

# Connecticut State University Outer Island Education Program Report

Submitted by:

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and

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February 2015

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

### **Outer Island Interns**

Two interns were hired for summer 2014 to staff Outer Island and to assist groups with educational programming during their visit to the island. The interns also conducted research activities, including water quality monitoring, and participated in maintenance activities on the island facilities. Lauren Gervais is pursuing a Biology degree at Ithaca College, Ithaca NY. Lauren recently worked as a Research Assistant in the ecology lab at Ithaca College and participated in volunteer activities including Guiding Eyes for the Blind and the Shoreline Food Pantry. Aleah Querns is pursuing Biological Sciences (Ecology, Conservation and Evolution) at North Carolina State University, Raleigh, NC. Aleah participated in the EPI Wildlife Ecology Summer Research Program, Yellowstone National Park in July 2013 and the Natural Resource Conservation Academy, UCONN in July 2012. All solicited and unsolicited feedback concerning the performance of their duties indicated that both interns were exemplary employees. Student interns each received a salary (\$2,722.50) processed via CCSU.

### **Schedule of Visitors**

Nineteen different groups scheduled 34 visits during the summer 2014 with an estimated 500 visitors participating in education programs. Many of the scheduled groups have visited the island in previous years. Some of the notable first time visitors to the island included students from the Worthington Hooker School, Columbus Academy, Barnard Environmental Magnet School and a geography class from SCSU. The complete schedule of groups visiting the island in 2014 is included in Table 1.

### **Research Activities**

#### **Water Quality Monitoring**

Water quality parameters were monitored by the CSU interns during the Summer 2014 from May 31<sup>st</sup> to August 3<sup>rd</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.

Salinity ranged from a low of 25.7 ppt (6/9) to a high of 28.4 ppt (8/3) with a mean value of 27.7 ppt (Figure 1a). Water temperature varied from a low of 14.9°C on May 31<sup>st</sup> and increased to the maximum temperature of 23.6°C on July 23<sup>rd</sup> (Figure 1b). Water temperature gradually increased from the spring to the end of the summer. Dissolved oxygen concentrations were highest initially (11.72 mg/L) and gradually decreased to a low of 5.44 mg/L on July 29<sup>th</sup>

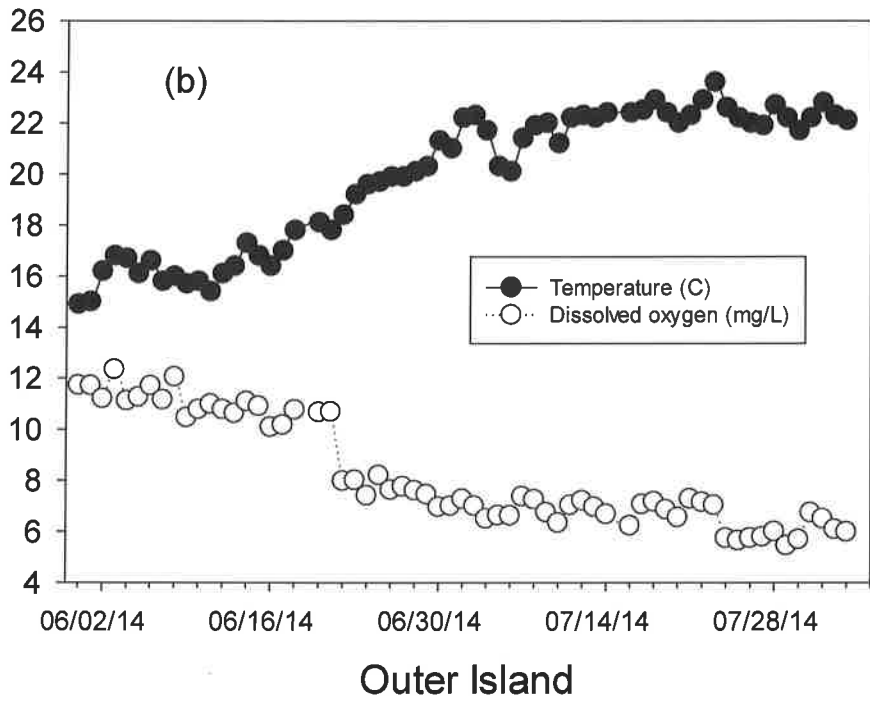
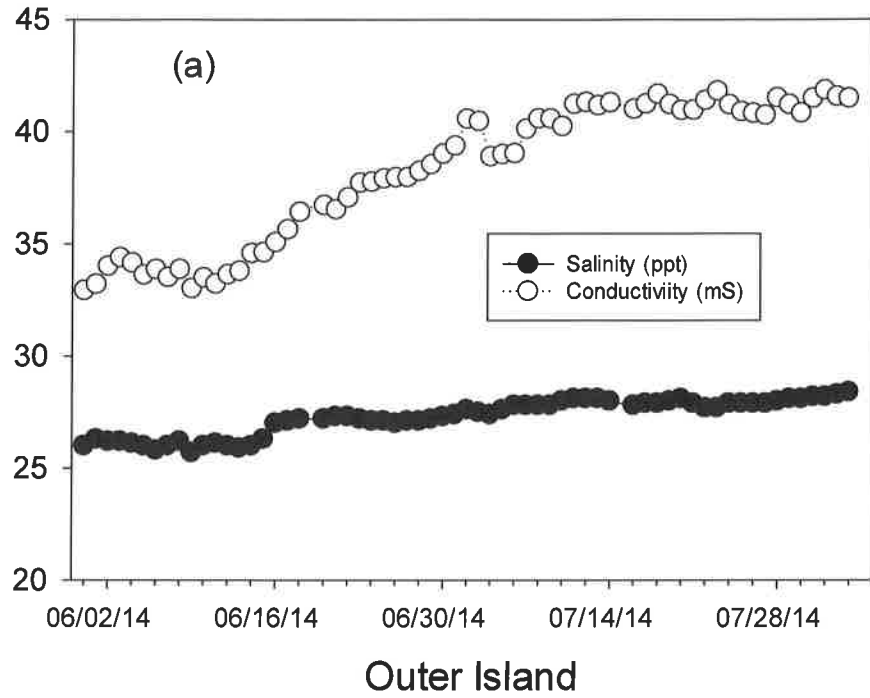


Figure 1. Outer Island 2014 water quality monitoring results: (a) salinity and conductivity and (b) temperature and dissolved oxygen.

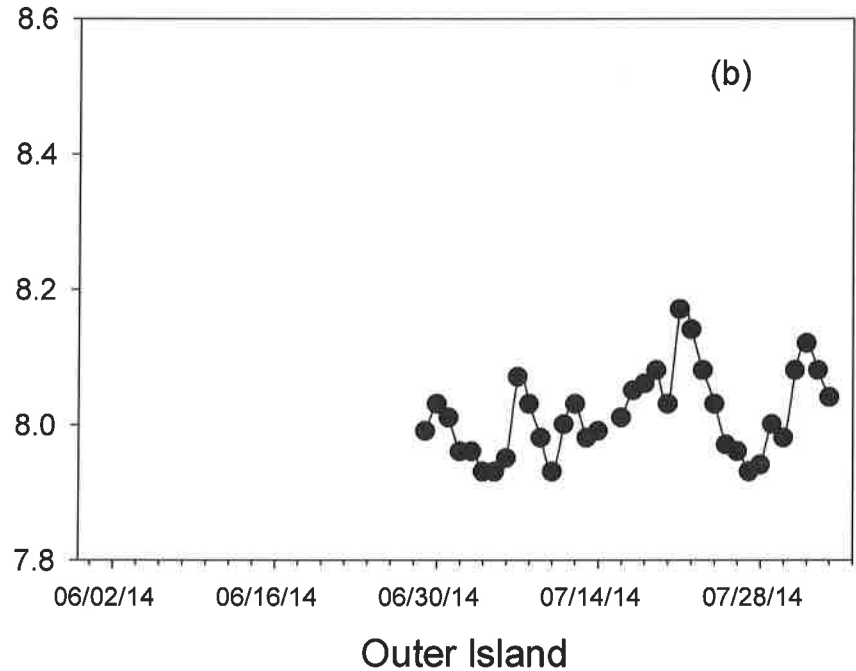
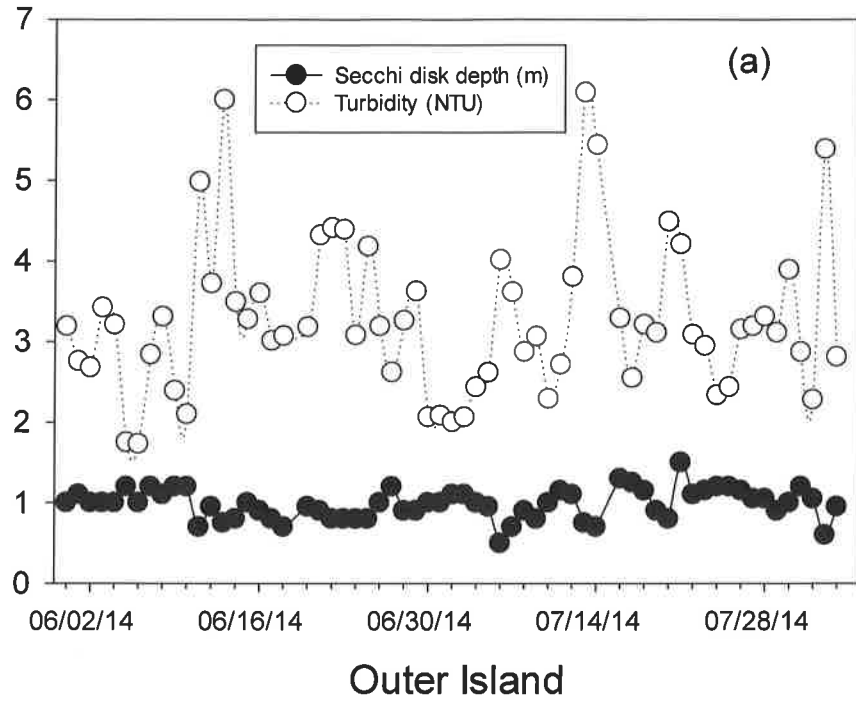


Figure 2. Outer Island 2014 water quality monitoring results: (a) turbidity and Secchi disk depth and (b) pH.

Outer Island Water Quality Data Summer 2014

Date	Sample Time	Weather	Wind speed (mph)		Relative humidity (%)	Air temperature (°C)	Solar radiation (lux)	Salinity (ppt)	Conductivity (mS)	Spec. Conductance (mS)	Temperature (°C)	Oxygen (mg/L)	Secchi Disk (m)	Turbidity (NTU)	pH
			Max	Min											
31-May	1:54pm	partly cloudy	11.90	0.90	49.3	21.70		26.00	32.93	40.85	14.90	11.71	1.00	3.19	
1-Jun	2:00pm	clear sun	0.00	0.00	47.1	28.60		26.30	33.21	41.00	15.00	11.71	1.00	2.76	
2-Jun	2:15pm	clear sun	6.60	0.00	67.3	20.10		26.20	34.02	40.91	16.20	11.20	1.00	2.68	
3-Jun	2:00pm	clear sun			71.9	20.70		26.20	34.40	40.95	16.80	12.36	1.00	3.42	
4-Jun	2:00pm	overcast	9.40	6.70	77.0	17.90		26.10	34.16	40.77	16.70	11.11	1.00	3.21	
5-Jun	2:00pm	overcast	9.10	2.30	79.5	18.80		26.00	33.62	40.48	16.10	11.26	1.20	1.75	
6-Jun	2:15pm	clear sun	12.30	2.20	44.2	26.80		25.80	33.86	40.37	16.60	11.70	1.00	1.73	
7-Jun	2:00pm	partly cloudy	3.90	0.30	61.3	26.70		26.00	33.51	40.68	15.80	11.15	1.20	2.84	
8-Jun	2:47pm	clear sun	0.00	0.00	84.4	25.70		26.20	33.87	40.74	16.00	11.05	1.20	3.31	
9-Jun	2:40pm	rain	1.60	0.60	76.1	18.20		25.70	33.02	40.14	15.70	10.45	1.10	2.39	
10-Jun	2:00pm	fog	3.70	2.80	91.8	19.80		26.00	33.49	40.65	15.80	10.77	1.20	2.10	
11-Jun	2:15pm	drizzle	14.10	3.70	79.2	16.60		26.00	33.22	40.67	15.40	10.98	0.70	4.98	
12-Jun	2:10pm	fog	14.50	5.30	80.5	16.80		25.90	33.63	40.51	16.10	10.77	0.95	3.72	
13-Jun	2:15pm	fog	1.30	0.50	86.6	18.50		26.00	33.79	40.49	16.40	10.62	0.75	6.00	
14-Jun	2:10pm	fog	11.10	5.20	61.5	21.70		26.00	34.58	40.57	17.30	11.08	0.80	3.49	
15-Jun	2:15pm		6.50	1.30	65.5	22.10		26.30	34.62	41.01	16.80	10.90	1.00	3.28	
16-Jun	2:00pm	clear sun	0.70	0.00	60.5	23.40	97000	27.00	35.07	41.9	16.4	10.08	0.9	3.6	
17-Jun	2:00pm	overcast	3.30	2.30	76.9	27.50	88100	27.10	35.64	42.07	17	10.16	0.8	3.01	
18-Jun	2:10pm	clear sun	18.80	4.30	65.7	23.60	96500	27.20	36.42	42.24	17.8	10.76	0.7	3.07	
20-Jun	2:20pm	clear sun	9.80	0.50	43.4	25.30	83300	27.20	36.72	42.36	18.1	10.68	0.95	3.18	
21-Jun	2:00pm	partly cloudy	4.10	1.90	15.5	24.60	100300	27.30	36.53	42.36	17.8	10.7	0.9	4.31	
22-Jun	2:00pm	partly cloudy	6.10	0.80	68.9	27.30	97300	27.00	37.06	42.39	18.4	7.97	0.8	4.4	
23-Jun	2:15pm	partly cloudy	12.50	7.80	75.1	21.00	90500	27.20	37.72	42.28	19.2	8	0.8	4.38	
24-Jun	2:00pm	clear sun	2.10	1.10	68.8	23.50	102900	27.10	37.76	42.06	19.6	7.4	0.8	3.08	
25-Jun	2:00pm	partly cloudy	4.70	0.80	84.1	20.90	99900	27.10	37.90	42.15	19.7	8.19	0.8	4.18	
26-Jun	2:00pm	partly cloudy	2.80	0.00	71.5	29.40	109300	27.00	37.95	42.04	19.9	7.62	1	3.19	
27-Jun	2:20PM	partly cloudy	0.00	0.00	63.9	29.10	98900	27.10	37.96	42.09	19.9	7.75	1.2	2.62	
28-Jun	2:15pm	clear sun	6.80	1.80	66.6	27.20	92500	27.10	38.23	42.14	20.1	7.59	0.9	3.26	
29-Jun	2:00pm	clear sun	5.10	0.40	68.3	24.40	85800	27.20	38.54	42.3	20.3	7.44	0.9	3.62	7.99
30-Jun	2:30pm	partly cloudy	0.00	0.00	80.4	24.00	90400	27.30	39.00	42.43	21.3	6.95	1	2.07	8.03
1-Jul	2:00pm	clear sun	8.60	3.10	80.1	25.70	89200	27.40	39.37	42.55	21	6.99	1	2.09	8.01
2-Jul	3:00pm	clear sun	11.70	2.30	76.4	28.00	74900	27.60	40.57	42.79	22.2	7.26	1.1	2.01	7.96
3-Jul	2:00pm	partly cloudy	6.80	1.90	75.4	28.30	84900	27.50	40.46	42.7	22.3	6.99	1.1	2.07	7.96
4-Jul	2:10pm	rain	13.10	5.60	78.7	19.90	9700	27.40	38.89	42.61	21.7	6.49	1	2.43	7.93
5-Jul	2:20pm	clear sun	14.40	8.70	52.4	23.90	91200	27.60	38.99	42.82	20.3	6.62	0.95	2.61	7.93
6-Jul	2:05pm	clear sun	0.00	0.00	51.3	31.00	93000	27.80	39.03	43.05	20.1	6.61	0.5	4.02	7.95
7-Jul	2:15pm	clear sun	2.50	1.30	74.9	28.20	91000	27.80	40.12	43.04	21.4	7.36	0.7	3.62	8.07
8-Jul	2:30pm	clear sun	2.10	0.30	69.4	25.80	82400	27.80	40.58	43.18	21.9	7.24	0.9	2.88	8.03
9-Jul	2:00pm	clear sun	0.00	0.00	70.3	24.50	95700	27.80	40.58	43.07	22	6.74	0.8	3.07	7.98
10-Jul	2:30pm	partly cloudy	0.00	0.00	53.5	26.80	82500	28.00	40.24	43.43	21.2	6.33	1	2.3	7.93
11-Jul	3:30pm	partly cloudy	1.10	0.00	52.2	28.20	76100	28.10	41.23	43.5	22.2	7.02	1.15	2.72	8
12-Jul	2:00pm	clear sun	3.70	0.00	73.4	25.10	91200	28.10	41.31	43.54	22.3	7.2	1.1	3.8	8.03
13-Jul	2:00pm	overcast	7.10	4.40	73.3	26.00	32000	28.10	41.17	43.55	22.2	6.95	0.75	6.09	7.98
14-Jul	2:00pm	drizzle	0.00	0.00	78.8	25.90	73200	28.00	41.30	43.45	22.4	6.67	0.7	5.44	7.99
15-Jul	2:00pm	overcast	4.30	3.30	72.4	27.00									
16-Jul	2:00pm	overcast	0.00	0.00	52.7	32.50	75200	27.80	41.00	43.09	22.4	6.22	1.3	3.29	8.01
17-Jul	3:05pm	overcast	4.80	0.90	48.6	28.60	78500	27.90	41.23	43.23	22.5	7.06	1.25	2.55	8.05
18-Jul	2:10pm	overcast	1.80	0.00	53.7	22.60	93600	27.90	41.67	43.31	22.9	7.16	1.15	3.21	8.06
19-Jul	3:00pm	overcast	13.00	5.10	77.6	21.40	23200	28.00	41.21	43.37	22.4	6.85	0.9	3.11	8.08
20-Jul	2:10pm	partly cloudy	3.60	0.80	73.0	22.10	97500	28.10	40.95	43.5	22	6.54	0.8	4.48	8.03
21-Jul	2:00pm	clear sun	0.60	0.00	80.0	23.50	94000	27.90	43.21	43.21	22.3	7.27	1.5	4.2	8.17
22-Jul	2:00pm	clear sun	4.30	1.80	74.10	26.20	94600	27.70	41.40	43.04	22.9	7.14	1.1	3.08	8.14
23-Jul	2:40pm	clear sun	0.00	0.00	87.30	30.10	94800	27.70	41.82	43	23.6	7.02	1.15	2.94	8.08
24-Jul	2:40pm	overcast	1.00	0.10	64.90	27.80	34000	27.90	41.20	43.14	22.6	5.73	1.2	2.33	8.03
25-Jul	2:10pm	clear sun	1.30	0.10	58.6	27.70	87900	27.90	40.89	43.26	22.6	5.64	1.2	2.33	8.03
26-Jul	2:05pm	overcast	0.00	0.00	72.1	23.70	28000	27.90	40.82	43.27	22	5.74	1.2	2.43	7.97
27-Jul	3:00pm	overcast	0.90	0.00	74.6	26.50	81500	27.90	40.89	43.3	21.9	5.78	1.05	3.19	7.93
28-Jul	2:00pm	partly cloudy	0.00	0.00	79.1	28.30	85800	28.00	41.51	43.43	22.7	5.99	1.05	3.31	7.94
29-Jul	2:00pm	partly cloudy	0.30	0.00	61.2	24.70	52200	28.10	41.21	43.51	22.2	5.44	0.9	3.11	7.98
30-Jul	2:00pm	partly cloudy	1.80	0.50	49.2	30.90	94800	28.10	40.83	43.55	21.7	5.68	1	3.89	7.98
31-Jul	2:40pm	clear sun	9.30	4.30	61.2	27.20	82300	28.20	41.49	43.64	22.2	6.73	1.2	2.87	8.08
1-Aug	2:10pm	partly cloudy	11.40	7.70	79.4	24.10	48400	28.30	41.85	43.71	22.8	6.49	1.05	2.28	8.12
2-Aug	2:00pm	overcast	13.60	8.40	76.1	22.80	53100	28.30	41.57	43.8	22.3	6.08	0.6	5.39	8.08
3-Aug	2:00pm	partly cloudy	8.00	4.10	67.6	24.60	58200	28.40	41.49	43.93	22.1	5.98	0.95	2.81	8.04

(Figure 1b) Water temperature and dissolved oxygen concentrations are inversely related, with oxygen solubility decreasing in warmer water.

Water clarity, as measured by a Secchi disk, varied from 0.60 m (8/2) to 1.2 m (6/8) during the monitoring period (Figure 2a). Greater variability was measured in water turbidity where values ranged from 1.73 NTU (6/6) to 6.09 NTU (7/13) (Figure 2a). In general, as turbidity increases water quality as measured by the Secchi disk should decrease. pH ranged from a low of 7.93 (7/4) to a high of 8.17 (7/20) (Figure 2b).

The water quality monitoring raw data and graphs will be available online in the redesigned Research section of the Outer Island website.

### **Water Quality Meters for Education Programs**

In 2013 research quality meters and probes were purchased solely for water quality monitoring by the island interns. This year we purchased water quality meters that are durable, reliable meters for use in water quality measurements in support of educational programming. Three meters, a conductivity/temperature/salinity meter (\$295 meter + \$219 probe), a dissolved oxygen meter (\$387.95) and a pH probe (\$111.95) were purchased for harbor and tide pool water quality measurements. Photos of the meters and manuals for their use and care will be posted on the [www.outerisland.org](http://www.outerisland.org) website. Additionally, replacement hydrometers, thermometers, magnifiers and pH strips (\$530.75) were purchased for use in educational programming for visiting school groups.

### **Fouling Studies**

The biofouling study is slowly moving forward. Eduardo Rentas (CCSU undergraduate) completed an independent study project looking at percent cover on fouling plates at the end of the 2014 season. Currently, two undergraduate students are working on population genetics of Caprellid and Gammarid amphipods. A brief research summary report is appended.

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

The Outer Island WeatherBug automated weather station and online web-camera suffered from the consecutive impacts of Hurricane *Sandy* and the Winter Storm *Nemo* in 2012 and 2013 and damaged solar storage batteries in Spring 2014. The weather station and camera systems survived intact and will be restarted once the solar batteries are replaced in Spring 2015. We received the 2<sup>nd</sup> Outer Island WeatherBug online web-camera (\$9,995) equipment in late December of 2013. Again, the damage to the solar batteries on the island has delayed the installation of the second camera and the re-siting of the existing camera on the island. With the replacement of the solar batteries and the restoration of power on the island, we will contact the

WeatherBug staff and will schedule an installation date in Spring 2015. We have 2 sites that could work for the 2<sup>nd</sup> camera (one is the planned site overlooking the southwest marsh area, but if that site is too far distant from the power source we may choose – with F&WS approval – an alternative location on the south end of the island overlooking the bedrock intertidal area and offshore rock outcrops.

The AT&T account used in support of the Outer Island WeatherBug station and video cameras was transferred during the Summer 2013 from the Community Foundation for Greater New Haven to SCSU. A second wireless line was added to the account in October 2013 to support the second video camera installation. AT&T broadband access fees for the wireless for the eleven month service period from Feb 1 2014 to December 31, 2014 totaled \$1054.33.

### **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 currently hosted on iPage ([www.iPage.com](http://www.iPage.com)). The hosting contract was recently extended until 2018 (\$323.64). We contracted an undergraduate student (Sebastian Smith; 250 hours @ \$10/hour = \$2,500) at SCSU on two occasions to assist us with redesigning the website.

The reorganized website now has a more simplified navigation and allows direct access to weather and water quality data. We anticipate having WeatherBug data and the views from two cameras available to visitors on the website for Summer 2015.

The inclusion of an interactive calendar in the redesigned website was initiated this summer and facilitated the scheduling of groups visiting the island. The interactive calendar was a significant improvement to the scheduling of groups. The calendar allowed visitors to identify open dates and reduced scheduling conflicts experienced in past years. The calendar also allows users, including interns, CSU coordinators, Friends of Outer Island, and US Fish & Wildlife personnel to view up-to-date changes in the schedule.

Other improvements to the website during 2014 include:

- Posting of water quality data (harbor and tide pools) and water quality equipment and manuals
- Home page banner photos showing unique habitats and island visitors
- The posting of past Summer Outer Island attendance records (1998-Present)
- Posting of intern photos and Bios, and
- Posted content on the History page

Improvements to the website during 2015 will include:

- Direct access to the web cameras and WeatherBug data
- Resources for LIS educators
- Photo gallery
- Updated water quality data
- Provide a location for posting news articles concerning Outer Island
- Link to the FOI video of Outer Island

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

The Outer Island Watercolor Workshop/Art Experience was held on July 19, 2014. 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. We anticipate scheduling a similar event during summer 2015. Wiley Carr, SCSU Art Professor, sent a workshop summary (See attached document). We were able to provide art supplies for each of the 17 participants. Wiley Carr was provided a stipend (\$1,000) in support of his role in organizing and watercolor instruction during the event.

### **Outer Island Outreach**

Dr. Breslin had several discussions with producer Clint Conley concerning Outer Island programs in support of the production of the Thimble Islands show Chronicle for WCVB, an ABC affiliate in Boston, MA. The production can be viewed at <http://www.wcvb.com/chronicle/thimble-islands-for-sale/28195820>.

Dr. Breslin and Dr. Graves were interviewed for a feature story on Outer Island in the SCSU Southern News campus newspaper. The article can be accessed here: <http://thesouthernnews.org/2014/09/17/dr-breslin-works-to-preserve-long-island-sound-and-educate-students/>





Date: 21 July 2014

To: Dr. Vincent Breslin,  
Professor of Science Education & Environmental Studies

From: T. Wiley Carr  
Professor of Art

Re: Summary Report of Outer Island Watercolor Workshop/Art Experience  
Outer Island, July 19, 2014

It is a pleasure to report an extremely successful outcome for the first watercolor workshop I conducted on Outer Island on Saturday July 19<sup>th</sup>.

Collaborating with the *Friends of Outer Island* we arranged for a maximum of 14 participants (the Thimble Islands Ferry capacity) with advanced registration and a \$10 deposit to cover the cost of the ferry. The workshop was promoted both internally (SCSU email) and externally through the Friends of Outer Island website, and distributed flyers. Registration **sold out** several days in advance of the workshop, and I was able to accommodate 3 additional participants, on request, for a total of 17.

Participants ranged in age from teenage (High School) students to Senior Citizens, and also included members of the SCSU community (Athletics, Counseling Services, Media & Instructional Services, Public Affairs), Friends of Outer Island, and the general public. Ten participants were visiting Outer Island for the very first time. Materials were provided to all participants, (and reusable and unused materials are sufficient for an additional future workshop.)

Great interest was expressed in future workshops of a similar nature, all feedback was extremely positive, and I was able to share valuable information about SCSU and our programs. I welcome the opportunity to hold additional future workshops on Outer Island.

A handwritten signature in purple ink, consisting of a stylized 'T' and 'C' followed by a long horizontal line.

T. Wiley Carr  
Professor of Art  
Southern Connecticut State University  
(203) 392-6636 email: carrt1@southernct.edu

# Outer Island Art Experience

A Wave of Workshops

**On Outer Island in the Thimble Islands of Stony Creek, CT.**  
A Unit of the Stewart B. McKinney National Wildlife Refuge

**Saturday, July 19, 2014**

*Choose one of the following Art Workshops for Teens & Adults*

## **Photography and Microscopy**

with Shoreline Publishing Photographer, Kelly Fryer 7:00 am – 9:30 am  
\*(Bring a digital camera)

## **Intro to Watercolor**

with SCSU Professor of Painting Wiley Carr 10:00 am – 2:00 pm  
\*(Supplies provided)

## **Sketching**

with Wildlife Artist Mike DiGiorgio 3:00 pm – 6:00 pm  
[http://www.natureartists.com/michael\\_digiorgio.asp](http://www.natureartists.com/michael_digiorgio.asp)  
\*(Bring sketch pad and 2B and 4B pencils)

**\*\*Space Limited**

**On Line Registration Required-Donation \$10**  
(includes ferry transportation from Stony Creek)

**[www.friendsofouterisland.org](http://www.friendsofouterisland.org)**



**Photography Watercolors Sketching Microscopy**

\*Sponsored by Friends of Outer Island and the CT State University in partnership with the US Fish and Wildlife Service

### Outer Island Budget 2014-2015

Category	Funds	Category	Expenditures
Personnel			
Student Stipend (250 hours @ \$10/hour)	\$2,500.00	Sebastian Smith (250 hrs @ \$10/hr)	2,500.00
Faculty Stipend T. Wiley Carr (Summer 2014)	\$1,000.00	Wiley Carr (20 hrs @ \$50/hr)	1,000.00
Fringe (18%)	\$180.00		180.00
Supplies			
Water Quality, Weather Meters and Educational Supplies			
Various laboratory and field supplies and computer software			
Art Supplies	\$7,520.00	Conductivity meter/pH meter/DO kit	742.34
		Meter case	30.20
		Beta Plus Water Bottle	589.68
		Outer Island Banners (2x)	127.29
		Binocular Adapters	34.38
		Hydrometers/Thermometers	
		Magnifiers/pH strips	530.75
		Painting Supplies - Watercolor event	619.08
		Iphone Adapters - TV	116.71
		Hardware for banners	54.86
		Digital Microscope	249.00
Equipment			
Water Quality Meter	\$1,000.00	Conductivity/Temp/Salinity	295.00
Camera Installation Charges	\$2,500.00		0.00
Refreshments			
Chartwells Catering (Refreshments for Workshop)	\$600.00		0.00
Travel (in State)			
Auto and Ferry Travel to Outer Island	\$800.00	Thimble Island Ferry Tickets	100.00
Other			
Annual Broadband Access fee for wireless service	\$1,400.00	11 months (2-1 to 12-31 2014)	1,054.33
Outer Island web hosting services (iPage) 2015-2018			323.64
Total Funds	\$17,500.00		8,547.26