Dear partners, funders, colleagues, stakeholders, and friends: We thank you for your care and stewardship of the special places and valuable natural resources of the Piscataqua Region in 2019!

So many positive things happened in our region this year: we advanced projects, investigated new challenges, formalized new collaborations, and enjoyed the places we work so hard to protect. With your help, PREP focused on the additional effort of updating the Comprehensive Conservation and Management Plan (CCMP), launched a clean water marketing strategy - Every Drop - with over 12 regional partners and support from the New Hampshire Charitable Foundation, and developed our first citizen science project focused on seaweed with support from the Coastal Research Volunteers and the Davis Foundation.

Each year we work hard to provide you with information and resources that add to your understanding of our estuarine systems. We are committed to championing your successes and learning from you as you address the complex issues facing our region and communities.

Looking toward 2020, it is going to be a big year! PREP will publish the 2020-2030 Comprehensive Conservation and Management Plan (CCMP) and the new 2020 Piscataqua Region Environmental Planning Assessment (PREPA). In addition, we will be developing the first integrated research and monitoring plan for the Great Bay Estuary.

And, of course, staying focused on the efforts we are already committed to such as facilitating the Piscataqua Region Monitoring Collaborative (PRMC), collecting baseline water quality and ecological habitat data, delivering focused technical assistance to our communities, progress reporting on our local policy and management practices, investing in land conservation, and seeking supplemental sources of funding that address high priority needs.

As always, we encourage you to reach out and let us know how we are doing as your partner. Are there specific opportunities we can capitalize on or resources we can bring to the region in support of our collective work? Please let us know how we can better help you do your work!

Thank you for celebrating 2019 with us. We look forward to another year of creating more positive, lasting impact for our estuaries in partnership with all of you.

Warm regards,

Rachel Rouillard, Director
The 2019 aerial survey for eelgrass distribution was completed in August and results are expected by March 2020. This summer, UNH researchers from the Geospatial Science Center conducted preliminary unmanned aerial flights to explore the use of drones in assessing subtidal habitats. To expand seagrass monitoring, a new site was established with the UNH Jackson Estuarine Laboratory near Fort Foster in Kittery, ME. Finally, the PREP Technical Advisory Committee (TAC) welcomed new co-chairs, Dr. Bonnie Brown (UNH) and Dr. Wil Wollheim (UNH), and the Piscataqua Region Monitoring Collaborative (PRMC) - a subgroup of the TAC - welcomed co-chairs Jennifer Perry (Town of Exeter), and Ted Diers (NH DES).

PREP, with the Great Bay NERR, hosted two Board Empowerment workshops in NH (Social Science Basics for Municipals and Mindfulness for Municipals). Increasing access to data and messaging from the State of Our Estuaries report, PREP partnered with the NH Coalition for Community Media to syndicate the “Stories from Our Estuaries” and “Ask Our Scientist” video series for community public television. This summer, PREP kicked off our first citizen science monitoring effort for seaweeds in the Great Bay Estuary with the UNH Jackson Estuarine Laboratory and the Coastal Research Volunteers. PREP also launched a brand new website (www.PREPestuaries.org) in September to share news from PREP and the region.

In partnership with the Southeast Land Trust of NH, PREP supported 11 high priority conservation initiatives resulting in almost 3,000 acres of newly protected lands. These lands help to protect water quality along 5+ miles of streams and tidal rivers, drinking water for residents, and habitat for a diversity of species. Working with key partners, PREP assisted in developing a white paper on the current state of eelgrass restoration science in the region. The paper is a starting point as we work towards a restoration plan to advance our goal of 2,900 acres of eelgrass in the Great Bay Estuary.
Seaweeds play an important role in our estuaries and in estuaries around the world. Common brown seaweeds found on rocks along the estuary edge - such as *Fucus vesiculosus* and *Aschophyllum nodosum*, both often referred to as rockweed - provide important ecosystem functions like nursery habitat. However, some nuisance seaweed species - such as *Ulva* and *Agarophyton* (previously known as *Gracilaria*) - can bloom in the estuary inhibiting the growth of eelgrass. An overabundance of these nuisance seaweeds can entangle, shade, and outcompete eelgrass - an important indicator of water quality and estuarine health. In tidally dominated systems - such as ours - seaweeds can have more impact than phytoplankton as a stressor on eelgrass.

Seaweed growth is accelerated by climate change, sedimentation, and nutrient over-enrichment, and is often coupled with quick growth and die off (bloom) that can negatively impact plants and animals by depleting oxygen in the water. Nuisance seaweeds easily outcompete eelgrass because they need less light than eelgrass and also require a high level of nutrients in the water column. Eelgrass can obtain nutrients required for growth from sediments because of their root systems. Seaweeds cannot do this because they are not rooted, and rely exclusively on nutrients in the water column itself.

PREP tracks 23 indicators of water quality and overall estuarine health including eelgrass and seaweeds. Between 2013 and 2018, PREP and our partners monitored the abundance and extent of seaweeds in the Great Bay Estuary with intertidal surveys, meaning the areas exposed as mud flat at low tide. Thanks to the work of researchers at the UNH Jackson Estuarine Laboratory (JEL), we now have data from both intertidal and subtidal areas. Subtidal sites are the most critical to understanding seaweed and eelgrass interactions. You can access the results from the 2018 pilot project in the publication “Macroalgal Monitoring in the Great Bay Estuary: 2018 Annual Report” available on the UNH Scholars’ Repository, and a new report incorporating data from 2019 will be available in May 2020.
FUTURE MONITORING

PREP and partners are committed to continuing subtidal habitat monitoring on an annual basis as well as continuing the intertidal monitoring with citizen scientists. In addition, two SeagrassNet sites - one in Great Bay and the other in Portsmouth Harbor - provide detailed data on eelgrass and seaweed interactions. Scientists visit these SeagrassNet sites at least two times a year. Recent SeagrassNet reports can be found under the 2017 list of PREP Reports & Publications on the UNH Scholars’ Repository.

Monitoring changing temperatures, precipitation levels, nutrient loading and concentration levels, as well as the response of eelgrass and seaweed, PREP and partners continue to increase our understanding of how our estuaries are changing and why. One of the ways partners collaborate on these issues is through the Piscataqua Region Monitoring Collaborative (PRMC). For the latest regarding monitoring in our estuaries, and to participate, check out the PRMC Workgroup under the Technical Advisory Committee page at www.PREPestuaries.org/who-we-are/ prep-technical-advisory-committee/.

CITIZEN SCIENCE

We are excited to share that in 2019 PREP and the UNH Coastal Research Volunteers piloted a citizen science seaweed monitoring effort with researchers from JEL and the Great Bay National Estuarine Research Reserve. Occasionally we receive photos or messages of increases in seaweeds from concerned residents around the Great Bay Estuary. Unfortunately, these accounts cannot be reported in the State of Our Estuaries reports and they often do not reach resource managers who may benefit from this information.

With support from the Davis Foundation and the Piscataqua Region Monitoring Collaborative (PRMC), we kicked off PREP’s first citizen science monitoring project with the goals of: 1) expanding existing seaweed monitoring to capture more representative conditions; and 2) empowering concerned citizens to participate in monitoring estuarine health. Nine volunteers assisted in seaweed percent cover estimates at five sites around the estuary. We are currently reviewing the pilot project and look forward to making improvements for future monitoring and citizen science efforts.
PREP is part of the U.S. Environmental Protection Agency’s National Estuary Program, a joint program between local, state, and federal agencies established under the Clean Water Act with the goal of protecting and enhancing nationally significant estuarine resources. PREP is supported in part by an EPA matching grant and is housed within the School of Marine Science and Ocean Engineering at the University of New Hampshire.

**2019 BUDGET**

PREP is part of the U.S. Environmental Protection Agency’s National Estuary Program, a joint program between local, state, and federal agencies established under the Clean Water Act with the goal of protecting and enhancing nationally significant estuarine resources. PREP is supported in part by an EPA matching grant and is housed within the School of Marine Science and Ocean Engineering at the University of New Hampshire.

**TOTAL PROGRAM BUDGET ($1.29M)**

- EPA Award $600,000
- Required Match (for EPA award) $600,000
- Monitoring $75,000
- Non-EPA Grants $15,000

**EXPENDITURE CATEGORIES ($1.29M)**

- Administration & Special Projects $190,000
- Science & Monitoring $775,000
- Community Technical Assistance $155,000
- PISCATAQUA REGION MONITORING COLLABORATIVE ($442,000)

**REQUIRED MATCH SOURCE BREAKDOWN ($600,000)**

- State (DES) $200,000
- UNH $100,000
- NGO Partners $130,000
- Municipal $75,000
- NextEra $80,000
- Foundation Grants $15,000

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- State (DES) $200,000
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- NGO Partners $130,000
- Municipal $75,000
- NextEra $80,000
- Foundation Grants $15,000

**PISCATAQUA REGION MONITORING COLLABORATIVE ($442,000)**

- State/Federal $277,000
- NextEra $80,000
- Municipal $75,000
- Foundation Grant $10,000
What do our watershed and estuaries mean to you? Maybe you like to enjoy a beautiful sunset, a walk along the coast, volunteering for your favorite organization, or fishing with your family and friends. Share your photos with #shotsfromtheshed and you could be featured in an upcoming edition of PREP’s newsletter, “Downstream.”
**PREP Publications** from the UNH Scholars’ Repository.

- **6,000+ downloads**
- **2,937 acres** were conserved in the Piscataqua Region watershed with PREP support. Projected value of conserved land **$12.9 M!**
- PREP kicked off our first *citizen science* monitoring effort for seaweed in the Great Bay Estuary.

**PREP** & partners launched *Every Drop* in Jan 2019. The website has seen **3,000+ visits** this year!

- Volunteers cleaned **1,200 lbs of debris** off the shores of the Great Bay Estuary on Sept 30 - including **887 pieces of plastic!**

*SAY CHEESE!*

360 underwater camera deployments assessed seaweed & seagrass coverage in the Great Bay Estuary!