast are most correlated with short term (1-2 day) increases of bottom dissolved oxygen and were termed "mixing events." In contrast, winds out of the south-southwest are most correlated with sustained hypoxic conditions over western Long Island Sound.

Additionally, summertime high-pressure systems north of LIS account for a large percentage of the aforementioned mixing events that can influence both the duration and the extent of summertime hypoxia by producing periods of sustained winds out of the east-northeast range.

Low dissolved oxygen levels may lead to hypoxic conditions in Long Island Sound and its tributaries, conditions detrimental to marine life.

In the Sound Stewards program organized by NY Sea Grant's Long Island Sound Outreach Coordinator **Amy Mandelbaum**, students participate in real-world research by measuring the dissolved oxygen content and other water quality parameters in designated Long Island Sound Stewardship Areas.

The data collected by Sound Stewards are used by managers at New York State Parks to determine areas of concern.

— Barbara A. Branca



Student stewards collect and analyze water samples along Sunken Meadow Creek at Sunken Meadow State Park in Kings Park, NY, a designated LIS Stewardship Area. Photo by Amy Mandelbaum, NYSG/LISS.