Snook: Home Sweet Home

Objectives:

At the end of the activity students will demonstrate their understanding of mangrove species, characteristics, location and reproduction. They will also be able to communicate the importance of mangroves in the saltwater and brackish habitats they are found.

Differentiation:

Students with differing abilities can be paired with classmates or group mates who may better be able to scribe answers to questions. Students with differing abilities can also complete the matching activity with the help of a group member rather than working solo.

Lesson background:

Mangroves are extremely important not only to species like snook that call this habitat home but also because they create and stabilize coastal shorelines. Mangroves are unique in the ability to live in such a salt-rich environment; to deal with these aquatic hurdles, they have developed salt excretion techniques, specialized seeds and also specialized root systems.

Florida State Standards (NGSSS)

- SC.5.L.17.1: Compare and contrast adaptations displayed by animals and plants that enable them to survive in different environments such as life cycle variations, animal behaviors and physical characteristics.
- SC.5.L.15.1: Describe how, when the environment changes, differences between individuals allow some plants and animals to survive and reproduce while others die or move to new locations.

National Standards (NGSS)

- 4-LS1-1: Structure & Function
- 4-ESS2-1: Earth Materials & Systems
- 5-LS1-1: Organiz. for Matter & Energy Flow in Organisms
- 5-ESS3-1: Human Impacts on Earth Systems

Activity:

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Procedure:

- Prior to teaching the lesson the teacher should review the species page about snook and mangroves and also personally familiarize him/herself with snook, their life stages and then mangrove adaptations and their locations and environmental role. The student readings and teacher reading material pages discuss life cycle, habitat and anatomy for the mangrove as well as the snook and are tools to best be prepared to present the material to the students.

- Using the provided mangrove student reading and with the help of a teacher students should break into small groups of 2-5 and be given the mangrove benefits worksheet to fill out in the group. The group will work for roughly 10 minutes reading the sheet, highlighting or making notes on the sheet that they think are important and then they will fill out the benefits sheet as a group. These benefits are theirs to complete and there are no true "wrong" answers if they can synthesize and explain their reasoning. The groups should all be instructed to pick their TOP 3 benefits that they were able to come up with, encourage them to think of non-traditional benefits or ones that might not have been directly given in the reading.

- Once the class groups have completed this portion then the class should come together again and the teacher will make a list of the group's top 3 benefits from each group. The teacher will push each group to explain the rationale for their picks and the teacher can make note of these reasons under each top 3 given.

Post Lesson Assessment:

Once the lesson has been presented you can move onto the next activities, "Mangroves, Anything but Mundane" and "Mangrove Moves," which dive deeper into the ethical reasons for protecting mangroves. If you are choosing to stop at this activity then you could quiz students on the mangrove types, locations, seeds and salt exclusion and extruder methods that each mangrove possesses. Either way you have done a great job of informing students on to the importance of mangroves and why they should continue to be protected and respected.

Snook hide in the prop roots of red mangroves which often form points like this one. Such configurations make excellent ambush spots.

Names: _____ **Date:** _____

_____

_____

_____

_____

Snook: Home Sweet Home

You have now learned all about mangroves, and understand what they do for snook, the coastline, and even us as people! Use this worksheet to take notes about the BENEFITS of the different mangroves, and brainstorm with your classmates to think of benefits that were not listed. It is okay to list more benefits for one type over another (for example, you may think of many benefits of red mangroves), but try to **list at least one benefit for each type**. When you have completed this sheet, decide as a group which 3 benefits are MOST important and prepare to share them with the class.

Red Mangroves	Benefits
	_____ _____ _____ _____ _____ _____ _____
Black Mangroves 	_____ _____ _____ _____ _____ _____ _____ _____
White Mangroves 	_____ _____ _____ _____ _____ _____ _____

Name: _____ **Date:** _____

Mangroves, Anything but Mundane

You will be learning about mangrove habitats, their importance to the coastal environment, and their adaptations that help them survive and thrive. Mangroves are commonly referred to as nursery habitat and are responsible for creating and maintaining the health of coastlines around the world. As important as mangroves are to our planet, they have been (and continue to be) destroyed at alarming rates. One way to stop this destruction is through education. If you can learn about mangroves, how they survive and why we should protect them then you can use your voice and knowledge to help ensure their long-term survival.

Mangrove Type	Location on shoreline	Seed and leaf description -or- drawing	Adaptations of root systems and salt excretion
Red Mangrove			
Black Mangrove			
White Mangrove			

Name: _____ Date: _____

Mangrove Moves:

Red mangrove prop roots stabilize sediment and provide cover for diverse forms of prey.

Now let's take some of what we have learned about mangroves and what they do for their environment and put it in our own words. Word bank has been provided but give yourself a challenge and attempt to fill in the words you think belong there BEFORE you look at the word bank. Once you have completed what you think you know LOOK at the word bank and add the words from the bank to any areas where you were unsure. Now, go back and see if the words that you filled in before you looked at the word bank are in your answers. How did you do? Are you on your way to being a mangrove specialist?

Mangroves are important to _____ habitats. These are ecosystems that have _____ or _____ water. Mangroves are _____ but they are really special since they can live in and actually take in _____ water through their roots. This would _____ most other types of trees. There are _____ species of mangroves common to Florida and the Caribbean. The _____ mangrove is said to have "walking roots". The roots of this mangrove look like long legs and help to securely hold the tree against _____ and _____. The red mangrove is often found the furthest in the _____ and this makes it the most _____ tolerant. The red mangrove has a long, thin seed which is also known as a _____. This seed is very well adapted to survival since it can _____. The fact that it can do that means when it drops off the tree it can go with the wind and waves and with any luck end up far away and produce the start of another mangrove habitat. The _____ mangrove is usually the next mangrove found higher in the location from water to shore. The black mangrove has tall "snorkels" that help is take in _____ from the air around it. The black mangrove excretes _____ from the bottom of the leaves. The black mangrove is also a _____ species.

WORD BANK: Salt, brackish, trees, propagule, salt, kill, three, red, salt, coastal, salt, protected, float, wind, waves, water, black, oxygen.

TEACHER KEY

Mangrove Moves:

Red mangrove prop roots stabilize sediment and provide cover for diverse forms of prey.

Now let's take some of what we have learned about mangroves and what they do for their environment and put it in our own words. Word bank has been provided but give yourself a challenge and attempt to fill in the words you think belong there BEFORE you look at the word bank. Once you have completed what you think you know LOOK at the word bank and add the words from the bank to any areas where you were unsure. Now, go back and see if the words that you filled in before you looked at the word bank are in your answers. How did you do? Are you on your way to being a mangrove specialist?

Mangroves are important to **coastal** habitats. These are ecosystems that have **salt** or **brackish** water. Mangroves are **trees** but they are really special since they can live in and actually take in **salt** water through their roots. This would **kill** most other types of trees. There are **three** species of mangroves common to Florida and the Caribbean. The **red** mangrove is said to have "walking roots". The roots of this mangrove look like long legs and help to securely hold the tree against **wind** and **waves**. The red mangrove is often found the furthest in the **water** and this makes it the most **salt** tolerant. The red mangrove has a long, thin seed which is also known as a **propagule**. This seed is very well adapted to survival since it can **float**. The fact that it can do that means when it drops off the tree it can go with the wind and waves and with any luck end up far away and produce the start of another mangrove habitat. The **black** mangrove is usually the next mangrove found higher in the location from water to shore. The black mangrove has tall "snorkels" that help is take in **oxygen** from the air around it. The black mangrove excretes **salt** from the bottom of the leaves. The black mangrove is also a **protected** species.

WORD BANK: Salt, brackish, trees, propagule, salt, kill, three, red, salt, coastal, salt, protected, float, wind, waves, water, black, oxygen.

Activity Rubric:

You should check to see if you meet the following criteria at the level "4"

Area	1 Does not meet expectations	2 Partially meets expectations	3 Meets expectations	4 Exceeds expectations
Science Content	NONE of the facts relating to each mangrove species are written in, and the locations of each mangrove were all incorrect	SOME of the facts relating to each mangrove species are written in, and the locations of each mangrove were only partially correct	MOST of the facts relating to each species are written in, but all locations of mangroves were correct.	ALL of the facts relating to each species are written in, and all locations of mangroves were correct.
Use of science vocabulary	NONE of the vocabulary from the reading on snook or mangroves is used in the writing of answers	SOME of the vocabulary from the reading on snook or mangroves is used in the writing of answers	MANY of the vocabulary from the reading on snook or mangroves is used in the writing of answers	A LARGE AMOUNT of the vocabulary from the reading on snook or mangroves is used in the writing of answers
Writing fluency	Writing flow errors create issues with sentence structure, making the activity close to impossible to comprehend	Writing flow errors are evident, but few, and make the activity difficult to comprehend	Writing flow errors are few, and the activity is easy to read and under-stand	Writing flow errors not present, and the activity is easy to comprehend and follow the information presented to the reader
Conventions	Spelling, capitalization, and punctuation errors are numerous and make the written narrative difficult to understand.	Spelling, capitalization, and punctuation errors are evident and make the written narrative difficult to understand.	Spelling, capitalization, and punctuation errors are few.	Spelling, capitalization, and punctuation errors not present in the writing at all.