

Maine DEP, 2020-2021 update

- 1) 2020 marked end of five year water quality and eelgrass monitoring effort in Portland area in partnership with FOCB
 - a. In 2016, nine water quality sites monitored in Fore River only
 - b. In 2017-2020, nine water quality sites monitored from Presumpscot River Head of Salt to Clapboard Island to mouth of Fore River
 - i. In 2020, COVID challenges meant missing first May sampling event and extending sampling event window based on use of only two people on vessel—efficiencies gained by integrating sonde and light meter sensors to complete a single vertical profile
 - ii. In 2020, captured post-Presumpscot River landslide conditions with two continuous sondes (just above Head of Tide and at mid-estuary) and discrete sampling—influence of landslide turbidity detectable through area off East End/south of Mackworth Island and reducing by mid-October—higher organic nitrogen signature at Head of Salt site may indicate sediment-bound nitrogen release
- 2) 2020 partnership with Maine Coastal Program staff and contractors resulted in sampling infauna and epifauna (taxonomic identification, abundance), sediment characterization, water quality characterization at three sites along Presumpscot estuary alignment and one inner Bay reference at Clapboard Island
 - a. Raw data and report have been completed and are awaiting DEP review
- 3) 2020 aerial imagery acquired from Clapboard Island down through East End and Fort Gorges to delineate eelgrass beds and add to time series of extent and percent cover of four eelgrass beds—groundtruthing occurred by underwater video from boat and on foot during low spring tide series—GIS delineation and change analysis forthcoming
- 4) 2020 eelgrass monitoring at three established sites in Portland area by SCUBA stymied by COVID vessel and white shark precautions, so monitoring consisted of only Photosynthetically Active Radiation (irradiance) profiles, qualitative video transects from deep to shallow edges of beds, and entire bed delineation and percent cover estimates (see #3 above)
- 5) All 2016-2020 data generated as described above and historic data for the Portland area (FOCB, EPA) will be analyzed by EPA contractor via Nutrient Scientific Technical Exchange Partnership & Support (N-STEPS) program to develop recommendations for nutrient and indicator targets. N-STEPS program is occurring coincidentally with Portland Area Nitrogen Group quarterly meetings in 2021 to discuss approaches to nitrogen target (and criteria?) establishment as well as implementation considerations for nutrient reductions, where warranted, in wastewater licenses and stormwater general permit.
- 6) 2020 National Coastal Condition Assessment (water quality, sediment and benthic fauna characterization, sediment and fish tissue contaminants, total alkalinity, sediment microplastics) was completed during summer at ~eight sites in Casco Bay as part of larger coastwide effort—survey conducted by Stantec Consulting under contract to DEP—results will become available over next several years

- 7) 2021 field plans include:
- a. Stable isotope study of eelgrass, sediment, water column at three sites in Casco Bay in collaboration with Bates College (Bev Johnson, Chenemi Maji) to assess nitrogen source identification
 - b. Groundtruthing for satellite remote sensing feasibility for eelgrass mapping using Landsat 8 products at two sites in Portland area with EPA Region 1 (Phil Colarusso)
 - c. Eelgrass mapping via plane-based imagery in Southern Maine (Cape Elizabeth through Eliot), but potential for Casco Bay survey in 2022???