For posters with authors from multiple departments/institutions:

Investigation of Phosphorus Deposition in Mount Hope Bay from Freshwater Inputs

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The importance of elemental phosphorus (P) bioavailability as a limiting nutrient within marine biological cycles has recently been refocused to quantifying the sources and sedimentary sinks within estuarine environments. Sedimentary P is an ecologically conserved critical nutrient for successful plant growth but can lead to eutrophication on the release of high anthropogenic concentrations. This study encompassed the environmentally exposed Mount Hope Bay (MHB) watershed spanning Rhode Island and Massachusetts state lines. MHB watershed is fed by four freshwater inputs (Taunton, Lee, Cole, and Kickemuit rivers) exiting out through the East Passage and the Sakonnet River to the Atlantic Ocean. Twenty-four surface (~5cm) sedimentary sampling sites were investigated across the watershed. The concentrations of nutrients (PO_4^{3-}, NO_3^-, NO_2^-, NH_4^+) were evaluated using Hach® spectrocolormeteric tests, using various chemical extraction methods: Total P (TP) (Koroleff 1983), Inorganic P (Ruttenberg 1992), Water Soluble Phosphorus (WSP), Readily Desorbable Phosphorus (RDP), Algal Available Phosphorus (AAP), and Bicarbonate Extractable Phosphorus (Olsen-P), (Zhou. *et al*). Confirmatory evidence for the presence of orthophosphate in extracts was also shown by P31 nuclear magnetic resonance. Each of these sites was further characterized by its carbon and carbonate content, granular size, pH, orp, salinity and acid extractable metals. This research demonstrated the various extraction techniques followed the same phosphorus content profile with an increasing concentration gradient transect from the river's source to the river's mouth paralleling increasing salinity.

For posters with authors from the same department/institution:

Stakeholder engagement on the Woonasquatucket through community programming and undergraduate research

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The Woonasquatucket (Algonquian: where the saltwater ends) River stretches nearly 26 km with a watershed area of 130 km2 in rural and urban central RI before joining the Providence River and draining into Providence Bay. Its historical legacy as a part of the industrial past of RI has led to it being designated an American Heritage River, while more recently the river has undergone a revitalization to create green spaces for the people living along its banks. To understand the needs of stakeholder organizations and communities in the Woonasquatucket River Watershed, we developed a two-dimensional approach to generating stakeholder feedback and implement basic research in support of community organizations. Currently our work is a collaborative effort with Revive the Roots (Revive) a non-profit organization dedicated to sustainability and community engagement through a diverse set of programs at the headwaters of the headwaters of the 'Woony'. Our collaboration with Revive is allowing us to deploy supporting communications to the ecology of the watershed, the fate and transport of plastic pollution, while generating a network of community members to provide feedback and lead the next generation of programs along this waterway. Many of our communications are interpretive and include QR codes that encourage community members to communicate with our team. In addition, Revive has become a starting point for understanding the needs of organizations and how basic ecosystem research can be leveraged to support their aims as a nucleus of stakeholder engagement. We plan to work with the Revive Land Stewardship board to generate a better understanding of how the agricultural past of RI affects plant and soil ecology, and how contemporary land use and recreation affects plastic pollution along the Woonasquatucket River by sampling soils and vegetation across a range of ecosites. In this poster we highlight recent and planned community engagement projects, and proposed basic research planned to begin in Autumn of 2022.