# ESTIMATING CARBON CAPTURE AND STORAGE OF COASTAL LOUISIANA HABITATS

Governor's Advisory Commission on Coastal Protection, Restoration and Conservation
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# CARBON CAPTURE?

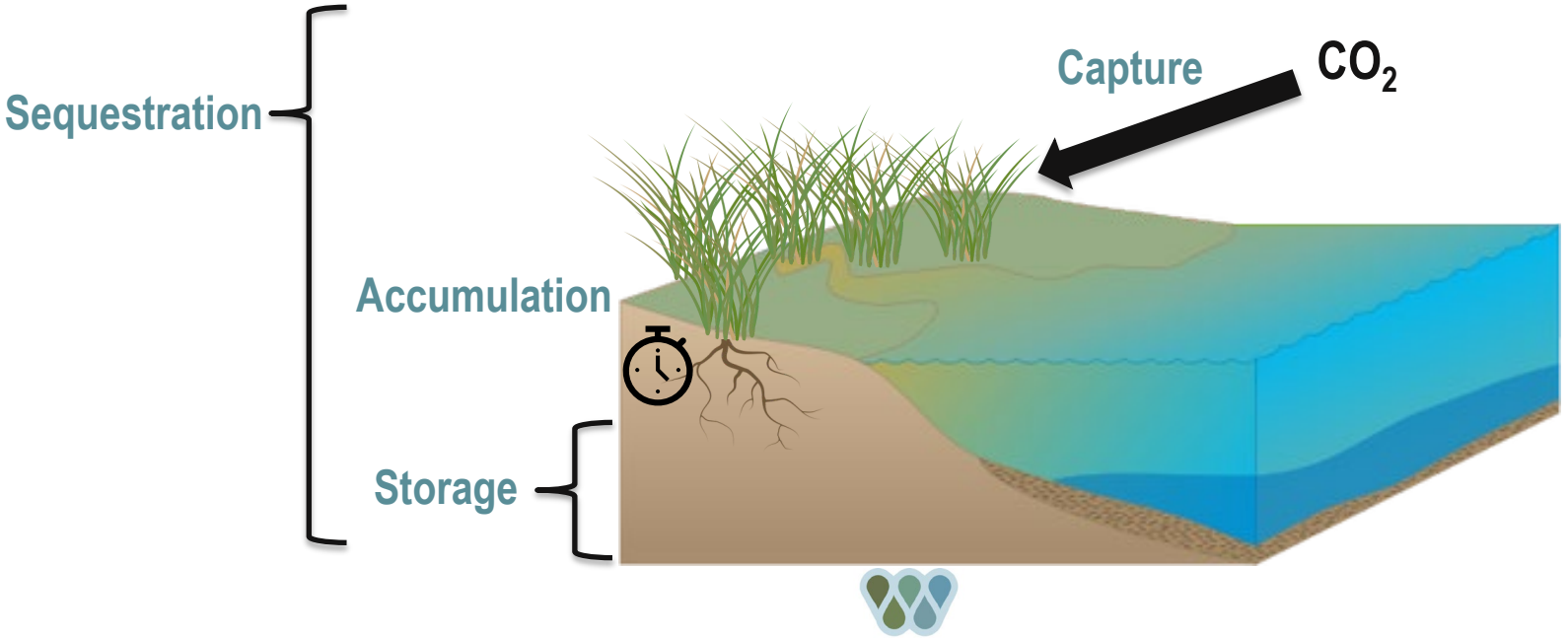
- **Blue Carbon**
  - Captured in coastal habitats by aquatic and wetland plants
- **Blue Carbon** is found in coastal habitats (fresh to saline) including:
  - Tidal forests
  - Marshes
  - SAV and seagrasses (Windham-Myers et al. 2019)
- Store organic carbon in flooded soils as a long-term sink
- Louisiana's coastal habitats are diverse and have great potential of **blue carbon** (Stagg et al. 2017, Baustian et al. 2017, 2020)

Port Fourchon, LA

# CARBON TERMINOLOGY

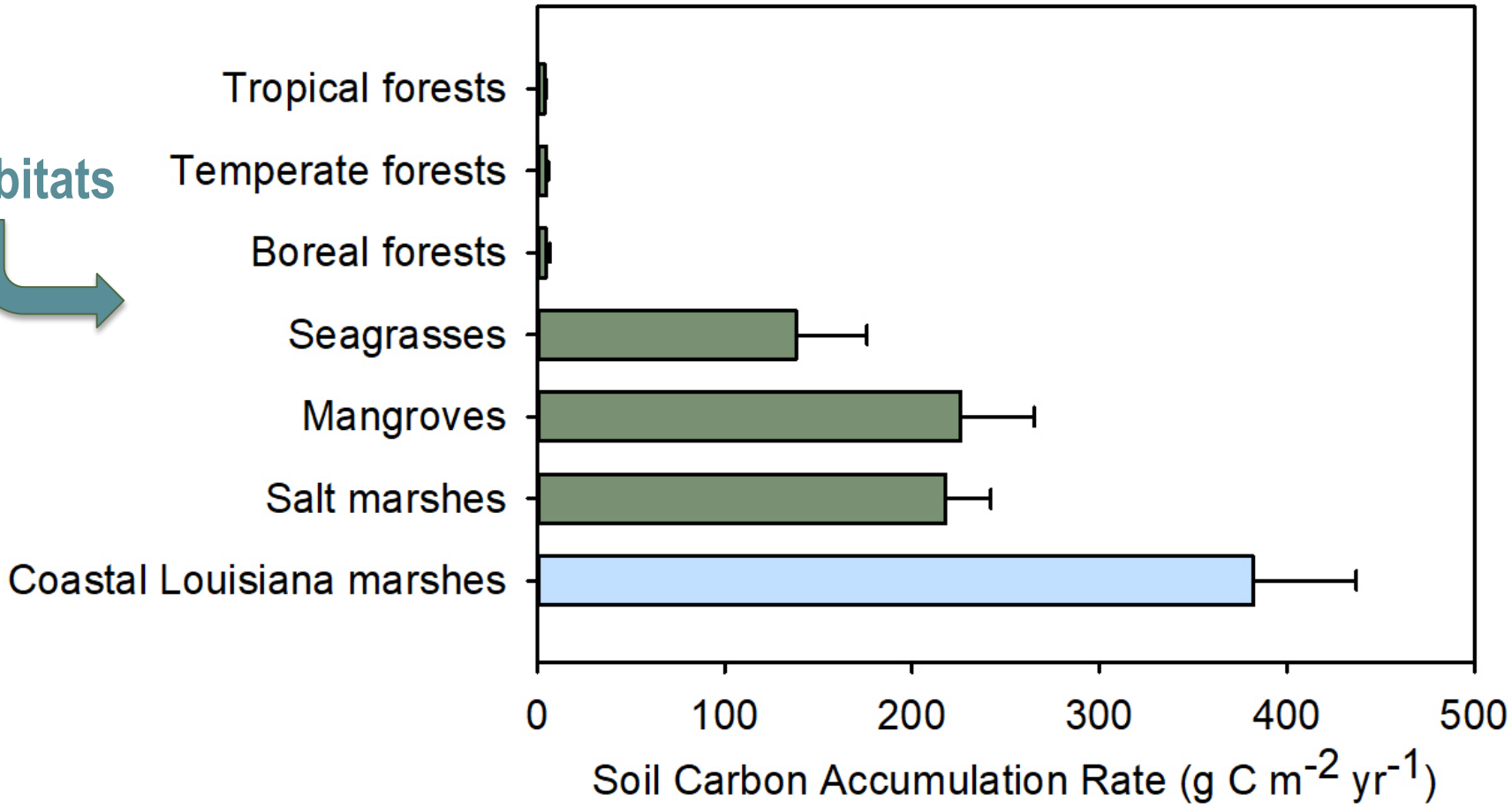
**Capture:** Process of grabbing $CO_2$
**Accumulation:** Amount gained over time
**Storage**: Long-term preservation in soils
**Sequestration:** Capturing and storing atm. $CO_2$
**Sinks:** Reservoir stores more carbon than releases
**Sources:** Reservoir that releases more carbon than it stores

Windham-Meyers et al. 2020



# LOUISIANA RIVALS OTHERS!

Habitats




*mean global rates from McLeod et al. (2011)

Coastal Louisiana marshes from Baustian et al. (2017, 2020)

Carbon in Soils

# HOW IMPORTANT ARE LOUISIANA CARBON SINKS?

**Soil carbon burial in Louisiana marshes**
(fresh to saline, 1 m, year 2013): **4.3 Tg C $yr^{-1}$**

That equates to:

**65%** of capacity in Gulf of Mexico

**47%** of capacity in North America

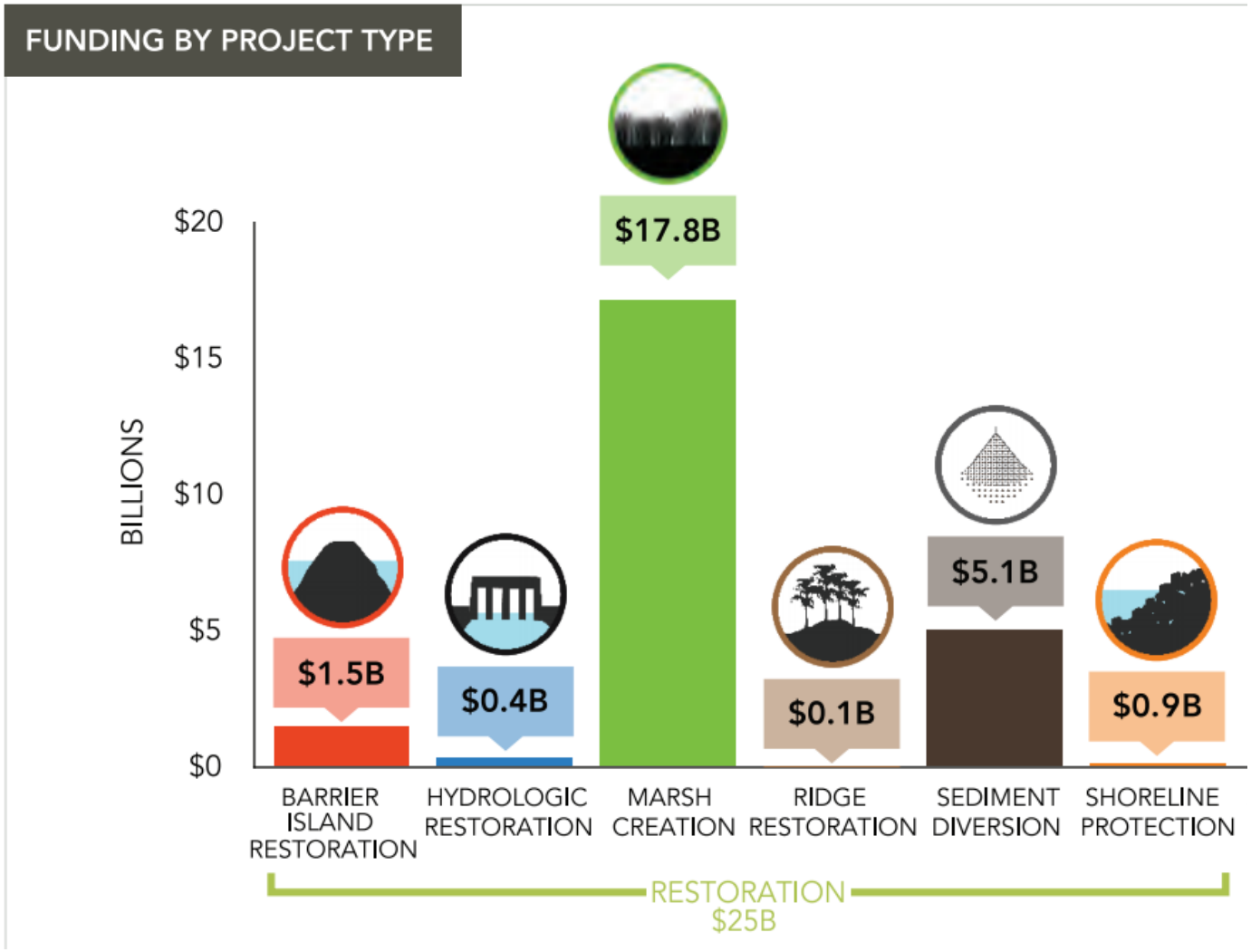
**5-21%** of capacity Globally

(Bouillion et al. 2008, Baustian et al. In press, Cai, 2011, Duarte et al. 2005, Hopkinson et al. 2012, Windham-Myers et al. 2018)

# PROJECT ACTIVITIES

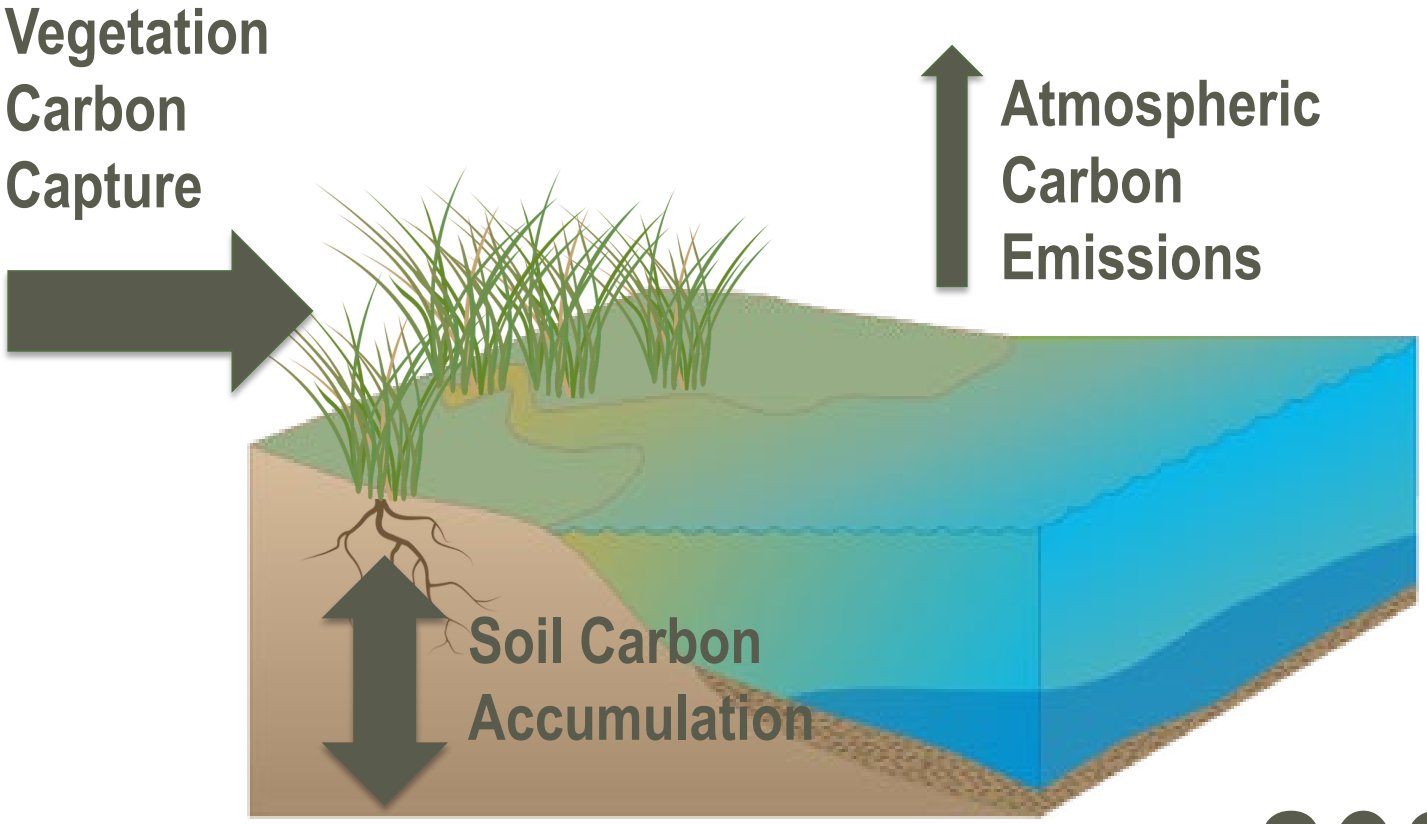
- Conduct State-of-the Science Literature Reviews
- Host Technical Meetings
- Estimate Coastal Carbon Sink
  - With and without 2017 Coastal Master Plan restoration projects
- Prepare Final Report
  - Coastal Carbon Sink
    - 2025, 2030, and 2050

# 2017 COASTAL MASTER PLAN




**Blue Carbon Restoration!**

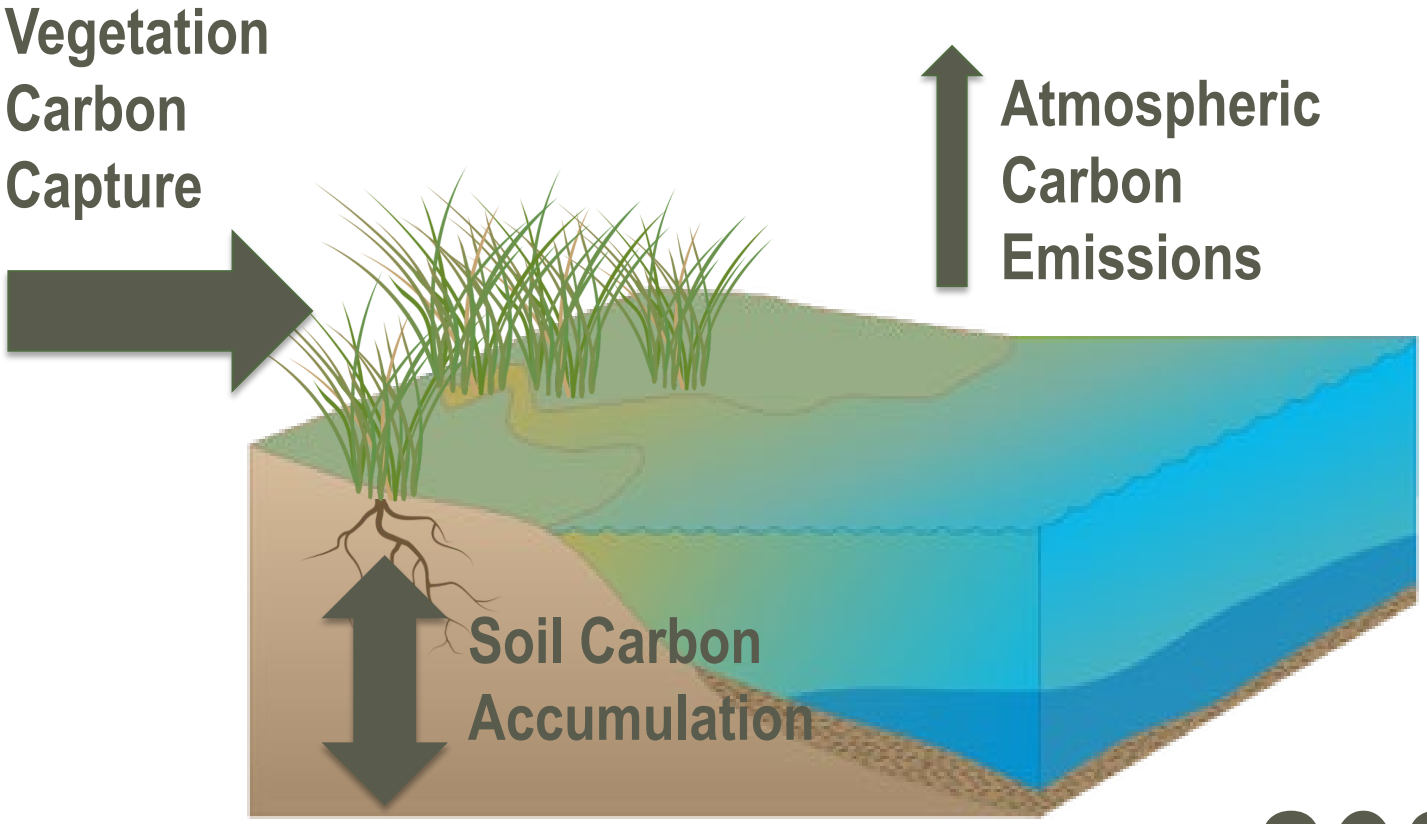
# COASTAL CARBON SINK




Adopted from DeLaune and Pezeshki 2003

2025

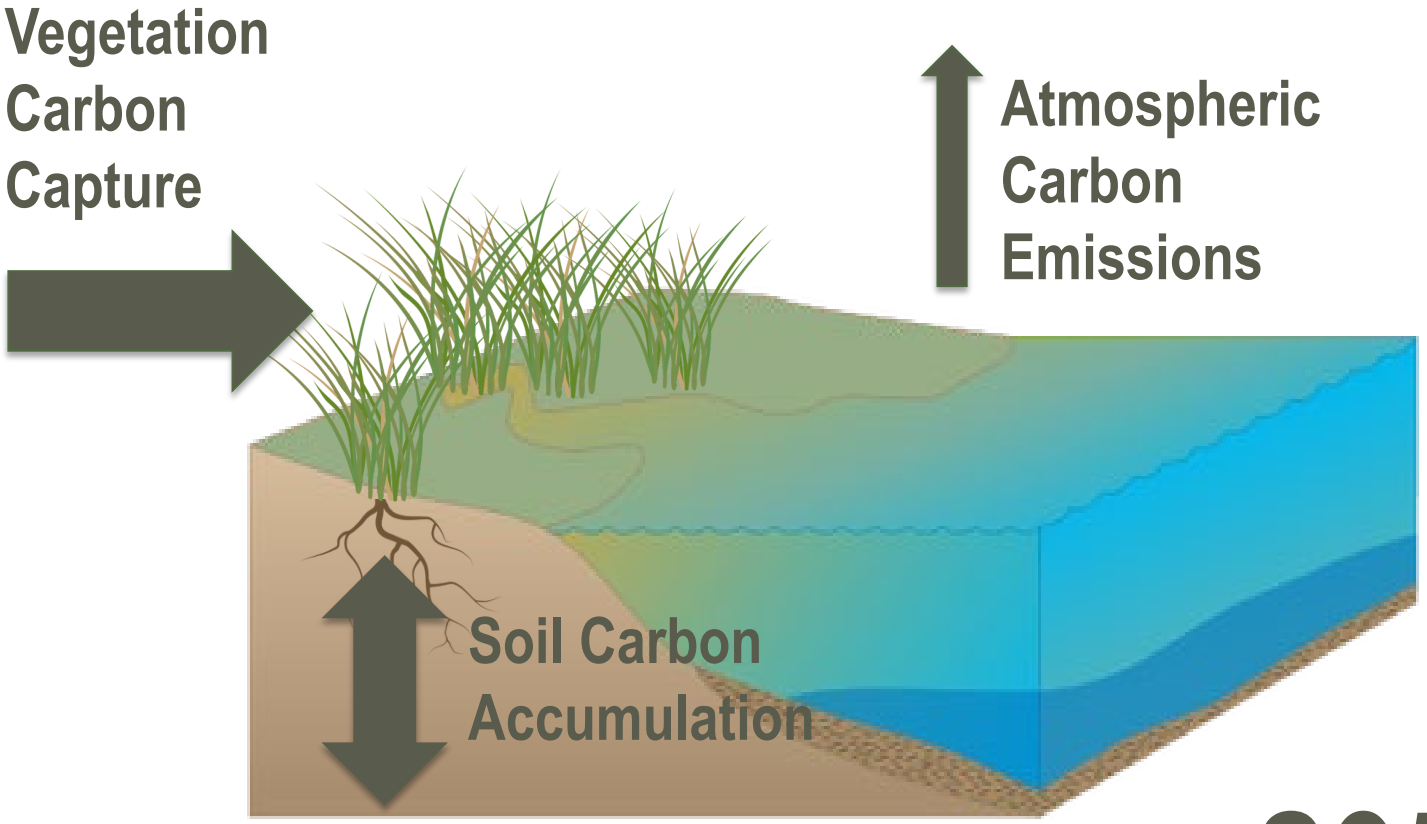
# COASTAL CARBON SINK




Adopted from DeLaune and Pezeshki 2003

2030

# COASTAL CARBON SINK




Adopted from DeLaune and Pezeshki 2003

2050

# 2021 TIMELINE

**Key Milestones:**

- State-of-science reviews — by July 2021
- Technical meetings — by August 2021
- Estimate of carbon sinks — by October 2021
- Report — by December 2021

# GOVERNOR'S ADVISORY COMMISSION INPUT….

- Suggestions for invitees of Technical Meetings?
  - Field and laboratory observations of coastal habitats
  - Restoration
  - Ecosystem modeling
  - Carbon inventory and markets

# Thank you!

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