



PREPTM

Piscataqua Region Estuaries Partnership

2021

ANNUAL REPORT

LETTER FROM MANAGEMENT COMMITTEE CHAIR

Dear Partners:

We are celebrating more than another great year; 2021 marks the Piscataqua Region Estuaries Partnership's (PREP) 25th anniversary!

Twenty-five years ago, a group of dedicated professionals and concerned community members developed a set of recommendations to improve water quality in New Hampshire's estuaries. The three-year process resulted in our first Comprehensive Conservation and Management Plan (2000); a guiding document used in our collective work and updated each decade.

Since 2000, we've evolved into a watershed-based organization, encompassing Maine into our focus area. Working with our Community of Partners we've protected and restored 16,590 acres of mostly undeveloped, forested land, totaling \$54,764,882 of investments in our watershed. In addition to smaller, more focused projects, PREP has published six State of Our Estuaries reports (2000, 2003, 2006, 2009, 2013, and 2018) communicating the status and trends for environmental, biological, and recently in 2018, social indicators of health across our watershed. We've published two updates of the Piscataqua Region Environmental Planning Assessments and offered local technical assistance grants supporting 23 projects with over \$134,000 since 2009. Last year we published our region's first integrated research and monitoring plan for the estuaries and intend for a similar plan for habitat and restoration with our partners. In 2013, recognizing the need to support sustained monitoring efforts, PREP established the Piscataqua Region Monitoring Collaborative convening partners to discuss existing environmental monitoring programs in our estuaries and to share upcoming opportunities and challenges. In the last year, PREP partnered with the Municipal Alliance for Adaptive Management to raise funds to continue monitoring water quality and ecosystem health in our estuaries.

Even with these changes some things stay the same. Water quality, land protection, supporting local decision-making, restoration, and partnership remain the foundation for our collective work, and we continue to make progress protecting and enhancing the health of our estuaries. In 2021, PREP supported local investments in community projects; worked with partners to expand access to critical datasets; analyzed datasets for key indicators from the last 14 years; and advanced discussions about dedicated funding for stormwater and flood resilience.

Twenty-five years later, we are thankful for our Community; we value their partnership and collaboration. For their service on the PREP Management Committee: Alix Laferriere, John Jones, Rayann Dionne, Tim Roache, Forrest Bell, Roger Stephenson, Jay Diener, and Rob Roseen. And finally, our most sincere gratitude for PREP's former Director, Rachel Rouillard, who stepped down in October to lead and support land conservation priorities with The Nature Conservancy. We are forever grateful for her eleven years of leadership, strategic vision, generosity, and support.

Looking forward to 2022 we will continue to grow and make accomplishments within the watershed. We look forward to welcoming a new Director, publishing the 2023 State of Our Estuaries report, monitoring the health of our estuaries, restoring critical habitats, assisting communities with local projects, and more!

Warm regards,



Annie Cox, Management Committee Chair
Wells Reserve

PROGRAM HIGHLIGHTS

SCIENCE

PREP and partners purchased several **light arrays with photosynthetically active radiation sensors** used to calculate light penetration every 15 minutes for months at a time. The arrays are sited at: Great Bay, near Dover Point, and in Portsmouth Harbor. We are working with partners to **QA/QC archived data** that can be included in our efforts to understand estuarine health. Two prime examples include 1) processing NERACOOS buoy data in central Great Bay, and 2) processing Tier 3 seagrass monitoring sediment data, going back to 2007. This year PREP and the UNH Water Quality Analysis Lab created a **new database with easy access and automated analysis of estuarine datasets** to be released for beta-testing in early 2022.

TECHNICAL ASSISTANCE

In February, PREP published the **2020 Piscataqua Region Environmental Planning Assessment** and selected five community projects in Dover, Epping, Hampton, Kittery, and New Durham for **2021 PREPA grants**. These projects aim to improve protections for water quality, flood resilience, and stormwater management. This year kicked off the **Clean Sweep: Expert Panel for Nonstructural Best Management Practices** project. The Advisory Committee and Expert Panel are working to develop a common calculus for removal of organic matter during periods of peak deposition to support updated metrics for pollutant tracking and accounting. PREP continues to support the City of Dover in a process to explore dedicated funding options for **stormwater management and flood resilience**. A recommendations report will be presented to City Council in early 2022.

RESTORATION & CONSERVATION

Throughout the 2020 field season, PREP helped coordinate and carry out **pilot-scale eelgrass restoration** in the Great Bay Estuary. As a member of the **Hampton-Seabrook Estuary (HSE) Collaborative** steering committee, PREP helped host a series of stakeholder webinars and produce the HSE Collaborative Prospectus to guide coordinated funding and efforts of state, local, and federal partners in HSE. As part of the **Great Bay Living Shoreline Project**, spearheaded by the NH Coastal Program and the Great Bay NERR, PREP is coordinating a team of engineering and landscape professionals in designing a living shoreline at Moody Point in Newmarket, NH. PREP also supported initiatives that resulted in the **protection of over 1,600 acres of priority lands** in the watershed.

PREP REPORTS & PUBLICATIONS

Restoration By Design: Great Bay Estuary, New Hampshire, Alix Laferriere and Brianna Group

Quality Assurance of Estuarine Water Quality Grab Sampling 2019, Lara Martin

Quality Assurance of Estuarine Water Quality Grab Sampling 2020, Lara Martin

Quality Assurance Report for Year 2019 Estuarine Water Quality Datasonde Monitoring, Lara Martin

Quality Assurance Report for Year 2020 Estuarine Water Quality Datasonde Monitoring, Lara Martin

Nitrogen, Phosphorus, and Suspended Solids Concentrations in Tributaries to the Great Bay Estuary in 2019, Kalle Matso

Great Bay Estuary Submerged Aquatic Vegetation (SAV) Monitoring Program for 2021 Quality Assurance Project Plan, Kalle Matso, Raymond Grizzle, and Michael Routhier

Great Bay Estuary Tier 2 Seagrass/Seaweed Monitoring Program 2021 Quality Assurance Project Plan, Kalle Matso, Trevor Mattera, David Burdick, and Tom Gregory

Seaweed Monitoring in the Great Bay Estuary, NH: 2020 Annual Report, Andrew Payne, David Burdick, Gregg Moore, Natalie White, Christopher Peter, and Arthur Mathieson

2020 Annual Report, PREP

For a complete list of PREP's reports and publications, visit <http://scholars.unh.edu/prep>



2021: A GOOD YEAR FOR SEAGRASS MONITORING

PREP, the Great Bay National Estuarine Research Reserve, and the University of New Hampshire were the recent recipients of a nationally competitive grant opportunity from the NERRS Science Collaborative. This newly funded \$550,000, 3-year project will work to connect hydrodynamics and eelgrass stressors, such as nutrients and sediments, which in turn impact things like plankton, seaweed, sediment quality, and light penetration. This important step, connecting field research to an accurate hydrodynamic model, has been an acknowledged gap for our community since 2014.

In addition to this focused project, PREP monitors the presence and health of eelgrass annually. During the May to October field season, PREP collects data to better understand not only where eelgrass is (and is not) but also to assess the health of eelgrass habitat. Monitoring happens using a tiered approach. Each tier has a set of protocols that collect increasing levels of detail from using aerial imagery to capture presence and absence of eelgrass beds (Tier 1), visiting 25 sites to look at seagrass and seaweed biomass and percent cover (Tier 2), and (Tier 3), which involves an annual return to fixed transects (one in Great Bay and one in Portsmouth Harbor).

This multi-faceted approach helps us better understand many eelgrass metrics, including changes to the shallow and deep edges of the meadow.

Implementing all three tiers of seagrass monitoring is new for 2021. Previously, PREP relied on Tier 1 and Tier 3 to inform our understanding of eelgrass health. All data is analyzed to identify what factors - or "stressors" - might be impacting eelgrass distribution and health. These "stressors" are the focus of the previously mentioned 3-year project.

This has been made possible, in part, by contributions from communities around the Great Bay Estuary including \$316,400 from the Municipal Alliance for Adaptive Management (MAAM) for monitoring in 2022. The MAAM was formed by communities to better coordinate efforts to address the EPA's new Great Bay Total Nitrogen General Permit. MAAM contributions will also increase how often PREP will be able to implement Tier 1. Previously, Tier 1 was scheduled to happen every other year, but is now on track to happen annually, due to community support.

Collaboration continues to be an integral part of this work. Partnerships are what drive the work we do, and we are fortunate to have the support from the University of New Hampshire, the Great Bay National Estuarine Research Reserve, local communities, including Exeter, Rochester, Portsmouth, Dover, Somersworth, Newfields, and Newington, from the New Hampshire Department of Environmental Services and the Conservation Law Foundation.

The monitoring and research described here is vital to help everyone in the Piscataqua Region understand how our efforts to reduce pollution are impacting the estuary, and what we need to continue the fight into the future. Stay tuned for results from the 2021 field season as well as trend analyses from 2016-2021 in the 2023 State of Our Estuaries report (published December 2022).





EELGRASS RESTORATION IN GREAT BAY ESTUARY

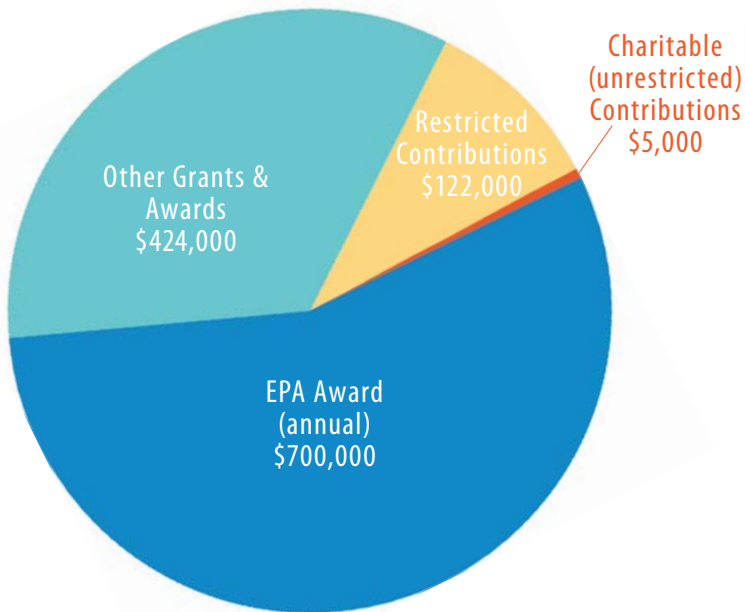
This year, PREP partnered with local eelgrass scientists, stakeholders, and volunteers to transplant and monitor over 8,000 eelgrass shoots across five sites around the Great Bay Estuary as part of a pilot-scale restoration project. This experimental project builds off results from an updated site suitability model and will provide crucial data to inform larger scale restoration activities in the near future. Below are a few photos from the 2021 field season. Thank you to everyone who participated and helped us with this pilot!



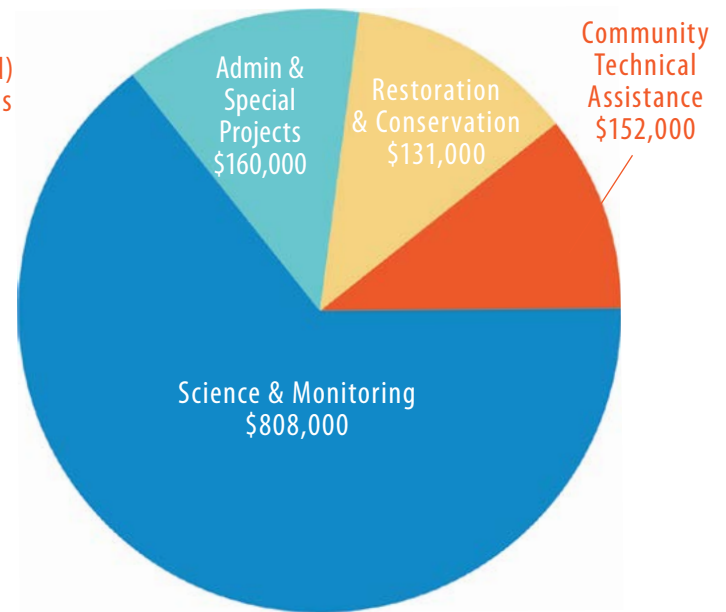
2021 BUDGET

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.

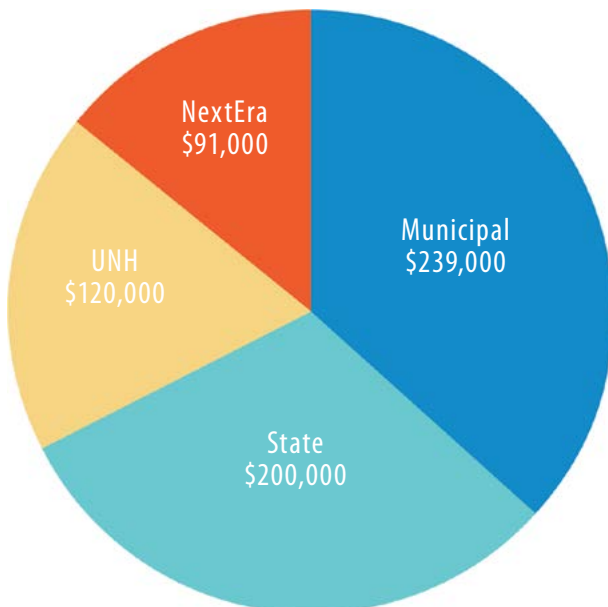
TOTAL PROGRAM REVENUE (\$1.251M)



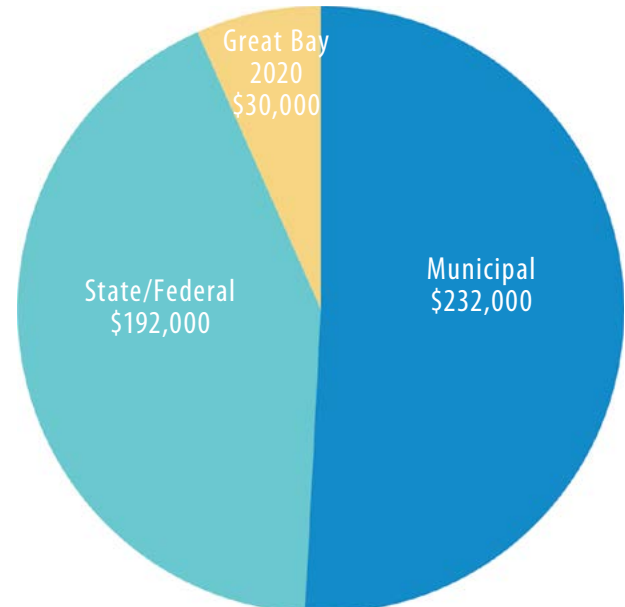
EXPENDITURE CATEGORIES (\$1.251M)



REQUIRED MATCHING FUNDS BREAKDOWN (\$650,000)



PISCATAQUA REGION MONITORING COLLABORATIVE (\$307,099)





MANAGEMENT COMMITTEE MEMBERS

| | |
|---------------------------------------------------------------|------------------------------------------------------------|
| Katie Ambrose, City of Rochester | Don Keirstead, USDA Natural Resource Conservation Service |
| Jon Balanoff, Acton Wakefield Watersheds Alliance | Jessa Kellogg, Town of Kittery |
| *Erik Beck, US Environmental Protection Agency | Peter Kinner, Great Bay Stewards |
| Dea Brickner-Wood, Great Bay Resource Protection Partnership | *Regina Lyons, US Environmental Protection Agency |
| *Erik Chapman, NH Sea Grant/UNH | Melissa Paly, Great Bay-Piscataqua Waterkeeper |
| Jim Chase, Seacoast Science Center | *Cheri Patterson, NH Fish and Game Department |
| *Steve Couture, NHDES Coastal Program | Jennifer Perry, Town of Exeter |
| Annie Cox, Wells National Estuarine Research Reserve (CHAIR) | Kim Reed, Town of Rye |
| Jennifer Czysz, Strafford Regional Planning Commission | *Cory Riley, Great Bay National Estuarine Research Reserve |
| *Ted Diers, NH Department of Environmental Services | Todd Selig, Town of Durham |
| *Addie Halligan, Maine Department of Environmental Protection | Carl Spang, Lamprey River Watershed Association |
| Russ Hillyard, Swell Oyster Company | John Storer, City of Dover |

*Indicates a standing seat on the Management Committee

**Indicates PREP program officer



TECHNICAL ADVISORY COMMITTEE

The **Technical Advisory Committee (TAC)** advises PREP on technical, science-based issues related to the estuary program, the **State of Our Estuaries** report, and the implementation of the **Comprehensive Conservation Management Plan**. TAC membership is open and the public is encouraged to attend.

For more about TAC and workgroup meetings visit PREP's new website www.PREPEstuaries.org/who-we-are/prep-technical-advisory-committee/

JOIN THE PREP COMMUNITY FOR CLEAN WATER

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.**"



PREPcommunity



@PREPcommunity



Piscataqua Region
Estuaries Partnership



@prepestuaries

12,000+
downloads
of PREP Reports &
Publications from
the UNH Scholars'
Repository!

Seagrass
monitoring
Tiers 1, 2, + 3
implemented
for the first
time!

1,600+
acres of priority
lands conserved with
PREP support in the
Piscataqua Region
watershed.

**5 COMMUNITY
PROJECTS** kicked off
in 2021 to implement
recommendations
from the 2020
PREPA!

PREP
and partners
AWARDED
\$550,000 for a
3-year project to connect
hydrodynamics
and eelgrass
stressors.

8,000+
eelgrass shoots
planted at **5 sites**
in the Great Bay
Estuary as part of a
pilot restoration
project.