

Grouper Race for Survival

Students play a board game to learn about the life cycle of the grouper and its survival needs at various stages of the cycle.

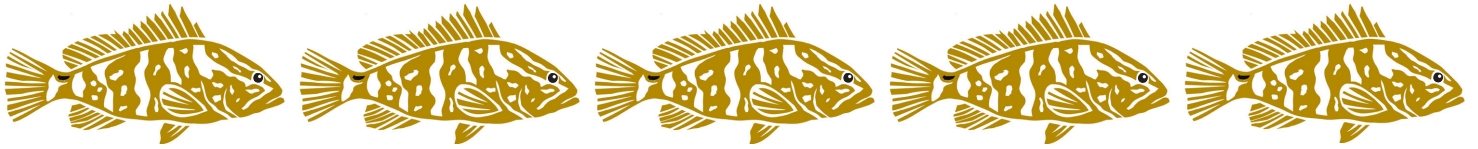
Background Information:

A life cycle is the series of stages an organism passes through during its lifetime. The Nassau grouper faces many challenges in completing the cycle from egg to adulthood. Most fish, including the Nassau grouper, develop from eggs outside the mother's body. The parents usually do not protect the soft eggs. Many eggs are produced so that enough young survive to continue the species — for the Nassau grouper that may mean a million or more eggs! Less than 1% of these eggs will survive through the life cycle. The tiny larvae that emerge may be eaten by big fish. Those that survive to the juvenile stage settle in seagrass or clumps of coral where they feed on crustaceans. Ten to 12 months later, these juveniles are carried by currents to the reef. It takes about seven years for a Nassau grouper to reach adulthood, the final stage in the life cycle. Adults live in caves and cracks in the reef. These are ideal places from which to ambush prey such as crawfish, parrotfish, red snapper, and other reef fish. The dark bars on Nassau grouper's body help it to blend into dark recesses. The adult Nassau grouper must avoid predators such as reef sharks, barracudas, and humans.

Top Predator with a Sixth Sense:

The Caribbean reef shark (*Carcharhinus perezi*) is one of the top predators in the Bahamian marine environment. It spends most of its time on the edges of reefs and preys on reef-dwelling fish, including the Nassau grouper. Reef sharks are most active in the morning and evening hours when their prey is most likely to be feeding. They use six keen senses to locate prey: smell, sight, hearing, touch (including receptors which run along each side of the shark's body to detect water vibrations), taste, and electroreception (using small pores under the skin on its head and snout to detect weak electric fields).





Materials:

Make one copy of the game board and the game card sheet for each pair of students, and cut the cards apart. For durability, mount the board and cards on card stock or copy them directly onto card stock, and laminate them. Make or collect playing pieces, such as fish-shaped erasers, or fish-shaped cardboard cut-outs — be creative! Remember, the playing pieces must be different so that each player can identify his or her playing piece.

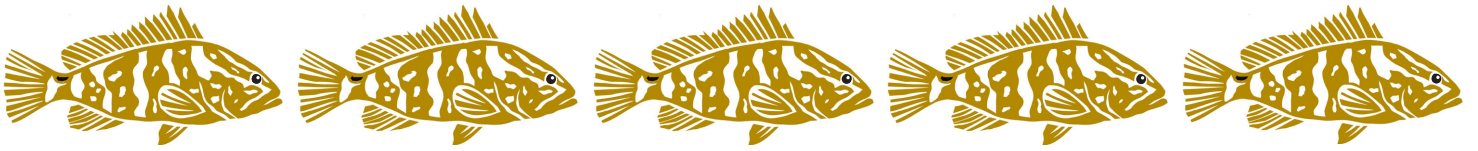
Procedures:

1. Introduce the life cycle of the Nassau grouper. Use the introductory information, the “Nassau Grouper Fact Sheet” (page 20), and the grouper poster to illustrate and explain its life cycle.
2. Play the “Grouper Race for Survival” game. Tell the students that they are going to play a game in which they pretend to be grouper eggs struggling to become adult groupers. Divide students into pairs or ask them to find partners. Pass out a game set to each pair of students. Explain the rules and play the game.
3. Discuss what students learned from playing the game. Ask questions like: Was it easy to go from an egg to becoming an adult fish? What were some of the dangers you encountered? What are some of the events that helped you to advance more quickly?

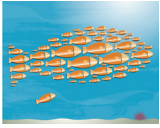
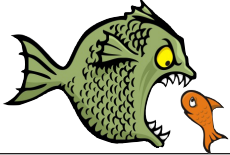

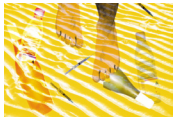






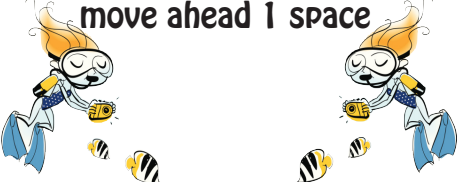

Extensions-Taking the game further.

- Have students write an essay (or a cartoon story) about a grouper’s adventures throughout its life cycle, or how the life cycle could be easier if there were not so many dangerous situations.
- Students can make playing pieces for the board game by creating models of the grouper at various stages. Students can also add more cards to the game.
- Play a life-sized version of the game. Simply recreate the game board on pavement with sidewalk chalk. Use numbers to indicate the challenges and instructions that are written on the game board. Use a star or other symbol for the spaces where players must pick a card. The students can play in teams, with one student from each team assigned to be the “playing piece,” another to roll the die, others to take turns selecting and reading the cards, and the whole group to work cooperatively and to cheer on the team. The same rules of the game apply.



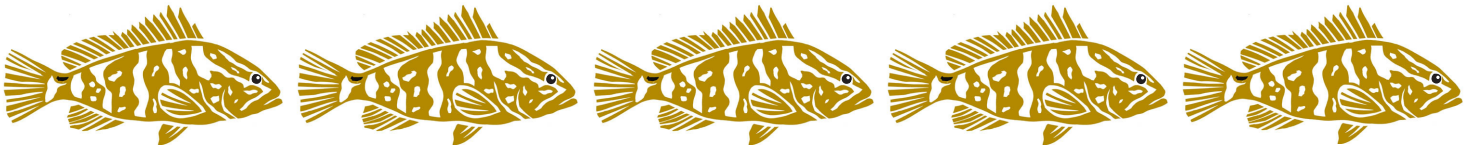


Grouper Race for Survival Game Cards













<p>Welcome to the fish buffet! Abundant food supply</p> <p>move ahead 1 space</p> 	<p>I'm starving! Food shortage</p> <p>move back 1 space</p> 	<p>Whew! That was close! Undersized grouper caught, but returned to the sea</p> <p>move ahead 1 space</p> 
<p>Who wrecked my place? I'm moving! Reef damage</p> <p>move back 2 spaces</p> 	<p>Protection perfection! Fishing laws enforced</p> <p>move ahead 2 spaces</p> 	<p>We had 452,000 girls and 563,000 boys! Spawning sites protected</p> <p>move ahead 2 spaces</p> 
<p>Eat beef! Overfishing of groupers</p> <p>move back 2 spaces</p> 	<p>I can't take this heat! Increasing water temperature</p> <p>move back 1 space</p> 	<p>Swim for your life ... ! Hurricane</p> <p>move back 2 spaces</p> 
<p>Do you smell bleach? Illegal fishing practices</p> <p>move back 1 space</p> 	<p>The camera loves me! Divers take pictures not fish</p> <p>move ahead 1 space</p> 	<p>A place to call my own! Marine Park created</p> <p>move ahead 1 space</p> 

From "Treasures of the Sea" by BREEF (Bahamas Reef Environmental Education Foundation).





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Grouper Race for Survival

Start
Grouper eggs



Grouper larva
eaten by big fish
GO BACK TO START

PICK
A CARD



PICK
A CARD



Pelagic juvenile
living
in seagrass
MOVE FORWARD
1 SPACE

Juvenile in reefs
MOVE FORWARD
1 SPACE



PICK
A CARD

CLEANING
STATION



MOVE 2 SPACES
to cleaning station

PICK
A CARD

Caught by
fisherman
BACK TO
START



Adult has a
parrotfish dinner
MOVE FORWARD
1 SPACE

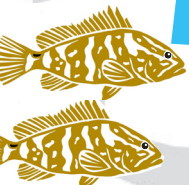
PICK
A CARD

SPAWNING
SITE

PICK
A CARD

Adult eaten
by shark
BACK TO START

PICK
A CARD



Rules

1. Shuffle the game cards and place them face down.
2. Each player rolls the die. The one who rolls the highest number plays first. *(For additional rounds between the same players, the winner plays first.)*
3. Place playing piece on the start space.
4. Roll the die and move the playing piece ahead the number of spaces indicated on the die.
5. If a player lands on a space with instructions, that player must move his or her playing piece accordingly. If the player lands on a PICK A CARD space, that player must take the top card, read it aloud and follow the instructions.
6. The first player to arrive at the spawning site is the winner!