



## INDEPENDENT STUDY: Module1, Class 7

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The recording for Class 7 is about 28 minutes and can be found in your attachments.

CLASS 7: Shell #s 53,32,42

I am looking for ways to create images in your mind so that you become comfortable with the cast of seashell characters. I realize there is a lot of information to take in, and I want to be sure this is delivered at a comfortable pace. 200 shells may sound over-whelming, but when you see something unique about each, they start to stand out as individuals. This will make the transition easier when we get into doing readings.

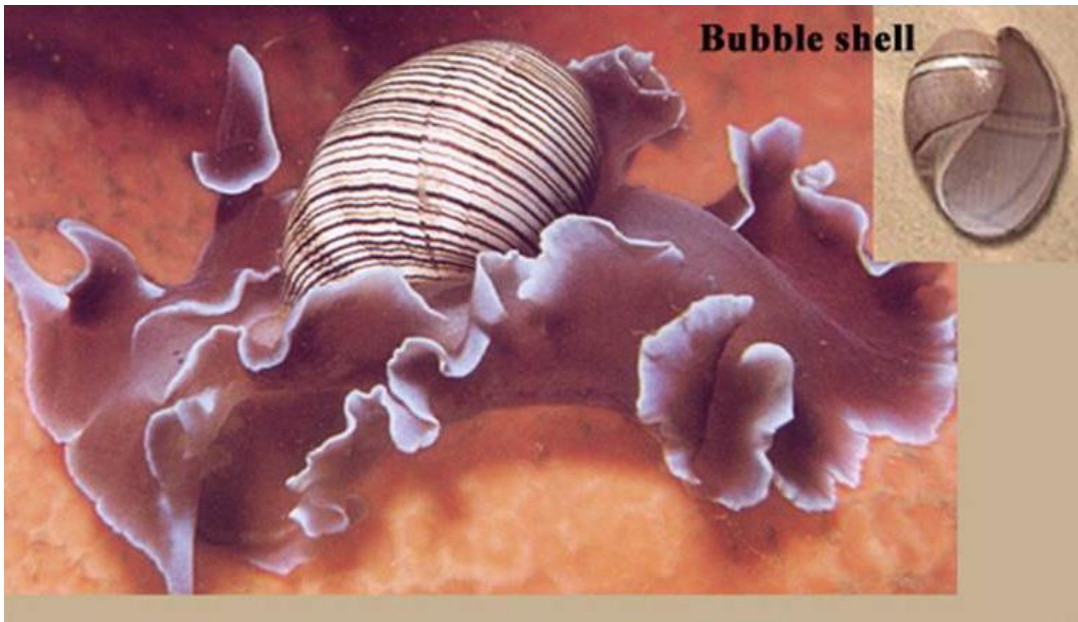
In this lesson, we will add to your list of outstanding qualities for some of these animals because it is time to discuss mollusks' sex lives. This is our X-rated class ☺

Just as with every other aspect concerning mollusks, there is a huge range of reproductive methods employed by these animals.



This picture shows two oysters spawning. I don't know which is which, but one is a male releasing a cloud of sperm into the ocean, and one is female releasing eggs. There can be several hundred million eggs. Fertilization is very random, and what you can't see in the picture is the fish

nearby gobbling up the eggs as quickly as they are released. You might agree with me that this is a very inefficient method of reproduction. Very few fertilized eggs survive.



This is the Rose Petal Bubble shell. We began learning about the bubble in the class on feeding habits. Now I want to discuss its sex life.

Bubbles are hermaphrodites. This means each bubble mollusk contains both male and female sex organs. They do not fertilize themselves, but this arrangement allows the bubbles to fertilize each other.



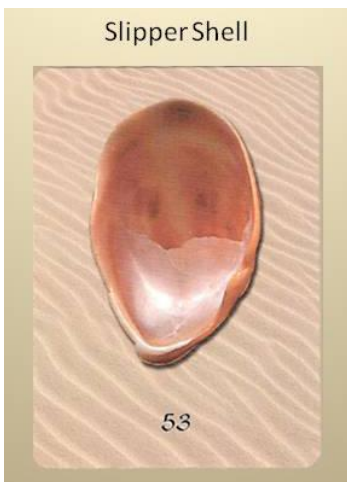
Land snails are also hermaphrodites. Here are three land snails. These are Univalve mollusks, Gastropods, but they possess lungs instead of gills. If we look at life through the perspective of a mollusk, there is an enormous benefit to being a hermaphrodite. Imagine you are a snail and you come across another of your species. If you are both the same gender, the population has no opportunity to increase. But, as hermaphrodites, both animals leave the encounter with fertilized eggs.

[https://search.yahoo.com/search?fr=chr-yo\\_gc&ei=utf-ilc=12&type=925777&p=leopard+slugs+mating](https://search.yahoo.com/search?fr=chr-yo_gc&ei=utf-ilc=12&type=925777&p=leopard+slugs+mating) 4:21 If this does not open to the link, look for you tube video called: BBC Who Knew Slugs Could Be So Romantic [https://video.search.yahoo.com/search/video;\\_ylt=AwrC5pksWMxeOhgArBz7w8QF;\\_ylu=X3oDMTBncGdyMzQ0BHNIYwNzZWfYy2gEdnRpZAM-;\\_ylc=X1MDOTY3ODEzMDcEX3IDMgRhY3RuA2NsaWRjc3JjcHZpZAMwWGxtSmpFd0xqRlM3M014WFdncDFnQndPVGd1TWdBQUFBQ01abVZxBGZyA2Noci15b19nYwRmcjIDc2EtZ3AEZ3BvaWQDSERkNnNnR3dRYkNEWV9lbmdTeWpSQQRuX3JzbHQDNjAEB19zdWdnAZAEB3JpZ2luA3ZpZGVvLnNIYXJjaC55YWhvby5jb20EcG9zAzAEcHFzdHIDBHBxc3RybAMEcXN0cmwDNDCeXVlcnkDd2hvJTIwa25ldyUyMHNsdWdzJTIwY291bGQlMjBiZSUyMHNvJTIwcm9tYW50aWMEdF9zdG1wAzE1OTA0NTAyNzg-?p=who+knew+slugs+could+be+so+romantic&ei=UTF-8&fr2=p%3As%2Cv%3Av%2Cm%3Aa&fr=chr-yo\\_gc#id=1&vid=2bdc56f088aa06876d7f0d263807bb02&action=view](https://video.search.yahoo.com/search/video;_ylt=AwrC5pksWMxeOhgArBz7w8QF;_ylu=X3oDMTBncGdyMzQ0BHNIYwNzZWfYy2gEdnRpZAM-;_ylc=X1MDOTY3ODEzMDcEX3IDMgRhY3RuA2NsaWRjc3JjcHZpZAMwWGxtSmpFd0xqRlM3M014WFdncDFnQndPVGd1TWdBQUFBQ01abVZxBGZyA2Noci15b19nYwRmcjIDc2EtZ3AEZ3BvaWQDSERkNnNnR3dRYkNEWV9lbmdTeWpSQQRuX3JzbHQDNjAEB19zdWdnAZAEB3JpZ2luA3ZpZGVvLnNIYXJjaC55YWhvby5jb20EcG9zAzAEcHFzdHIDBHBxc3RybAMEcXN0cmwDNDCeXVlcnkDd2hvJTIwa25ldyUyMHNsdWdzJTIwY291bGQlMjBiZSUyMHNvJTIwcm9tYW50aWMEdF9zdG1wAzE1OTA0NTAyNzg-?p=who+knew+slugs+could+be+so+romantic&ei=UTF-8&fr2=p%3As%2Cv%3Av%2Cm%3Aa&fr=chr-yo_gc#id=1&vid=2bdc56f088aa06876d7f0d263807bb02&action=view)

In Class 6, when we covered eating behaviors, we discussed the meaning of **Bubble Shell, #69** in Ocean Oracle, as secret, closeted behavior. If you recall, this is derived from their habit of expelling the contents of their stomach to retract deeper into their shells coupled with the fact that they eat underground, hidden from view. We said this was similar to the human condition of bulimia where people vomit their food and hide this behavior behind closed doors. The meaning of secret, closeted behavior does not just apply to eating habits. This can extend to any type of secret behavior. Bubbles are hermaphrodites, which may be common in the mollusk world, but sexual variety often necessitates secrets, and closeted behavior in the human world.

A former freshman asked a question when we covered the Geography Cone. She wondered if the people who select the Geography Cone “*Putting past negative behavior to positive use*” revealed secretive clients. These negative behaviors have the potential for such positive use, that the clients see a purpose for this and are able to admit the circumstances of their lives. However, when the Bubble Shell shows up in a reading, it indicates secret behaviors. Does everyone see why the Bubble Shell could show you a client keeping secrets?

Now let me show you a really fascinating mollusk....the slipper.



This is the **Slipper Shell**. In Ocean Oracle, it is shell **#53**. When you look at the aperture, you can understand that the little shelf covering half the opening led to the name of Slipper Shell. They are also given the common name of Boat Shells.

Michelle Hanson.....Shelley	Shell	Cypraea tigris.....Tiger Cowrie
Donald Hanson		Cypraea argus.....Eyed Cowrie
Russ Hanson		Cypraea aurantum.....Golden Cowrie
May Hanson		Cypraea asellus.....Idol's Eye Cowrie
Edna Hanson		Cypraea isabella.....Isabella Cowrie
Ken Hanson		Cypraea moneta.....Money Cowrie

Hanson is the **Genus**, there are many Hansons in my husband's family.

Michelle is the **Species**, it tells you which Hanson I am.

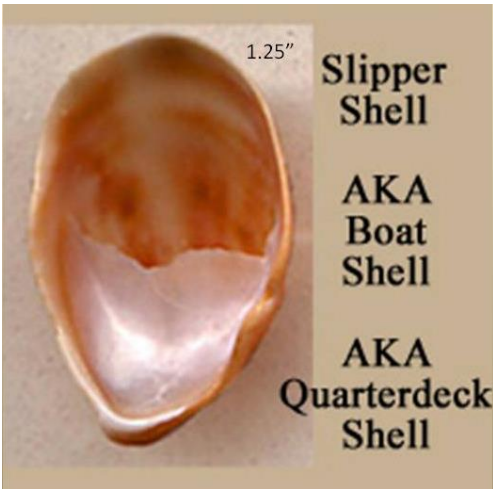
In scientific nomenclature, my name is: *Hanson michelle*  
 Note: There is only one name for me in Scientific nomenclature.

Shelley is my **common name**  
 Shell is my **common name**

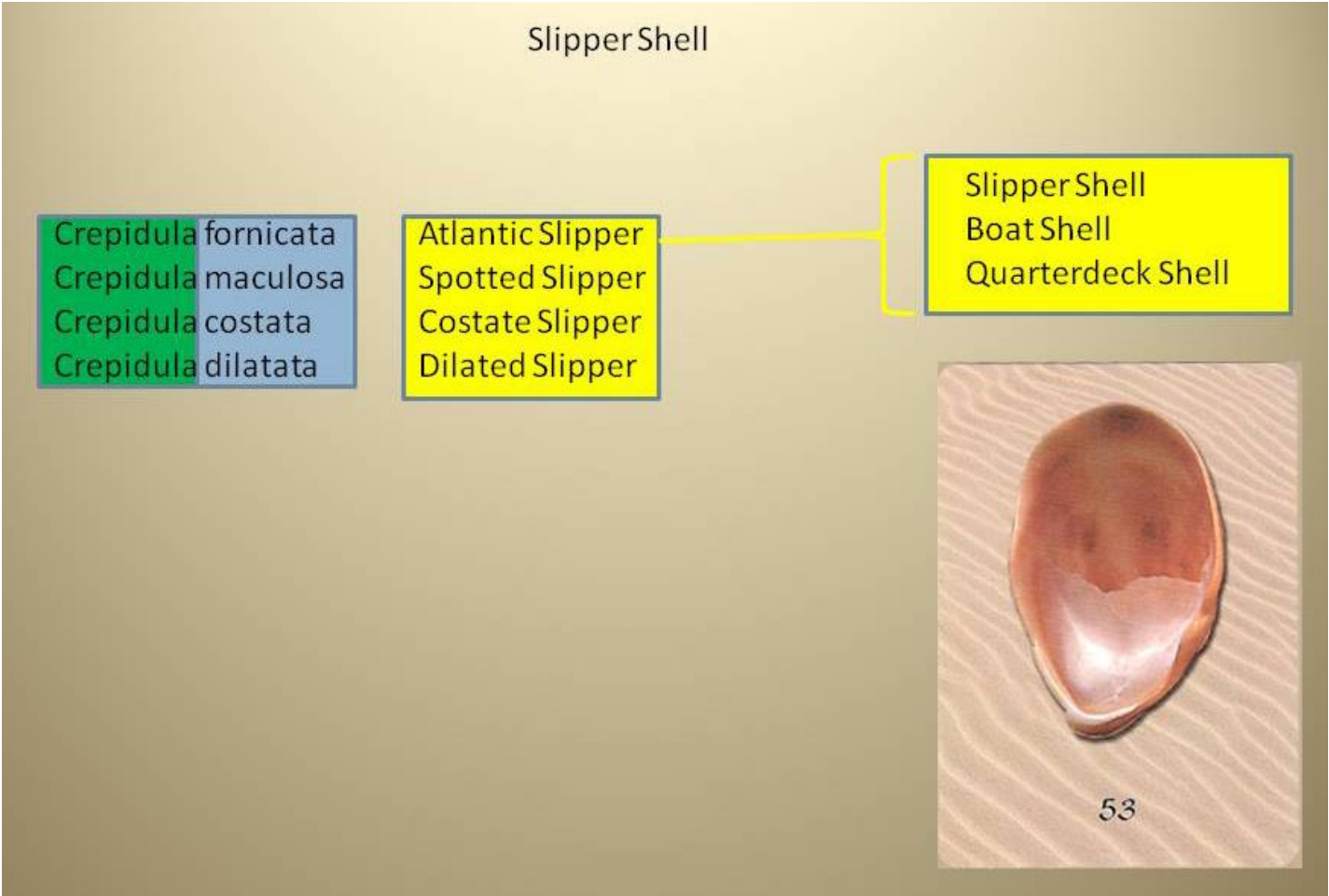
Let me see if I can help you understand the concept of common name vs. scientific name. Think of the common name as someone's nickname. Some people have a variety of nicknames depending upon whether they are addressed by family members or friends. However, the given name, (using last name, followed by first) is similar to the shell's scientific name. It takes the form of Genus, followed by species, and is usually in italics. Let me use my name to demonstrate this. You know my nickname is Shelley. I am called

Shelley, or Shell, and these would be my common names. According to these rules, my scientific name would be *Hanson michelle*. (The species appears in lower case letters.)





In the case of the Slipper/Boat shell, it is also called a Quarterdeck Shell. All of these are common names. You can see the possible confusion, and the value of the scientific name. Some call this by the common name of Slipper Shell, and to those who call this a Boat Shell, they may have never heard of a Slipper Shell, or realize it is the same shell they know as the Boat Shell. But the scientific name is identical all over the world, and to people who use all three common names, all know this shell by the same scientific name, which is *Crepidula fornicata*.



All Slipper Shells belong to the Genus *Crepidula* (like the person’s last name i.e., Hanson). There are several types of Slipper Shells. This shell #53 in *Ocean Oracle*, is the particular species *fornicata*, like a person’s first name (i.e., michelle) to identify which Hanson family member we are talking about.

Now, when I used the name of the shell as a way to derive meanings, except for the testiculus, I used the common name. Let’s take the given name John Doe. By the rules above, the scientific name would be *Doe john*. That does not give me much information as a scientific name, but if his friends call him by the common name of “Einstein” or “Mozart” I have something to work with. In the case of Einstein, I can say the John Doe shell has to do with genius level intelligence, if he is called Mozart, I can connect the shell to a child prodigy.



OK, back to the Slipper's method of reproduction. This picture shows several slippers in their native habitat. As you can see, they live in colonies on top of each other. The smallest shells on top of the colony are young males, and the older, larger shells at the base are females. The females release a steady supply of hormone. When a female dies, the hormone level is altered, resulting in the transformation of the oldest, lowest male

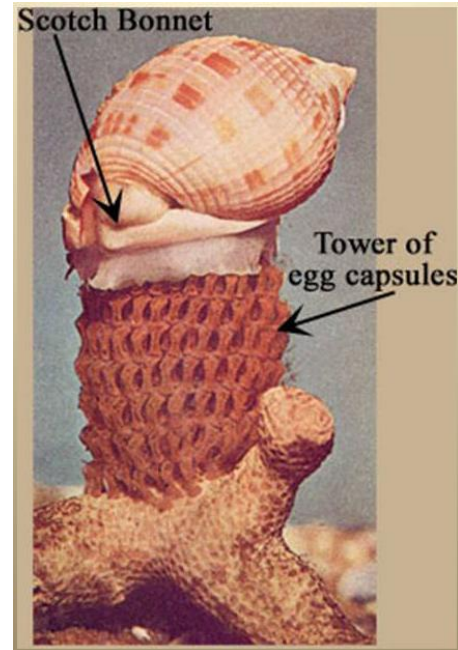
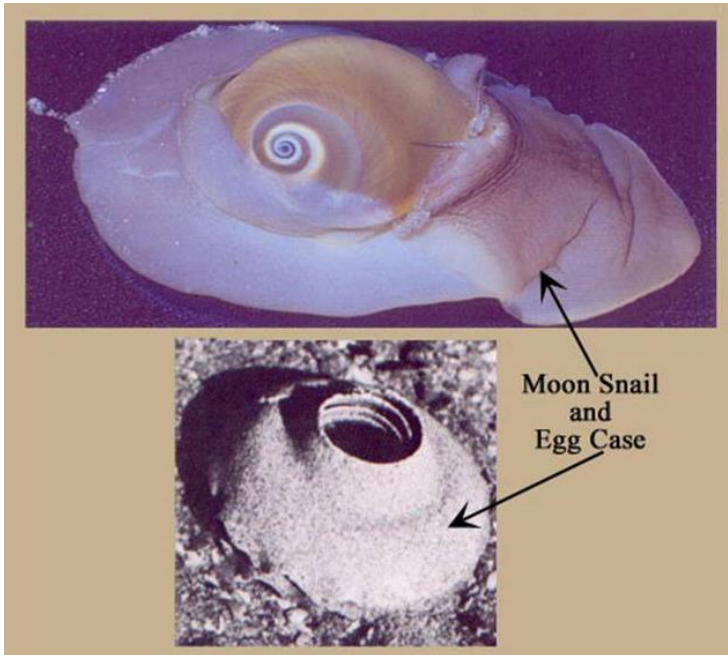
slipper into a female. All the eggs that are laid are male and begin at the top of the colony. Throughout the colony, as each member works its way toward the bottom, each is in the process of changing genders. By the time they reach the bottom, they have gone through enough hormone changes to become fully female. This means during their life cycle, all slippers will experience life as both genders. They begin life as males, and complete their life cycle as females.

In shell divination, the slipper is about pushing the envelope, not allowing society to dictate what you can and can't do based upon gender. It encourages men to allow their feminine side to flourish, saluting the stay-at-home dad. It supports women who want to express their male energy, inspiring the first female doctor, or astronaut...professions society once said were strictly for males. These gender limits hold no power for slippers. If a male is told you can't do something because it is for women only, the male slipper would say, "Well if you wait a while, I will be a woman." If a woman is told she is prohibited from something that is strictly for men, the female slipper would say, "No problem. I used to be a man." The slipper is pushing the envelope, defying these imposed limitations. And, it is not just based upon gender. This can apply to race, religion, age, culture, anything that is being used as justification for unequal treatment. Push that envelope!

The name *fornicata* is not lost on me. I was once at my mother's 50<sup>th</sup> high school reunion as a guest speaker. One of her classmates could not stay until I gave my seminar, but as she was leaving, she came over to me and whispered a question asking me what the name of the "sex" shell was. She said they were little piles of shells all over Cape Cod. I knew she meant Slipper shells, and I told her what I just told you about them experiencing life as both male and female. That evening, I was at a restaurant with my parents and several relatives. My mother related the story of the lifestyle of the Slipper Shells changing from males into females in their colonies. My father was fascinated, and called down the table to ask me if all Slipper shells did this. I replied without thinking "I don't know if this applies to all species of Slipper shells, just the *fornicata*." My father almost choked on his food.



Now that you have looked at some hermaphrodites, the Bubble and the Slipper shells, there are mollusks that reproduce heterosexually as well.



In the picture on the left, at the top is a moon snail. Below is a moon snail egg case. The females lay their eggs in gelatinous rings that are soon covered with sand. The result is these sand collars on the beach. We will be spending a great deal of time discussing moon snail in a future class. For now, I want to show you the diversity in mollusk reproduction.

In the picture on the right, you see another heterozygous mollusk. This is the scotch bonnet sitting on top of her towering egg case. Once she finishes laying her eggs, like the moon snail, she will abandon them to the whims of fate.

<http://blogs.evergreen.edu/ebestiary/files/2012/05/noodle2.png>



And now, look who is back! Here is a mother Octopus. She is inside a cave and the strings you see above her contain her egg capsules. Once she lays her eggs, (the common octopus can lay as many as 200,000-400,000 eggs) unlike the other mollusks who abandon their eggs, mother octopus never leaves. She remains to guard them and care for them. Depending upon the species, this could be 3-5 months. She is so dedicated; she does not even leave to eat. All she does is gently caress them with her arms to keep them free from bacteria, and blow air through her siphon to keep her eggs clean and oxygenated. By the time they hatch, she has wasted away to nothing. If she does not die, all of her predators are very aware of her weakened state, and are lined up to make her their next meal.

<http://www.teara.govt.nz/EarthSeaAndSky/SeaLife/OctopusAndSquid/2/ENZ-Resources/Standard/2/en#breadcrumbtop> [Mother octopus tending her eggs.](#)

<http://www.teara.govt.nz/en/octopus-and-squid/2/3> [Hatching baby octopus](#) already equipped with siphon and tentacles.

If unable to get these links above, try these You tube videos

<http://www.youtube.com/watch?v=5MHJbxWO6OM> 1:16 [Baby octopus from Vancouver aquarium.](#)

<http://www.youtube.com/watch?v=59x51Zz-8kg> 0:56 [Baby octopus shows camouflage ability.](#)

This means once a female octopus lays her eggs, she lives just long enough for them to hatch. Her last act is to blow air through her siphon to try to push the hatchlings past all those predators. When I was young, and read about this, I burst into tears. That was when I thought “I can save her!” and that is the real reason I campaigned to get a pet octopus. I was too young to realize that she would need a mate.

With all I have learned since, I realize that she is weak because she does not eat, but it is not because she is unable to get food. Divers have tried to feed female octopus guarding their eggs, but they will not take food.

I also realized that if she were that hungry, she could eat her arm. That is another amazing thing about octopus. Eels sometimes yank off an octopus’s arm, and my youthful studies said that the octopus immediately stops bleeding. To confirm this, I found a site on the Internet that explains why this is possible. “*Each blood vessel has its own nerves and can contract independently, making some injuries less dangerous. If an arm is bitten off by a predator, the blood supply to that arm is shut off quickly and the octopus does not bleed to death.*” As the site points out, “Imagine the effects on humans with such an ability!”

If you wish to read more, here is the link: <http://westbriar.tripod.com/id1.html> (This is a site discussing squid, but as a cephalopod, the information applies to octopus as well. See [Circulatory System](#) in brown text for the quote above.)

In fact, loss of an arm is not a problem for the octopus. They can amputate their own arm and toss it aside to distract an enemy. The arm has a life of its own.

[http://www.globio.org/glossopedia/article.aspx?art\\_id=65](http://www.globio.org/glossopedia/article.aspx?art_id=65) (this site is no longer available but was the source of the information below:)

### **Unarmed but Unharmed**

*If a predator catches an octopus, the octopus takes drastic action. It lets one of its arms break off! The detached arm dances around and changes color to get the predator’s attention. The predator usually starts eating the arm. This allows the octopus to swim away unnoticed. In time, a new arm grows in to replace the lost arm.*

I found this explanation on another site no longer available:

*“They also have the amazing ability to autotomize their arms, or virtually break it off and toss it aside to distract an enemy. Noted for their advanced brain structures, the octopus body and arms hold 2/3 of their nerves, and not the brain. This not only allows them to separate the arm, but permits that severed limb to keep moving, flashing colors, and generally serve as a distraction for predators. This feature also means they are capable of re-growing the arm.”*

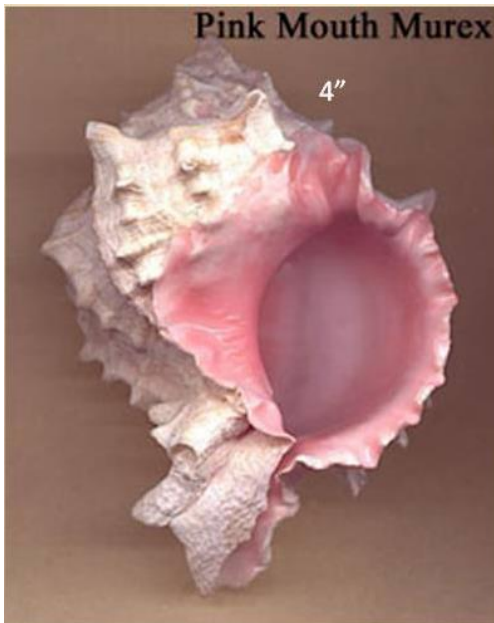


Here is new information from August 2013...

<http://blogs.scientificamerican.com/octopus-chronicles/2013/08/28/how-octopus-arms-regenerate-with-ease/> **How Octopus Arms Regenerate With Ease** by Katherine Harmon Courage

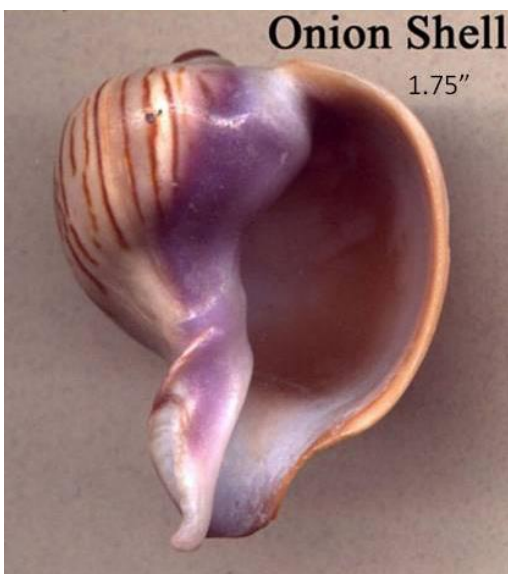
With all of this evidence, I knew that the arm could be severed, wouldn't bleed, and can regenerate. So, I reasoned that if she were starving while guarding her eggs, she could eat her own arm. The fact that she refuses food from the divers, and does not use her arm, tells me something else is going on. I think they are programmed to shut down any desire to eat. Since all she does is clean her eggs, my theory is that she may not eat because she does not want to soil the area by excreting waste products. Whatever the reason, I would certainly say that the octopus is a devoted mother, paying the ultimate price for her children.

[https://www.researchgate.net/publication/7545324\\_Octopus\\_Senescence\\_The\\_Beginning\\_of\\_the\\_End](https://www.researchgate.net/publication/7545324_Octopus_Senescence_The_Beginning_of_the_End) **Article on senescence.** (New research reveals that after reproduction, a secretion from their optic gland leads to loss of appetite, and eventual starvation and death.)



Another mollusk that can pay a price during reproduction is the **Pink Mouth Murex**. You have seen that mollusks may lay thousands, even millions of eggs. Pink Mouth Murex females travel out to sea to lay their eggs in communal masses. There are billions of eggs, and it is not unusual for a female pink mouth murex to become trapped and smothered by them. This is shell #32 in *Ocean Oracle*, and it connects to the meaning of being smothered by our childhood stuff...issues that stem from childhood impacting our life choices. Survival behaviors we adopted as children may no longer serve us as adults. People attracted to this shell may benefit from inner-child work. We will revisit this topic much later in the course.

As you all know, I don't have an octopus. But I was elated to discover there is a mollusk with a shell that also displays the quality of devotion.



In *Ocean Oracle*, it is shell #42, the **Onion Shell** seen here. As you now know, mollusks can lay hundreds of thousands, or even millions of eggs, but the mothers abandon them to suffer the whims of fate. Due to predators or environmental conditions, very few survive. Even the devoted octopus loses the majority of her eggs to predators. One source said only 2 of 200,000 eggs survive. The onion is very different. She only lays 3 eggs, but she attaches them to her shell, increasing the chances of survival of all her children. In *Ocean Oracle*, the meaning for the Onion Shell is "*Devotion and dedication, especially regarding motherhood.*"

When I read that the onion attaches her eggs to her shell, I had found a shell to represent the devotion I had only connected to the octopus. Of course, I wanted to get one to use in my shell readings with my clients.



My parents were departing for their yearly vacation in Sanibel, Florida, and my mother asked me if there were any shells I wanted her to look for. I had been content with my collection for quite a while, but I had a new agenda. I was just writing *Ocean Oracle*, and I thought why not reach for the stars? Based upon what I taught you about the value of intention, I had been using stand-ins for various meanings in my collection. However, if possible, I wanted to obtain the accurate shells from various locations throughout the world to use in the deck for my book. I made out a wish list for my mother, and included the Onion Shell which my books said were rare. I knew I would be lucky if she found even one of the shells on my list. A few days after she left, she called me and said she had visited the shell store and asked the proprietor if he had any of the shells on my list. His response amazed me. He told her that he had everything on the list. He had not seen Onion Shells for many, many years, but that very week, he just got two in the store. I had to admit that it seemed the shells were coming to live with me to help me make *Ocean Oracle* all I had envisioned it could be.

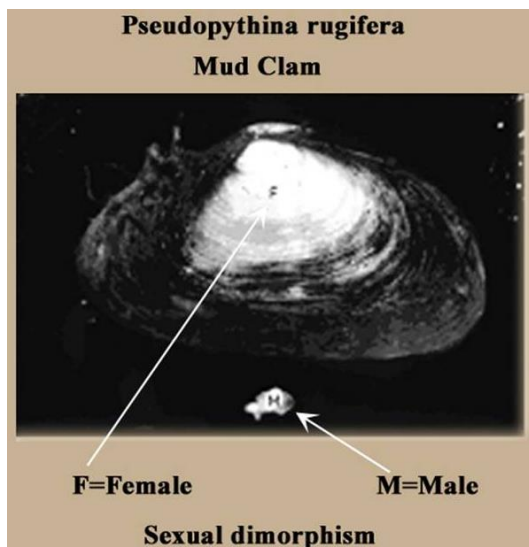
Since we are on reproduction, there is another mollusk to tell you about that is not in *Ocean Oracle*. It adds to the range of diversity regarding this subject and mollusks. In Class 8, we will look at sexual dimorphism, (a difference in size or color or form between different sexes of the same species.) In many animals, the male is larger than the female. With some mollusks, the opposite is true. The female is much larger than the male, and the males are referred to as dwarfs.

Apparently, there is a clam that has quite a discrepancy between the male and female. The female is much larger, and the male clam lives inside her shell. He is totally dependent on her for food and shelter. Since he is sexually mature, she is able to be fertilized. In some marine clams, the male degenerates leaving only a functional testis with no other parts of his body.

[http://www.ummz.lsa.umich.edu/mollusks/cool\\_mollusks.html](http://www.ummz.lsa.umich.edu/mollusks/cool_mollusks.html) This link may have been altered since I first came across this information. I have copied the relevant information on Dwarf Males below.

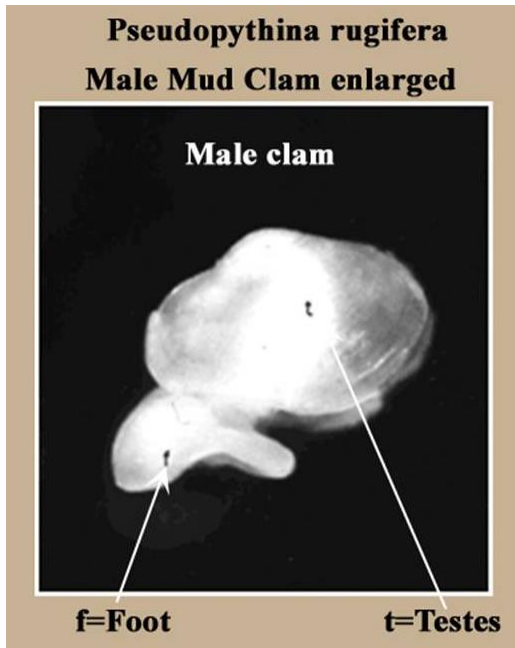
### **Dwarf Males**

Sexual dimorphism occurs when one sex (gender) is typically larger than another. We are most familiar with this condition in mammals where usually males are, on average, larger than females. In our species, that size difference is approximately 10% in terms of body mass. In many other organisms, including some molluscs, the dichotomy is reversed and amplified. Females are much larger, and miniturized (dwarf) males are housed within or upon the female's body. This typically occurs when population densities are very low due to a spatially restricted and discontinuous habitat. We find this for example in some small commensal marine clams.



The figure on the left shows a typical **male (M)** and **female (F)** *Pseudopythina rugifera*.

This species of marine clam is found commensally with burrowing mudshrimp and polychaete worms off the west coast of North America. Note (left) the huge male-female size disparity. The tiny male lives within the mantle cavity of the female and is completely dependent on her for food and shelter.



At left is a close-up of the **dwarf male** (the **M** from the photo above) *Pseudopythina rugifera*. Note the large suckerlike foot (f) for moving around the female host. Note also the whitish portion of the body mass (t). This is the male gonad, the testis. Although small, this animal is sexually mature. In this species the tiny male has a complete, though miniturized, anatomy. In other cases the dwarfed male may physically fuse with the female host and degenerate into a functional testis, secondarily losing all other aspects of its anatomy.

That certainly seems an extreme example of sexual dimorphism. But the testis is all she needs to reproduce.

In Class 8, we will continue with our discussion of sexual dimorphism, where another seashell partner awaits your acquaintance 😊