

**Improving Coastal Water Quality
The Beaches Conference
June 14, 2019**

Moderator: Laura Diemer, FB Environmental Associate

Note Taker: Trevor Mattera, Piscataqua Region Estuaries Partnership

Fecal Source Tracking w/ successes and challenges of methods

Who's Polluting the Water?...

- Audrey: How's WQ monitored?
 - Looks for detection of fecal pollution
 - Not source specific
 - Enterococci levels – WQ standards set to keep below >30/1000 predicted GI
- Microbial Source Tracking
 - Molecular-based techniques
 - Minimizes human health risks, keeps beaches open, gain insight on pollution source, saves resources when sources ID'd
 - Mammal, Human, Gull, Dog, Ruminant, Bird
- Polymerase Chain Reaction (PCR) & quantitative ~ (qPCR) [presence/absence vs relative concentration]
- Results for 2017-18 studies of positive PCR
 - Bird contamination throughout 2018 was high, but no health
- Conclusion:
 - Fecal contamination should be monitored over time
 - Humans dogs & birds most common contributors
 - Human during summer
 - Bird throughout year
 - Dogs late summer/fall
- Steve: Do specific fecal sources relate to differential levels of potential pathogens?
 - Now applying bacterial community and DNA sequencing to ID potential pathogens in the water
- Place enterococci and fecal markers along beach and storm drain environments in the same area
 - Storm drains contained the highest percent (1.4%) of fecal potential pathogens
 - Elevated fecal potential pathogens during July, August, October
 - Significant relationship between enterococci & fecal potential pathogens

- Study limitations
 - Not detecting actual pathogens or genetic traits
 - Could use more specific sequencing approach to target pathogens

Expanding the Fecal Source Tracking Toolbox...

- Meagan: Tackling Persistent Bacteria Sources in Kennebunkport's Goose Rocks Beach Watershed
- Mission of ME Healthy Beaches – monitoring coastal beaches (w/ volunteer monitors) for potential Beach Advisories
 - WQ for recommending advisories & notify the public
 - Build collaborative partnerships & build local capacity to identify and address pollution
- 2 beaches in KBPT, Tier 1 level monitoring (1/wk and increased to 2-3/wk)
 - Frequent beach exceedances
 - GRB is an economic source for the town
 - Work to ensure the WQ stays below threshold
- Most beaches exceed 10% of the time or less – GRB way over that
 - GR-5 (one of the many sites of GRB) really driving that exceedance rate
- GRB Watershed made up of 3 different subwatersheds
- Take every parameter that we can in WQ monitoring that they can (and is affordable) to paint the full picture
- The challenge: so many different sources (also cross connection with sewer & storm lines)
 - Using Microbial Source Tracking when possible
 - Expensive, but can hone in on sources and see trends
- What other partners? Conservation Districts? Schools?

Reflection on the Success of Remediating Fecal Pollution...

- Maggie: How a community and town can be the stewards of their river
- Similar strategies as discussed but different setting
- Waldoboro is a huge contributor of SSC's in ME
 - Huge economic investment for town in their river
- Medomak has faced bacteria issues
 - 1990s WWTP directly discharging into the river, and facility moved
 - Early 2000s, still issues of fecal contamination
 - Task force started by clambers and included many stakeholders, Phil from

DEP

in upper watershed

- Phil increased monitoring, MST, collecting more data
- Gabby in estuary looking at hydrodynamics
- 2019 data compiled for a management plan
- Julie: Hotspots & Issues:
 - Seaweed processor had leak that they were unaware of.
 - Also found cows were too close to the river; Dept of Ag came in for some BMPs
 - Telling people they couldn't take dogs to public landings was very visceral, but after assessment for hotspots, it made a difference
 - Tested above & below beaver dams, ID'd it coming from the beavers
 - Pigeons under the bridge
 - Dark blue getting smaller shows progress
 - Town has to be engaged in what's going on
 - Glen – the clam flats are the most important resource of our community
 - What's next: Grant to grow baby clams, Implement WMP, Hydrodynamic research, sewer line repair
 - In ME, everyone has their own little fiefdom, but that has to stop.
 - Had the opportunity to share shellfish warden but “oh, we can't do that”
 - Have to work with other people and sharing is caring; break that cycle and work with one another

Q&A

- How much does the MST cost?
 - If you can directly work with town, \$100/PCR. For PCR, \$10/target, \$20/target for qPCR ME Healthy Beaches – is there an email for updates?
 - Yes, just talk to Meagan
- Anything ongoing with York?
 - The town has gone off in other directions since study
- Long beach – was that storm sewer from septic?
 - Thing with storm drains, you can get cross connections. People hook up to the wrong one... And if you get bacteria in there, it's a warm moist environment. That why using MST showing fecal specific species is important.