EARTH AWARENESS MONTH:

MARINE ECOSYSTEMS

https://www.seasidesustainability.org

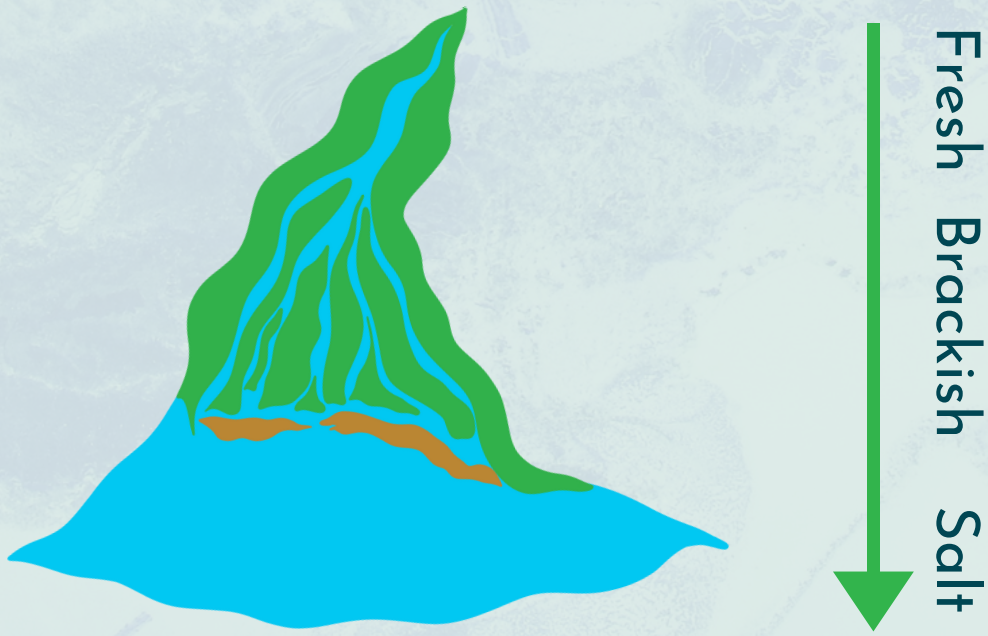
SEASIDE SUSTAINABILITY

ESTUARIES

Characteristics

- Estuaries are most often found where rivers meet the ocean, creating **a mix of salt and freshwater,** or brackish water

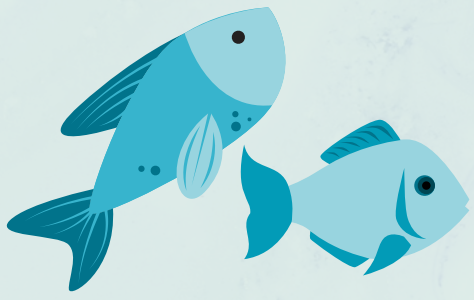
- Can also be freshwater emptying into a lake, such as the Great Lakes in the US

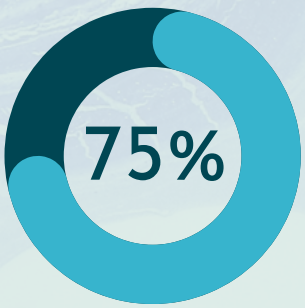


ESTUARIES

Benefits

- One of the most productive ecosystems in the world, estuaries are often used for **breeding**, **resting** during migration, **growing** young, **protecting** young organisms, or **feeding**
- Estuaries are the **nursing grounds** for **75%** of the fish we catch and eat





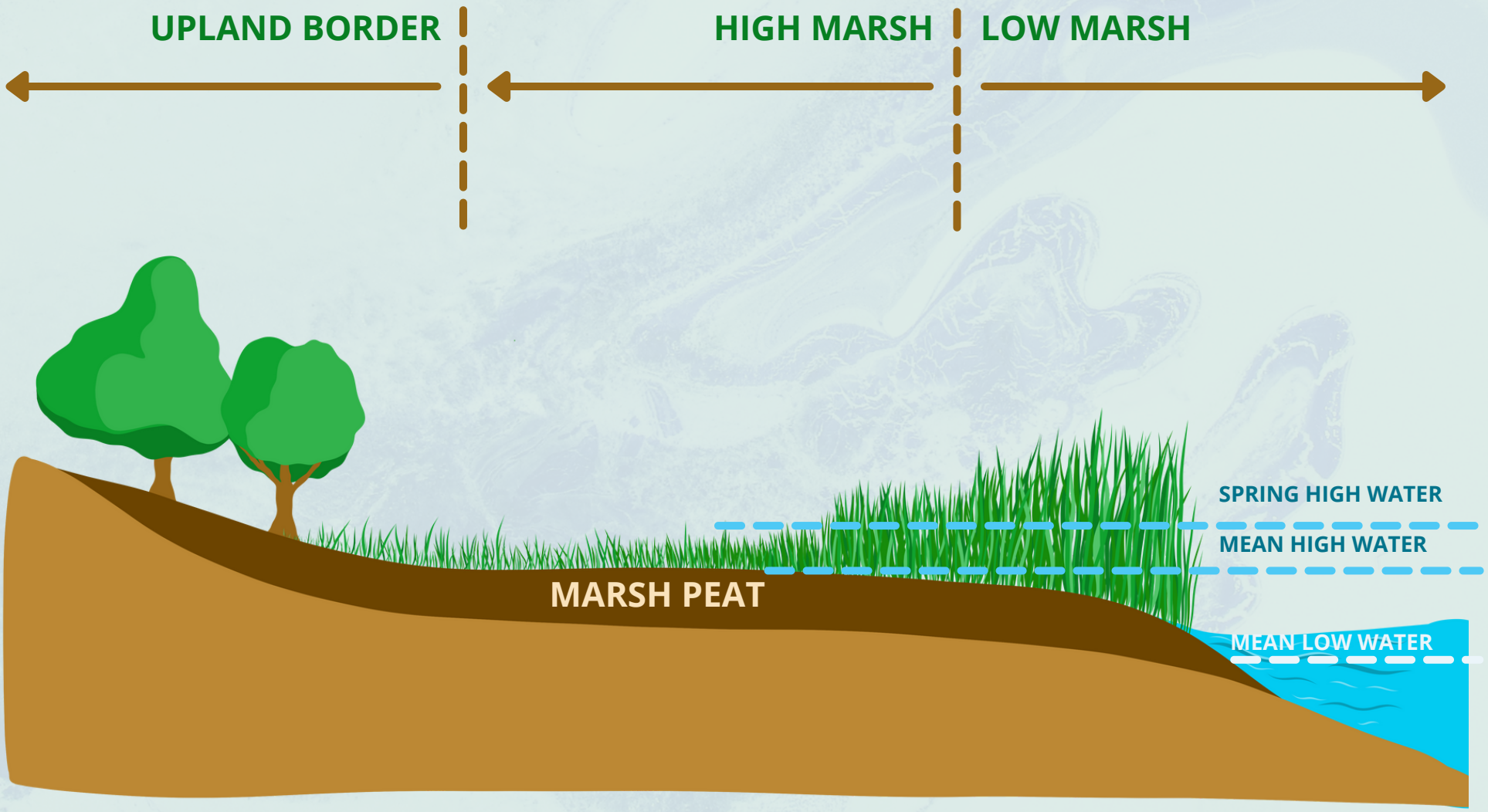
Threats

- They are severely threatened by human development, often drained, dammed, filled, or dredged in the process.
- They are converted into agricultural or urban settings
- In the US, **38%** of wetlands in coastal areas have been lost to development
- Pollution includes chemicals, metals, and nutrient pollution, from agricultural or storm runoff
- Are also susceptible to invasive species

SALT MARSHES

Characteristics

- Salt marshes, similarly to estuaries, are **coastal ecosystems** that fluctuate with rising and receding ocean tides



SALT MARSHES

Benefits

- These dynamic environments are important **refuges** and **nurseries** for marine organisms, such as fish, shrimp, crab, oysters, mussels, and clams

- They also are crucial in **buffering land** from waves and erosion, and help **filter runoff** by absorbing and metabolizing nutrients. They contain decomposing plant matter called peat, which helps **maintain the low oxygen levels** that promote bacterial growth, creating a sulphurous smell.

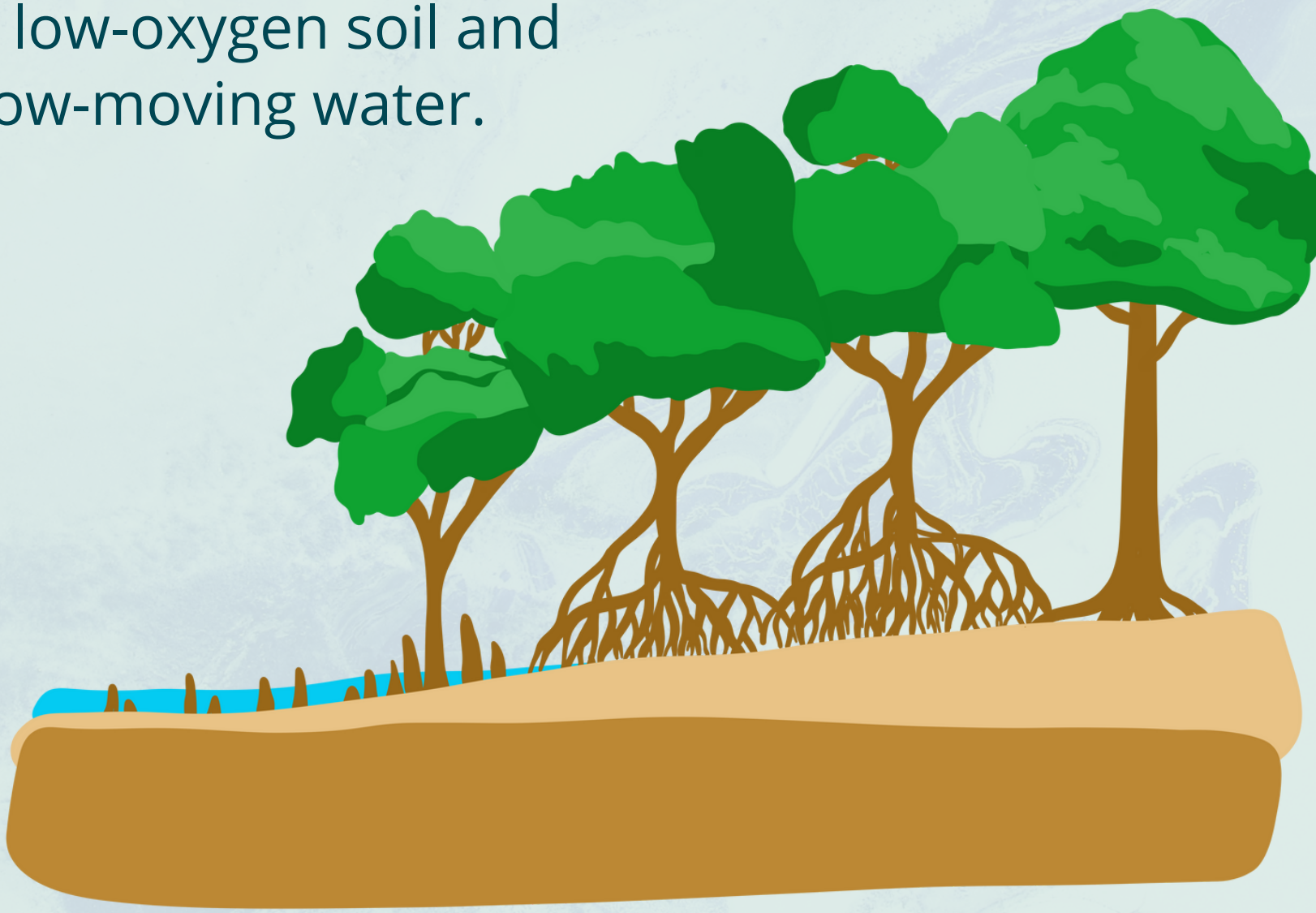
Threats

- Coastal development due to **urban sprawl** converts marshes into concrete developments. These new impervious surfaces direct stormwater runoff quickly into marshes with pollutants and chemicals.

MANGROVE FORESTS

Characteristics

- Mangrove forests are actually **trees growing in saltwater and soil**
- They’re often found in tropical and warm regions, in low-oxygen soil and slow-moving water.



Coastal Zone | Middle Zone | Inland Zone

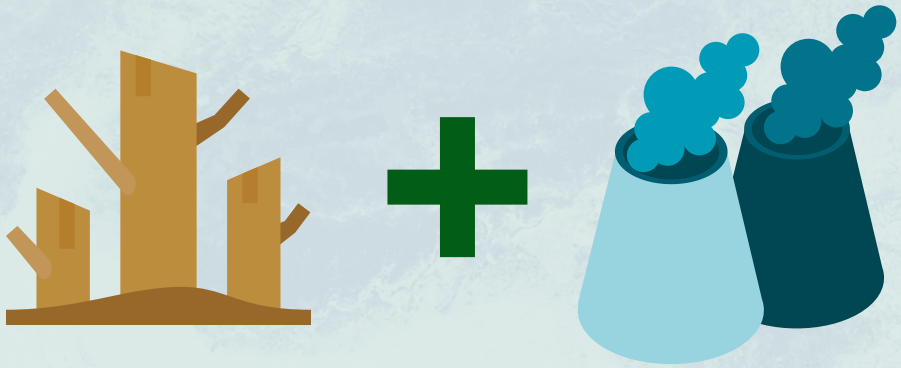
MANGROVE FORESTS

Benefits

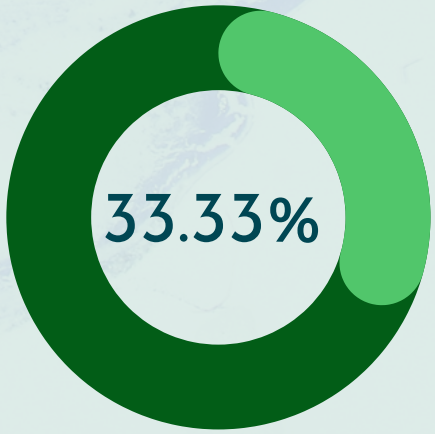
- Mangroves help buffer coasts from waves, erosion, and tides through their **strong root systems**
- Similarly to salt marshes and estuaries, they provide **important habitat for young fish and invertebrates**, many of which later reside in coral reefs

Threats

- Their most urgent anthropogenic threats include **clear-cutting** for development and **pollution**



- At least 1/3rd of all mangroves have been lost in recent decades



SOURCES

National Ocean Service: The National Oceanic and Atmospheric Administration

- https://oceanservice.noaa.gov/facts/estuary.html
- https://oceanservice.noaa.gov/education/tutorial_estuaries/est09_humandis.html#:~:text=The%20greatest%20threat%20to%20estuaries,and%20loss%20of%20estuarine%20habitats.
- https://oceanservice.noaa.gov/facts/saltmarsh.html
- https://oceanservice.noaa.gov/facts/mangroves.html#:~:text=Mangroves%20are%20a%20group%20of,allow%20fine%20sediments%20to%20accumulate.

Salt Marsh Guide

- https://www.saltmarshguide.org/guide/threats-protection/

U.S. Fish & Wildlife Service

- https://www.fws.gov/refuge/Wolf_Island/wildlife_and_habitat/salt_marsh.html#:~:text=Composed%20of%20fine%20silts%20and,ground%20is%20composed%20of%20peat.

Oceana

- https://oceana.org/marine-life/marine-science-and-ecosystems/mangrove-forest