

Lessons Learned: Engaging Students at the High School Level

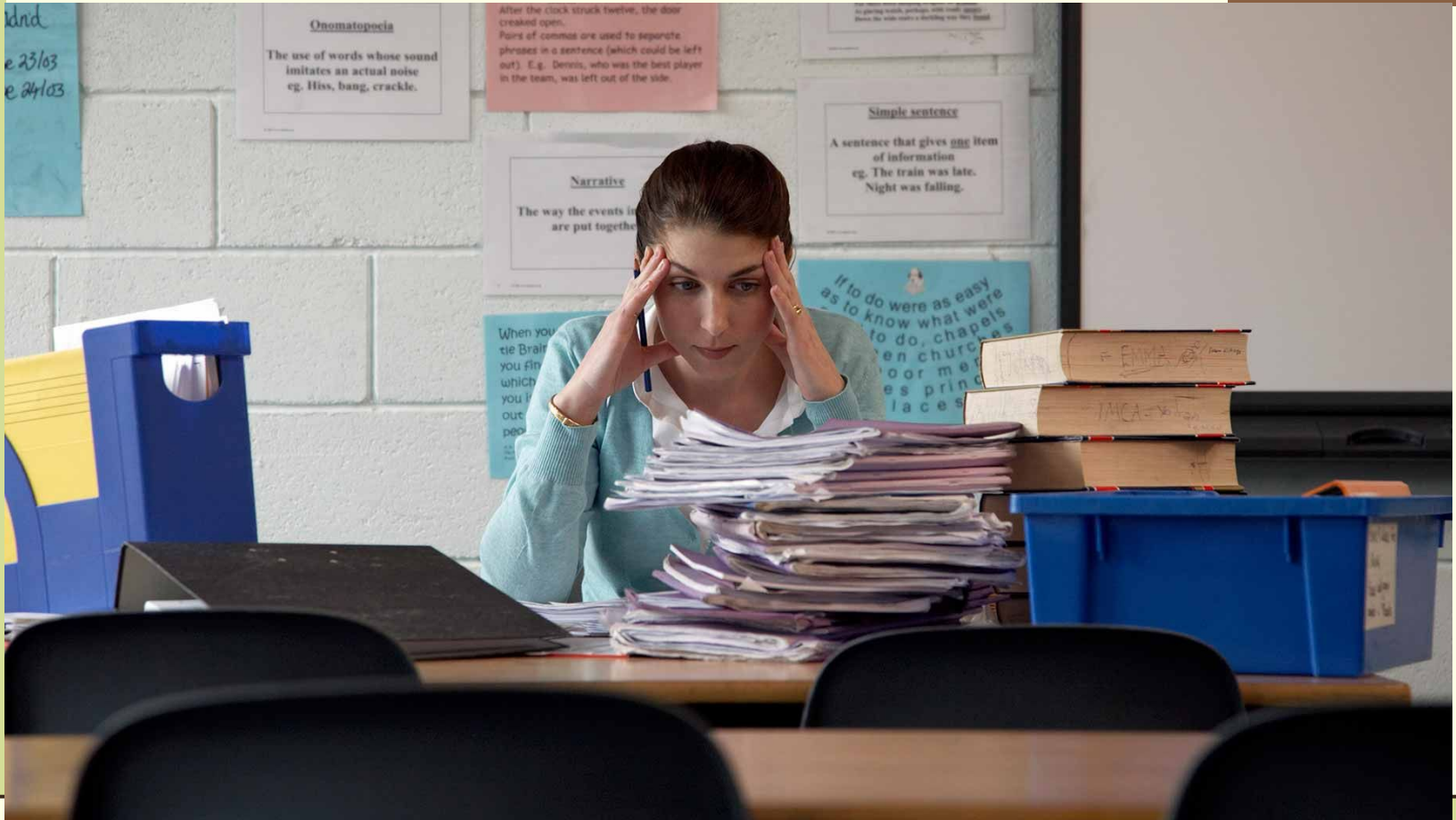
Dave Fryxell (Executive Director) and Leeza Barstein (TerraCorps Service Member)

THE
DENNIS
CONSERVATION
LAND TRUST











Massachusetts Science
+ Engineering Fair

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Empowering students
to ask tough questions
and problem solve
using science +
engineering practices



IMPORTANT NEWS

High School State Fair: April 4,
2025 at Gillette Stadium,
Foxboro

Middle School State Fair: May 10,
2025 at Clark University,
Worcester

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opportunities and news »](#)

**START HERE: High School
Science Fair Ready
Checklist**

**START HERE: Middle
School Science Fair
Ready FAQs**

2023 - “Comparing tick preference for human clothes vs. animal fur on and off trails on Cape Cod”



ABSTRACT

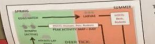
Ticks can transmit diseases that pose serious health risks to wild animals, such as Lyme disease. Ticks are most active during the summer months, and their activity is influenced by the amount and type of clothing worn. This study compared tick counts on human clothing and animal fur on and off trails on Cape Cod in the summer of 2022. In the fall, we surveyed the tick counts on the clothing and fur of the researchers. Our results show that ticks are more likely to attach to human clothing than animal fur, and that ticks are more likely to attach to clothing worn on trails than clothing worn off trails.

INTRODUCTION

Ticks and tick-borne diseases are increasingly common in humans, wild, and wild animals throughout New England. Ticks have been found on trails in Cape Cod during spring and summer. Ticks on the trails are a concern for hikers and runners, but most research has focused on whether outdoor habitats are more likely to have ticks than urban areas. Although the prevalence of ticks is high on trails, the abundance of ticks is still low. To the extent that ticks are a concern for hikers and runners, understanding of where and under what conditions hikers and runners are most likely to be bitten is important.

Hypotheses

- 1) Ticks are more abundant off trails than on trails.
- 2) Ticks would more likely attach to human clothing than animal fur on trails.



MATERIALS & METHODS

- Dog Identification
 - 1's of 100g
 - 1's of 100g (weigh down)
 - 3' of 100g tape
 - Tangle-free bag weights
 - Cotton cloth, 6' x 6' ft

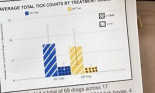
- 12 responses
- 12 responses
- Cotton vs. fur, on vs. off
- 200' trail length
- Complete steps listed in methods

- Dog Shaver
- Dog Shaver, hair shaver
- Dog Shaver, hair shaver
- Dog Shaver, hair shaver
- Dog Shaver, hair shaver

- Tick Coating
- Tick Coating
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RESULTS



- We conducted a single 50-step survey 17 responses, capturing a grand total of 114 ticks, 4 of which were off trails.
- We found slightly more ticks on human clothing than animal fur on trails.

DISCUSSION

On versus Off Trail
 Our results on human clothing and animal fur were consistent on trails versus off trails. This pattern suggests that ticks are more likely to attach to human clothing than animal fur on trails, and that ticks are more likely to attach to human clothing than animal fur off trails.

Human Clothing versus Fur
 Our results show that ticks are more likely to attach to human clothing than animal fur on trails, and that ticks are more likely to attach to human clothing than animal fur off trails.

Conclusions
 Our results show that ticks are more likely to attach to human clothing than animal fur on trails, and that ticks are more likely to attach to human clothing than animal fur off trails.

2024 - “Testing Pesticide Resistance, Avoidance, and Efficacy in Mosquito Populations on Cape Cod”



2025 - “How Nutrient Outputs From Title 5 Septic Systems and IA Systems Compare in Impacts to Cape Cod Ponds”



2025 - “Cachers Doing What They Do Best: Acorn Species Preferences Between Seed Cachers and Consumers on Cape Cod”



Science Fair = Depth

But funders want breadth!



Existing module:
Field observation

Flax Pond

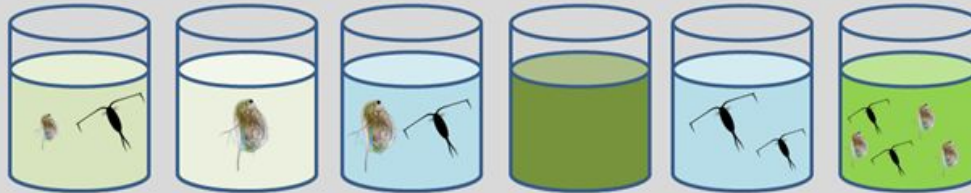
Long Pond

Measure ecological differences in the field, develop hypotheses.

Collect zooplankton & phytoplankton, introduce evenly across jars.



Randomly apply treatments, wait one week before sampling.

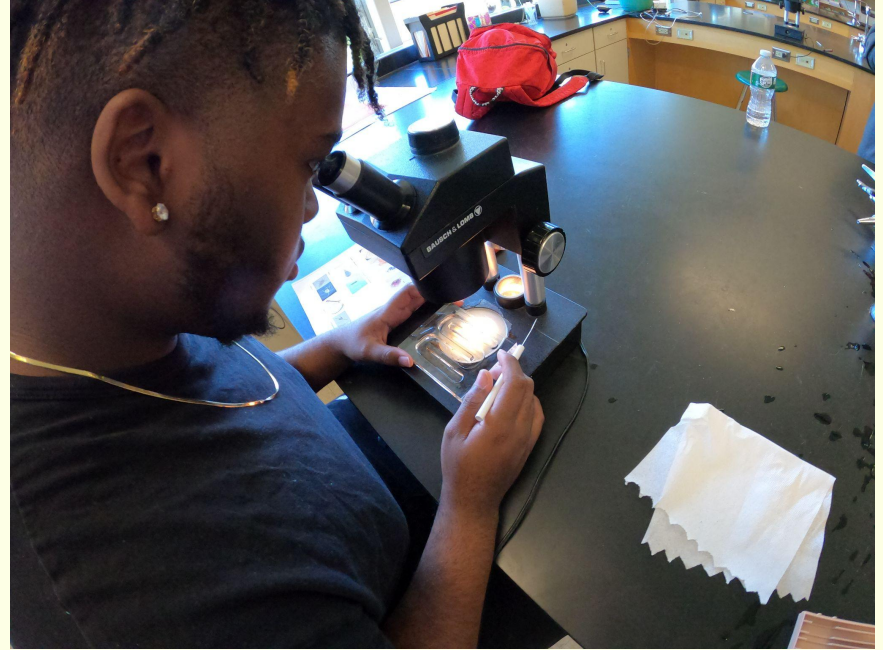


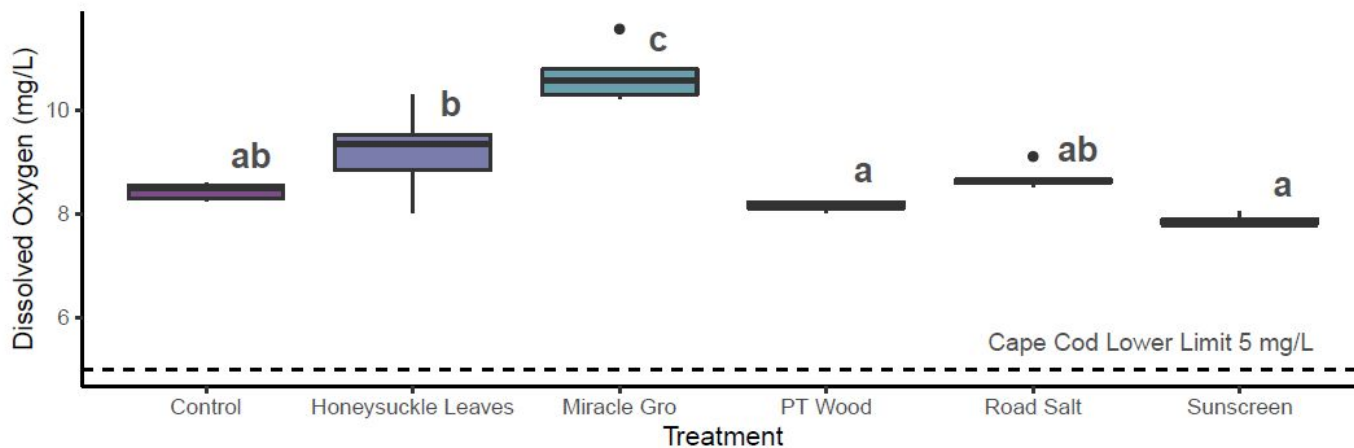
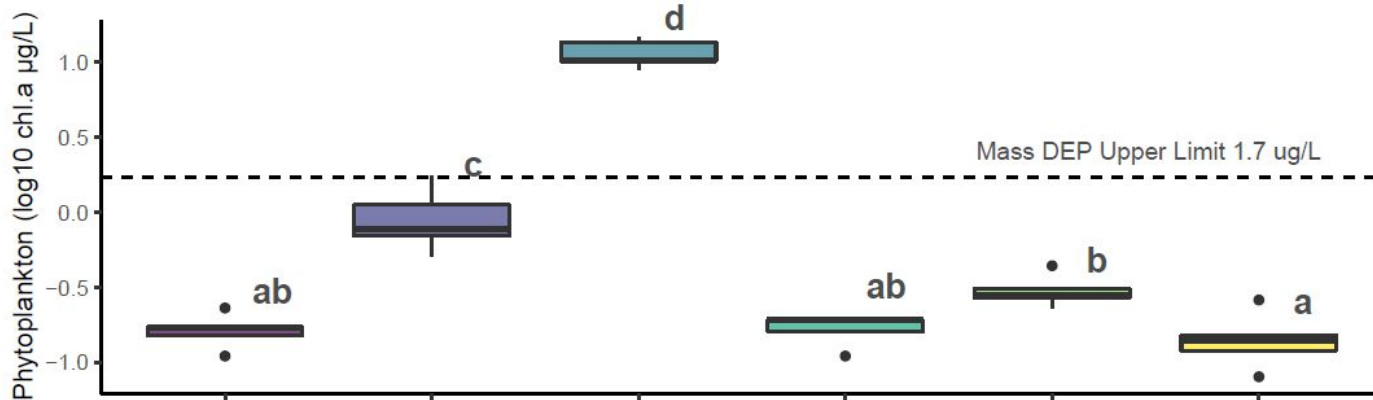
Sample chemistry, zooplankton & chlorophyll *a*, graph data to test hypotheses.

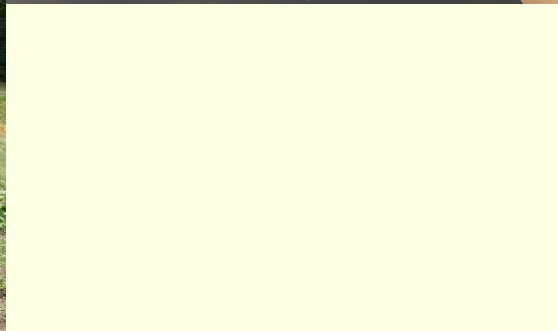
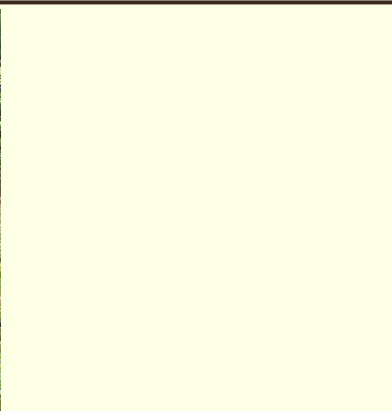
New module:
Experimental manipulation

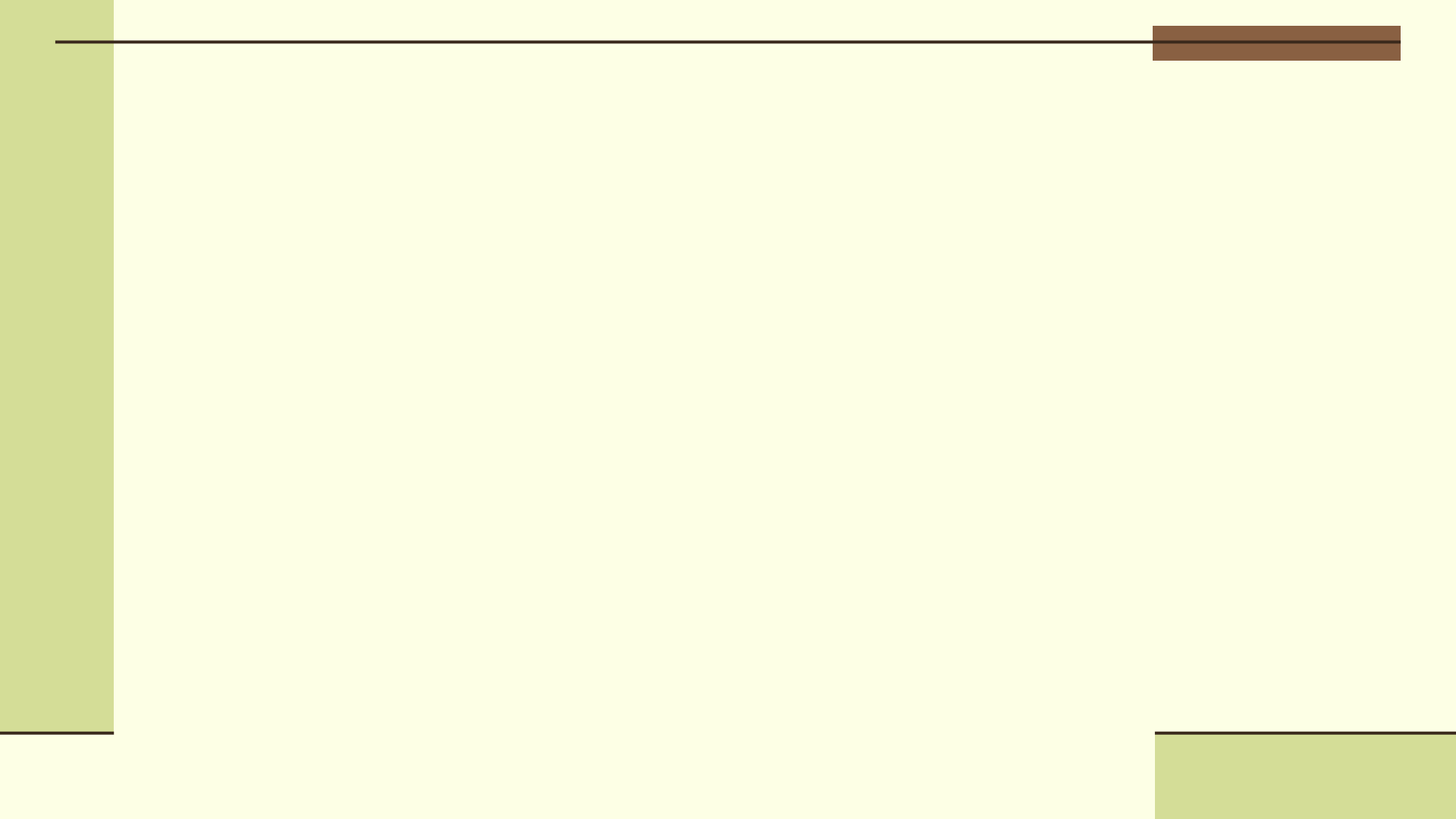














Engaging Young People
in Our Programs:
Lessons Learned by Doing

I know what
you're thinking...

Angie Weldon

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Buzzards Bay Coalition





Outdoor Exploration:
Outdoor Learning
Schooner Ernestina Morrissey
Bay Adventures
Onset Bay Center



Think Outside the Box

- Afterschool Clubs
- School Field Trips
- Summer Camps
- Volunteer Work Days
- Guided Hikes, Guided Paddle, Guided Bike Ride



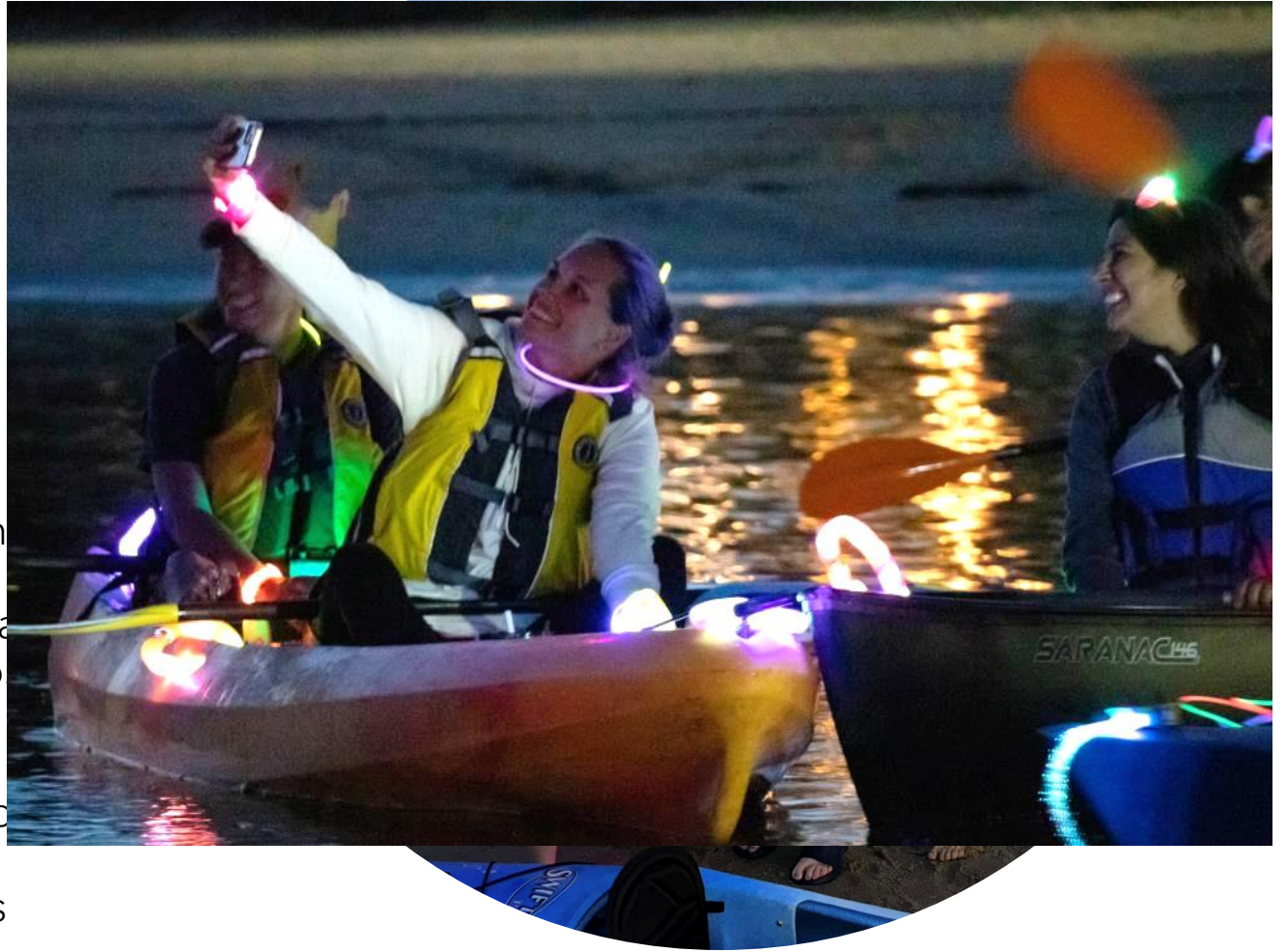
Community Events & Targeted Youth Programs



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- October: Halloween Paddle Parade

- Costumed guided paddle around Onset Bay



November: BaysGiving: Shellfishing & Quahog Boil



- February: Valentine's Stargazing
- March: Beach Madness'
 - Sand / Snow Sculpture Festival
- April: Plant-a-Palooza
 - Volunteer Work Day
- May: Community Day
 - "Open House," Free activities
- June: Summer Solstice Paddle
- July & August: Seas the Day
 - Free Rental Days
- December: Wickets Wonderland
 - Lights, Music, Campfire



Event Metrics

Activity	2022	2023	2024	Age Range	Community Partners
JAN: New Year's Polar Plunge	75	500	800-1000	6+	Food Trucks, Local DJ, Mobile Sauna
FEB: Valentine's Stargazing	-	40	100	6+	HS Astronomy Club
MARCH: Beach Madness	-	45	20	3+	Local Artist - Kids' projects
APRIL: Earth Month Volunteer Day	-	40	40	8+	
MAY: Community Day	60	100	200	3+	Orgs Tabling
JUNE: Summer Solstice Paddle	-	-	60	14+	

Event Metrics

Activity	2022	2023	2024	Age Range	Community Partners
JULY & AUG: Seas the Day: Free Rentals	-	-	400 Total	3+	Local restaurants (% off meal after booking)
SEPT: Glow-in-the-Dark Paddle	-	-	120	8+	
OCT: HALLOWEEN PADDLE PARADE	40	80	100	Any	
NOV: BaysGiving: Shellfishing and Quahog Boil	-	25	85	10+	Harbormaster / DNR, HS Culinary Teacher, Council on Aging
DEC: Wickets Wonderland	40	80	250	Any	Local Coffee Company



Community Events

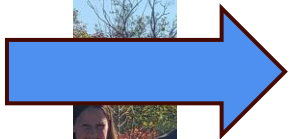
Overall Impact:

- Increased numbers to your org
- Community building:
 - With participants (new and repeat)
 - Relationships with partner organizations and the town
- YEAR-ROUND offerings (yes, even in WINTER!!)
- Annually repeated - Create BUZZ with word of mouth & let your activities advertise for themselves
- Novel ideas attract young participants (families, teens, and young adults)





Afternoon Hike at
Gooseberry Island



Snowy Owl Prowl



act:
community for families
ing children to their
UN ways, all year-
round

Successes & Challenges:

Successes:

- Offering **high quality** programs, well training staff, and **little to no cost** to our participants. **No Gear, No Fear**
- Go **hyper-local** with advertising
- Lean into your **partnerships**
- Program **growth** & honoring the relationships we build
- Explore **Cultural Council** grant funding to support new programs

Challenges:

- **Feedback and changes** – Learn through doing (New Years day plunge)
- **Staffing** - Lean on your volunteers – these are FUN opportunities to get involved
- **Engaging young adults** – under 30 without children (more adventurous activities?)
- **Branding:** We're still new! Fighting the “Yacht Club” vs Community Boating Center identity



Final Thoughts

Thank you!

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savebuzzardsbay.org

