



MANGROVE FORESTS

MANGROVES ARE TREES AND SHRUBS THAT LIVE IN THE COASTAL INTERTIDAL ZONE. THE ELABORATE ROOT SYSTEM OF THE MANGROVES MAKE THESE AREAS ATTRACTIVE TO FISH AND OTHER ORGANISMS SEEKING FOOD AND SHELTER FROM PREDATORS.

At the end of this lesson plan...

- Students will be able to explain the importance of mangroves
- Describe the relationship between a mangrove environment/ecosystem and other environments/ecosystems
- Explain why mangroves are important for juvenile sharks

LESSON PLAN

Learning Standards

- Common Core: CCSS.ELA-Literacy.RST.6-8.7
- NGSS: 3-LS3-2., 4-LS1-1., 4-ESS3-2., 5-LS2-1., MS-LS1-4, MS-LS2-1, MS-LS2-2, MS-LS2-5
- Ocean Literacy: Principle 2A, Principle 5

Vocabulary

- Mangrove- tropical plants that are adapted to loose, wet soils, salt water, and being periodically submerged by tides
- Ecosystem- a biological community of interacting organisms and their physical environment
- Ecosystem services- any positive benefit that wildlife or ecosystems provide to people
- Nursery habitat- a subset of all habitats where juveniles of a species occur, having a greater level of productivity per unit area than other juvenile habitats
- Erosion- the geological process in which earthen materials are worn away and transported by natural forces such as wind or water

Learning Objectives

Students should be able to

- Explain the importance of mangroves
- Describe the relationship between a mangrove environment/ecosystem and other environments/ecosystems
- Explain why mangroves are important for juvenile sharks

ACTIVITY 1:

Place the plants and animals in the correct location on the cross-section of the coastal ecosystems.

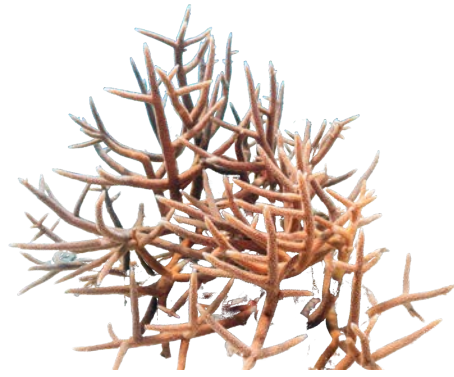
Mangroves are an ideal habitat for small, juvenile fish to grow up with an abundance of food and protection from larger predators. Almost all fish and shellfish caught by commercial and recreational anglers spend some part of their life cycles in or near mangroves. Seagrass communities typically serve as the link between wetland and mangrove communities and hard-bottom and coral reefs.

Cut out each plant/ animal and determine which ecosystem that organism lives in. Paste or tape the organisms in the appropriate locations. Hint: locate where the seagrass and coral communities would be in respect to the mangroves first!





Common Snook



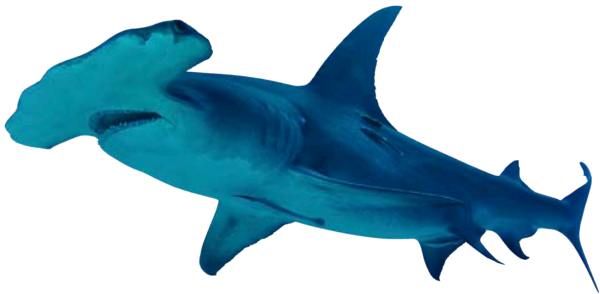
Staghorn Coral



Southern Stingray



Turtle Grass



Great Hammerhead Shark



Yellow Stingray



Juvenile Barracuda



Spiny Lobster



Elkhorn Coral



Lionfish



Barracuda



Mangrove Crab



Blue Heron



Juvenile Lemon Shark



Pipefish



Upside-down Jellyfish



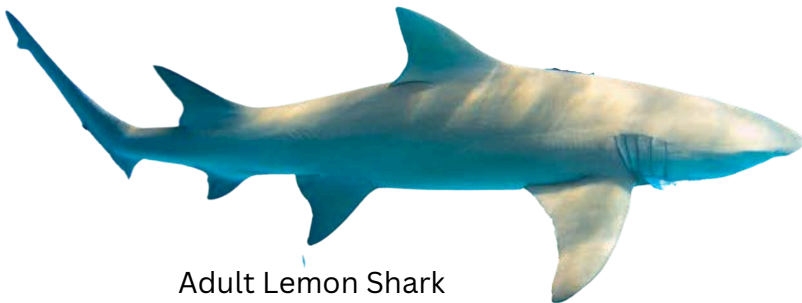
Yellowfin Mojarra



Mangrove Snapper



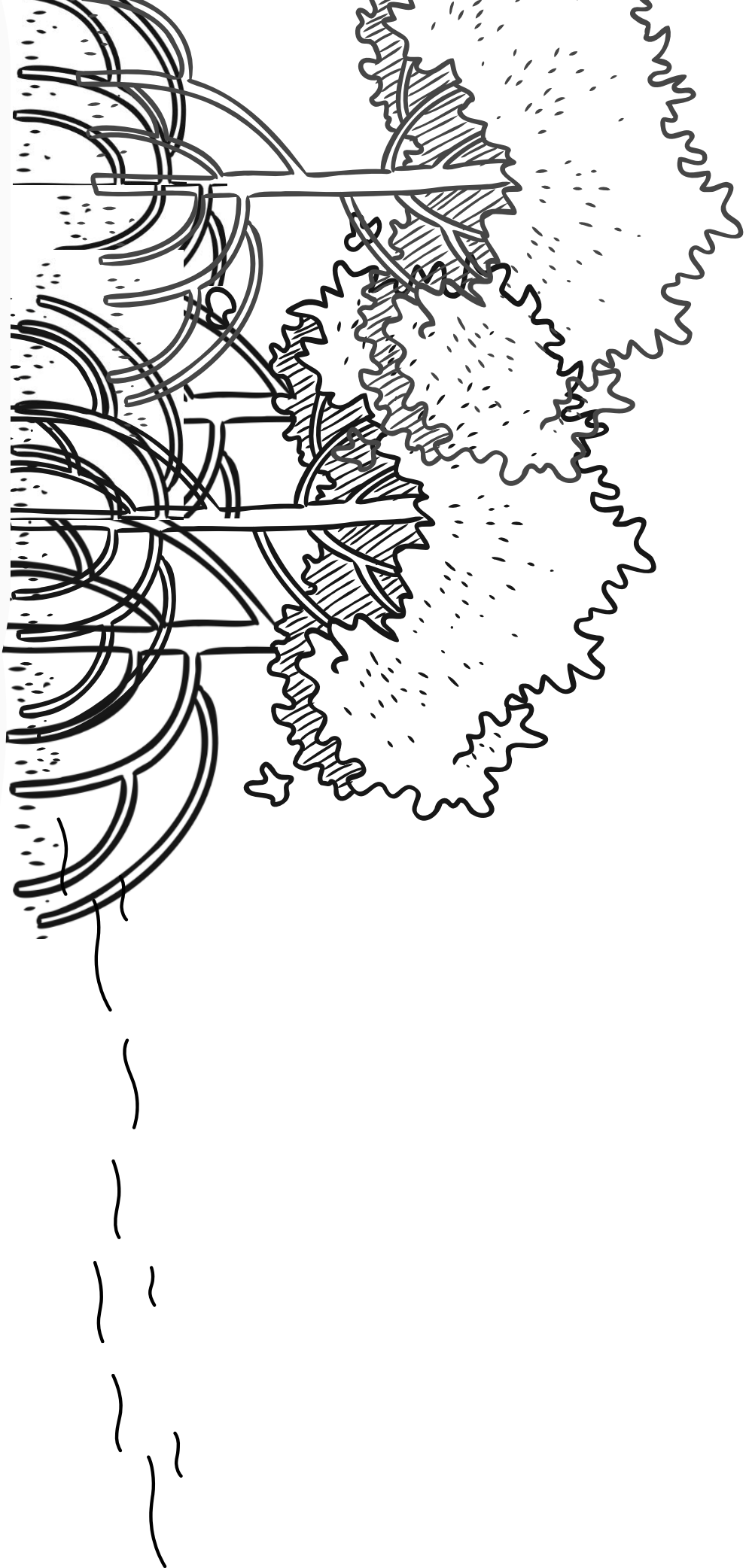
Juvenile Nurse Shark



Adult Lemon Shark



Juvenile Queen Conch



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ACTIVITY 2:

Mangroves provide numerous ecosystem services, or positive benefits, to us on land. Circle which services are provided by mangrove forests.

provides opportunities for recreation



provides timber



serves as a nursery habitat for sharks and other fish



carbon sequestration



climate regulation



provides fresh water



provides food



storm and flood protection



supports healthy fisheries



serves as a reservoir for disease



erosion control



MANGROVES & SHARKS

The lemon shark (*Negaprion brevirostris*) is a large (~3 meters) coastal shark found in tropical and temperate waters. Mangroves provide critical nursery habitat for neonate and juvenile lemon sharks. The dense mangrove forests provide cover and foraging opportunities for baby lemon sharks as they mature. Juvenile lemon sharks will also forage on the sand flats and seagrass beds that can be found near the mangrove edge, while sub-adults can use deeper channels.

Once these sharks reach adulthood, they travel among a variety of coastal habitats including mangroves, coral reefs, and estuaries. Research from Bimini, The Bahamas has shown that females return to the mangroves where they were born to give birth and the cycle begins over again. Coastal mangrove forests and lagoons provide critical habitat for this species' life history.



ACTIVITY 3:

Make an advocacy poster!

The mangroves need your help! The fictional coastal town of Coral Village has a lush mangrove forest home to a handful of juvenile lemon sharks. These little lemon sharks grow big and strong here before heading out of the safety provided by the mangroves, only to return to this exact forest to give birth to their young. A billionaire land developer chose Coral Village as the site for their new resort and golf course and is demanding the removal of the mangrove forest for a better ocean view.

How would you communicate to the developers, stakeholders, and public that these mangroves are important for protecting sharks?