

Seagrass Meadows - Forests under the Sea

What are Seagrasses?

Seagrasses are aquatic vascular flowering plants found in shallow coastal waters globally.

Narragansett Bay has two types of seagrasses:

Eelgrass (*Zostera marina*) is dominant and thrives in cooler waters

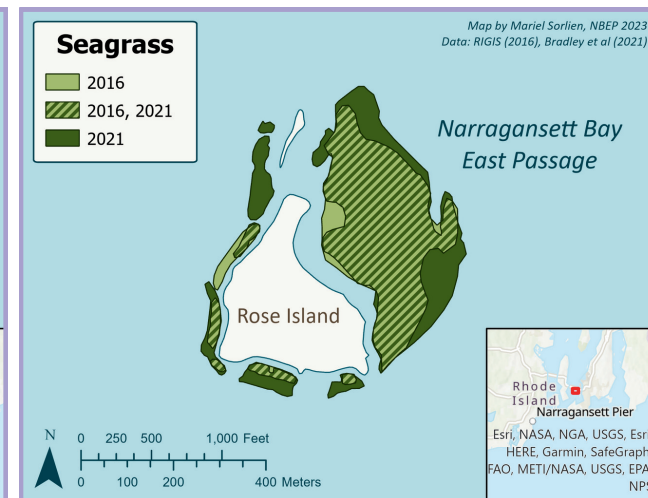
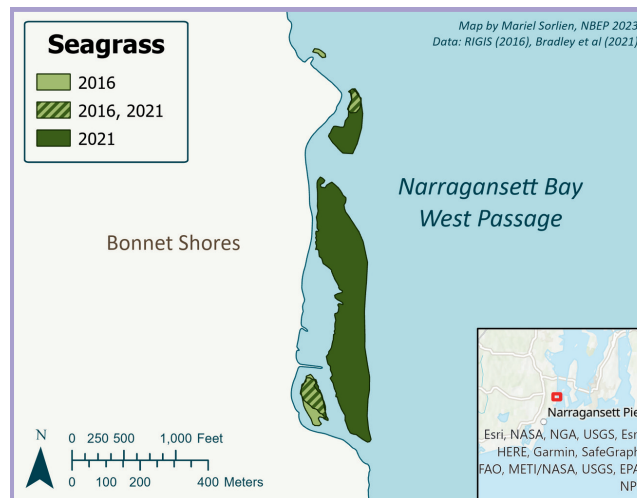
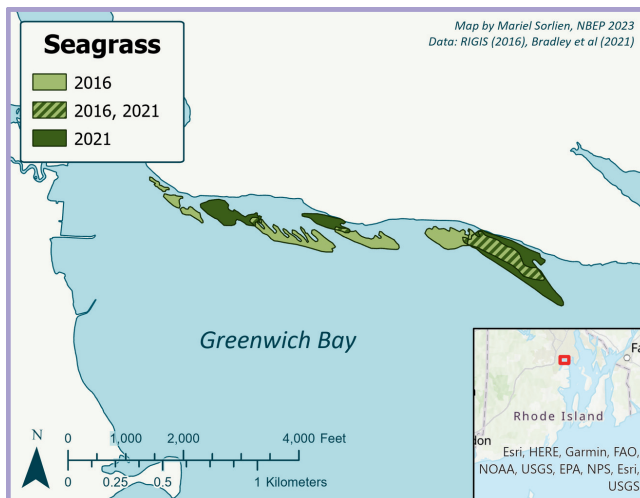
Widgeon Grass (*Ruppia maritima*) tolerates lower salinity and warmer waters than eelgrass

Why Do Seagrasses Matter?

Seagrasses stabilize sediment, store carbon and provide vital habitat and nursery grounds for fish and shellfish. Because they require good water quality to thrive, seagrasses serve as indicators of ecosystem health. High water temperature and nutrient loading stress seagrasses, and water clarity is an important influence on seagrass condition.

Overall Findings (2016-2021)

- 476 acres mapped in 2021 (similar to 2016)
- Gains in West and East Passages
- Losses in the Sakonnet and Narrow Rivers
- Extent remains steady along the mouth of Narragansett Bay



Seagrass extent in Narragansett Bay. 2016 acreage is light green, 2021 is dark green, and areas where seagrasses remained between surveys is striped.

Total Acreage	2006	2012	2016	2021
Greenwich Bay	0	29	26	25
West Passage	55	91	65	106
East Passage	210	258	237	242
Sakonnet River	31	52	44	35
Narrow River	0	24	44	10
Mouth of Narragansett Bay	61	59	65	59
TOTAL	357	513	481	476

Widgeon Grass in Greenwich Bay

- Between 2006 and 2012, widgeon grass sprouted in Greenwich Bay and has remained
- This is the only bed of widgeon grass in Narragansett Bay
- Likely thrives in the fresher, warmer, calmer, and higher nutrient waters of Greenwich Bay
- Currently do not know much about the life history of widgeon grass and the ecosystem services it provides in Narragansett Bay

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Changes in Seagrasses with Time

- Historic losses of seagrass started near Providence in the 1930s and moved south
- Bay-wide gains noted between 2006 and 2012 with steady decline since
- Recovery observed in West Passage due to declines in **nutrient loading** and improved **water clarity**
- East Passage acreage remains strong due to influence of cold Atlantic Ocean and less nutrient loading
- **Temperatures** are warming throughout the Bay which may lead to declines especially in shallow areas (e.g Narrow River)



Widgeon
grass



Eelgrass

Questions for Further Study

- Why are seagrasses responding inconsistently to nutrient declines and increased water clarity?
- What is the life history of widgeon grass and what ecosystem services does the habitat provide in Narragansett Bay?
- Are there areas in the Bay which are better suited for seagrass restoration and what techniques should be used?
- What restoration approaches would increase genetic and species diversity?