Microbial Source Tracking

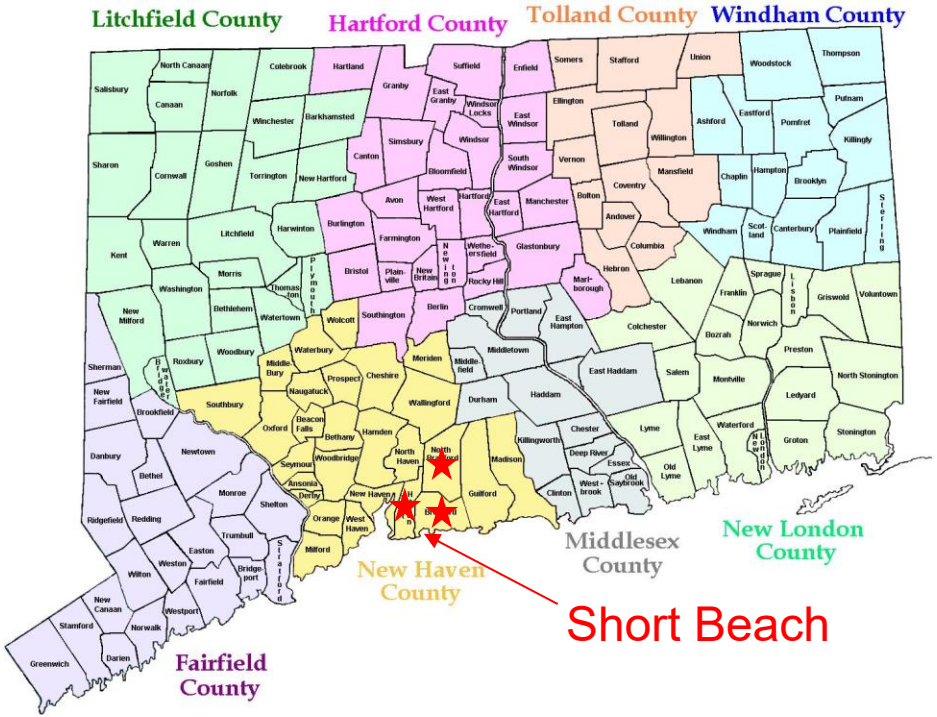
Progress Update

Sarah Esenther, Michael Pascucilla, Amy Scholz

East Shore District Health Department

The East Shore District Health Department serves the Towns of Branford, East Haven, and North Branford

The Short Beach neighborhood of Branford is a coastal community



Background

- According to Save the Sound, Johnson's Beach has the 4th highest bacterial counts out of 37 beaches in Connecticut
- High bacterial counts and beach closures for decades
- Previous studies (since at least the 1990s) have failed to identify the cause of high bacterial counts

How does fecal bacteria enter the water?

Sewer overflow

Stormwater runoff

Septic system failure

Vessel discharge

Wild animals

Pet waste

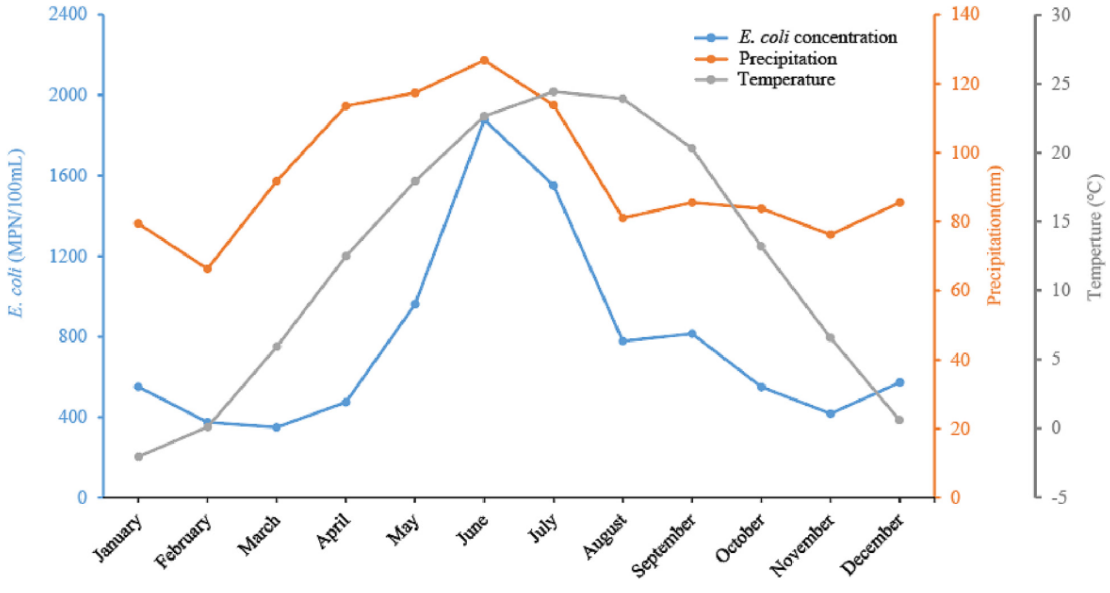
Upstream agriculture

Industrial discharge

Predictors of High Fecal Indicator Bacteria

Increased bacteria level is correlated with increased temperature and precipitation

- ~8% increase in diarrheagenic *E.coli* for each 1°C increase in mean monthly temperature
- Precipitation: Spikes in bacteria counts follow precipitation (runoff washes fecal matter into waters)



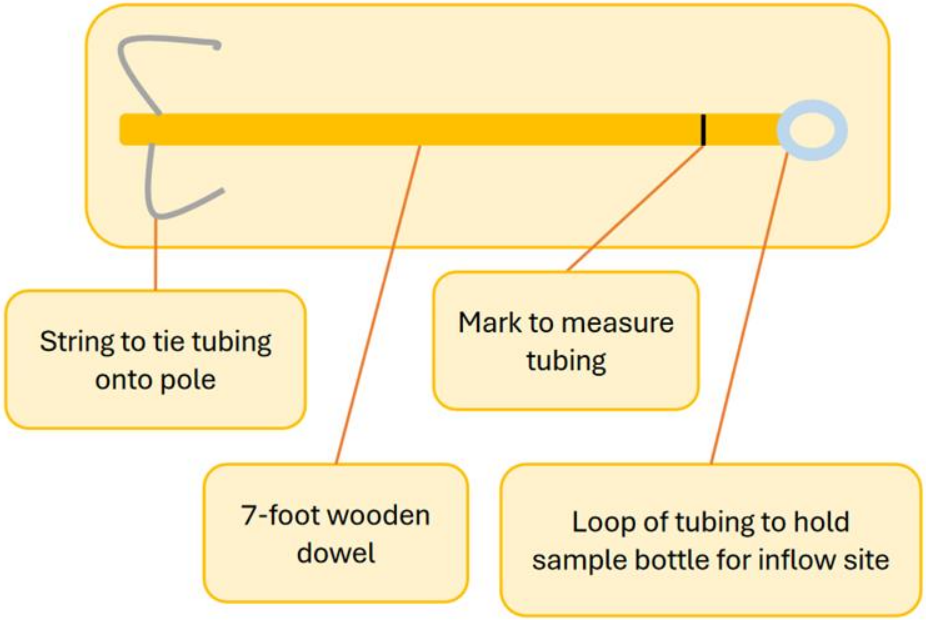
Project Overview

Our goal was to identify which animal species are causing fecal contamination in Short Beach waters.

Microbial Source Tracking (MST): Identifies whether bacteria from a chosen species is present in a water sample, quantifies bacteria level.

We tested for **human, avian, and canine** bacteria.

Materials Used



The pole is used to reach storm drain and inflow sample sites

Sterile sample bottle

Peristaltic pump

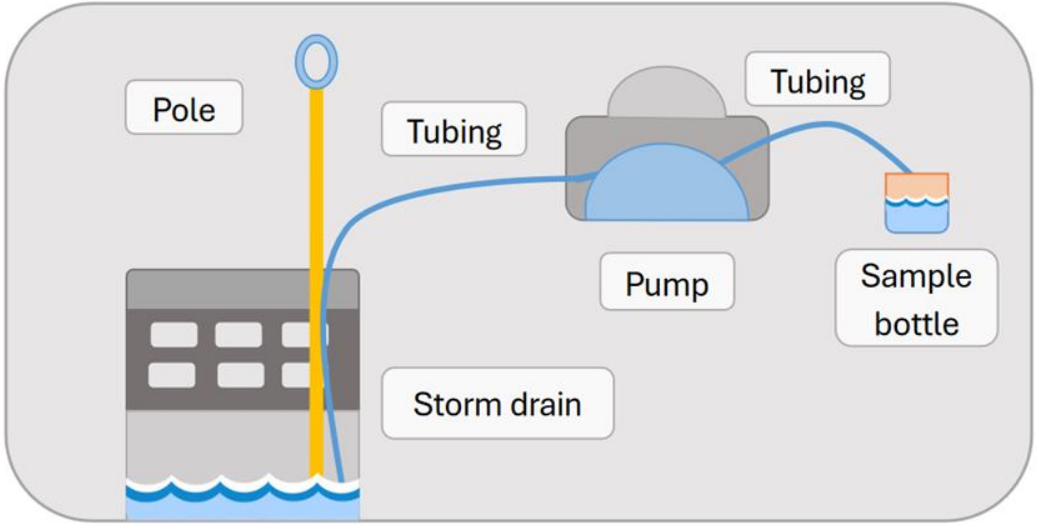
Sterile PVC tubing

Using the Pole-Pump System

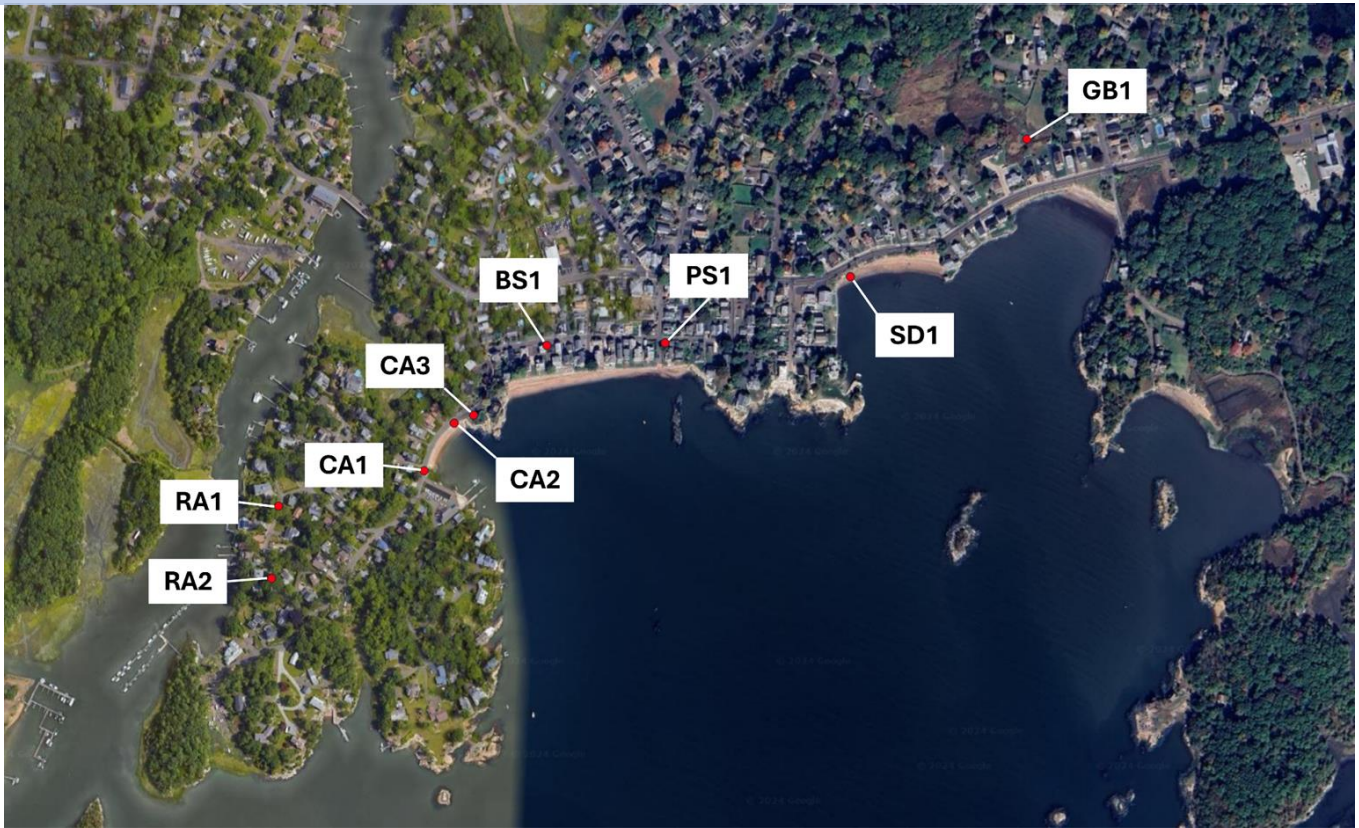
Pole reaches the bottom of storm drains

Pump generates force to bring water upwards

Two samples per site



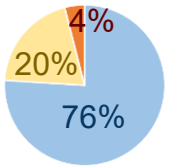
Short Beach Sampling Locations

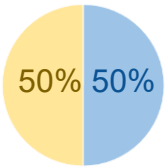


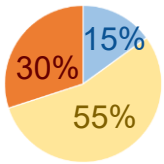
2023 Results

Out of high E.coli samples, the high dog counts were most common (and the counts were the highest). Low category includes non detects.

Date	# Sites Sampled	Human			Bird			Dog		
		Low	Med	High	Low	Med	High	Low	Med	High
6/13/2023	2	2	0	0	0	2	0	0	2	0
6/27/2023	3	3	0	0	0	3	0	1	1	1
7/10/2023	6	3	2	1	3	3	0	2	2	2
8/8/2023	8	5	3	0	6	2	0	0	6	2
8/22/2023	4	4	0	0						
9/25/2023	2	2	0	0	1	0	0	0	0	1
	Occurrence of count	76%	20%	4%	50%	50%	0%	15%	55%	30%







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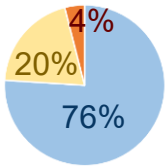
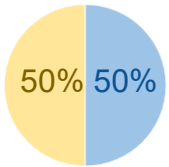
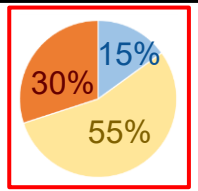
85% of samples tested for canine found moderate to high abundance







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2023 Sound Health Explorer Grade: C+

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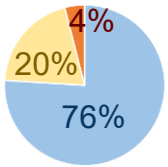

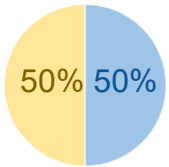

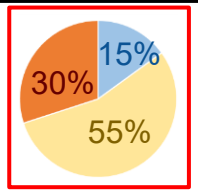

Short Beach Response

- Trash can lids added at all beaches
- Civic Association of Short Beach designed a “Stop Poo-llution” behavior change campaign targeted to this community
  - Temporary and permanent signs
  - Mailed one-pagers to Short Beach residents
  - Dog bag stations added
- Summer Dog Parade
- Press and social media coverage
- Resampling at all locations

THE SOUND

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Branford, North Branford & Northford
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In Tandem: Lockworks Tavern, SaltBrick Prime Open

By Pam Johnson
Senior Staff Writer

Based on the buzz, brilliant surrounds, and fantastic food and drink at the June 27 sneak peek celebration, Branford is going to love its tandem new eateries, Lockworks Tavern and SaltBrick Prime. Both restaurants, which opened to the public on June 28, were developed under the creative and talented guidance of long-time Branford resident and accomplished restaurateur Stephen Goglia.

“There’s a good culinary community in Branford, and we’re excited to bring something that we think really didn’t exist here, until now,” said Goglia.

On June 27, supportive Branford community members, including First Selectman Jamie Cosgrove and Branford Economic and Business Development Manager Perry Maroscia, were among a crowd of well-wishers at the new venues. Also joining in were some local business friends who joined Goglia and his Lockworks Hospitality Group (LHG) corporate partner, Chief Operating Officer Matt O’Neil, as enthusiastic participants in the venture. Goglia is president and CEO of LHG. At the Branford restaurants, Goglia’s son serves as director of operations.

“It’s really become a community team,” said Goglia. “We’re overjoyed.”

A big part of the team on the ground is Executive Chef Alex Calvera, a seasoned pro who has

See IN TANDEM page 5

March to End ‘Poo’llution

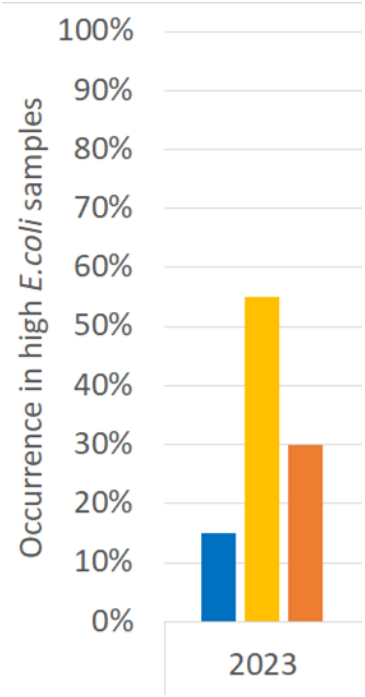
Residents took to the streets in Short Beach on June 30 to raise awareness of water contamination caused by dog waste. The ad hoc group marched from Pardee Park down several streets, concluding at the beach.

Photo by Wesley Bunnell/The Sound

State Representative Robin C...
5h ·

Short Beach launched their “Clean Short Beach Stop Poolution” campaign with a parade to spread awareness about the dog waste water pollution at the neighborhood beach. I was happy to be able to bring 10k of funding for ongoing water testing to see if this public health education program and behavior changes can make a difference in the bacteria content in our local swimming areas and waterways.

Short Beach Sampling Locations

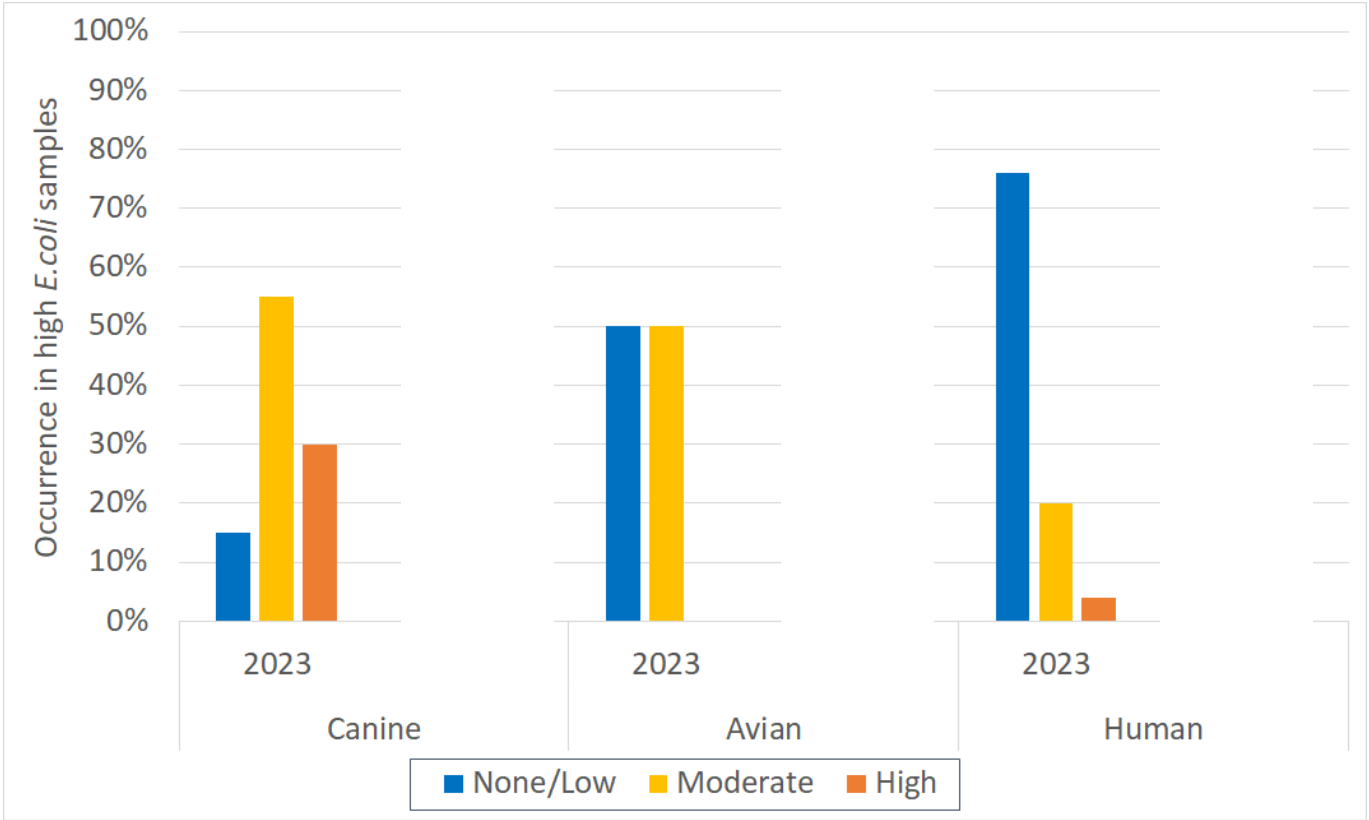


Blue: Percent of samples with low or no markers

Yellow: Percent of samples with moderate markers

Orange: Percent of samples with high markers

Preliminary Short Beach Results



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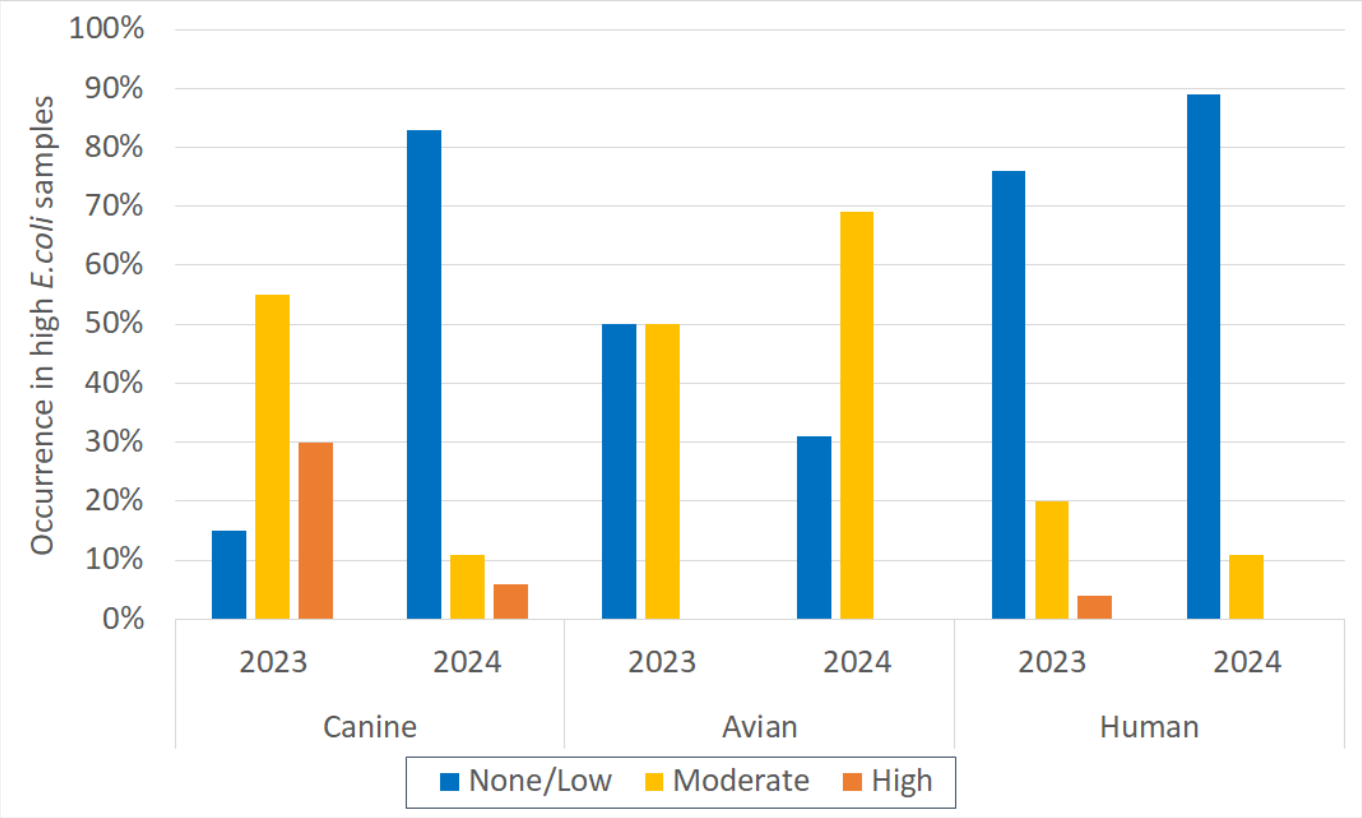

Prevalence of moderate and high canine markers in high E.coli samples has dropped from 85% to 17%

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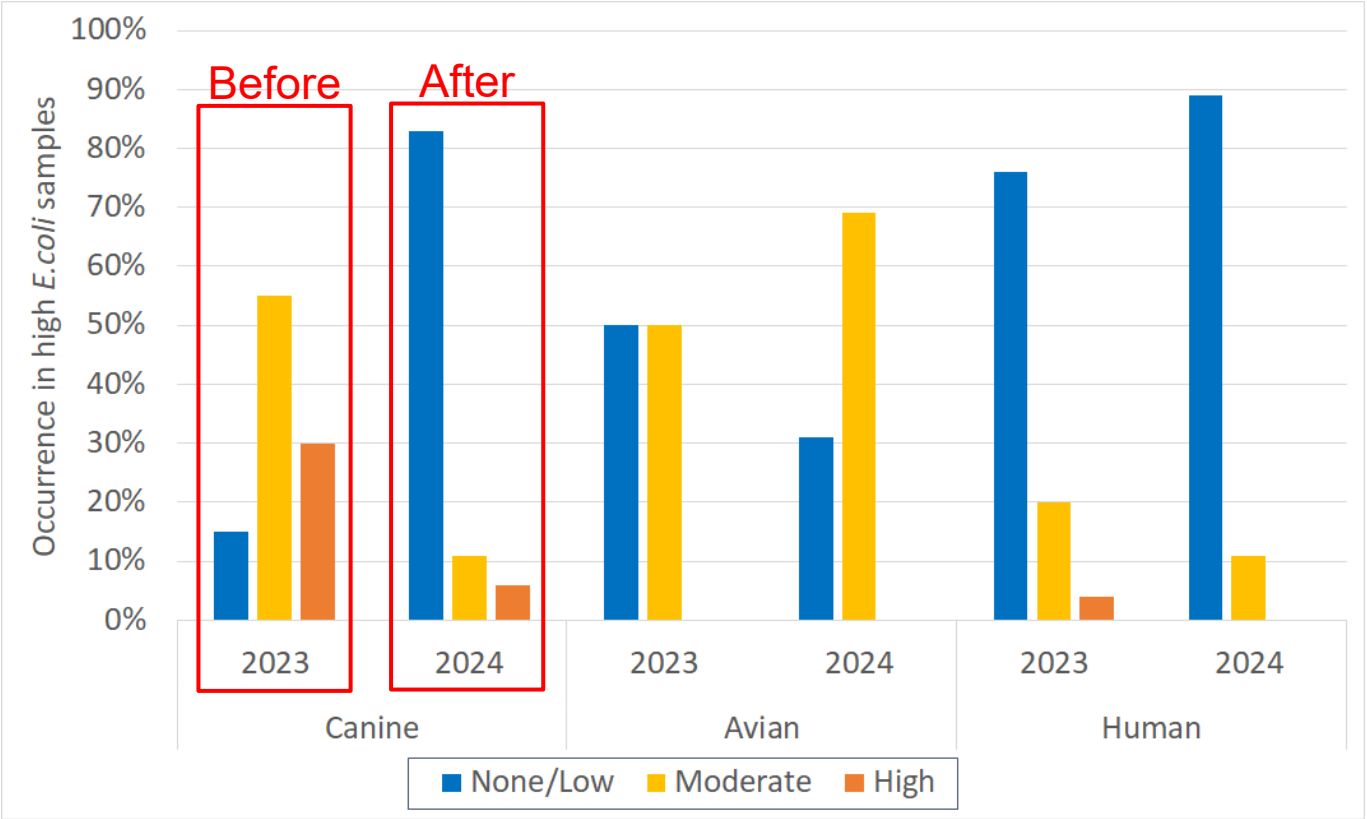

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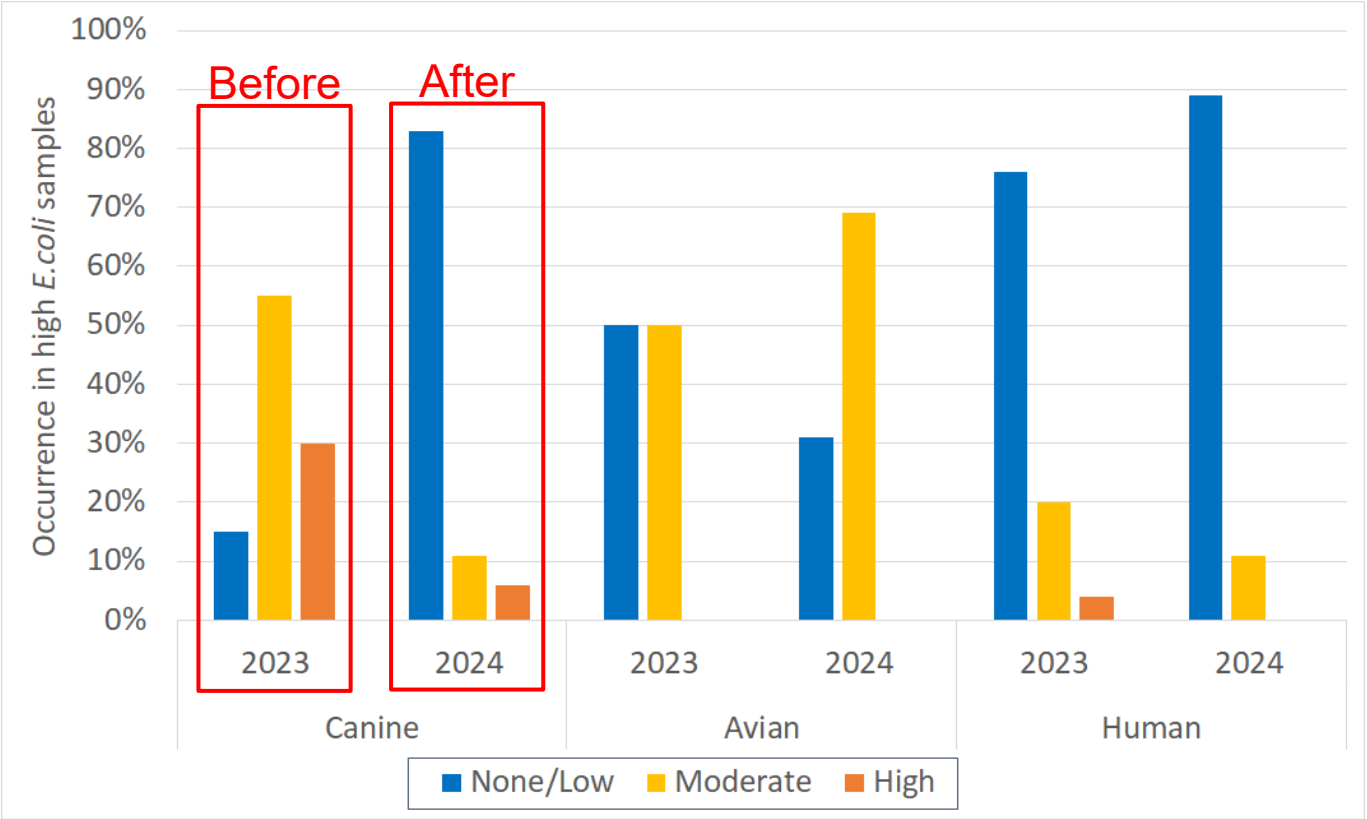

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No beach closures in 2024

Sound Health Explorer

	Precipitation	Grade
2023	18”	C+
2024	22”	B

https://soundhealthexplorer.org/swimmable

Hotspot: Pentecost Street

10 of 12 samples had elevated E.coli

- 3 canine detects: low, moderate, high
- 8 avian detects: all moderate
- 1 human detect: moderate (not a concern)

Consistent background avian. But when canine was present, E.coli was always higher than the lab could measure.

Only avian present: E.coli averages 6,500

Avian and any canine present: E.coli >24,000

Next Steps

- Finalize preliminary results
- Additional sampling to confirm and continue improvements, target remaining hotspots
    - Have begun sampling, focusing on hotspots (Pentecost Street, Granite Bay, Shore Drive, Clark Ave)
- Camera sewers
- Encourage people to keep up the good work cleaning up dog waste!

Takeaways

- Short beach continues to see high E.coli counts following precipitation, but levels have been lower than in past years (**no beach closures in 2024**)
- Species identification results are preliminary
- Lower canine contamination and lower total bacteria after the 2024 interventions shows we correctly identified the canine as the main driver of bacteria
- Bacteria counts are still elevated in some places (especially Pentecost Street): further clean up efforts are needed at hot spots

Thank you!

Thank you to the the CT State Public Health Lab, the Town of Branford, the New Haven Green Fund, the Branford Community Foundation, the Civic Association of Short Beach for their support, all volunteers, and Ann Davis!

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