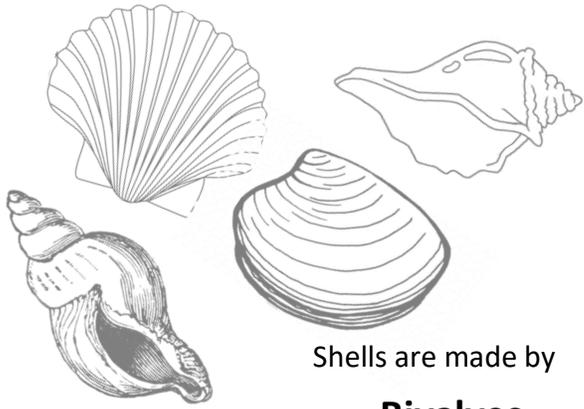


# Shells and Corals



Where do shells come from?

**Shells** are made of a mineral to make them hard and give them strength. Humans need the same mineral for strong bones. Can you name it?  
Find the answer on the back.

Shells are made by  
**Bivalves**

(having 2 shells/top & bottom)

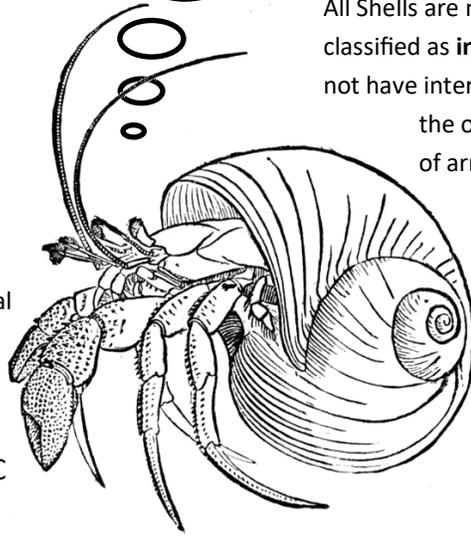
&  
**Gastropods**

(having 1 shell that creates a spiral and one large opening)

Color the shells above.  
Color the bivalves orange & color the gastropods yellow.

All Shells are made by living animals that are classified as **invertebrates**, meaning they do not have internal bones. A shell is grown on the outside of their bodies like a suit of armor for protection.

Some animals like this hermit crab can not make a shell on their own. They will use shells that were made by other animals. **Can you tell what type of animal made this Hermit Crab's shell?**



Circle your answer below

**Gastropod**      **Bivalve**

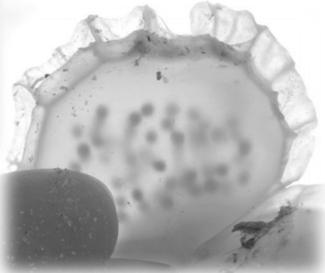
A **whelk** is a sea snail that is very common in NC

**Did you know ?**  
gastropod means stomach foot



Whelk eggs

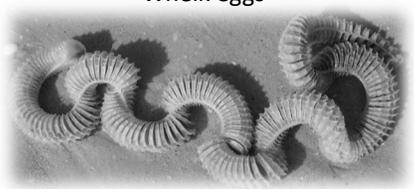
Whelks lay **eggs** in long chains of hollow **chambers**. Each chamber may contain more than a dozen baby whelks developing inside. Each baby whelk is the length of a grain of rice (5-6 mm).



Whelk egg chamber



There are 10 millimeters (mm) in a centimeter (cm). Starting from 0, count 6 millimeters on the ruler to the left to see how long a baby whelk is when it hatches.



As shells are grown, they get thicker and stronger. Every time that an animal adds more shell, a line is visible. **Did you know that you can read a shell's story by looking at its growth lines?**



Some growth lines on a shell will be close together while others will be spaced widely. In wide spaces, the animal added a lot of shell. It was very healthy. Where the growth lines are close together, the animal made less shell. It doesn't necessarily mean that it was unhealthy, though. There may be seasonal differences. When there is a lot of food available, the animal will eat more and make more shell.

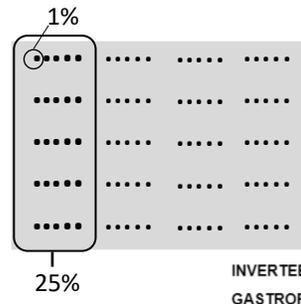
**When do you think more food is available?**  
Circle your answer.

Spring/Summer      Fall/Winter

How many growth lines can you count? \_\_\_\_\_

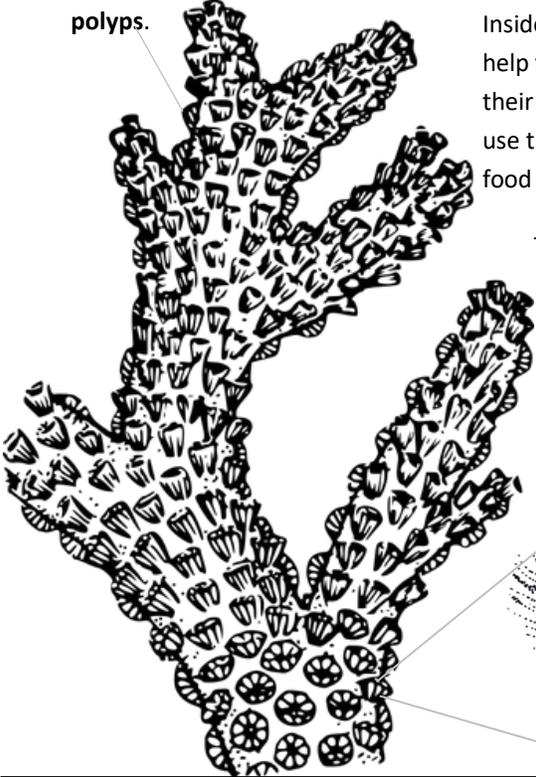
Like shells, hard **corals** are made of a mineral called **calcium**. Also like shells, corals are living animals. They are colonies of tiny creatures called **polyps**.

Coral reefs make up only **1%** of the earth's surface, but **25%** of ocean life depends on coral reefs for food and shelter.



Not all corals have a hard skeleton. Some are soft corals; like sea whips and sea fans.

Inside each polyp are tiny organisms that help to feed the polyps and give corals their color. They are **zooxanthellae** that use the sun (photo) to make (synthesize) food in a process called **photosynthesis**.

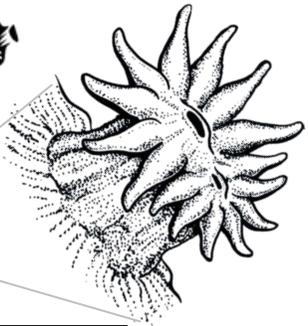


Try pronouncing zooxanthellae.

ZO - A - ZAN - THEL - A

Try pronouncing photosynthesis.

PHO - TOE - SINTH - A - SIS



**Shells and Corals**

L	S	A	L	G	E	D	C	B	I	A	C	A	O
W	I	E	I	P	B	C	R	E	N	N	A	C	S
W	V	W	V	O	L	C	B	R	V	I	L	P	V
L	U	S	S	L	T	B	C	I	E	R	C	I	H
C	U	Y	S	Y	A	S	I	R	R	C	I	V	L
O	L	T	L	P	C	V	G	S	T	E	U	R	C
R	O	I	R	S	H	B	I	Y	E	A	M	T	I
A	W	S	H	E	L	L	S	B	B	O	Y	I	R
L	H	R	O	S	D	O	P	O	R	T	S	A	G
S	E	E	V	L	I	I	B	T	A	S	U	T	A
E	L	V	C	W	W	C	V	H	T	E	E	E	T
S	K	I	G	N	I	H	C	A	E	L	B	L	L
B	L	D	C	L	S	I	S	E	S	E	G	H	L
L	L	S	R	L	B	N	V	H	S	S	I	S	B

- INVERTEBRATES
- GASTROPODS
- BIVALVES
- SHELLS
- WHELK
- CORALS
- CALCIUM
- POLYPS
- DIVERSITY
- BLEACHING

When we burn **fossil fuels** like coal, oil, and gas for transportation and electricity, **carbon dioxide (CO<sub>2</sub>)** is released into the atmosphere. As CO<sub>2</sub> builds up around the earth, it creates a thick layer like a heat-trapping blanket. The ocean absorbs a lot of that trapped heat which causes water temperatures to rise. When we use less transportation, find new ways to make electricity, and simply use less energy, we help keep our ocean healthy.

A healthy coral reef should be vibrant and colorful providing shelter and food for a large **diversity** (or variety) of other animals like fish and crustaceans. The reef below has lost its color. This is actually happening to corals around the world. It's called coral **bleaching**. Warming water temperatures cause stress upon the corals and they will purge their zooxanthellae. Without the zooxanthellae, the corals have no color. The corals also lose the nutrition provided by the zooxanthellae. Without nutrition, the corals cannot survive.

**To revive this coral reef, color it in with as many colors as possible.**

