Blitzing the Beach: Beach Water Quality Awareness and Testing in Maine and New Hampshire

Part of the NH EPSCoR New England Sustainability Consortium (NEST) Project

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Beach Businesses & Water Quality
Case Study of York Maine

According to the National Resource Defense Council's 2013 report of water quality at beaches, Maine ranked 27th out of 30 states.[3] In York Maine, state and local governments are working to better inform the public about beach water quality, as well as using microbial source tracking to identify sources of bacteria. The NEST team also sought to understand how the business community in York perceive coastal water quality and the effectiveness of advisories aimed at informing the public about potential health risks.

- Completed 31 interviews with employees and owners of beach related business in June- July 2015
- Questions gauged respondents knowledge of water quality and beach management issues
- 2 days of interviews completed while water quality advisory was in effect
- Summer 2015, there have been 16 days with a water advisory in effect at York beaches

Partners:
Dr. Tom Safford- Sociology
Issac Leslie- MA student Sociology
Town of York ME

Short Sands Beach, York ME

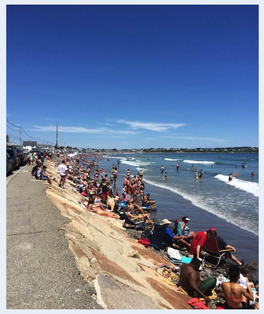
"I don't think anyone's worried about it, as you can see the beach is full."

Sample Responses

"There's a drain over here. There's water that's going in, you can hear mothers saying 'oh don't play in the sewer water.' Well its not sewer water at all. That's tested constantly, that is clear, clean water, underground water that goes in there. […] I have to correct women who are watching their children and they're playing in that because they keep them out and that sometimes is a top of conversation. but it is clean water, its ground water and its tested."

"I mean I've never read about or heard any issues with the town's water quality."

"What signs? I don't even know what they say? What do they say?"


Long Sands Beach, York ME

"[…] The quality of water is paramount to existence of York."


Cape Neddick Beach, York ME

"[…] its pretty bad and its comparable to like toilet water, if not worse."

"[…] we don't run into huge problems [...]"

Beach Blitz 2015!

At many beaches in the U.S. managers and researchers are finding increasing levels of potentially harmful bacteria in ocean waters. While standard sampling protocols have found low levels of harmful bacteria at NH's beaches, researchers from the NEST project sought to investigate whether a synoptic water sampling technique might provide more precise understanding of NH beach water quality. Researchers in collaboration with UNH Cooperative Extension, chose a use a citizen science approach and implemented the Beach Blitz 2015 to use this more intensive sampling method and engage the local community.

Partners:
- Dr. Steve Jones (UNH Researcher)
- Sonya Carlson (Beach Program Coordinator at NH DES)
- UNH Cooperative Extension
- Stewardship Network: New England
- NH Parks & Recreation

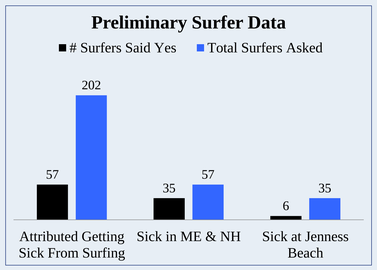
NH DES Water Advisory Sign

What is Citizen Science?
The collection and analysis of data relating to the natural world by members of the general public, typically as part of a collaborative project with professional scientist[4]

North Hampton State Beach
Location chosen based on records indicating this beach had the most ocean water quality advisories in NH

Sample points at North Hampton State Beach

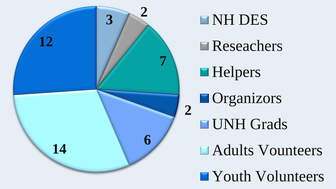
Sawyer's Beach & Jenness State Beach
- 10 Samples taken across both beaches
- Location chosen based on interviews conducted by Sophie Scott with surfers who identified water quality concerns at this beach (To the Right)



Sophie Scott, Plymouth State Graduate Student's, Preliminary Surfer Data from research summer 2015

About the Beach Blitz
- 44 total participants
- 3 Beaches sampled: Totaling 1 mile coastal sampling
- 22 samples taken by volunteers
- 9 bystanders asked questions

People at the Beach Blitz!



Overheard at the Beach Blitz:

"What is the DO concentration in this water?"
"What are we doing with the results?"
" Why does the water look dirty in the ocean, but clean in the sample bag?"

Next Steps
- Completion of data analysis in collaboration with Jackson Estuarine Laboratory
- Effective communication of results
- Share with state and local managers to inform risk communication and provide relevant guidelines for awareness
- Assess impact of collaboration between researchers and public participants

Observations & Lessons Learned

York ME Business Interviews
- Gaps exist in the business community's awareness and understanding of water quality issues
- General public interacts with businesses about the beaches, but do not ask about advisories or water quality
- Business and public evaluate beach management and water quality based on visual cues rather than signage
- Businesses trust local government and believe they would know if there was a regular problem

Beach Blitz Citizen Science Approach
- Recruitment of volunteers and researchers proven possible and beneficial
- Outcomes of synoptic water sampling investigated as compared with single sampling techniques
- Effectively engaged all ages and became science education opportunity for youth

"We had lots of fun today! Thank you! I'm amazed at how much information my kids took in too. Great stuff!"

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[3] National Resource Defence Council. *Testing The Waters 2014: A Guide to Water Quality at Vacation Beaches*. http://www.nrdc.org/water/oceans/ttw/default.asp. [4] University of Illinois at Urbana-Champaign. "What is Citizen Science.", 6 Aug. 2015.