

# Connecticut State University Outer Island Education Program Report

Submitted by:

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and

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## **Connecticut State University Outer Island Summer Programs**

### **Outer Island Interns**

This year (Summer 2017) three student interns were hired to staff Outer Island and to assist groups with educational programming during their visit to the island. The interns also conducted research activities, including monitoring water quality and fouling, and participated in maintenance activities on the island facilities. This past summer the island interns were Adan Isa, Alex Manos and Courtney Pesce. Brief bios were provided by the interns and are included below:

Adan Isa graduate from Central Connecticut State University. Being from West Hartford, I have spent my whole life in Connecticut and have come to appreciate the natural beauties this great state has to offer. I enjoy exploring the great outdoors and love to study aquatic wildlife. At school my favorite subjects to study are ecology and statistics. I have also volunteered as a garden assistant at Westmoor Park in West Hartford and I also enjoy taking care of plant life as well.

Alex Manos recently graduated from Central Connecticut State University obtaining a B.S. in Biology with a specialization in environmental science. While at CCSU, he worked with Dr. Clayton Penniman conducting water quality research and also worked with Dr. Jeremiah Jarrett studying the population genetics of various marine organisms.

Courtney Pesce is a senior at Southern Connecticut State University majoring in Geography with a concentration in Applied Sustainability. Prior to her internship at Outer Island, Courtney arrived back in the United States after living in San Jose, Costa Rica for a semester abroad. While abroad, she studied global, agroecological sustainability, and Spanish. Courtney enjoys gardening and practice permaculture. Courtney's goal is to pursue a career in land management or urban management. This summer internship experience with the United States Fish and Wildlife Service provided her with an opportunity to communicate the health of the Long Island Sound and to teach others how to Save the Sound.

This summer 2017 was the third summer where three interns were hired to provide visitor services on the island. By all measures, having three interns on the island improved visitor

services and community outreach. Student interns each received a salary (\$2,722.50) processed via CCSU.

### **Schedule of Visitors**

Twenty-five different groups scheduled 40 visits during the summer 2017 with an estimated 800 visitors participating in education programs (see attached schedule). Both the number of scheduled groups and the total number of scheduled group visitors to Outer Island in summer 2017 were comparable to previous years. Many of the scheduled groups have visited the island in previous years. Some of the notable first time visitors to the island included the SCSU STEM faculty, members of the Rye Nature Center and the Leadership, Education, Athletics in Partnership (LEAP) program. One of the more successful events conducted on the island this year was the GLOBE International Conference. This event brought students from around the world to Outer Island to participate in field-based educational training and exploration of the island habitats.

### **Research Activities**

#### **Water Quality Monitoring**

Water quality parameters were monitored by the CSU interns during the summer 2017 from June 1<sup>st</sup> to September 11<sup>th</sup>. Water quality monitoring occurred each day at 2:00 pm from the end of the floating dock. Water quality parameters monitored included: water temperature, salinity, conductivity, specific conductance, dissolved oxygen, Secchi disk depth, turbidity, and pH. All measurements were made on water samples collected from at a depth of one meter.

Water temperature gradually increased from the spring to the end of the summer. Water temperature ranged from 14.3°C (6/6) to a high of 23.8°C (8/5). Variations in water temperature over the summer correlated well with changes in measured air temperature (Figure 3). Dissolved oxygen concentrations saw an early spike (10.80 mg/L) on 6/2 and showed surprisingly little variability as temperatures changed with a low of 7.00 mg/L on 7/20. Compared to previous years, temperature and dissolved oxygen showed little correlation (Figure 1b). Salinity showed

**Outer Island Visitor Schedule 2017**

CSU Escort	Date	Time	Attendance	Organization	Contact	Phone	email
Shaun Roche	30-May	10:00 am - 2:00 pm	25	US Fish & Wildlife School Group	Shaun Roche		<a href="mailto:Shaun_Roche@fws.gov">Shaun_Roche@fws.gov</a>
Shaun Roche	31-May	10:00 am - 2:00 pm	25	US Fish & Wildlife School Group	Shaun Roche		<a href="mailto:Shaun_Roche@fws.gov">Shaun_Roche@fws.gov</a>
Shaun Roche	1-Jun	10:00 am - 2:00 pm	25	US Fish & Wildlife School Group	Shaun Roche		<a href="mailto:Shaun_Roche@fws.gov">Shaun_Roche@fws.gov</a>
Shaun Roche	2-Jun	10:00 am - 2:00 pm	25	US Fish & Wildlife School Group	Shaun Roche		<a href="mailto:Shaun_Roche@fws.gov">Shaun_Roche@fws.gov</a>
Interns	10-Jun	10:00 am - 3:00 pm	15	Friends of Outer Island Training	James Lockhart		<a href="mailto:teach_1@stbridgets.net">teach_1@stbridgets.net</a>
Shaun Roche	12-Jun	10:00 am - 2:00 pm	25	US Fish & Wildlife School Group	Shaun Roche		<a href="mailto:Shaun_Roche@fws.gov">Shaun_Roche@fws.gov</a>
Interns	13-Jun	9:00 am - 1:30 pm	29	St Bridgets School, Cheshire	Michelle Carroll		<a href="mailto:mcarroll@stbridgetschool.org">mcarroll@stbridgetschool.org</a>
Shaun Roche	14-Jun	10:00 am - 2:00 pm	25	US Fish & Wildlife School Group	Shaun Roche		<a href="mailto:Shaun_Roche@fws.gov">Shaun_Roche@fws.gov</a>
Shaun Roche	16-Jun	10:00 am - 2:00 pm	25	US Fish & Wildlife School Group	Shaun Roche		<a href="mailto:Shaun_Roche@fws.gov">Shaun_Roche@fws.gov</a>
Vince Breslin	21-Jun	10:00 am - 2:00 pm	15	SCSU STEM	Winnie Yu		<a href="mailto:yu1@southernct.edu">yu1@southernct.edu</a>
Interns	25-Jun	11:00 am - 1:00 pm	15	Yoga on Outer Island	Lew Deluca		<a href="mailto:deluca2@southernct.edu">deluca2@southernct.edu</a>
Interns	29-Jun	10:00 am - 12:00 pm	8	Guilford Hikers Tour	Ginny Baltay		<a href="mailto:virginia_baltay@gmail.com">virginia_baltay@gmail.com</a>
Interns	5-Jul	12:30 pm - 2:30 pm	10	Rye Nature Center	Taro Ietaka		<a href="mailto:taroietaka@ryenaturecenter.org">taroietaka@ryenaturecenter.org</a>
Interns	6-Jul	9:00 am - 4:00 pm	12	SCSU Environmental Education	Vince Breslin		<a href="mailto:breslinv1@southernct.edu">breslinv1@southernct.edu</a>
Interns	6-Jul	10:00 am - 3:00 pm	15	SCSU Art Class	Wiley Carr		<a href="mailto:carrt1@southernct.edu">carrt1@southernct.edu</a>
Interns	12-Jul	9:00 am - 2:00 pm	15	Cub/Boy Scouts	Corey Smith		<a href="mailto:cdsmith314@yahoo.com">cdsmith314@yahoo.com</a>
Interns	14-Jul	10:00 am - 3:00 pm	20	Solar Youth Camp	Corinne Nowell		<a href="mailto:corinne@solar-youth.org">corinne@solar-youth.org</a>
Interns	17-Jul	10:00 am - 3:00 pm	15	SCSU Art Class	Wiley Carr		<a href="mailto:carrt1@southernct.edu">carrt1@southernct.edu</a>
Interns	18-Jul	9:00 am - 1:00 pm	30	LEAP	Ivette Lopez		<a href="mailto:ivette.lopez@vale.edu">ivette.lopez@vale.edu</a>
Interns	19-Jul	1:00 pm - 5:00 pm	30	JUNTA	Ivette Lopez		<a href="mailto:ivette.lopez@vale.edu">ivette.lopez@vale.edu</a>
Interns	20-Jul	12:30 pm - 2:30 pm	10	Rye Nature Center	Taro Ietaka		<a href="mailto:taroietaka@ryenaturecenter.org">taroietaka@ryenaturecenter.org</a>
Interns	22-Jul	10:00 am - 3:00 pm		Watercolor Workshop, Art Day	Ginny Baltay		<a href="mailto:virginia_baltay@gmail.com">virginia_baltay@gmail.com</a>

CSU Escort	Date	Time	Attendance	Organization	Contact	Phone	email
Interns	25-Jul	10:00 am - 3:00 pm	15	SCSU Art Class	Wiley Carr		<a href="mailto:carrt1@southernct.edu">carrt1@southernct.edu</a>
Interns	26-Jul	9:00 am - 2:00 pm	15	Cub/Boy Scouts	Corey Smith		<a href="mailto:cdsmith314@yahoo.com">cdsmith314@yahoo.com</a>
Interns	1-Aug	9:00 am - 4:00 pm	35	Globe Conference	Scott Graves		<a href="mailto:gravess1@southernct.edu">gravess1@southernct.edu</a>
Interns	5-Aug	12:30 pm - 2:30 pm	10	Rye Nature Center	Taro Ietaka		<a href="mailto:taroletaka@ryenaturecenter.org">taroletaka@ryenaturecenter.org</a>
Interns	8-Aug	10:00 am - 3:00 pm	8	CCSU Biology	Jeremiah Jarrett		<a href="mailto:jarretti@ccsu.edu">jarretti@ccsu.edu</a>
Interns	9-Aug	10:00 am - 3:00 pm	8	CCSU Biology	Jeremiah Jarrett		<a href="mailto:jarretti@ccsu.edu">jarretti@ccsu.edu</a>
Interns	13-Aug	11:00 am - 1:00 pm	15	Yoga on Outer Island	Low Deluca		<a href="mailto:deluca12@southernct.edu">deluca12@southernct.edu</a>
Island Keeper	5-Sep	9:00 am - 1:00 pm	25	Walsh Intermediate School	Jeffrey Rizzo		<a href="mailto:jrizzo@branfordschools.org">jrizzo@branfordschools.org</a>
Island Keeper	6-Sep	9:00 am - 1:00 pm	25	Walsh Intermediate School	Jeffrey Rizzo		<a href="mailto:jrizzo@branfordschools.org">jrizzo@branfordschools.org</a>
Island Keeper	7-Sep	9:00 am - 1:00 pm	25	Walsh Intermediate School	Jeffrey Rizzo		<a href="mailto:jrizzo@branfordschools.org">jrizzo@branfordschools.org</a>
Island Keeper	8-Sep	9:00 am - 1:00 pm	25	Walsh Intermediate School	Jeffrey Rizzo		<a href="mailto:jrizzo@branfordschools.org">jrizzo@branfordschools.org</a>
Island Keeper	11-Sep	9:00 am - 1:00 pm	25	Walsh Intermediate School	Jeffrey Rizzo		<a href="mailto:jrizzo@branfordschools.org">jrizzo@branfordschools.org</a>
Island Keeper	12-Sep	9:00 am - 1:00 pm	25	Walsh Intermediate School	Jeffrey Rizzo		<a href="mailto:jrizzo@branfordschools.org">jrizzo@branfordschools.org</a>
Island Keeper	13-Sep	9:00 am - 1:00 pm	25	Walsh Intermediate School	Jeffrey Rizzo		<a href="mailto:jrizzo@branfordschools.org">jrizzo@branfordschools.org</a>
Island Keeper	14-Sep	9:00 am - 1:00 pm	25	Walsh Intermediate School	Jeffrey Rizzo		<a href="mailto:jrizzo@branfordschools.org">jrizzo@branfordschools.org</a>
Island Keeper	15-Sep	9:00 am - 1:00 pm	25	Walsh Intermediate School	Jeffrey Rizzo		<a href="mailto:jrizzo@branfordschools.org">jrizzo@branfordschools.org</a>
Island Keeper	18-Sep	9:00 am - 1:00 pm	25	Walsh Intermediate School	Jeffrey Rizzo		<a href="mailto:jrizzo@branfordschools.org">jrizzo@branfordschools.org</a>
FOI	23-Sep	4:00 pm - 7:00 pm	20	FOI Volunteer Picnic	James Lockhart		<a href="mailto:teach-1@sbglbhal.net">teach-1@sbglbhal.net</a>

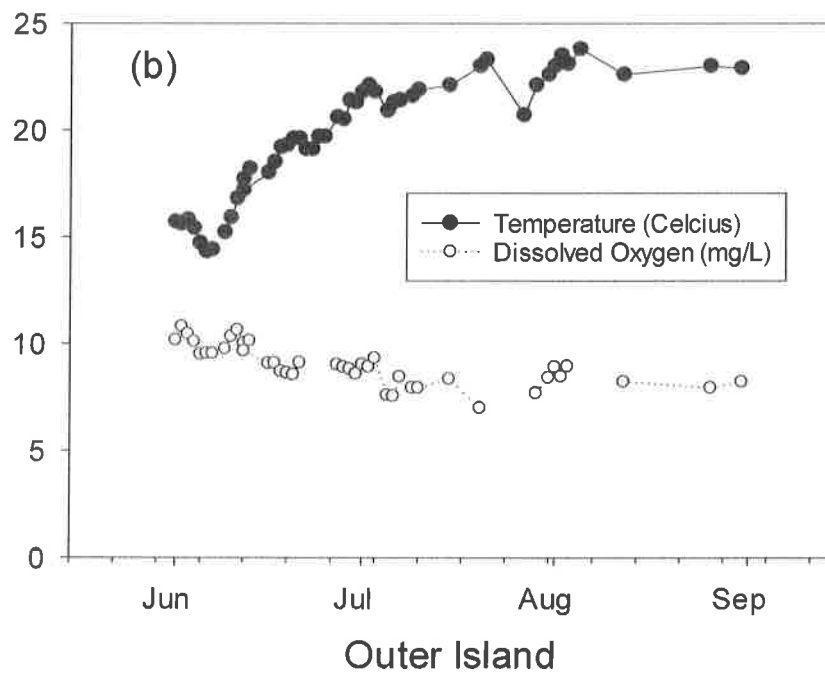
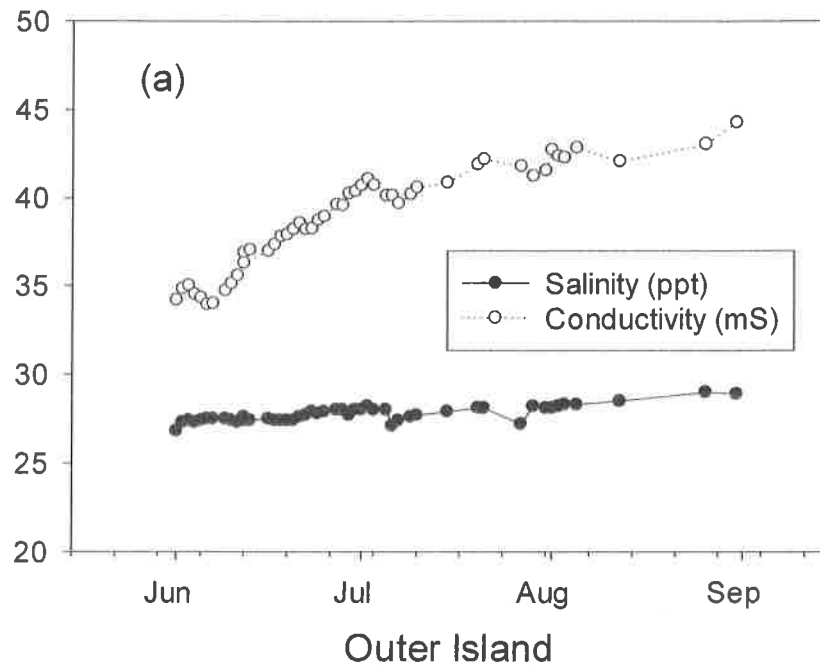


Figure 1. Outer Island 2017 water quality monitoring results: (a) salinity and conductivity and (b) temperature and dissolved oxygen.



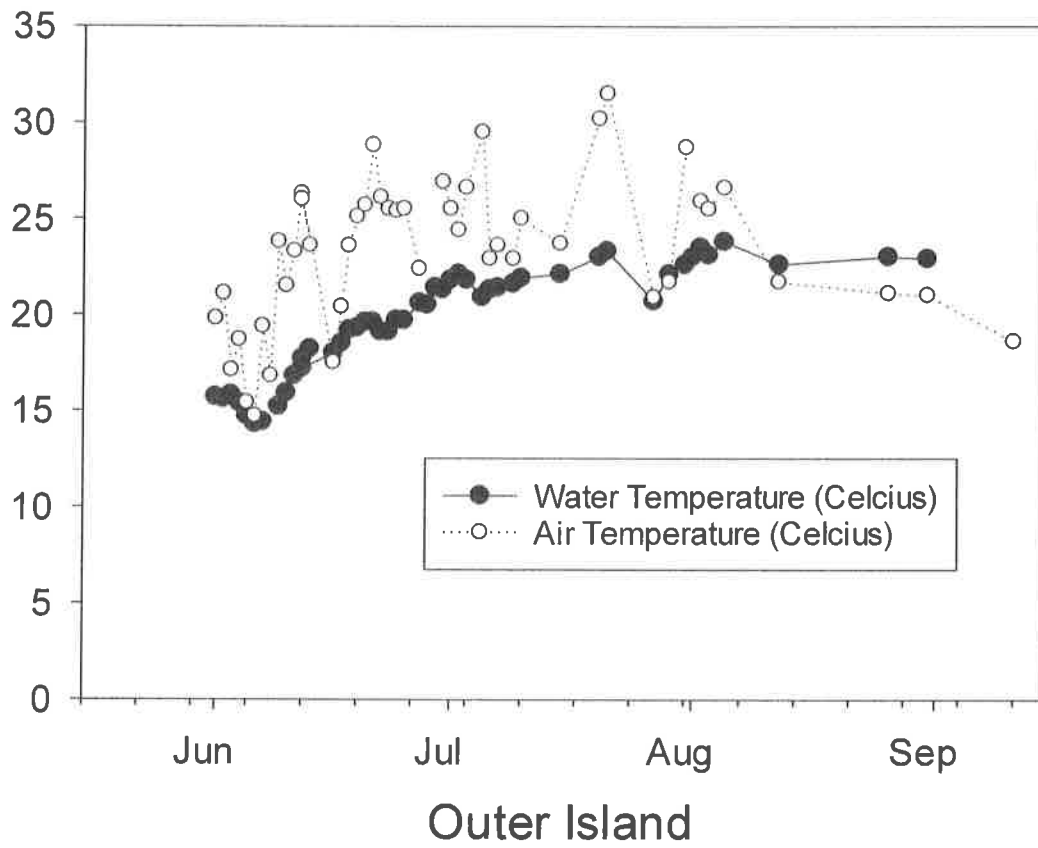


Figure 3. Outer Island water quality monitoring results: Water and air temperature.



Outer Island Water Quality Summer 2017

Date	Time	Weather	Wind speed		Rel. Humidity	Air Temperature	Solar Radiation	Salinity	Conductivity	Water temp	Oxygen	Secchi Disk	pH
			Max (mph)	Min									
1-Jun-17	2:47PM	drizzle	2.8	0.0	65.7	19.8	116	26.8	34.19	15.7	10.16		8.06
2-Jun-17	2:02PM	partly cloudy	2.0	0.0	58.3	21.1	253	27.3	34.82	15.6	10.80	0.7	8.01
3-Jun-17	1:30PM	partly cloudy	13.9	0.0	49.1	17.1	1060	27.4	35.01	15.8	10.45	0.3	8.07
4-Jun-17	2:02PM	overcast	0.0	0.0	63.0	21.8	27.3	27.3	34.50	15.4	10.10	1.0	8.00
5-Jun-17	2:00PM	overcast, fog	2.1	0.0	83.8	15.4	189	27.4	34.31	14.7	9.50	0.8	8.00
6-Jun-17	1:50PM	overcast, fog, drizzle, rain	4.5	0.0	70.7	14.7	209	27.5	33.94	14.3	9.53	0.8	8.18
7-Jun-17	2:00PM	partly cloudy	4.5	0.0	74.0	19.4	382	27.5	33.99	14.4	9.53	0.8	7.99
8-Jun-17		partly cloudy	9.7	7.9	65.0	16.8							
9-Jun-17	2:05PM	partly cloudy	0.3	0.0	58.1	23.8	1091	27.5	34.72	15.2	9.75	0.5	8.04
10-Jun-17	2:00PM	clear sun	0.0	0.0	78.4	21.5	951	27.4	35.12	15.9	10.33	0.8	8.01
11-Jun-17	2:00PM	clear sun	1.4	0.2	70.0	23.3	666	27.3	35.58	16.8	10.63	0.8	7.98
12-Jun-17	2:07PM	clear sun	0.2	0.0	72.0	26.3	989	27.6	36.88	17.7	10.02	0.9	7.91
13-Jun-17	2:45PM	partly cloudy	1.5	0.0	70.8	23.6	848	27.4	37.04	18.2	10.13	1.1	8.01
12-Jun-17	2:00PM	clear sun	0.0	0.0	64.0	26.0	942	27.4	36.29	17.2	9.65	0.8	7.96
16-Jun-17	6:14PM	cloudy, fog, drizzle, rain	5.9	0.0	87.1	17.5	36	27.5	36.98	18.0	9.07	0.9	8.05
17-Jun-17	3:30PM	cloudy, drizzle, rain	3.4	0.0	87.4	20.4	140	27.4	37.34	18.5	9.08	0.9	8.05
18-Jun-17	2:00PM	clear sun	8.1	4.4	81.0	23.6	936	27.4	37.81	19.2	8.70	0.8	7.95
19-Jun-17	2:00PM	overcast, fog, drizzle, rain	2.2	0.4	82.0	25.1	388	27.4	37.91	19.3	8.62	0.6	8.02
20-Jun-17	3:00PM	clear sun	1.2	0.0	70.2	25.7	851	27.4	38.22	19.6	8.55	0.7	8.02
21-Jun-17	2:00PM	partly cloudy	1.9	0.2	64.0	28.8	1064	27.6	38.57	19.6	9.10	0.7	8.30
22-Jun-17	2:10PM	clear sun	1.2	0.0	63.0	26.1	945	27.7	38.22	19.1		0.7	8.21
23-Jun-17	2:00PM	partly cloudy	4.0	0.0	80.0	25.5	1016	27.9	38.25	19.1		0.8	8.07
24-Jun-17	2:00PM	partly cloudy	13.0	0.0	52.6	25.4	247	27.8	38.74	19.7		0.7	8.08
25-Jun-17	2:30PM	partly cloudy	1.3	0.0	63.8	25.5	907	27.9	38.95	19.7		0.7	8.05
27-Jun-17	2:00PM	partly cloudy	5.9	0.0	65.5	22.4	942	28.0	39.63	20.6	9.01	0.7	8.24
28-Jun-17	2:00PM	partly cloudy	2.5	0.0	24.9	39.4	1105	28.0	39.58	20.5	8.89	0.75	8.15
29-Jun-17	2:00PM	partly cloudy	0.0	0.0	30.4	38.4	790	27.7	40.26	21.4	8.80	0.9	8.14
30-Jun-17	2:15PM	partly cloudy	3.0	0.0	67.7	26.9	908	28.0	40.38	21.3	8.58	0.6	8.14
1-Jul-17	2:20PM	partly cloudy	7.1	0.0	78.3	25.5	689	28.0	40.71	21.8	9.02	0.6	8.20
2-Jul-17	3:00PM	partly cloudy	1.0	0.0	78.2	24.4	870	28.2	41.07	22.1	8.91	0.75	8.17
3-Jul-17	2:00PM	partly cloudy	1.7	0.0	72.0	26.6	991	28.0	40.74	21.8	9.31	0.9	8.19
5-Jul-17	2:30PM	clear sun	4.2	0.0	52.0	29.5	912	28.0	40.13	20.9	7.59	0.6	8.11
6-Jul-17	3:25PM	overcast	3.0	0.0	21.1	22.9	721	27.1	40.13	21.3	7.55	0.8	8.13
7-Jul-17	3:45PM	overcast	7.8	0.0	85.1	23.6	288	27.4	39.69	21.4	8.45	1.0	8.20
9-Jul-17	2:08PM	clear sun	0.3	0.0	74.1	22.9	921	27.6	40.22	21.6	7.93	0.9	8.20
10-Jul-17	2:00PM	partly cloudy	2.7	0.0	70.8	25.0	913	27.7	40.59	21.9	7.93	0.9	8.17
15-Jul-17	2:00PM	clear sun	2.4	0.0	81.9	23.7	885	27.9	40.85	22.1	8.35	1.1	8.31
20-Jul-17	2:00PM	clear sun	2.0	0.0	63.0	30.2	947	28.1	41.88	23.0	7.00	0.1	8.14
21-Jul-17	2:00PM	clear sun	0.2	0.0	60.8	31.5	877	28.1	42.17	23.3		1.1	8.08
27-Jul-17	2:54PM	fog, drizzle	7.0	0.0	75.5	20.9		27.2	41.80	20.7		1.0	8.15
29-Jul-17	4:40PM	partly cloudy	14.0	0.0	62.5	21.7	264	28.2	41.24	22.1	7.69	0.9	8.08
31-Jul-17	2:00PM	clear sun	3.1	0.0	55.3	28.7	887	28.1	41.55	22.6	8.41	1.1	8.31
1-Aug-17		clear sun						28.1	42.73	23.0	8.90	1.1	8.19
2-Aug-17	2:40PM	cloudy	5.0	0.0	78.2	25.9	806	28.2	42.37	23.5	8.47	1.0	8.30
3-Aug-17	2:15PM	clear sun	2.0	0.0	73.4	25.5	918	28.3	42.28	23.1	8.94	1.1	8.27
5-Aug-17	2:30PM	partly cloudy	0.2	0.0	75.2	26.6	430	28.3	42.84	23.8		0.8	8.27
12-Aug-17	2:00PM	overcast	0.7	0.0	80.6	21.7	420	28.5	42.06	22.6	8.22	1.0	8.31
26-Aug-17		partly cloudy	2.4	0.0	71.9	21.1	795	29.0	43.04	23.0	7.93	0.9	8.11
21-Aug-17	2:45PM	partly cloudy	9.0	0.0	76.1	21.0	300	28.9	44.25	22.9	8.22	1.0	8.20
11-Sep-17	3:00PM	clear sun	10.0	0.0	72.2	18.6	818					1.2	8.01

little variability as well, with a range of only 26.8 ppt (6/1) to 29.0 ppt (8/17), while conductivity showed a slightly larger range from 34.19 mS (6/1) to 44.25 mS (8/31) (Figure 1a). Both parameters showed less variability than in previous years.

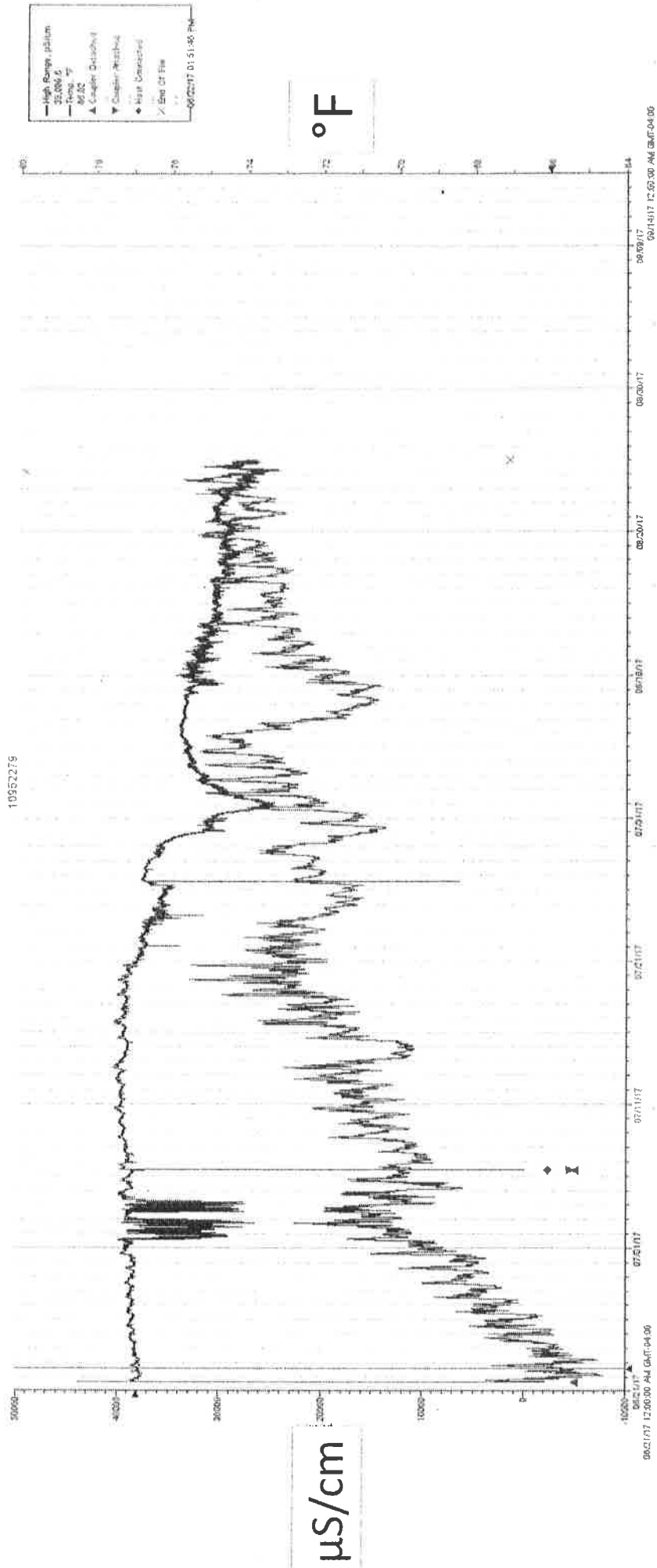
Water clarity, as measured by a Secchi disk, varied from 0.1 m (7/20) to 1.2 m (9/11) during the monitoring period (Figure 2a). pH ranged from a low of 7.91 (6/11) to a high of 8.31 (8/12) (Figure 2b). Similar to other parameters this season, water clarity/turbidity and pH showed less variation than previous years. The water quality monitoring raw data and graphs will be available online in the redesigned Research section of the Outer Island website.

A HOBO temperature-salinity probe was purchased in winter 2017 in support of the water quality studies (2016 Final Report). The HOBO probe was suspended one meter deep from the floating dock on June 21 and removed on August 25. Temperature measurements performed by the probe agreed well with the water quality meter at the end of the dock, about 19°C on June 21<sup>st</sup> and increased to 23°C on August 25<sup>th</sup>. Conductivity measurements agreed well with the water quality intern measurements for the first month but then began to fluctuate for the HOBO probe. I suspect this fluctuation was due to biofouling on the probe. We will need to perform more frequent maintenance on the probe to remove fouling organisms bi-weekly.

### **Water Quality and Supplies for Education Programs**

A new YSI Pro 30 Dissolved Oxygen meter was purchased in support of the water quality monitoring program (\$1,685.00). This meter replaces an older, poor functioning meter. A viewing scope was purchased for student use on the island. The viewing scope allows the user to obtain a clear view into the water or tide pool to view plants and animals. The viewing scope eliminates sun glare or surface turbulence and provides the viewer with a clear view into the water column.

# HOBO Temperature and Conductivity



## **Books Purchased for Outer Island Library**

A reference library is located in the laboratory on Outer Island. A series of field guides concerning marine habitats and organisms were purchased for the island staff and visitors. The books include oceanography text books, and bird, invertebrate and algae guides. A bibliography is listed below:

- Watling et al., 2003. *Life Between the Tides: Marine Plants and Animals of the Northeast*.  
Tilbury House Publishers, Thomaston, ME.
- Gosner, K.L. 1978. *Peterson Field Guides: Atlantic Seashore*. Houghton Mifflin Company,  
Boston.
- Tekiela, S. 2000. *Birds of Connecticut: Field Guide*. Adventure Publications, Cambridge, MN
- Lynch, P.J. 2017. *A Field Guide to Long Island Sound*. Yale University Press.
- Van Patten, M. 2006. *Seaweeds of Long Island Sound. Second Edition*, Connecticut Sea Grant  
College Program.
- Telander, T. 2014. *Birds of New England. Falcon Pocket Guide*. Rowman and Littlefield,  
Guilford, CT.
- Skehan, J.W. 2008. *Roadside Geology of Connecticut and Rhode Island*. Mountain Press  
Publishing Company, Missoula MT.
- Pinet, P. 2016. *Invitation to Oceanography, Seventh Edition*. Jones and Bartlett Learning,  
Burlington, MA.
- Sverdrup, K.A. and Kudela, R.M. 2014. *Investigating Oceanography*. McGraw-Hill Publishing,  
NY.

## **Outer Island Website Update**

We continue to revise the Outer Island website ([www.outerisland.org](http://www.outerisland.org)) to create a more informative, user friendly interface for Outer Island information and educational programming. The Outer Island website is hosted on iPage ([www.iPage.com](http://www.iPage.com); recently renewed; now terms February 2021). Several undergraduate computer science students (Xavier Garcia and Azm Hussein) have worked on the Outer Island website this past year. Xavier Garcia posted

additional content to the website during the summer 2017. Improvements to the website during 2017-2018 include:

- Posting of summer 2016 and 2017 water quality data (harbor and tide pools) and water quality equipment and manuals
- The posting of past Summer Outer Island attendance records (1998-Present)
- Posting of summer 2017 intern photos and bios, and
- Resources for LIS educators
- Link to the FOI video of Outer Island

More recently, Azm Hussein has begun to undertake a more complete renovation of the Outer Island website. Currently the site is hosted by <http://www1.ipage.com/> and is using php as its server side programming language. None of the main features that are supposed to be shown are working and the site is littered with broken links. One main problems that needs to be addressed is the ability for people after me to add, upload, and update content with minimal programming backgrounds. One possible solution to this is to embed Wordpress features that allow the user to edit content without having to dive deep into programming. Outer Island currently has sophisticated camera's located around the island and one key feature is to be able to showcase live feeds on the site. These camera's will not only provide educational benefits but allow security aspects as well. Another problem is the weatherbug not currently visible/linked to the site.

We have decided that the best way to proceed is to start from scratch and build the website correctly and migrate all the data into the new and improved site. After the site is both aesthetically pleasing and easy to navigate (either using WordPress or other css/javascript templates that are well done) we will design and incorporate live streaming, weather data and geolocation tracking. Everything will heavily documented to ensure that upkeep can be handled without my assistance. We can also do something with the data collected from the island and find more ways to make the site more interactive with the user.

## **Air Quality Monitoring**

A PerkinElmer ELM Air Quality Monitoring System was purchased (\$2,080) and installed on Outer Island in October 2015. This ELM air quality monitoring system gathers information on atmospheric temperature, humidity, volatile organic compounds (VOCs), ozone, nitrogen dioxide, particulate matter and noise (see attached brochure). ELM is designed to monitor outdoor air quality using a range of dedicated nano-technology sensors. The ELM system was installed along-side the WeatherBug weather station on the roof of the laboratory building. ELM measures local pollutant levels in real time, wirelessly transmitting the data to a cloud-based system for storage, analysis and processing. To access the daily air quality data use the following URL: <http://elm.perkinelmer.com/map/>. Zoom in on the map to locate the Outer Island station, Thimble Islands, Long Island Sound. Clicking on the station (green dot) allows access to the data. The air quality monitoring data can be directly accessed from the Outer Island website at <http://outerisland.org/index.php?id=air-quality-monitoring>.

During the Summer 2017, the air quality meter did not function well due to excessive corrosion. PerkinElmer sent a replacement air quality meter at no cost during August 2017. Rather than install the new meter and risk exposure over the winter months, we decided to defer installation until spring 2018.

## **WeatherBug Station, Web Cameras and Remote Video Capabilities**

Following the maintenance performed on the WeatherBug weather station the station has been performing well. A new High Definition camera and 5 year maintenance contract was purchased and installed in spring 2017 (\$6,000). The camera replaced an older, poorly functioning camera. The two cameras now provide uninterrupted video from west looking over the marsh and east with a view of the dock. For the past several months the WeatherBug weather and video from the cameras have not been viewable from the outerisland.org website. The redesigned website will restore the camera views and access to the WeatherBug weather data.

### **AT&T Wireless Account**

The AT&T wireless account used in support of the Outer Island WeatherBug station and video cameras now supports three wireless lines transmitting data and images. Two of the lines support the cameras and WeatherBug weather data and the third line supports the ELM Air Quality monitoring station. This new ELM support line was established in 2015. The account also supports a wireless hot spot to allow internet access to the student interns. Data usage was increased this summer (2017) on the account to cover intern internet usage. In spite of these increases, the interns exceeded monthly data usage and incurred overage charges. We will work with AT&T to modify the summer data limits to reduce future overage charges.

AT&T broadband access fees for the wireless for the twelve month service period from April 2017 to February 2018 totaled \$2686.23.

### **Outer Island Watercolor Workshop/Art Experience**

The Fourth Annual Outer Island Watercolor Workshop/Art Experience was held on Saturday July 22<sup>nd</sup>, 2017. The workshop was conducted in collaboration with the Friends of Outer Island and featured watercolor, photography, and sketching workshops. By all measures the event was a success. Wiley Carr, SCSU Art Professor, sent a workshop summary (see attached document). We were able to provide art supplies for each of the 12 participants. Wiley Carr was provided a stipend (\$1,000) in support of his role in organizing and watercolor instruction during the event.

### **21<sup>st</sup> Globe International Conference, Coastal Resilience in Urban Environments**

The Global Learning and Observations to Benefit the Environment (GLOBE) Program is an international science and education program that provides students and the public worldwide with the opportunity to participate in data collection and the scientific process, and contribute meaningfully to our understanding of the Earth system and global environment. The 2017 21<sup>st</sup> Annual Meeting (30 July - 3 August) was hosted by GLOBE Partner Dr. Scott Graves, Southern Connecticut State University. Outer Island was selected for hosting one of the field investigation sites. International students participated in data collection activities in the intertidal zones, tide

pools and coastal waters. We supported the GLOBE Conference by providing support (\$832) for ferry service to bring student participants to the island. Many of the participating GLOBE instructors assisting with the field activities were trained in GLOBE protocols during past GLOBE teacher workshops held on the island. A GLOBE Conference announcement and a detailed schedule of the GLOBE activities on the island are appended to this report.





Southern Connecticut  
State University

Date: 24 July 2017

To: Vincent Breslin  
Professor and Chair  
Science Education and Environmental Studies  
Co-Coordinator, Werth Center for Coastal and Marine Studies

From: T. Wiley Carr  
Professor of Art

Re: Final Report, Outer Island Watercolor Workshop 2017

Dear Vince,

The 4th Annual Watercolor Workshop was again a great success. The workshop was enrolled to capacity, 12 participants, and remains a popular event. All of the participants were visiting Outer Island for the first time.

Participants found the experience to be educational, enjoyable and informative. It reflected well on SCSU and our programs.

I am attaching the information distributed to participants, which outlines materials utilized. I'm also attaching one of several emails received, and the promotional page that I generated. Reusable art materials remain stored on the island.

Please let me know if I can provide additional information; The grant-funding is deeply appreciated by myself and the participants.

Respectfully,

T. Wiley Carr  
Professor of Art

email: [carrt1@southernct.edu](mailto:carrt1@southernct.edu)

**Subject:** Watercolor Workshop on Outer Island

**Date:** Friday, July 7, 2017 at 4:31:36 PM Eastern Daylight Time

**From:** SCSU Announcements (sent by announce-campus <announce-campus-bounces@lists.southernct.edu>)

**To:** announce-campus@lists.southernct.edu

On Saturday, July 22, from 9:30 a.m. - 1:30 p.m., Professor of Art T. Wiley Carr will be conducting a watercolor painting workshop on Outer Island in Stony Creek/Branford (weather permitting).

The watercolor workshop is one component of Art Day Outer Island Experience, sponsored by Friends of Outer Island and SCSU in partnership with the U.S. Fish and Wildlife Service.

Space is limited, and online registration <https://www.eventbrite.com/e/outer-island-watercolor-workshop-tickets-35565781209> is required with a \$15 donation (which covers the cost of the ferry trip). The workshop is otherwise free, open to the public, and suitable for all levels of ability. All materials will be provided.

Any inquiries can be emailed to Professor T. Wiley Carr at [carrt1@southernct.edu](mailto:carrt1@southernct.edu)

Please also visit <http://www.outerisland.org/> to learn about Outer Island and its programs.

\*\*\*\*\*

T. Wiley Carr  
Professor of Art ~  
Art Department/ Earl Hall/ Office 102C  
Southern Connecticut State University  
501 Crescent Street  
New Haven, CT 06515  
Phone: (203) 392-6636

**Subject:** You're invited to "Outer Island Watercolor Workshop"

**Date:** Monday, July 24, 2017 at 9:36:16 AM Eastern Daylight Time

**From:** wiley

**To:** Carr, T. W.

I'd like to share this event with you!

## Outer Island Watercolor Workshop

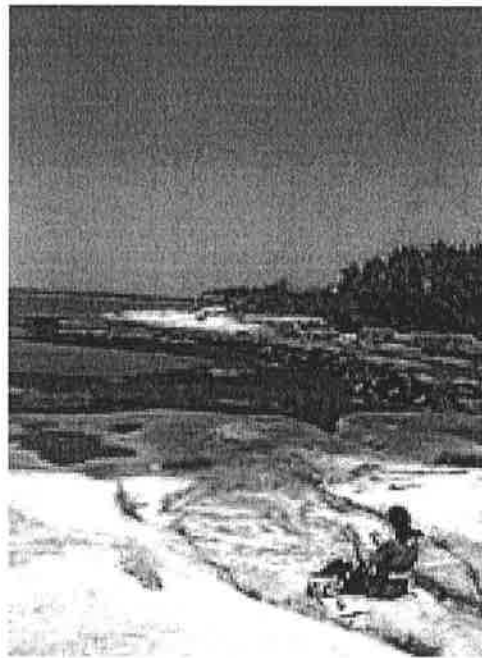
Saturday, July 22, 2017 from 9:30 AM to 1:30 PM (EDT)

Outer Island / Stony Creek Dock

4 Indian Point Road  
Thimble Islands  
Stony Creek 06405

[View Map](#)

Attend



Want company? Share this event!



Eventbrite

**Subject:** FW: Watercolor Workshop Outer Island 7/22  
**Date:** Monday, July 24, 2017 at 9:27:24 AM Eastern Daylight Time  
**From:** Carr, T. W.  
**To:** Carr, T. W.

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**From:** deborah smith  
**Date:** Saturday, July 22, 2017 at 10:18 PM  
**To:** "Carr, T. W." <[carrt1@southernct.edu](mailto:carrt1@southernct.edu)>  
**Subject:** Re: Watercolor Workshop Outer Island 7/22

Hi Wiley,

I just wanted to say thank you again for the outer island watercolor workshop. Everything about it was wonderful. I loved the boat ride. It was great learning about the island and having the chance to wander and connect with it. Your workshop was low key and informative. I was very appreciative of you providing all of the materials so that we could just show up and experience - and - the setting couldn't have been more inspirational!

Again - I really appreciate what you gave us today!

Take care,

Deb Smith



# 21<sup>ST</sup> GLOBE ANNUAL MEETING

COASTAL RESILIENCE  
IN URBAN ENVIRONMENTS

*30 July - 3 August 2017*  
*New Haven, Connecticut*  
**#GLOBE21**



THE **GLOBE** PROGRAM

Sponsored by



Supported by



Implemented by



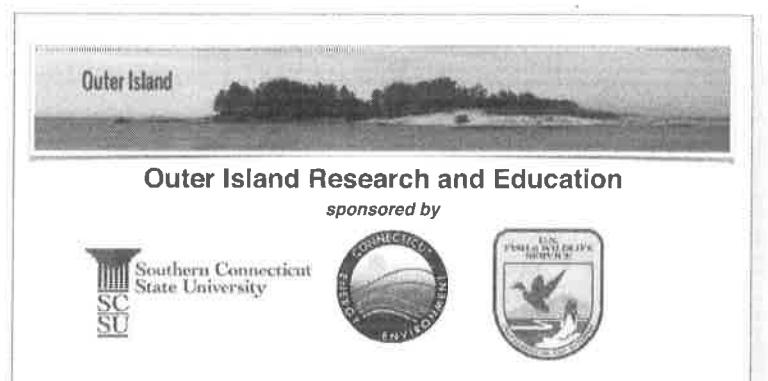
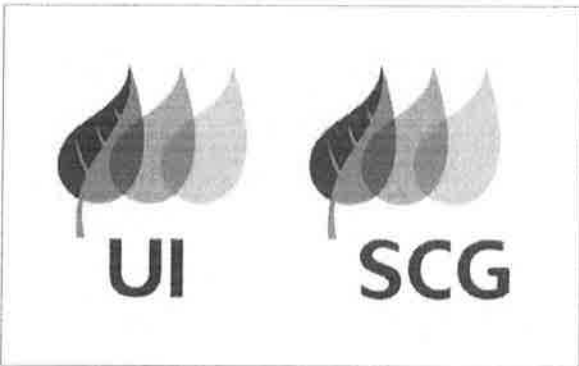
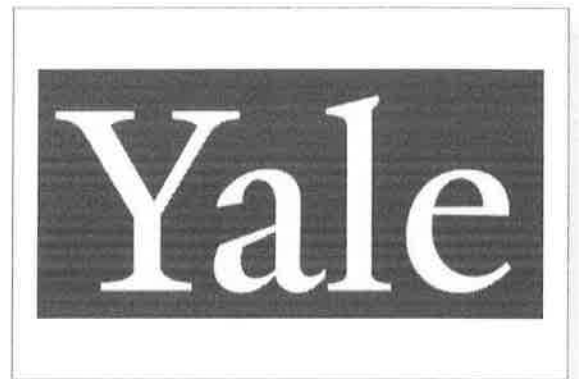
Hosted by



Southern Connecticut  
State University



Thank you to our Sponsors, Donors and Exhibitors:





# 21st Annual GLOBE Meeting

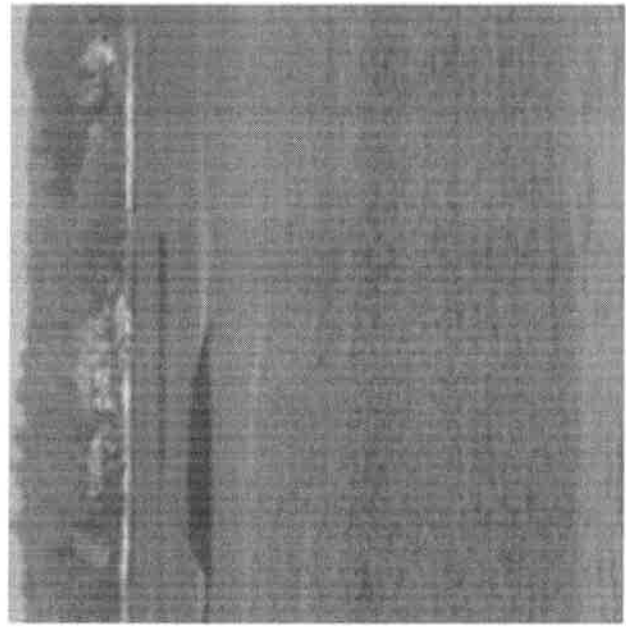
**Field Sites: locations, descriptions, activities/protocols, procedures, timeline, rotation.**

## Outer Island

**Field Activities | Protocols, Equipment, Timeline and Rotation**

### **Timeline of Activities and Rotation Schedule:**

1. 10:15am - Meet as a large group on the rock wall near the pavilion.
  - Ginny, Jim and the Island Keepers will go over Island Safety and general rules, etc.
2. 10:30am - 11:30am - Island Tour and Atmosphere/WeatherStation and Website. - Groups rotate from Tour to Lab at 11:00am.
  - **Group 1** w/ trainers and Island Interns will take a tour of the island with Ginny and Jim; slow walking around the east/south/west of the island and introducing the habitats, ecology, geology, etc. At 11:00am group rotates to Lab.
  - **Group 2** w/ trainers will remain in the Lab/Pavilion area to discuss Atmosphere (Peter Falcon and Juliet Hulse to lead); they will use Cloud App, Charts and a Kestrel or other weather meter; also in the lab connect a tablet/phone or laptop to the large screen TV to view the Outer Island Website (basic island overview, online resources, weather data links and webcams; Trainers will have access to the last 6 months of weather data to show on the screen. At 11:00am group rotates to Tour Island.
3. 11:30am - 12:00pm - **Lunch.**





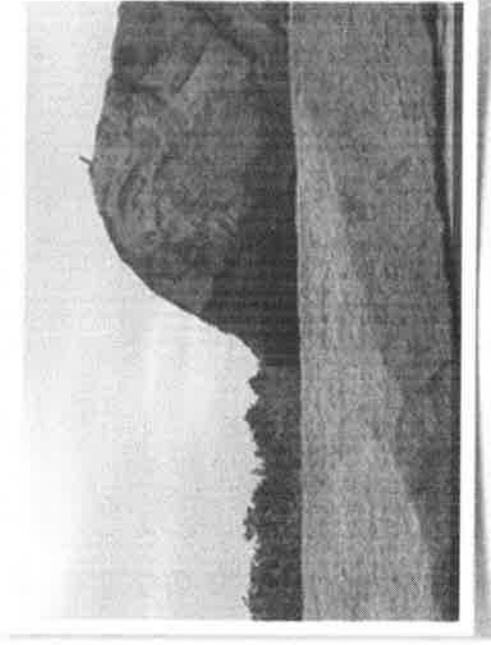
# 21st Annual GLOBE Meeting

**Field Sites: locations, descriptions, activities/protocols, procedures, timeline, rotation.**

## Outer Island

### Field Activities | Protocols, Equipment, Timeline and Rotation

4. 12:00pm to 1:15pm - Hydrology and Intertidal Transects Part 1.
- **Group 1** (20 students) to work with Ginny and Jim on Intertidal Transect Activity, and data gathering;
  - **Group 2** (20 students will split in to smaller groups of 5 with Trainers (Peggy and Julie and Peter as leads) will rotate among the Hydro Sites (2a, 2b).
  - **Group 2a** Hydro 1 @ Tidepool/Ocean Site #1 with Peggy (Temp, pH, DO, Salinity, biota obs).
  - **Group 2b** Hydro 2 @ Tidepool/Ocean Site #2 with Julie (Temp, pH, DO, Salinity, biota obs).
  - **Group 2c** Hydro 3 @ Dock/Pier with Island Interns (Temp, pH, DO, Salinity, Transparency, deep water sampling).
- \* Groups Rotate after 25 minutes; **Group 2a starts @ Tidepool Site #1 and rotates to Tidepool Site #2 and then on to Dock/Pier Site. Group 2b starts @ Tidepool Site #2, rotates to Dock/Pier and on to Tidepool Site #1, Group 2c starts at the Dock, rotates to Tidepool #1, and then Tidepool #2.**
5. 1:30pm - 2:45pm - Hydrology and Intertidal Transects Part 2.
- **Group 2** (20 students) to work with Ginny and Jim on Intertidal Transect Activity, and data gathering;
  - **Group 1** (20 students will split in to smaller groups of 10 with Trainers (Peggy and Julie and Peter as leads) will rotate among the Hydro Sites (2a, 2b).
  - **Group 1a** Hydro 1 @ Tidepool/Ocean Site #1 with Peggy (Temp, pH, DO, Salinity, biota obs).
  - **Group 1b** Hydro 2 @ Tidepool/Ocean Site #2 with Julie (Temp, pH, DO, Salinity, biota obs).
  - **Group 1c** Hydro 3 @ Dock/Pier with Island Interns (Temp, pH, DO, Salinity, Transparency, deep water sampling).
- \* Groups Rotate after 25 minutes; Group 1a starts @ Tidepool Site #1 and rotates to Tidepool Site #2 and then on to Dock/Pier Site. Group 1b starts @ Tidepool Site #2, rotates to Dock/Pier and on to Tidepool Site #1, Group 1c starts at the Dock, rotates to Tidepool #1, and then Tidepool #2.
6. 3:00pm - 4:00pm - All Groups reassemble in the Lab and under the Pavilion to discuss the Hydro data collection and Intertidal Observations.
- 3:00ppm - **Group 1** meets with Ginny and Jim in the Lab to discuss Transect data. - **Group 2** meets under the Pavilion with Peggy and Julie and Peter to discuss hydro data. comparing findings at each site.
  - 3:30ppm - **Group 2** meets with Ginny and Jim in the Lab to discuss Transect data. **Group 1** meets under the Pavilion with Peggy and Julie and Peter to discuss hydro data. comparing findings at each site.
7. All Groups + Trainers prepare to depart the Island, Clean - up and trash check, all trash removed from Island as teams depart for Stony Creek Landing.





**SCSU Outer Island Funds Request 2017-2018**

Banner Org# 280541

Category	Requested Funds	Disbursed Funds	
<b>Personnel</b>			
Student Stipend (150 hours @ \$10/hour)			
Website maintenance (Xavier Garcia)	\$1,500.00	1,500.00	
Website maintenance (Azm Hussein)		1,500.00	
Faculty Stipend Scott Graves (Summer 2017) (62.7%)	\$1,000.00	0	
Faculty Stipend T. Wiley Carr (Summer 2017) (20.4%)	\$1,000.00	1,000.00	
Fringe	\$360.00	204.00	
<b>Total Personnel</b>	<b>\$3,860.00</b>	<b>4,204.00</b>	<b>4,204.00</b>
<b>Supplies</b>			
Water Quality, Weather Meters	\$3,500.00		
Laboratory and field supplies			
		Case	33.80
		Scope	81.78
		Lab Supplies	238.93
Art Supplies		Art Supplies	200.89
Educational Supplies and Books		Office Supplies	226.60
		iPage	42.99
		iPage	394.20
		Books	239.30
		Books	71.94
		Books	49.30
			1,579.73
<b>Equipment</b>			
HD Camera/Installation/5 year maintenance	\$6,595.00	6,000.00	6000
<b>Refreshments</b>			
Chartwells Catering (GLOBE Workshop)	\$600.00	0.00	
<b>Travel (in State)</b>			
Ferry Tickets to Outer Island	\$1,000.00		
		FOI	960.00
		GLOBE	832.00
			1792
<b>Other</b>			
Annual AT&T Broadband Access fees	\$2,600.00		
		Apr-17	146.63
		May-17	198.30
		Jun-17	196.63
		Jul-17	421.63
		Aug-17	331.63
		Sep-17	211.63
		Oct-17	196.63
		Nov-17	196.63
		Dec-17	196.63
		Jan-17	196.63
		Feb-17	196.63
		Mar-17	196.63
			2686.23
<b>Total Funds Requested 2017-2018</b>	<b>\$18,155.00</b>		<b>16,261.96</b>