



CSCR

2021 Eelgrass

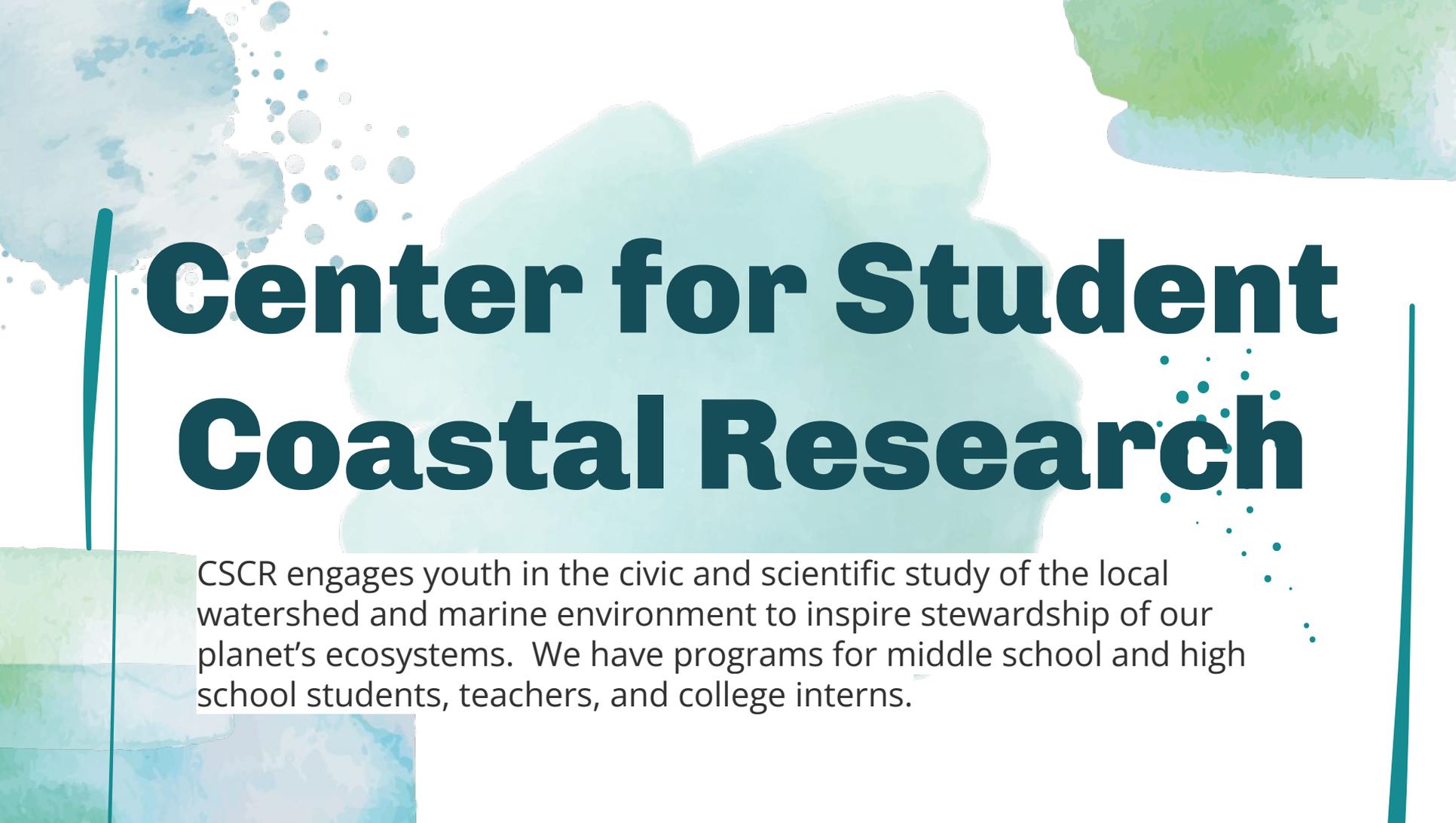
Findings

Presented

December 14, 2021



Cohasset Center for
Student Coastal Research



Center for Student Coastal Research

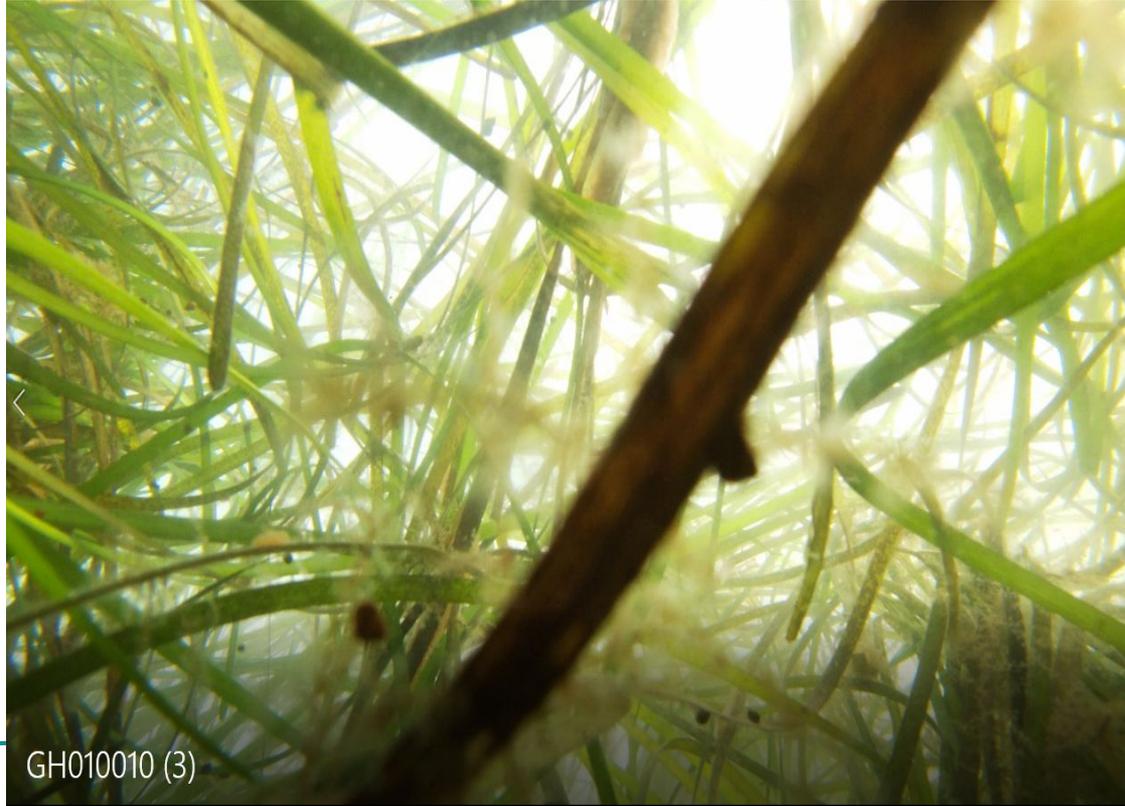
CSCR engages youth in the civic and scientific study of the local watershed and marine environment to inspire stewardship of our planet's ecosystems. We have programs for middle school and high school students, teachers, and college interns.



What Is Eelgrass?

Zostera marina, or eelgrass, is soft wavy submerged aquatic vegetation (SAV).

it works to improve water quality, helps to protect us against storms, is good for fish and arthropods and it even prevents climate change.





Role in Ecosystem



- Traps sediments
 - Converts CO₂ to O₂ through Photosynthesis
 - Stores Carbon
 - Holds sediments with roots
 - Provides habitat
 - Improves water quality
 - Absorbs greenhouse gasses
 - Mitigates Ocean Acidification
 - Absorbs wave action
 - Nursery for fish
- 
-



**Eelgrass survives below
the low tide line where
there is sunlight**



Where?



Little Harbor

Great Brewer Park

Cohasset Harbor

The Glades

Hercher J. Pelletier Memorial Park

The Glades

Minot

0.2 0.4 km

Esri Community Maps Contributors, MassGIS, © OpenStreetMap, Microsoft, Esri Canada, Esri, HERE, Garmin, SafeGraph, IN...

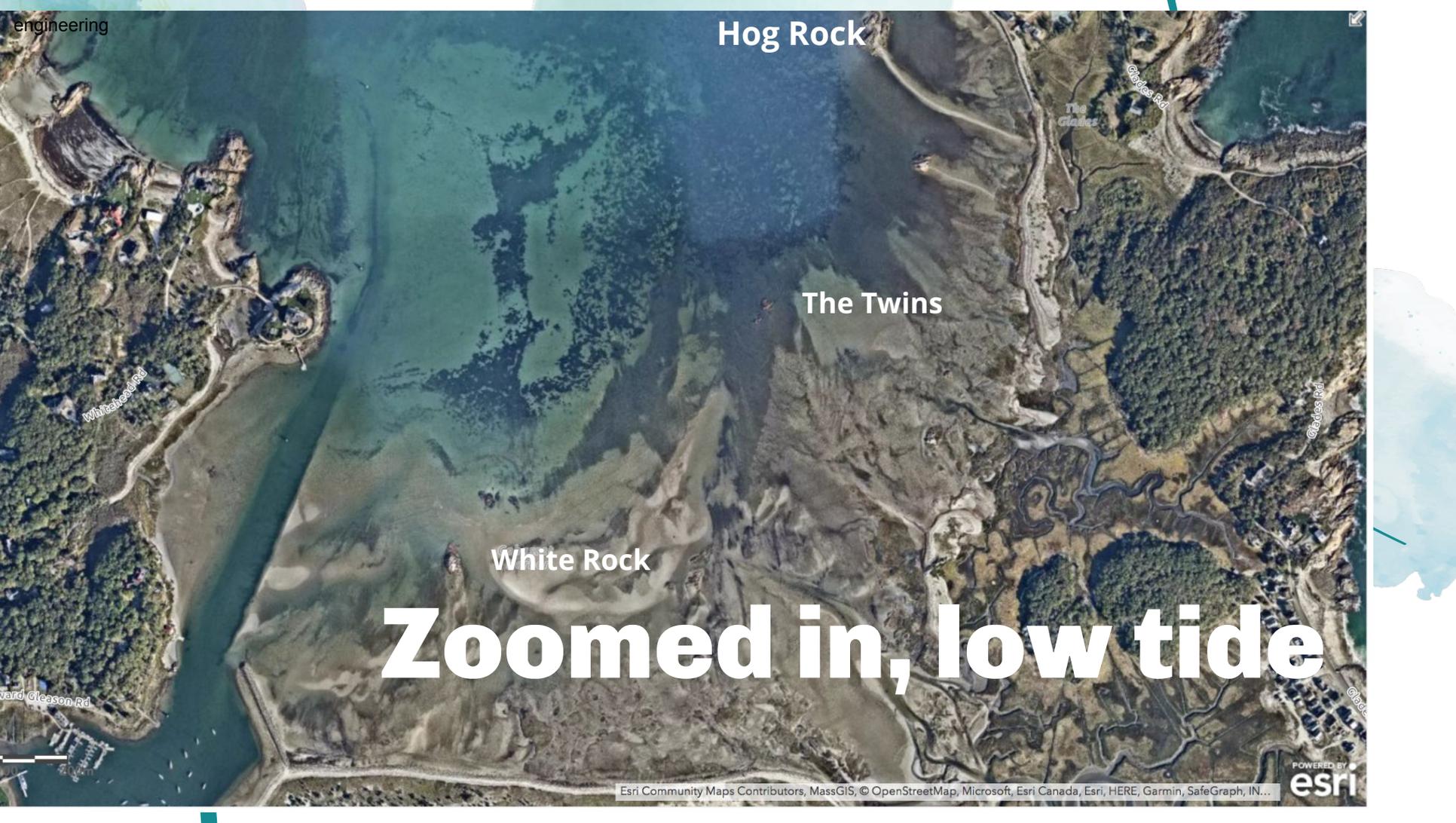
POWERED BY
esri

Hog Rock

The Twins

White Rock

Zoomed in, low tide





Techniques

Film clip courtesy of
CSCR Student Owen Gurtz

Brush
Island

The dark green is dense eelgrass coverage. The pale yellow is <1% eelgrass and some of the middle of the beds have bare patches.

Gull
Island

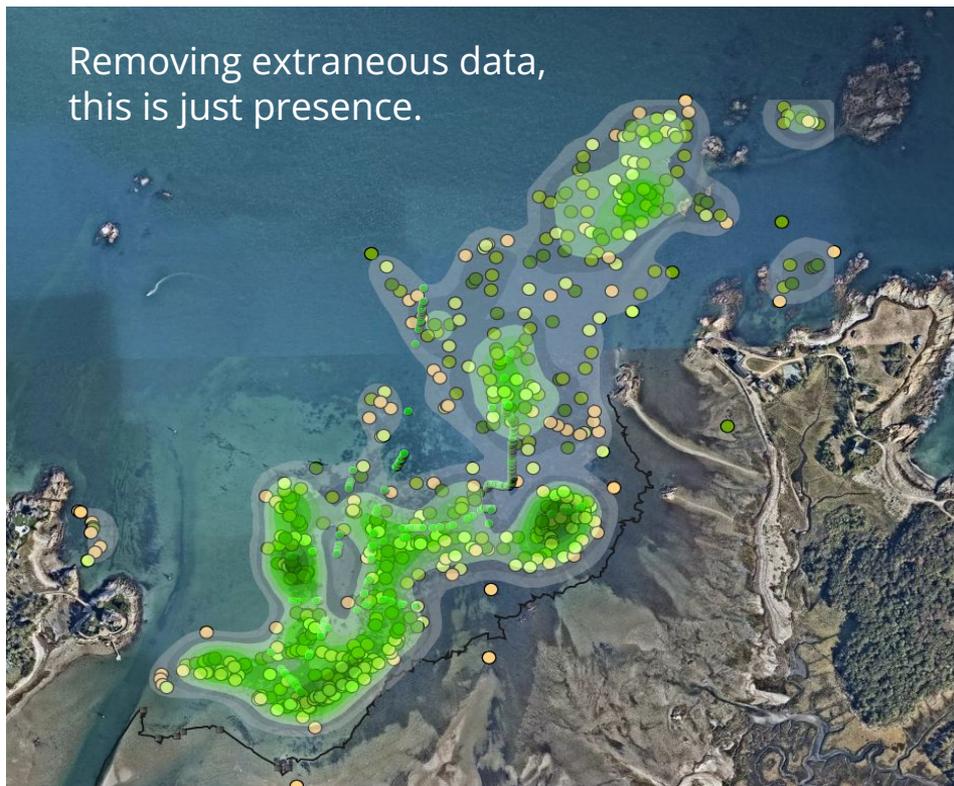
The
Glades

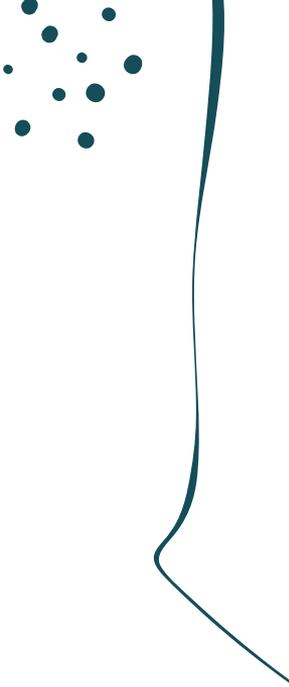
CSCR's study sites

Great
Brewster
Park



2018-2020 Mapped Presence





**Your *official*
source for
eelgrass data is...**

**Mass DEP
maps from
flights**

**The next Mass DEP Flyover is scheduled
for May/June 2022**



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Map Tools:



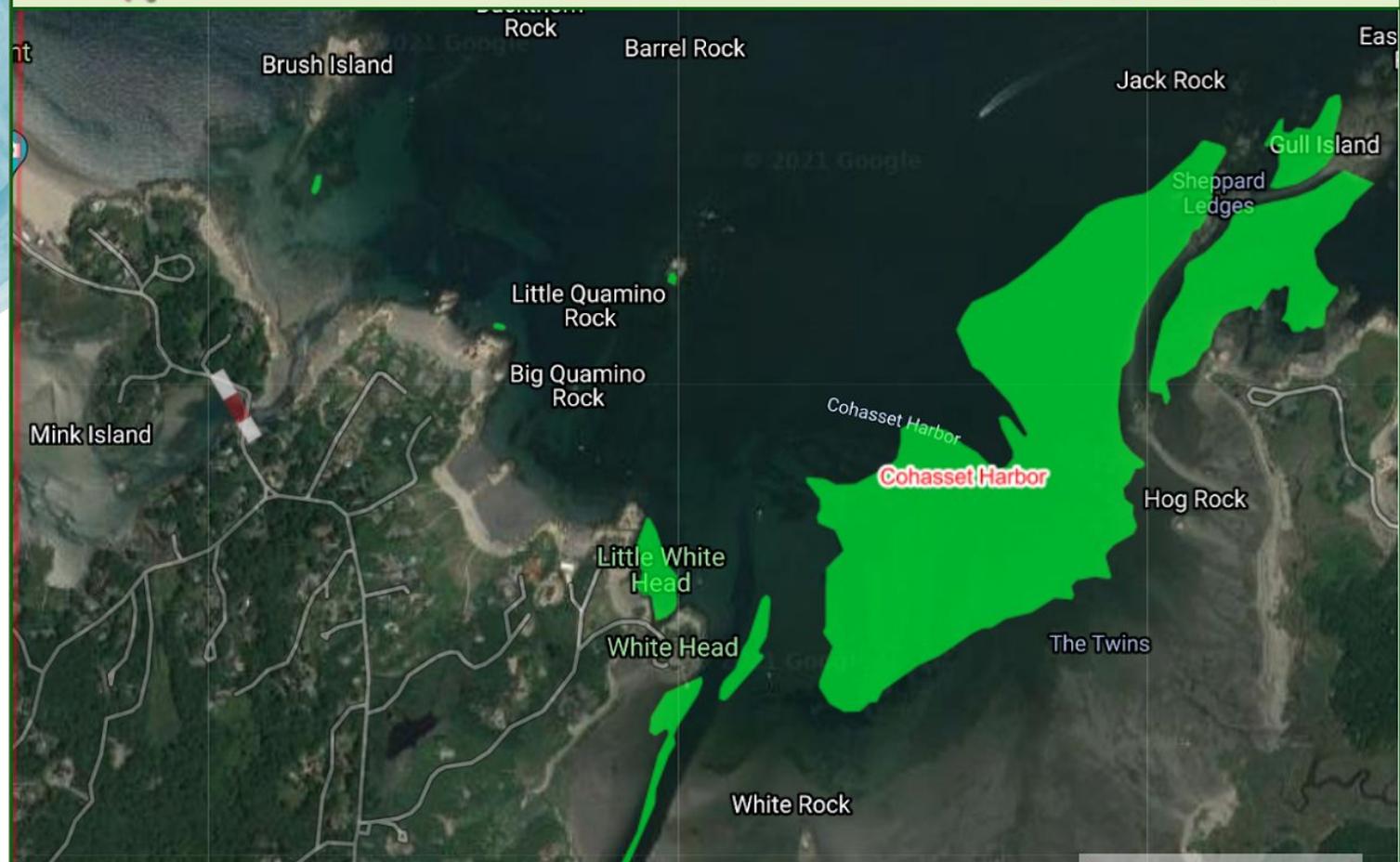
Project Areas:

South Coast - Hingham to Scituate

View Mapped Eelgrass:

Legend for View Mapped Eelgrass:

- 1995 (Green)
- 2001 (Yellow)
- 2006 (Purple)
- 2010-13 (Orange)



42°15'33"N, 70°47'03.9"W

500 m

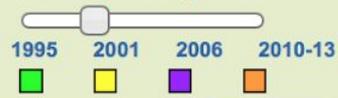
Map Tools:



Project Areas:

South Coast - Hingham to Scituate

View Mapped Eelgrass:



Map Tools:



Project Areas:

South Coast - Hingham to Scituate

View Mapped Eelgrass:



| | | | |
|------|------|------|---------|
| 1995 | 2001 | 2006 | 2010-13 |
| | | | |



42°15'26.9"N, 70°46'24.6"W

Briggs Harbor 500 m

Map Tools:



Project Areas:

South Coast - Hingham to Scituate

View Mapped Eelgrass:

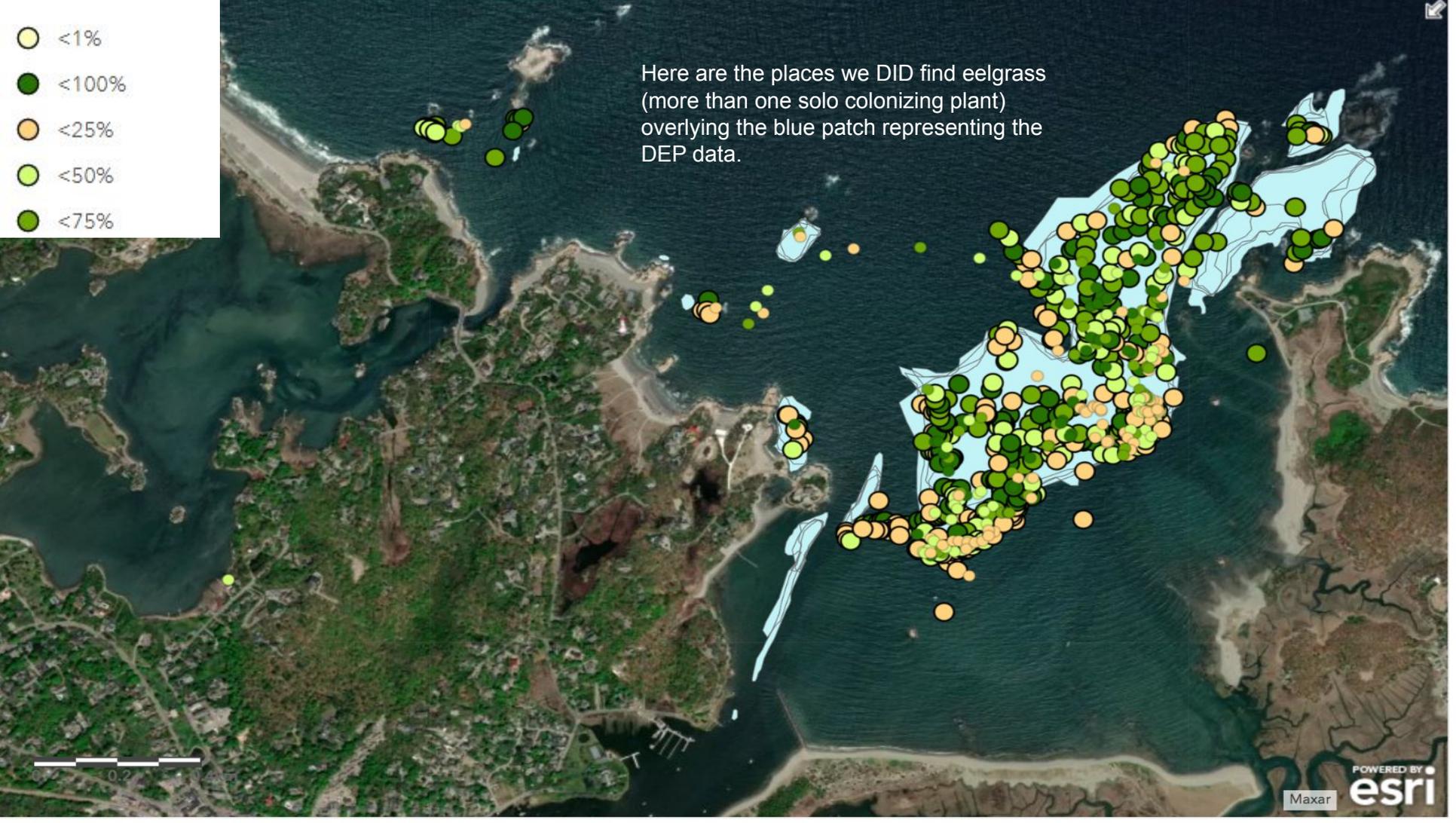


1995 2001 2006 2010-13

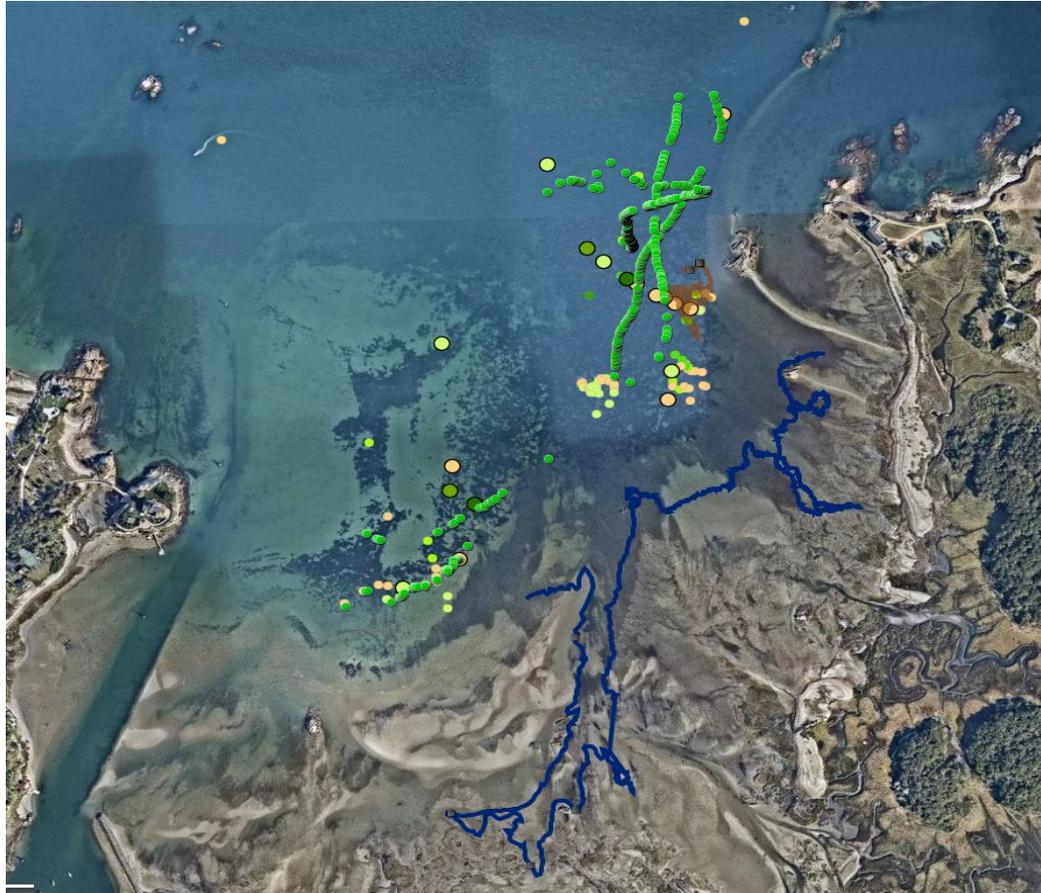


42°15'26.9"N, 70°46'24.6"W

Briggs Harbor 500 m



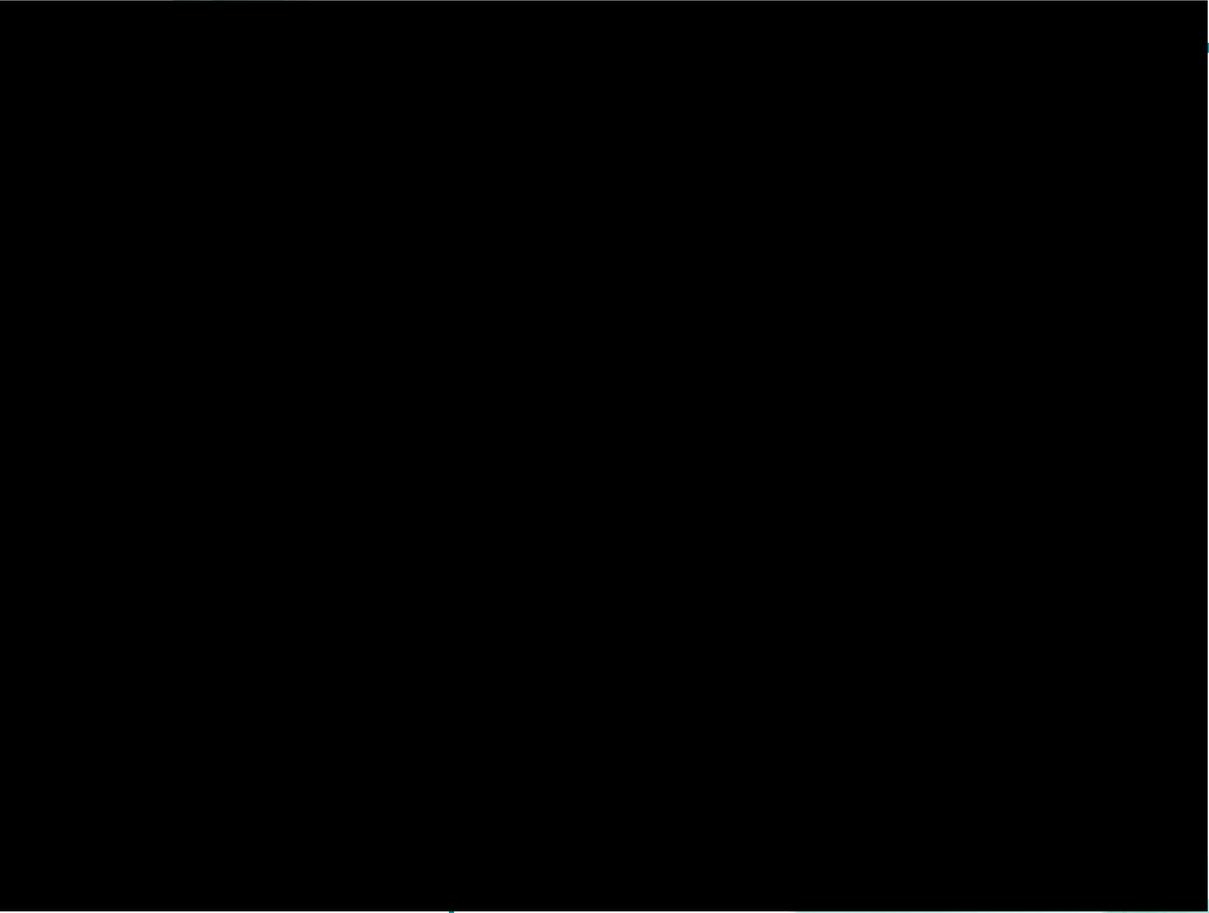
2021 Eelgrass Presence Map



Here is where we found eelgrass in 2021. Green Dots represent Presence of eelgrass.

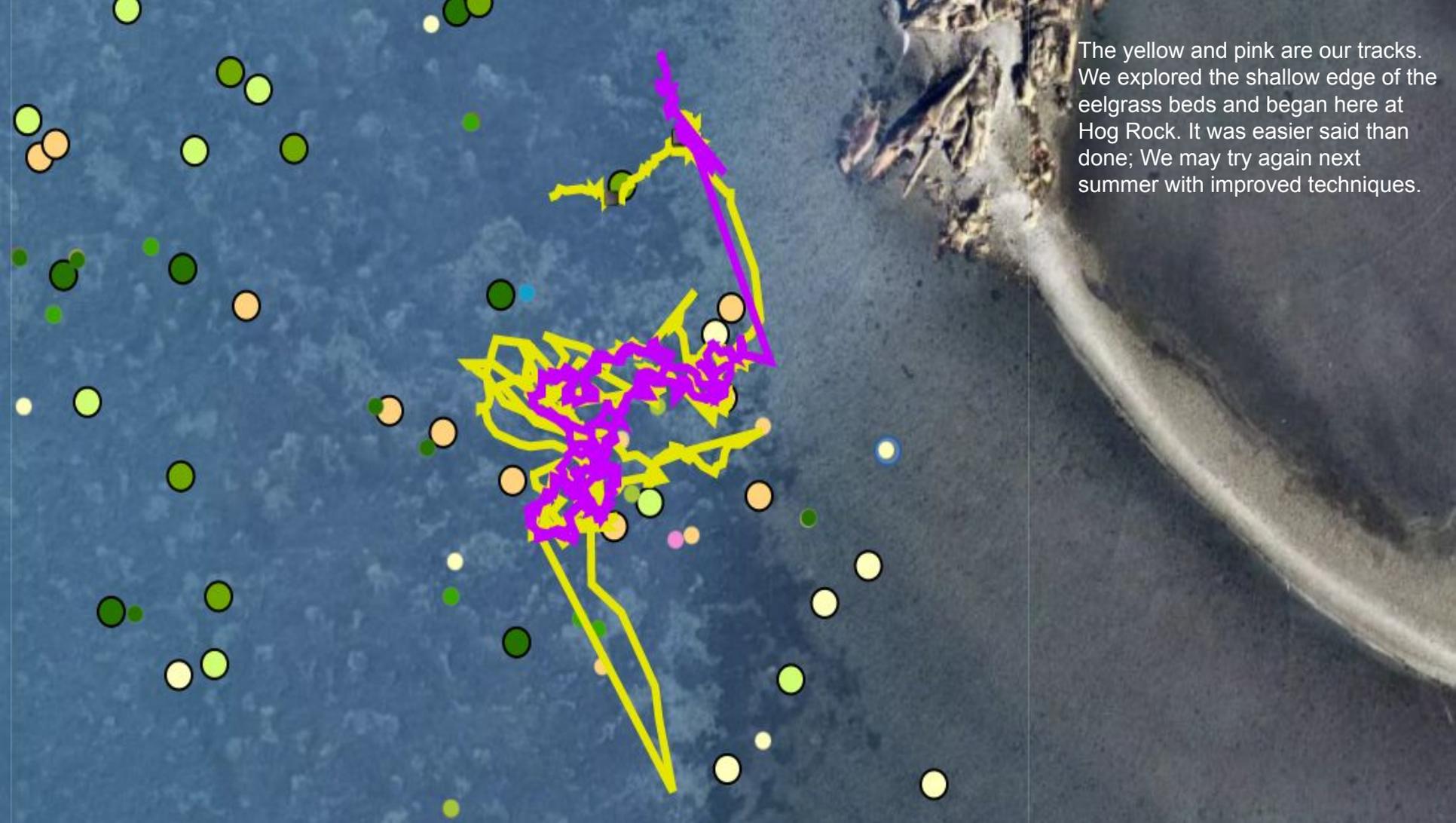


Tracking the shallow edge

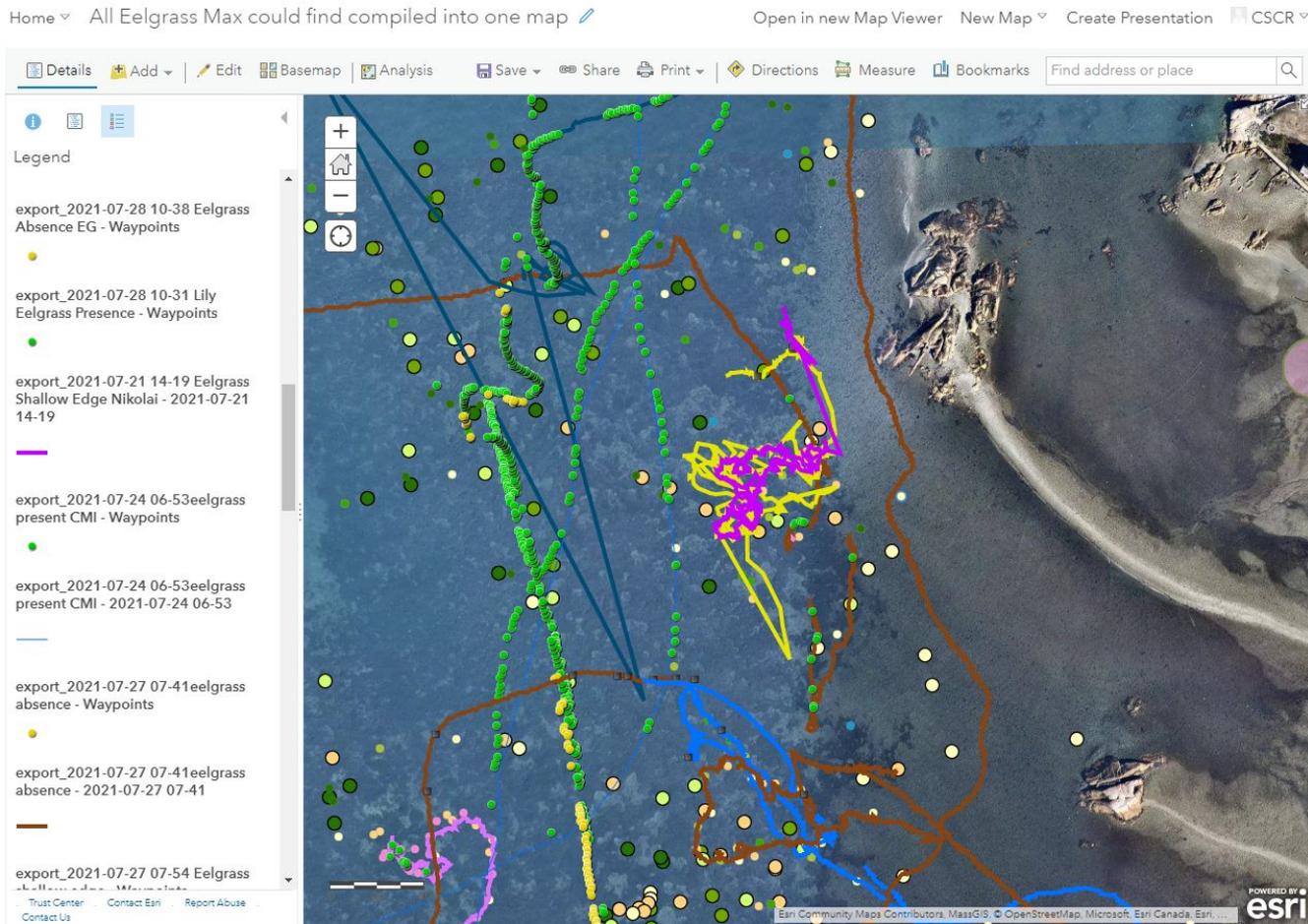


Video by Owen Gurtz

We waded trying to put eelgrass plants on one side of us and no plants on the other, using GPS trackers.



The yellow and pink are our tracks. We explored the shallow edge of the eelgrass beds and began here at Hog Rock. It was easier said than done; We may try again next summer with improved techniques.



2nd iteration:

wading straight out, pinging presence of eelgrass plants, instead of outlining it, resulted in the green dots. Yellow dots are absences.



Solo colonizing plants



Solo colonizing plants are plants that have apparently sprung up by seed that are isolated from other plants. We find them interesting because they are either an unsuccessful outlier or the first to colonize a new area. These are represented by pink dots. They are more likely to be seen by us wading and snorkeling than by flyovers.

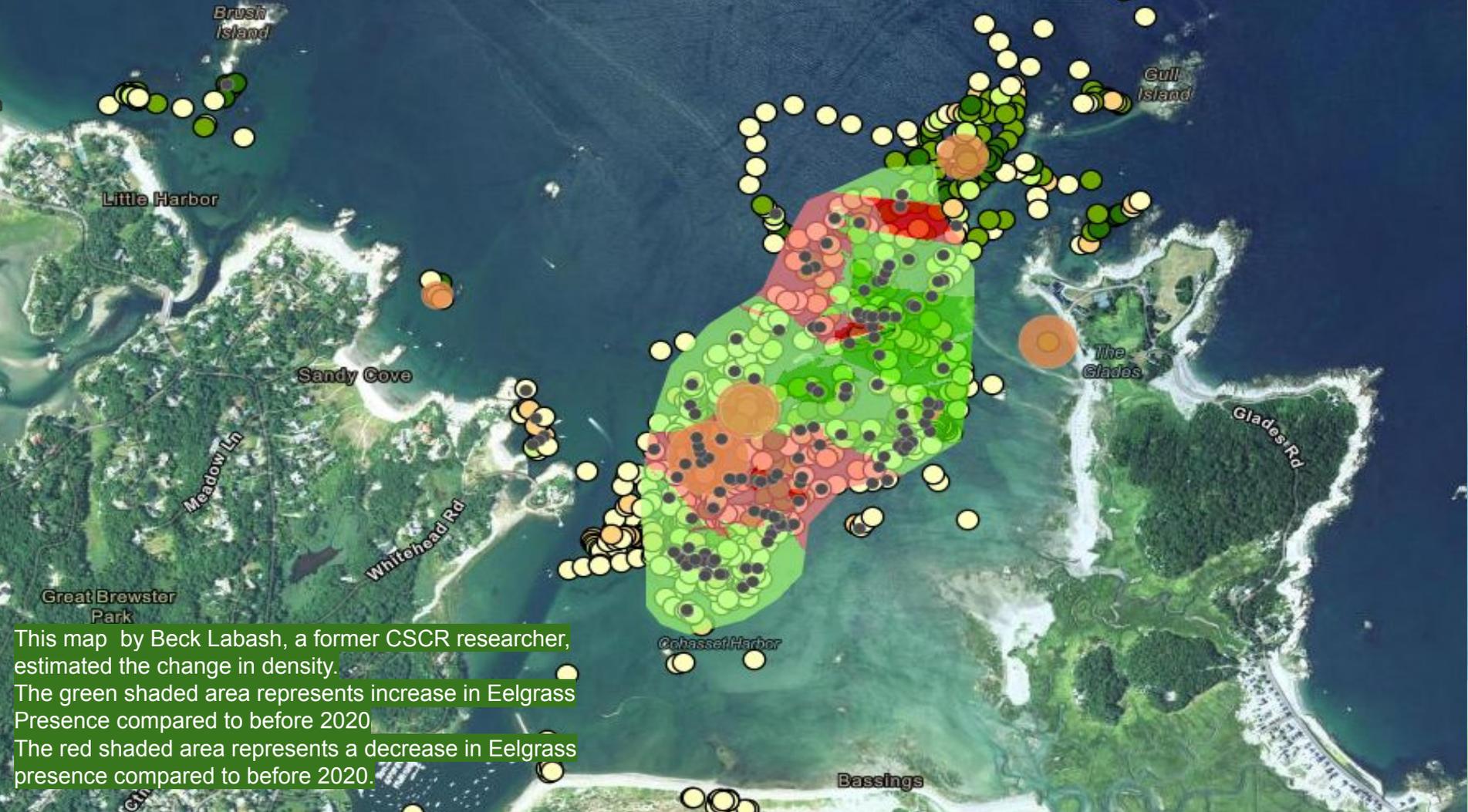




Changes we have noticed



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This map by Beck Labash, a former CSCR researcher, estimated the change in density.

The green shaded area represents increase in Eelgrass Presence compared to before 2020.

The red shaded area represents a decrease in Eelgrass presence compared to before 2020.



Why eelgrass is important



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Eelgrass is estimated to be valued 6,100 USD per square hectare based on its value for carbon and nitrogen absorption

**According to EnviroEconomics Sweden Consultancy
and the Swedish Department of Marine Sciences**



The world's seagrass meadows, including eelgrass, are estimated to capture 83 million metric tons of carbon each year, according to Smithsonian Oceans



48%

Is the percentage of global eelgrass population that has been lost since 1980, according to frontiersin.org

Threats

The Eelgrass decline can be caused by:

- Sunlight deficiency,
- Fouling organisms,
- The pathogenic wasting disease,
- Human activity, such as anchoring and mooring,
- Predation by invasive species,
- Temperature changes
- Pollution
- Other

We welcome your continued interest and questions

Film clips with original scores by Owen Gurtz.

ArcGIS maps by Max Fernald, Carl Fernald,
Beck Labash

and other CSCCR Eelgrass Researchers
over the years, including Amelia Suvak and Silvia
Thompson,

with support from

Scituate Education Foundation, Marjot Foundation,
wonderful families, and Aaron Hassan, our
research vessel donor.