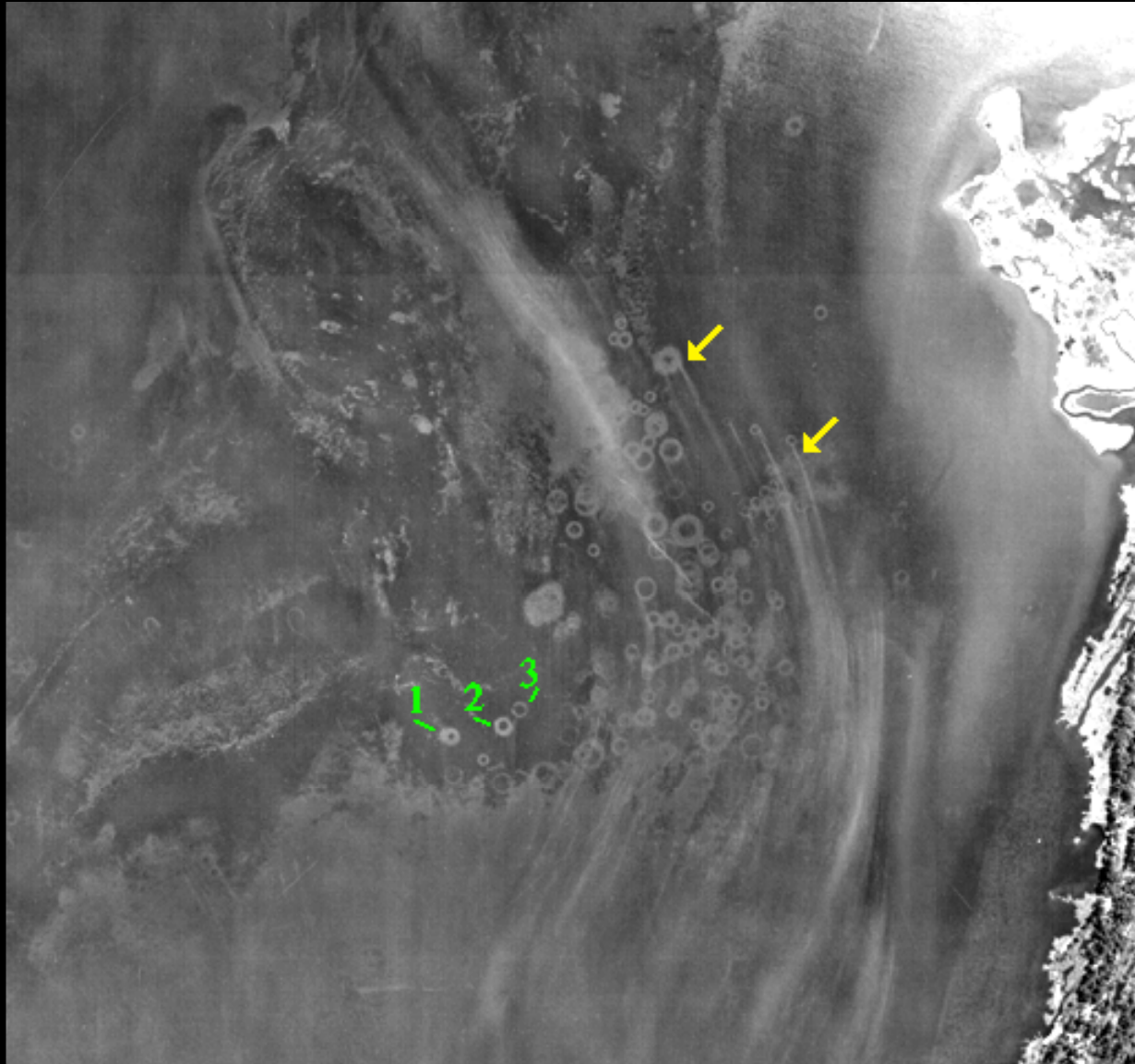


Re-working of open dredge scars by Cow-nosed Rays



Seagrass- Clam Aquaculture Interactions



Northampton County, Virginia

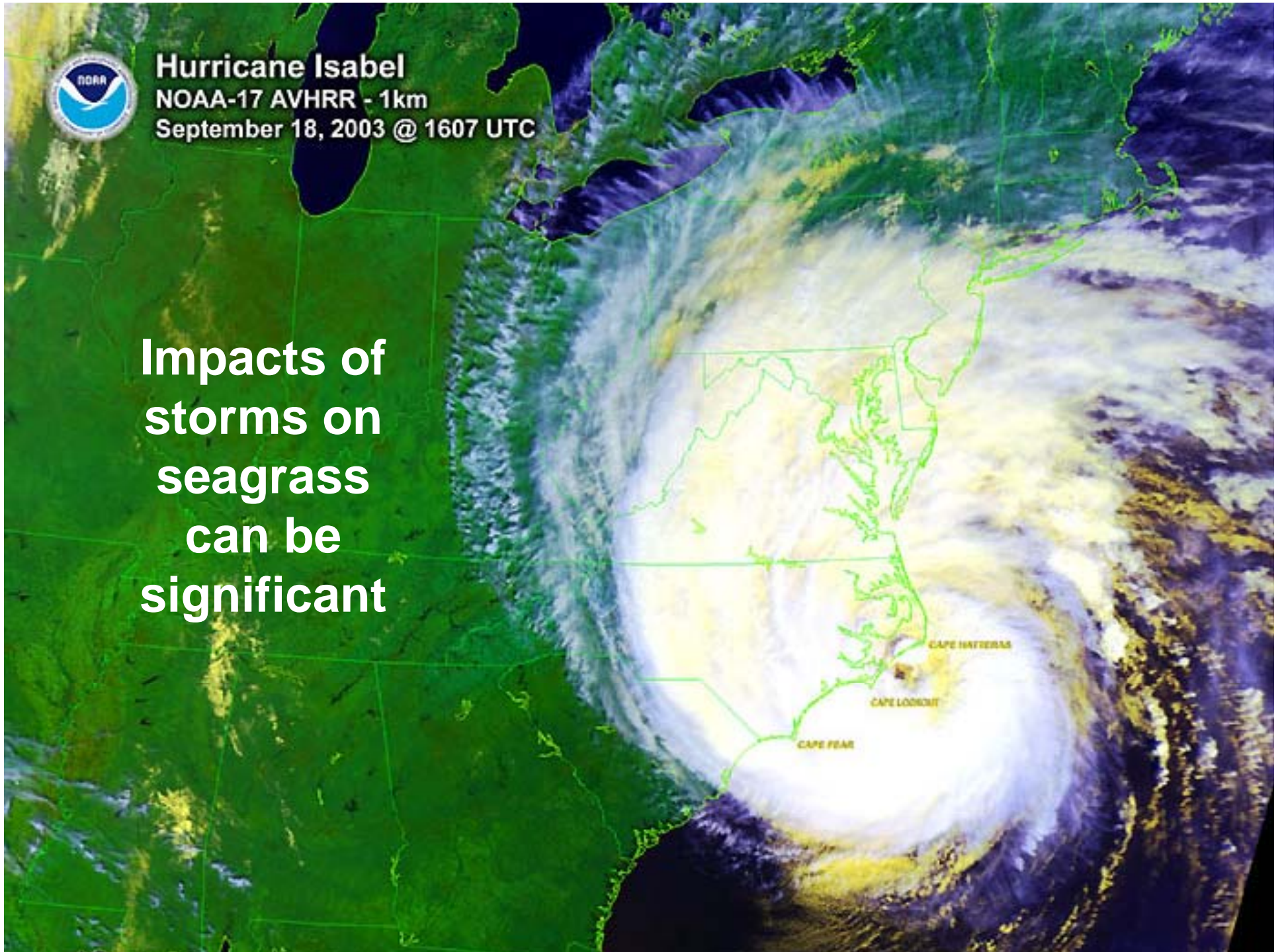
Climate Change Factors Affecting Underwater Grasses

- **Temperature Rise**
 - Increased Duration and Intensity of High Temperatures
 - Decreased Duration and Intensity of Low Temperatures
- **Atmospheric Changes**
 - Frequency/Intensity of storms
 - Rainfall Patterns
 - Increase Nutrient and Sediment Inputs (100% loading increase for C. Bay)
 - CO₂, UVB
- **Sea Level Rise**
 - Increases in Water Depth, Water Motion and Tidal Circulation
 - Salinity Changes

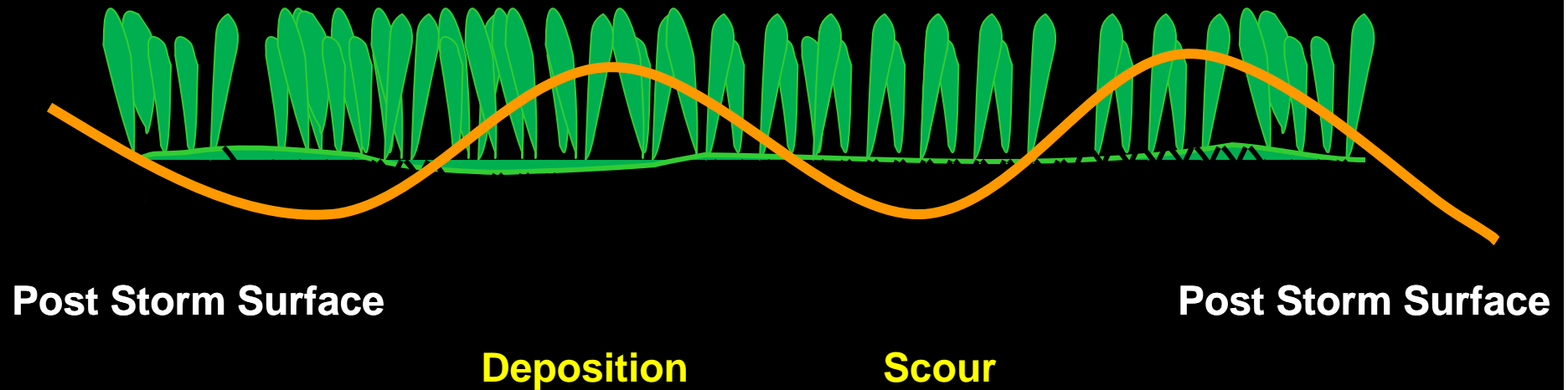


Hurricane Isabel
NOAA-17 AVHRR - 1km
September 18, 2003 @ 1607 UTC

**Impacts of
storms on
seagrass
can be
significant**



Scour and deposition lasting for weeks after storms can result in landscape scale changes to SAV beds

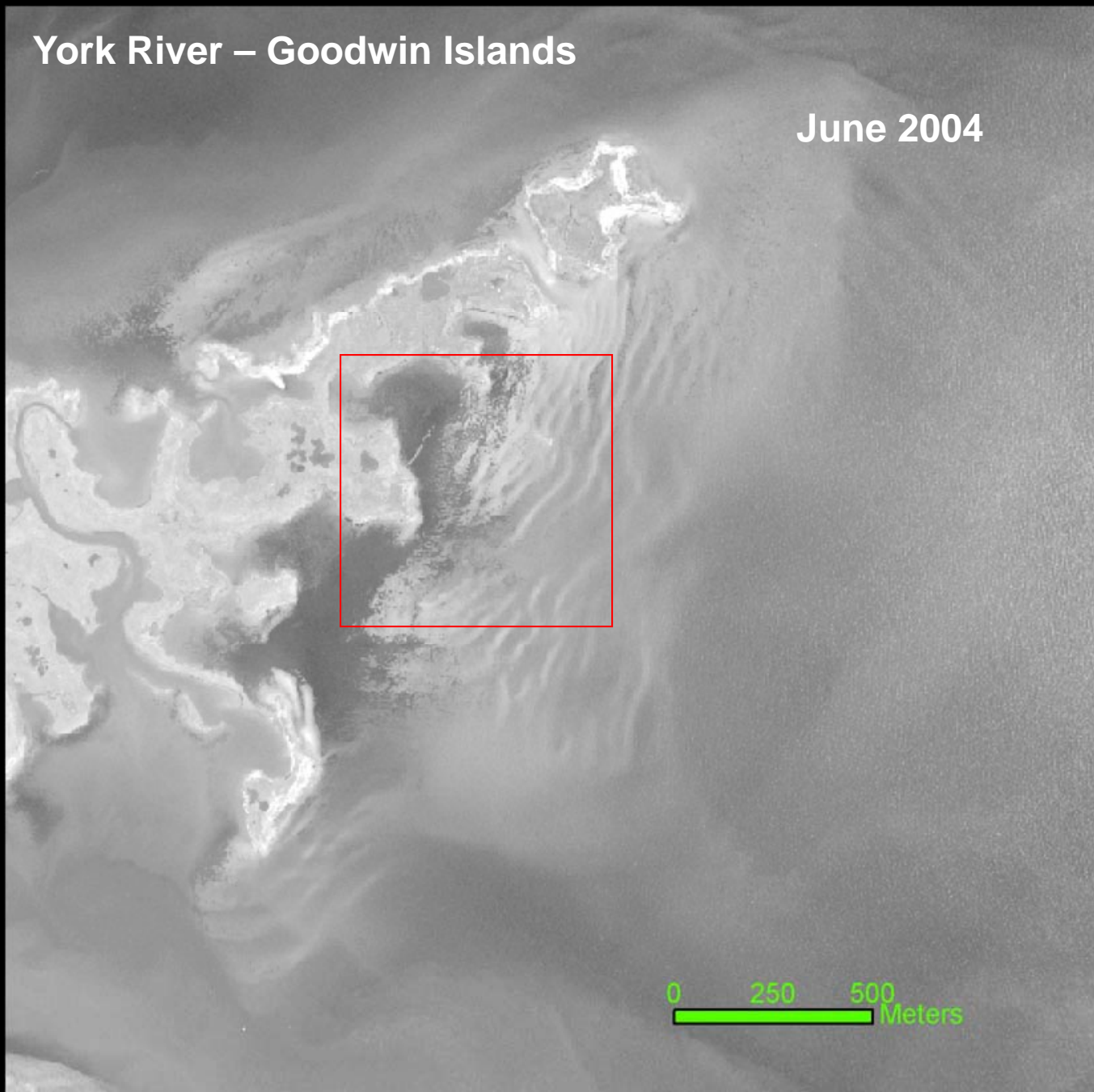


The effects of tropical storms observed in SAV beds in lower Chesapeake Bay



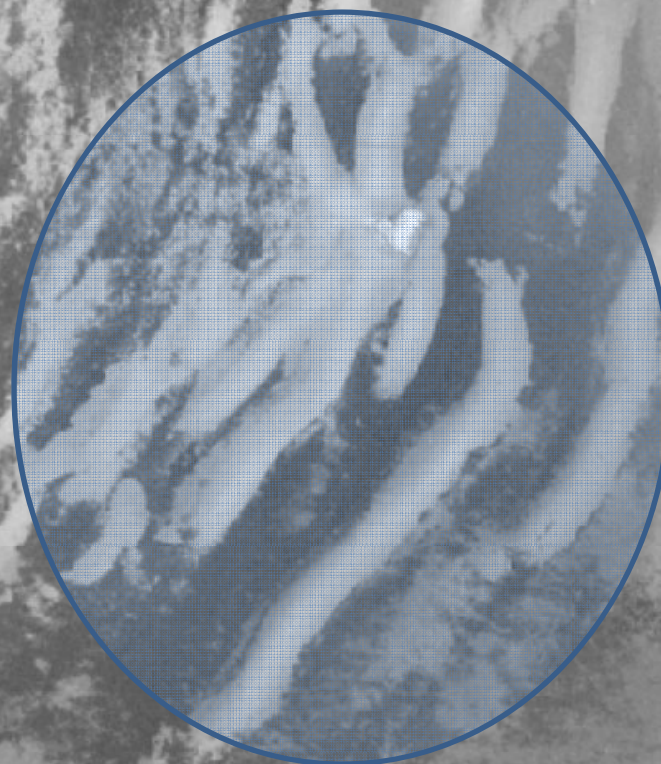
York River – Goodwin Islands

June 2004

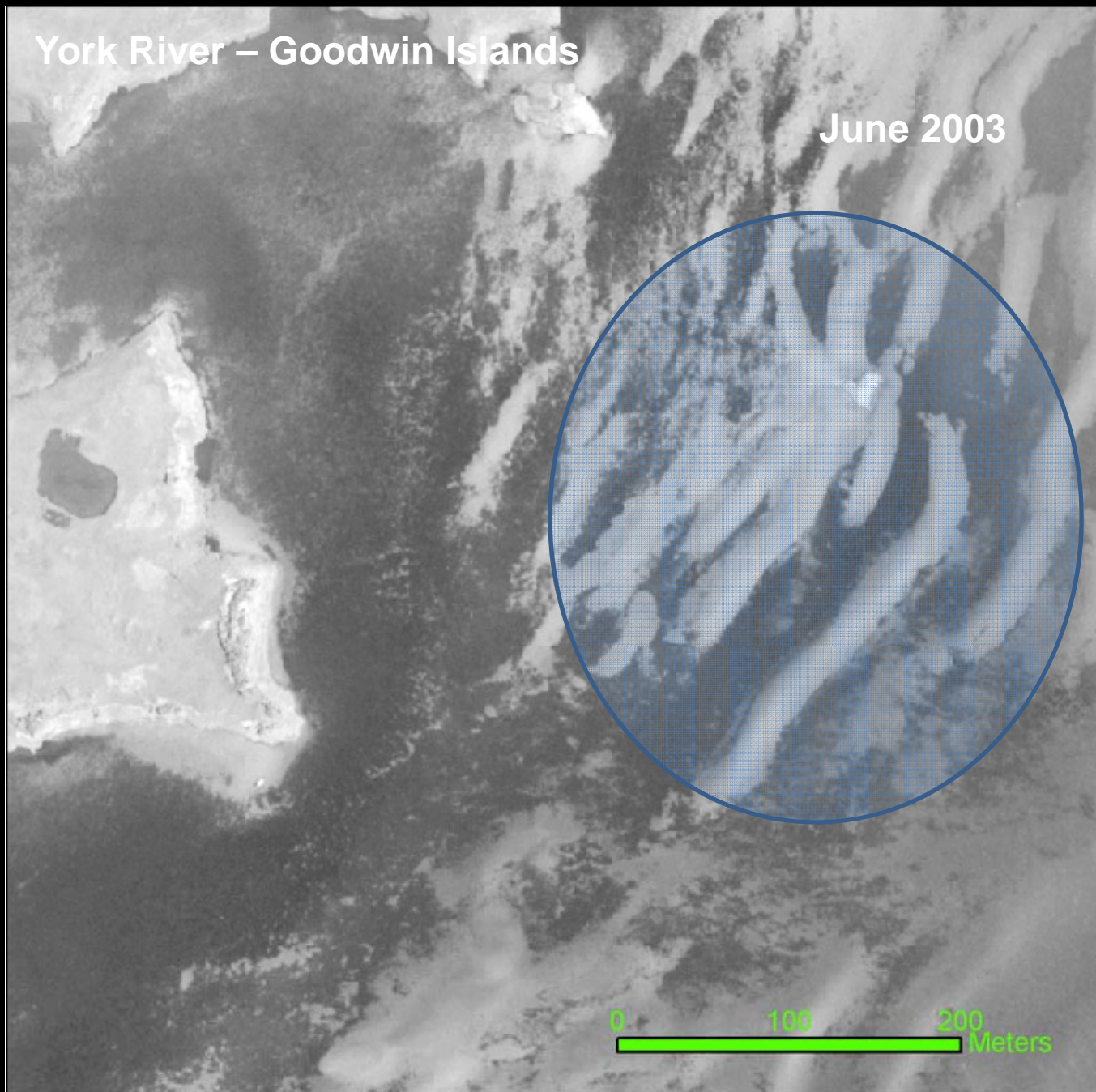


York River – Goodwin Islands

June 2003

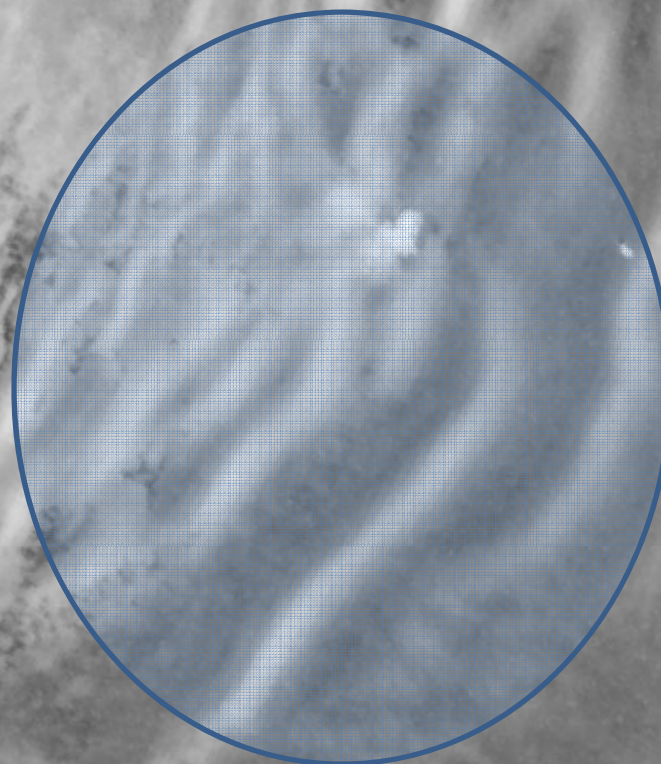


0 100 200 Meters

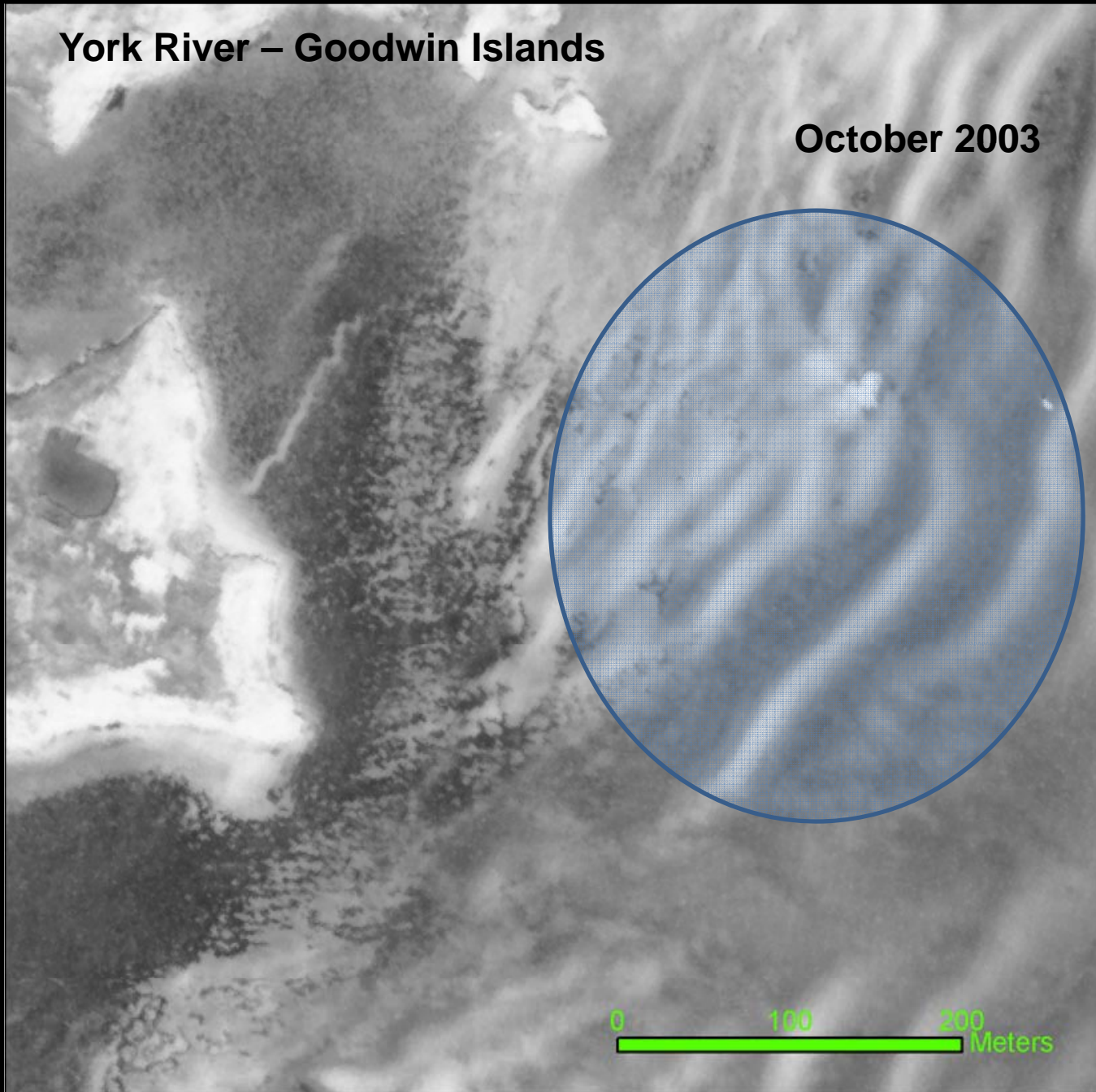


York River – Goodwin Islands

October 2003

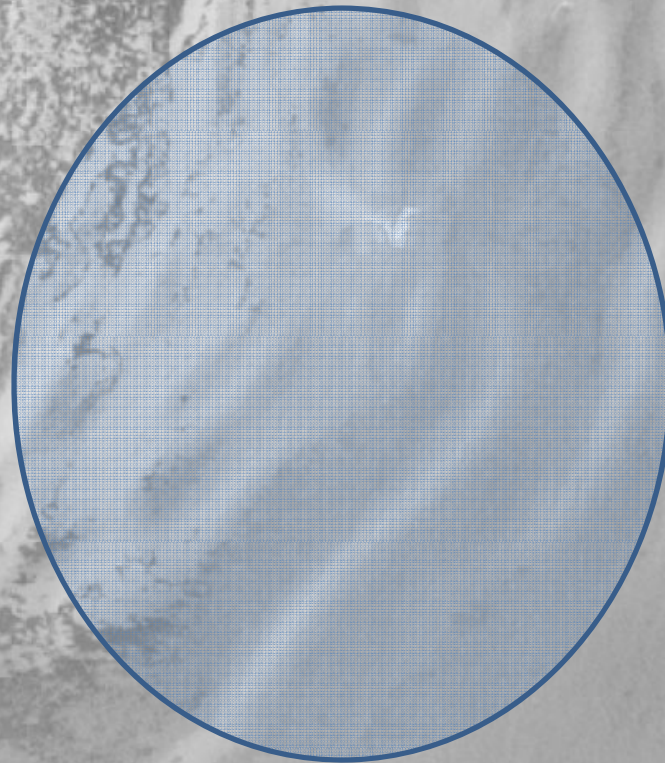


0 100 200 Meters



York River – Goodwin Islands

June 2004



0 100 200 Meters

Bay SAV Restoration Goal of 185,000 acres

Accomplished by:

- Improving Water Quality
(reducing inputs of nitrogen and sediment)
- Protecting Existing Beds
(education, dredging issues, aquaculture, mute swans)
- Restoring grass beds (Provide source beds, Increase species diversity)

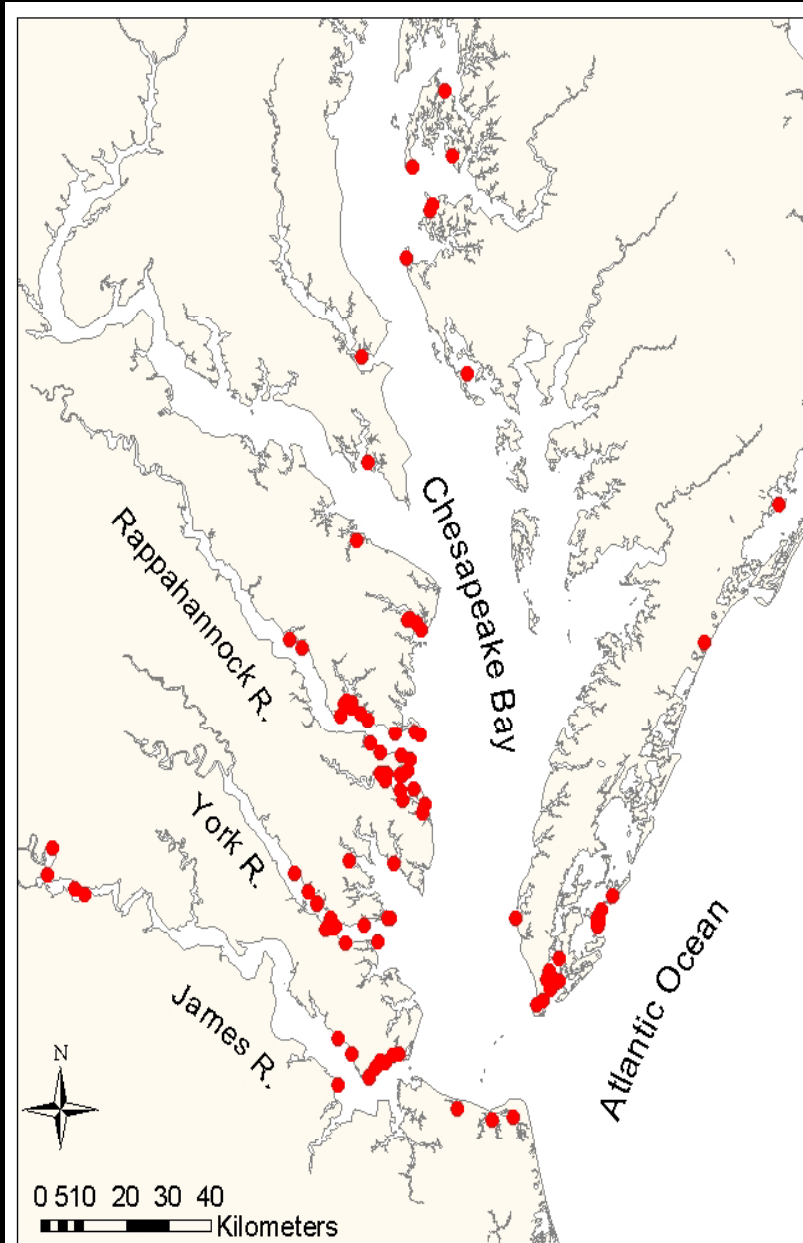


Seagrass Transplant Sites

- Nearly 90 sites planted

SPECIES USED

- Eelgrass
- Widgeon Grass
- Wild Celery
- Sago Pondweed
- Redhead Grass
- Water Stargrass
- Elodea
- Coontail



Test plantings initially required



Seagrass Transplanting Boat



Eelgrass Transplant Bundle



Regrowth of Restored SAV Beds

1984



1985



1987



1988



1990



Reproductive Shoots

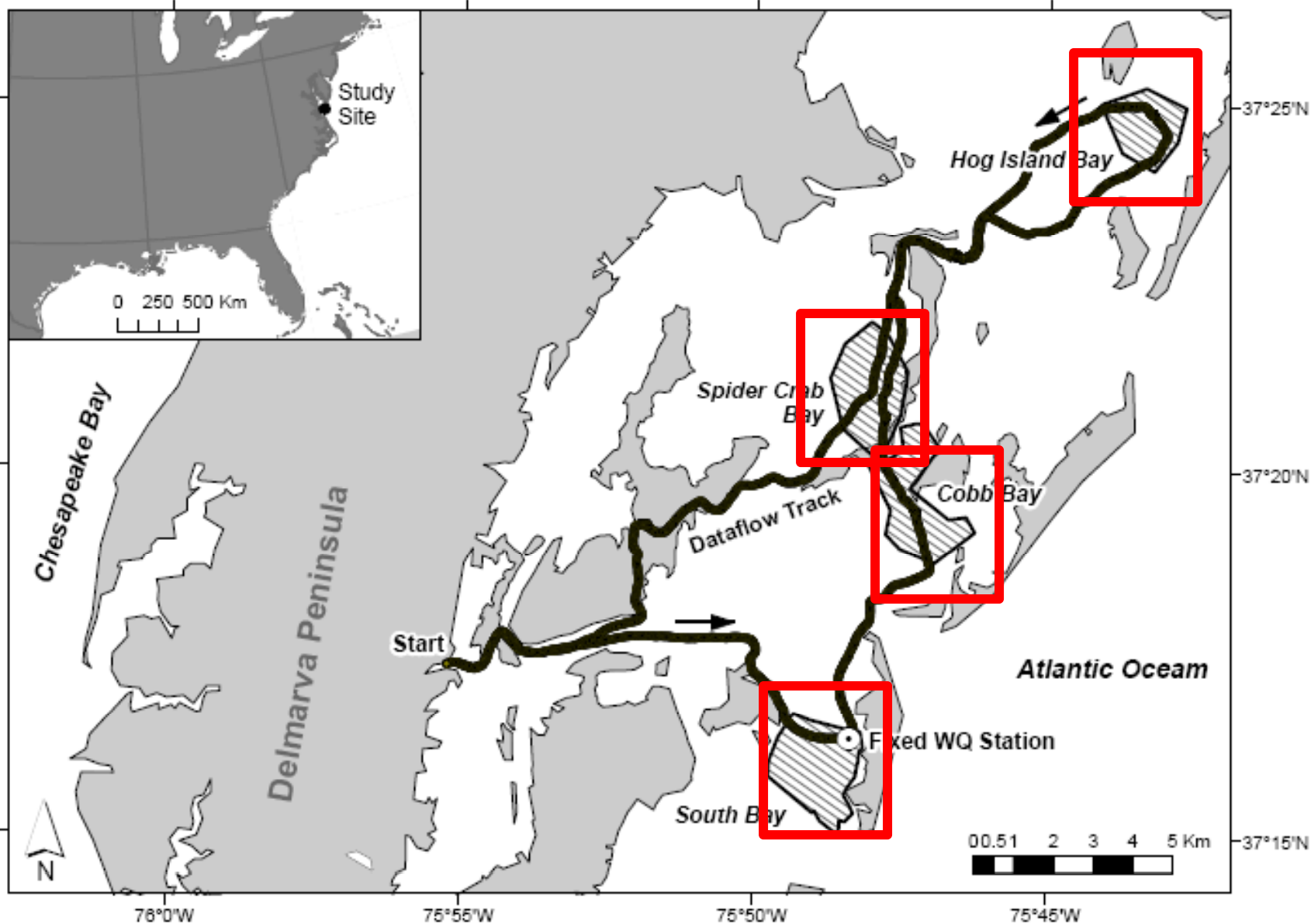


Screen Out Shoot Material Leaving Mostly Seeds



2m x 2m Eelgrass Patch from seed after 2 years in Va. Coastal Bay





2001



2004

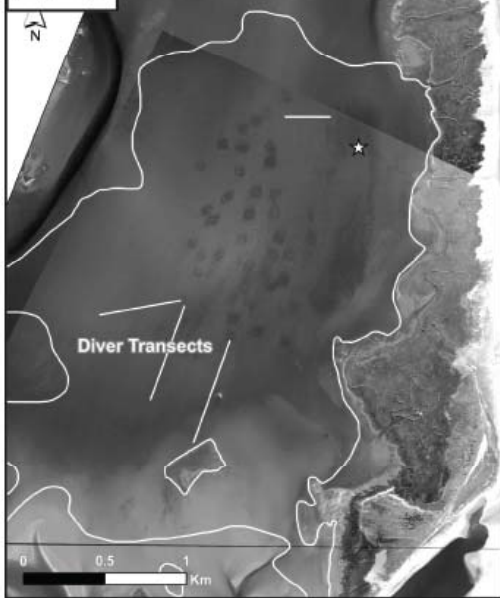


Aerial photographs showing development of the South Bay eelgrass bed from 2001 – 2010.

Large scale seeding: 1999, 2001, 2002

0.4 ha transplant plots of eelgrass

2006



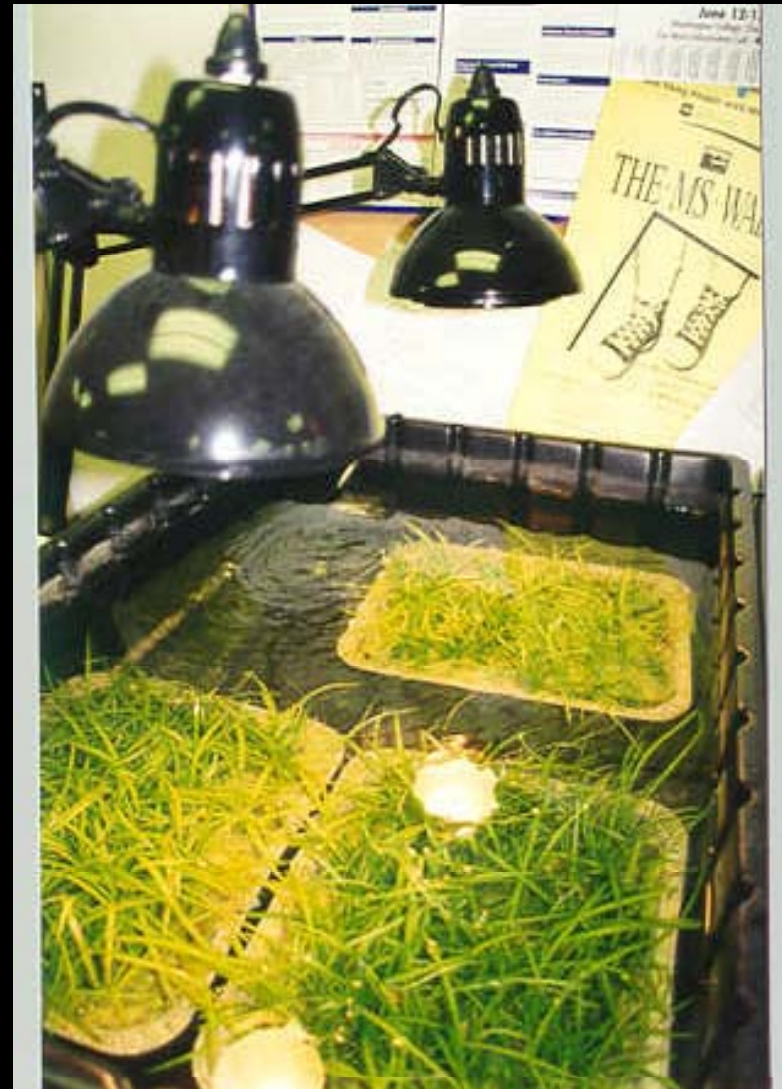
2010



Continuous eelgrass

“Grasses in Classes”

**with the
Chesapeake Bay
Foundation**



Restoration Activities by Schools



Fencing is Sometimes Needed to Reduce Impacts of Herbivores



What can you do to help?

- **Don't be part of the problem.**
- **Support efforts to clean up and protect the bay.**
- **Participate in bay restoration activities where you can.**
- **Educate others. Be an advocate.**
- **Be prepared for the long haul.**

An underwater photograph showing a dense field of seagrass. The blades are long and narrow, with some appearing yellowish-green and others a darker green. The water is slightly turbid, and the seabed is visible in the background. The text "THANK YOU!" is overlaid in the center in a bold, red, sans-serif font.

THANK YOU!