# Connecticut State University Outer Island Education Program Report

Submitted by:

Vincent T. Breslin

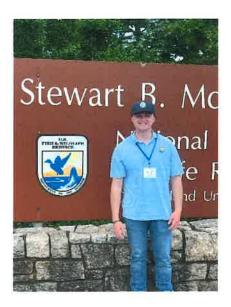
Environment, Geography and Marine Sciences

Southern Connecticut State University

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

#### **Outer Island Interns**

Interns are hired each summer to staff Outer Island and to assist visiting groups with educational programming during their visit to the island. The interns also conduct research activities, including water quality monitoring, and participate in maintenance activities on the island facilities. Below are brief bios for the Summer 2023 Outer Island Interns:



**Daniel McGuire** 

Hey everybody, I'm Daniel! I am from Branford, CT and a rising senior at the University of Connecticut. I major in Natural Resources with a concentration in Fisheries and Wildlife. I plan on pursuing a career in conservation and my goal is to become a Game Warden. I am also interested in river ecology and the preservation of Native Trout populations. I have been boating in the Thimbles for my whole life and would love to share my knowledge with you all. My passions include fly fishing, skiing, and hiking. I look forward to meeting you all on the island!



Isabella Martinez

Hi, my name is Isabella. I've recently received my associate degree in environmental science from Manchester Community College, and I am hoping to complete a bachelor's degree in environmental Geology at Central Connecticut State University in the future. I am excited about this opportunity to educate the public on this beautiful area, as well as assisting with research and maintenance projects that keep the natural beauty of these islands.



**Ashley Williams** 

My name is Ashley Williams, I am a biology major, focusing on Ecology and Conservation at the University of Bridgeport. I took an informative Ecology course with Dr. Kathleen Engelmann this past fall semester. I loved the field trips we took for lab with Professor James Casey. I was able to immerse myself in the course material hands on, which helped me retain the material. As an artist, I started to photograph animals everywhere. I've always had a passion for environmental justice and the natural world. I partnered with the Armory Garden and the Sojourn Market to host food justice classes, gardening days, and have a community pantry. My goal is to expand my research and knowledge of plants and animals. I want to work as a field Ecologist, journaling and collecting data on plants, animals, and their habitats.

As in past years, Thimble Island Ferry tickets were purchased during the summer 2023 for use by the interns and visitors to Outer Island. Tickets were purchased on three occasions: 5/10 (14 books; \$1,960), 5/30 (14 books; \$1,960), and 8/31 (5 books; \$700).

## **Schedule of Visitors**

The island interns supervised group visitors on Outer Island from May 22<sup>nd</sup> until the island seasonal closing on September 19<sup>th</sup>, 2023. Those visitors included fifteen different groups that scheduled 23 separate visits during the summer 2023 with an estimated 563 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 2023 were higher compared to recent years. Many of the scheduled groups were repeat visitors. The number of groups and visitors is increasing following the visitor restrictions imposed during 2020-2021.

			Outer Island V	Outer Island Visitor Schedule 2023		
CSU Escort	Date	Time	Attendance	Organization	Contact	Email
Interns	22-May	10:00am-1:00pm	20	West Haven High School	Carissa Anastasio	Carissa. Anastasio@whschools.org
Shaun Roche	24-May	10:00am-2:00pm	30	Hill Central School	Shaun Roche	Shaun Roche@fws.gov
Shaun Roche	25-May	10:00am-2:00pm	30	Hill Central School	Shaun Roche	Shaun Roche@fws.gov
Shaun Roche	30-Мау	10:00am-2:00pm	25	Worthington Hooker School	Shaun Roche	Shaun Roche@fws.gov
Vincent Breslin	30-May	2:00pm-4:00pm	∞	SCSU EGMS Faculty	Vincent Breslin	breslinv1@southernct.edu
Shaun Roche	31-May	10:00am-2:00pm	25	Conte West Hills School	Shaun Roche	Shaun Roche@fws.gov
Interns	1-Jun	10:00am-2:00pm	25	Unquowa School	Joshua Bartosiewicz	joshua.bartosiewicz@unquowa.org
Shaun Roche	2-Jun	10:00am-2:00pm	25	Conte West Hills School	Shaun Roche	Shaun Roche@fws.gov
Interns	3-Jun	11:00am-2:00pm	20	Girl Scout Troop #3	Eileen Dallas	leenied54@yahoo.com
Shaun Roche	2-Jun	10:00am-2:00pm	25	Conte West Hills School	Shaun Roche	Shaun Roche@fws.gov
Shaun Roche	unr-9	10:00am-2:00pm	25	Worthington Hooker School	Shaun Roche	Shaun Roche@fws.gov
Shaun Roche	7-Jun	10:00am-2:00pm	49	Foote School, New Haven	Lauren Luparia	laurenluparia@gmail.com
Interns	8-Jun	10:00am-2:00pm	25	Brass City Charter School	Becca Caravello	bcaravello@brasscitycharter.org
Interns	12-Jun	10:00am-2:00pm	20	St. Bridget School	Michelle Carroll	mcarroll@stbridgetschool.org
Interns	13-Jun	9:00am-12:00pm	15	New Haven Urban Refuge Partnership	Shaun Roche	Shaun_Roche@fws.gov
Interns	13-Jun	1:00pm-3:00pm	15	Arts and Ideas-Adult Day	Denise Santisteban	DeniseS@artidea.org
Interns	22-Jun	9:00am-11:00am	15	Arts and Ideas-Family Day	Denise Santisteban	<u>DeniseS@artidea.org</u>
Interns	10-Jul	9:30am-12:45pm	24	Arts and Ideas-Family Day	Denise Santisteban	<u>DeniseS@artidea.org</u>
Interns	20-Jul	10:00am-12:45pm	15	Island Arts and Crafts	Friends of Outer Island	friendsofouterisland@gmail.com

CSU Escort	Date	Time	Attendance	Organization	Contact	Email
	2-Aug	9:00am-12:00pm	15	Yoga-Friends of Outer Island	Chris Gaynor	friendsofouterisland@gmail.com
	7-Aug	10:30am-2:00pm	12	Yale University	Dr. Alfred Kaye	Abigail.yu@yale.edu
	10-Aug	10:00am-3:00pm	15	Island Arts and Crafts	Chris Gaynor	friendsofouterisland@gmail.com
	16-Aug	9:00am-12:00pm	15	Yoga-Friends of Outer Island	Chris Gaynor	friendsofouterisland@gmail.com
	16-Sep	1:00pm-4:00pm	20	Season Wrapup Celebration	Ginny Baltay	virginia.baltay@gmail.com
	19-Sep	10:00am-3:00pm	20	The Foote School	Lauren Luparia	laurenluparia@gmail.com

#### **Research Activities**

## **Water Quality Monitoring**



Water quality parameters were monitored by the CSU interns during the summer 2023 from May 25<sup>th</sup> to September 2<sup>nd</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 measurements showed little variability, with a range of only 23.1 ppt (7/19) to 27.9 ppt (6/20), while conductivity showed a slightly larger range from 33.90 mS (5/25) to 41.03 mS (8/7) (Figure Ia). Both parameters showed similar variability compared to previous years. Water temperature gradually increased from the spring to the end of the summer. Water temperature ranged from 15.1°C (5/25) to a high of 25.5°C (7/28). Variations in water temperature over the summer correlated well with changes in measured air temperature (Figure 2). Dissolved oxygen concentrations were highest initially (9.85)

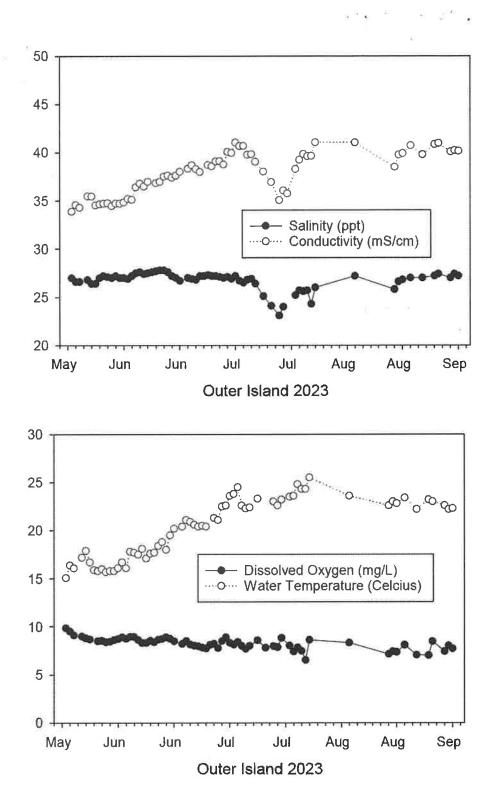


Figure 1. Outer Island 2023 water quality monitoring results: (a) salinity and conductivity and (b) temperature and dissolved oxygen.

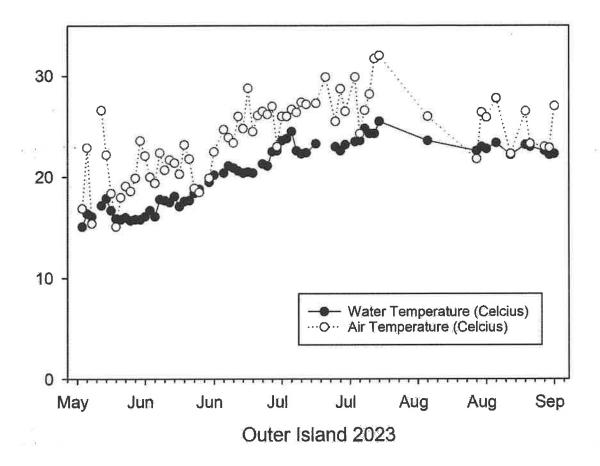
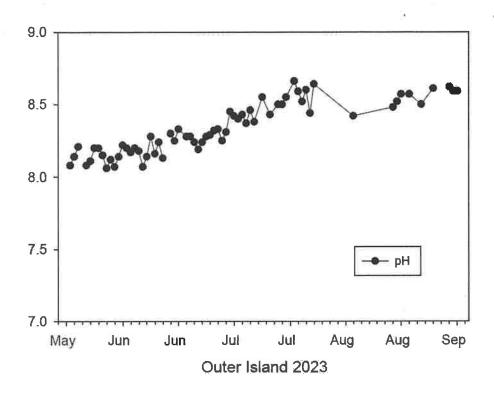


Figure 2. Outer Island water quality monitoring results: water and air temperature.

mg/L) on 5/25 and showed a decrease over the summer months correlating with increasing temperatures reaching a low of 6.52 mg/L on 7/27 (Figure 1b).

Water clarity, as measured by a Secchi disk, varied from 0.8 m (7/13) to 1.8 m (6/1) during the monitoring period (Figure 3a). pH ranged from a low of 8.06 (6/6) to a high of 8.66 (7/23) (Figure 3b). Like other parameters this season, water clarity/turbidity and pH showed similar variations with previous years.

A YSI Pro 30 conductivity meter and Pro 30 1-meter cable assembly was purchased for use in the water quality monitoring program (\$1,175). The new meter replaces older, less efficient water quality equipment. Additionally, the ONSET water quality monitoring probes (dissolved oxygen, pH and conductivity) were sent to Onset Computer Corporation for refurbishing and battery replacement (\$1,257).



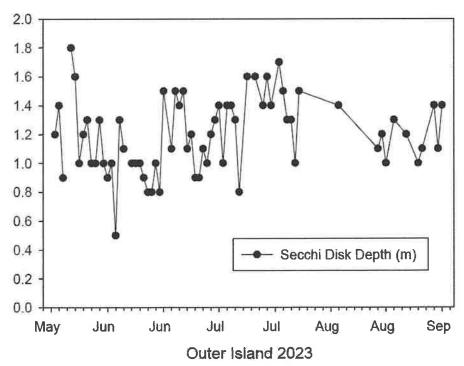


Figure 3. Outer Island water quality monitoring results: (a) pH and (b) secchi disk depth.

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Date	Sample Time	High Tide Time	Salinity (ppt)	Conductivity	Spec Conductivity	Temperature (Celcius)	Oxygen (mg/L)	Secchi Disk (meter)	рН	Weather	Wind Sp	eed (mph)	Relative Humidity	Air Temperature	Solar Radiatio
	Title	iiiic	(ррс)		Conductivity	feciales	(6, -)	,					(%)	(Celcius)	-
							2	023							
25-May	1:13pm	4:25pm	27	33.9	41.99	15.1	9.85	1.2	8.08	clear sun	6,9	3.2	37.5	16,9	9
28-May	3:10pm	6:54pm	26.6	34.58	41.37	16.4	9.52	1.4	8,14	clear sun	2.4	1	59.7	22.9	7
	2:30pm	8:18pm	26.6	34.3	41.49	16.1	9.12	0.9	8.21	clear sun	9.2	5	50.5	15.4	7
	2:27pm	9:00am	26.7	35.3	41.6	17	9.35 8.99	1.4	8.08	clear sun clear sun	3.7 0.8	1.5 0	75.7 47	16.1 26.6	9
	2:30pm	9:49am	26.8 26.4	35,48 35,46	41.66 41.1	17.2 17.9	8,8	1,6	8.11	clear sun	4.4	2.8	107.5	22.2	
	2:35pm 2:13pm	10:35pm 11:20pm	26.4	34.55	41.19	16.7	8.68	1	8.2	overcast	12.9	9.8	64	18.4	
	2:34pm	12:06pm	27	34.65	42.07	15.9		1.2	8.2	partly cloudy	6.9	2.2	56	15,1	
	2:13pm	12:55pm	27.2	34.71	42.22	15.8	8.5	1.3	8.15	overcast	10	5.5	63	18	
6-Jun	2:30pm	1:46pm	27.1	34.76	42.09	16	8.53	1	8.06	overcast	0,9	0.5	65	19.1	
7-Jun	2:35pm	2:40pm	27	34.47	41.95	15.7	8.39	1	8.12	cloudy	12	9.1	52	18.6	
	2:02pm	3:53pm	27.2	34.73	42,24	15.8	8.45	1.3	8,07	overcast/fog	6.7	0.8	65.5 58.9	19.9 23.6	
	2:02pm	10:07pm	27	34.71	42.11	15.8	8.61	0,9	8.14 8.22	partly cloudy partly cloudy	2.7	1.1	62	22.1	
	2:30pm 2:39pm	5:34pm 6:35pm	27 26.9	34.84 35.2	42.02 41.83	16.1 16.7	8.72 8.91	1	8.2	partly cloudy	7.4	6.3	48.4	20	_
	1:03pm	7:02am	27.2	35.12	42.22	16.1	8.76	0,5	8.17	partly cloudy	9.5	8.4	89	19.4	
	4:25pm	8:29pm	27.5	36.4	42.6	17.8	8.95	1.3	8.2	partly cloudy	3.4	0.8	65.6	22,4	
	1:35pm	9:21pm	27.6		42.88	17.7	8.94		8.18	partly cloudy	6.5	3.4	80	20.7	
	2:30pm	9:54am	27.4		42.62	17.5	8.63		8,07	partly cloudy	4	1.4	77.2	21.7	
16-Jun	2:02pm	10:44am	27.5		42.58	18.1	8.31	1	8.14	overcast	2.3	1.5	66.4	21.4	
	2:00pm	11:30am	27,6		42.84	17.1	8.31	1	8.28	overcast	13	9.9	69 59.9	20.3	_
	2:03pm	12:13pm	27.7	36.83	42.9	17.6	8.53		8.16 8.24	party cloudy clear sun	5.7 5.6	4.5	64.2	23.2	
	2:07pm	12:56 PM	27.8 27.8	36.96 37.51	43.02 43.02	17.7 18.4	8.39 8.65	0.9	8.13	clear sun	8.6	6.2	77	18.9	
	2:36pm 3:45pm	1:38pm 2:20pm	27.6			18.8	8.73	0.8	0.13	party cloudy	16		79.2	18,5	
	2:00pm	3:03pm	27.2		42.22	18	8.9	1	8,3		12.5	10.9	77.7	9.4	
	2:00pm	3:45pm	27			19.5	8.74	0.8	8.25	overcast	9,5	2,3	82.1	19.9	
	2:00pm	5:16pm	26.7	38	41.84	20.2	8.49	1.5	8.33	clear sun	5.4	4	82.4	22.5	
26-Jun	2:00pm	6:03pm	27	38.32	41.98	20.4	8.21		8.28	partly cloudy	8.2	5.9	88.5	24.7	
27-Jun	2:34pm	6:52pm	26.9			21.1	8.51		8.28	party cloudy	6.6		80.6		-
	2:25pm	7:43pm	26.8			20.9	8.14		8.24	partly cloudy	6.1	0.9	84	23.4	
	2:35pm	8:37pm	27.2			20.6	8.02 7.96	-	8.19 8.24	overcast/fog overcast/fog	1.9 4.4	1.5 4.3	69.3 77.6		
	2:03pm	9:12am 9:54am	27.2 27.3		42.29 42.34		7.81	-	8.28	partly cloudy	3.8	2	75.1	28.8	
	2:04pm 2:00pm	10:54am	27.2			20.4	7.73		8.29	overcast/fog	2.8	1.2	84.7	24.5	
	2:00pm	20.544111	27.2				8.1		8.32	partly cloudy	1.6	1.1	74.2	26.1	
	2:38pm	12:37pm	27.1				8.22	1.1	8.33	partly cloudy	1.8	1,3	80.2	26.5	
5-Jul	3:00pm	1:24pm	27	38.76	42.06	21.1	7.77	1	8.25	clear sun	2.5	1.1	80.1	_	
6-Jul	2:30pm	2:25pm	27.1	40.07			8.5		8.31	clear sun	2.4	1.8	77.7		_
	2:00pm	3:13pm	26.9				8.88		8.45	clear sun	10.3		88.2		_
	2:00pm	4:14pm	27.2				8.31		8.42 8.4	clear sun overcast	4.9 8.3	5.6	81.5		_
	2:02pm	5:11pm	26.7 26.5				8.12 8.4		8.43		3.4	1.4	77.9		-
	2:00pm	6:07pm	26.8				8		8.37		2,2				
	2:30pm 2:34pm	7:01pm 7:59pm	26.9				7.69		8.46		1.1				_
	2:02pm	8:41am	26.4				7.99		8.38		4.5		76.6	27.2	
	3:00pm	10:31am	25.1		39.39	23.3	8.58		8.55		4.2				
	2:20pm	11:50pm	24.1				7.8		8.43		1.2		-		_
	2:20PM	1:06PM	23.1				7.97		8:50		0			-	_
	2:04pm	1:51	24				7.86 8.82		8.5 8.55		4.4				-
	2:00pm	2:00pm	25.2	35.77 38.28			8.03		8.66		1				
	2:30pm 2:00pm	3:48pm 4:17pm	25.7		-		7.4		8.59		2.4				
	2:40pm	5:09pm	25.6				7.82		8.52		4.8				-
	3:15pm	5:59pm	25.7		<del></del>		7.47		8.6	clear sun	0.9	2.4	81.8	28.2	
	2:00pm	6:42am	24.3				6.52	1	8.44		4.5				
	2:00pm	7:30am	26		-		8.61		8.64		1.4				_
	2:00pm		27.2				8.31	+	8.42		4.1				_
	2:00pm	12:35pm	25.8	_	10-		7.14		8.48		12.3				
	2:00pm	1:07pm	26.6				7.41		8.52		2.7				_
	2:00pm	1:41pm	26.8		-		7.33 8.08	-	8.57 8.57		0.7				
	2:10pm 2:00pm		27				7.04		8.5		9.8				
	2:00pm 2:00pm	8:33pm	27.2	4			7.01		8.61		1.9				_
	2:00pm	9:13am	27.4	+	+**	1	8.45			overcast	8.5				_
	2:00pm	11:52am	27				7.42		8.62	ir sun/partly clo		_			
DT-VOR						22.2					2.9		53.9	22.9	41

## **Outer Island Website Update**

We continue to upgrade and revise the Outer Island website (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) and the iPage web hosting package was recently renewed for 3 years (\$594.03). Web hosting provides an online home for the website and makes it accessible to other users. Hosting providers store the website files, including articles, images, product information and site coding, on a secure computer called a server. The outerisland.org domain name was also renewed for 2 years (\$44.65; expires 1/03/2026). The domain privacy protection package was also extended and expires on 2/15/27 (\$47.83).

The website hosts the two web cameras on both the landing page and the weather conditions pages of the website. We did experience a loss of the image from the west facing (marsh) camera in fall 2022. At about this time, we also noticed issues with the performance of the weather station on Outer Island. This past summer, we invited the Earth Works Network to the island to examine the camera performance and evaluate the components of the WeatherBug weather station. It was determined that both pieces of equipment required replacement. In fall 2023, Earth Networks installed an Axis HD camera package and a Davis Weather Station (\$9,295.00) (Figure 4 a and b). Both installations represent a significant upgrade in the facilities and the weather data and web camera images can be accessed at (<a href="http://outerisland.org/index.php?id=current-weather-conditions">http://outerisland.org/index.php?id=current-weather-conditions</a>). Both pieces of equipment have been performing well with no reported issues/outages.

Paul Johnson, the Outer Island website coordinator, continues to post new content.

The visitor calendar continues to be updated frequently and continues to be a resource for scheduling educational and civic group programs. Recent updates to the website have been completed, or are scheduled to be completed including:

- Changes to the homepage
- Changes to the Visit Outer Island page
- Intern bios (2021, 2022, 2023 and 2024)
- Water quality data (2021, 2022, 2023) and
- Annual reports (2021, 2022, and 2023)
- Attendance reports (2021, 2022 and 2023).

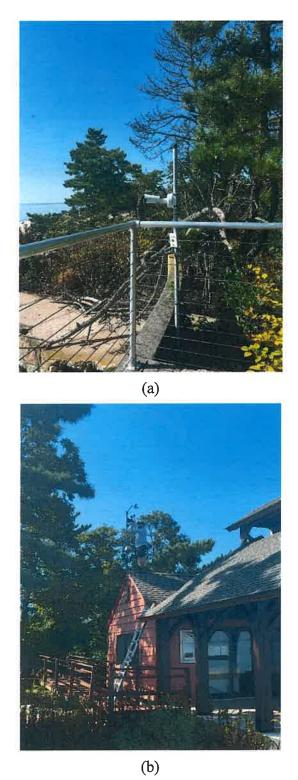


Figure 4. View of the new west facing HD camera (a) and the installation of the replacement Davis weather station (b) on Outer Island.

## Outer Island Children's Library

Six new environmental/marine themed books were purchased (\$117.10) for the Outer Island library (see photo and attached bibliography for titles) in support of educational programs. Several of the children's books feature diversity and inclusion themes (characters/language). The island now has a diverse collection of marine reference books and children's books for the public use.



Newly Purchased Childrens Books (New Titles Bold)

- Befort, O. (2019). *Backpack explorer: Beach Walk*, Storey Publishing. ISBN: 9781612129020, Pages 1-48.
- Burgess, T. W., Southwick, W. H., & Sutton, G. M. (2005). *The Burgess seashore book for children*. Dover Publications. ISBN: 978-0486442532, Pages 1-288.
- Butterfield, Moira. (2022). Look What I Found at the Beach. Candlewick Press. ISBN: 978-1536223972. 32 pp.
- Byrd, Jesse & Messner, Andressa. (2023). *Marina: A Story About Plastic and the Planet*. Paw Prints. ISBN: 978-1223186658. 40 pp.
- Davies, Becky. (2020). Little Turtle and the Changing Sea: A Story of Survival in our Polluted Oceans. Tiger Tales. ISBN: 978-1680101997. 32 pp.
- Diesen, D., & Hanna, D. (2019). *The pout-pout fish cleans up the ocean* (First edition). Farrar Straus Giroux. ISBN: 978-0374309343, Pages 1-32.

- French, Jess. (2021). La Vida Secreta de los Océanos. DK Children. ISBN: 978-0744048650. 80 pp.
- Garrow, L. illus, & Tibbitts, C. K. (1999). *Seashells, Crabs & Sea Stars*. NorthWord. ISBN: 978-1559716758, Pages 1-48.
- Hawthorne, Lara. (2020). Alba and the Ocean Cleanup: A Story About Saving Our Oceans. Picture Press; Illustrated edition. ISBN: 978-1536210446. 32 pp.
- Lord, Michelle & Blattman, Julia (2020). *The Mess That We Made*. Flashlight Press. ISBN: 978-1947277144. 32 pp.
- Murray, L., (2019) Beneath the Waves, Big Picture Press, ISBN 978-1-5362-1040-8, pages 1-60.
- Muñoz Ryan, P., (2003), Hello Ocean / Hola Mar, Charlesbridge Publishing, ISBN 978-1-57091-372-3, pages 1-32.
- Pfister, M., (1992) The Rainbow Fish / Il Pesce Arcobaleno, NordSud Verlag AG, ISBN 978-0-7358-4370-7, pages 1-29.
- Rosa-Mendoza. G., (2021) Who Lives in the Sea? / ¿Quien vive en el mar?, Chosen Spot Publishing, ISBN 978-1-945296-09-3, pages 1-17.
- Scales, H., (2022) What a Shell Can Tell, Phaidon Press, ISBN 978-1-83866-431-2, pages 1-47.
- Sibley, D. (2020). What it's like to be a bird: What birds are doing, and why -- from flying to nesting, eating to singing. Alfred A. Knopf. ISBN: 978-0307957894, Pages 1-240.
- Stahl, B. (2019). Save the ocean. Bethany Stahl. ISBN: 978-1732395138 Pages unknown.
- Trinick, L., White, T., (2021) Oceanarium, *Big Picture Press*, ISBN 978-1-78741-631-4, Pages 1-96.
- Weiss S., (2018) Ocean: Secrets of the Deep, White Star s.r.l, IBSN 978-1-9999680-7-6, Pages 1-71
- Wright, A., & Peck, M. H. (1992). At home in the tide pool. Charlesbridge. ISBN: 978-0881064834, Pages 1-32.

## **AT&T Wireless Account**

The AT&T wireless account used in support of the Outer Island WeatherBug station and video cameras now supports two wireless lines transmitting data and images. The two lines support the cameras and WeatherBug weather data. AT&T broadband access fees for the wireless for the 12 months service period from April 2023 to March 2024 totaled \$1,232.88.

	SCSU Outer	Island Fun	de Ace	ountino	2022 2	024		
	SCSU Outer	isiand run	ids Acc	ounung	2023-2	024		
Catego	ry							Funds
Equipm	ent							
_	Outer Island V	Veather Stati	on and H	D Came	ra Replac	cement	30-Sep	\$9,295.00
								, , , , , , , , , , , , , , , , , , , ,
Supplie	s							
	ONSET water							\$1,257.00
	pH, (	Conductivity a	and disse	olved ox	ygen pro	bes		
	Educational S	Supplies and	Books					\$117.10
	Pro 30 Condu	ctivity meter	and cabl	e assem	bly			\$1,175.00
Travel (	in State)							
	Thimble Islan	ds Ferry Tick	ets to Ou	ıter İslan	d		10-May	\$1,960.00
							30-May	\$1,960.00
							31-Aug	\$700.00
Other								
	Annual AT&T	Broadband A	ccess fe	es				\$1,232.88
	iPage	.org rene	w 2 year					\$92.48
	iPage	hosting (3	years)					\$558.56
	Domain name	Renewal						\$22.32
	unds Awarded 2	2002 2004						\$18,370.34