God's Miraculous Octopus!

All animals were created by Father God, the Lord Jesus Christ, and the Holy Spirit

I give ALL of the glory to my Father God, the Lord Jesus Christ, and the Holy Spirit for the collection of books which He has written, for the illustrations, materials, and lessons - ALL of which would not have been possible without Him. He instructed me to put the copyright in my name and I have obeyed. God's Loving World Ministries™ is a Christian Literacy organization whose mission is to teach remedial reading, writing, math, and English to English as a Second Language Learners FOR FREE.

Psalm 115:1

"[1] Not to us, LORD, not to us
but to your name be the glory,
because of your love and faithfulness." (NIV)

The octopus is separated into an animal group called Octopoda. There are about 300 different species within this group. All of these octopuses will have different name extensions and appearances.

In 2023, scientists know of 2 different TYPES or suborders of octopus: CIRRATA [seer-rah-tah] and INCIRRATA [in-seer-rah-tah] .

CIRRATA [seer-rah-tah] octopus are DEEP SEA octopuses and scientists are just beginning to explore the ocean at these depths.

Based on what scientists know in 2023:

Some have webbing on their arms that extends from their bodies to the ENDS of their arms and have hair-like projections called Cirri underneath.

Some may have 2 fins on the sides or tops of their heads.

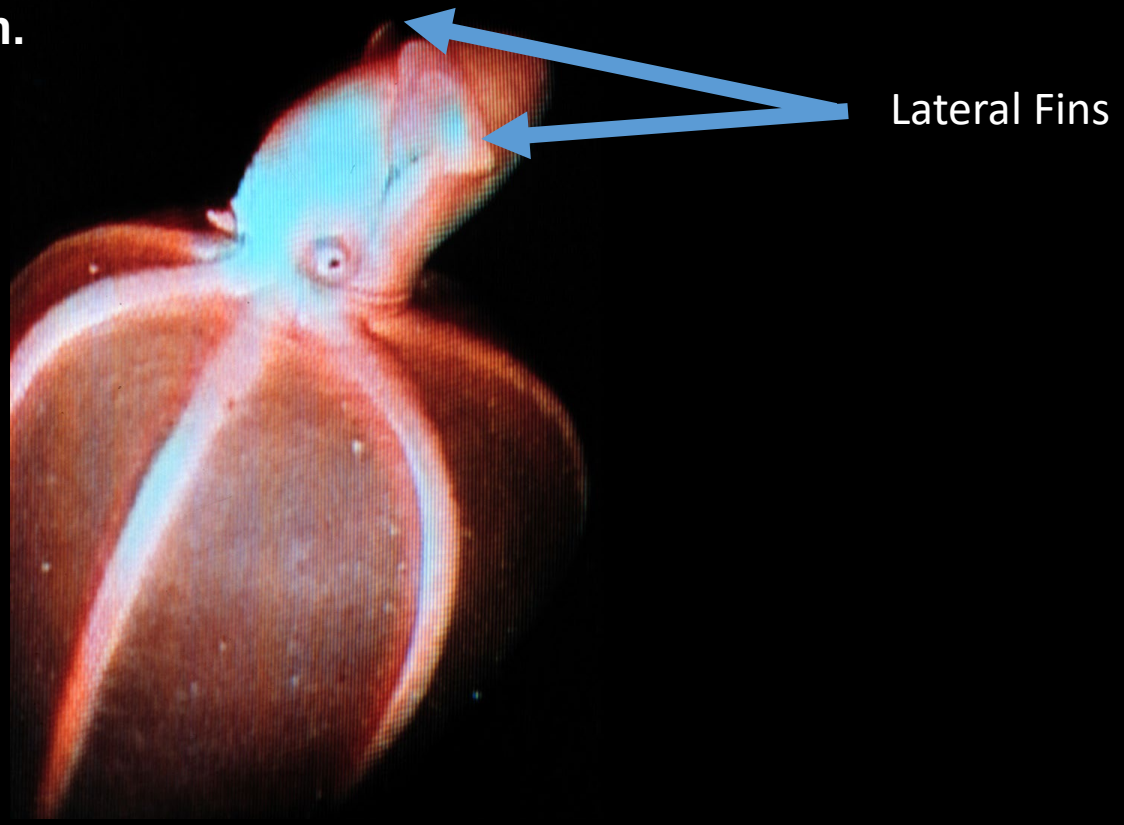
Males do not have a hectocotylus [hec-tō-cot-i-lus] – a modified arm that holds the male sperm and is inserted into the female to fertilize the eggs and is removed from the male octopus's body.

CIRRATA [seer-rah-tah] octopus live where no sunlight can reach in the deepest parts of the ocean. They have soft bodies and heads shaped like a bell. Some have an internal shell made of cartilage that gives their bodies shape and it helps them to swim better. Some have arms that are webbed. Some have fins on the top or sides of their heads that they use to make themselves move. Scientists think that they do not have ink sacs, because it's so dark in the depths where they live, it would be of no use to them for protection.

Examples of CIRRATA [seer-rah-tah] octopus:

Grimpoteuthis sp. [Grim-po-tooth-is]

This Cirrata octopus purposely forms a bell shape in the water, using its body as a net to catch plankton and feeding on them.



Lateral Fins

Notice the webbing between the arms. It goes all the way from the top of the arm to the bottom.

Stauroteuthis syrtensis [star-o-tooth-is sir-ten-sis]

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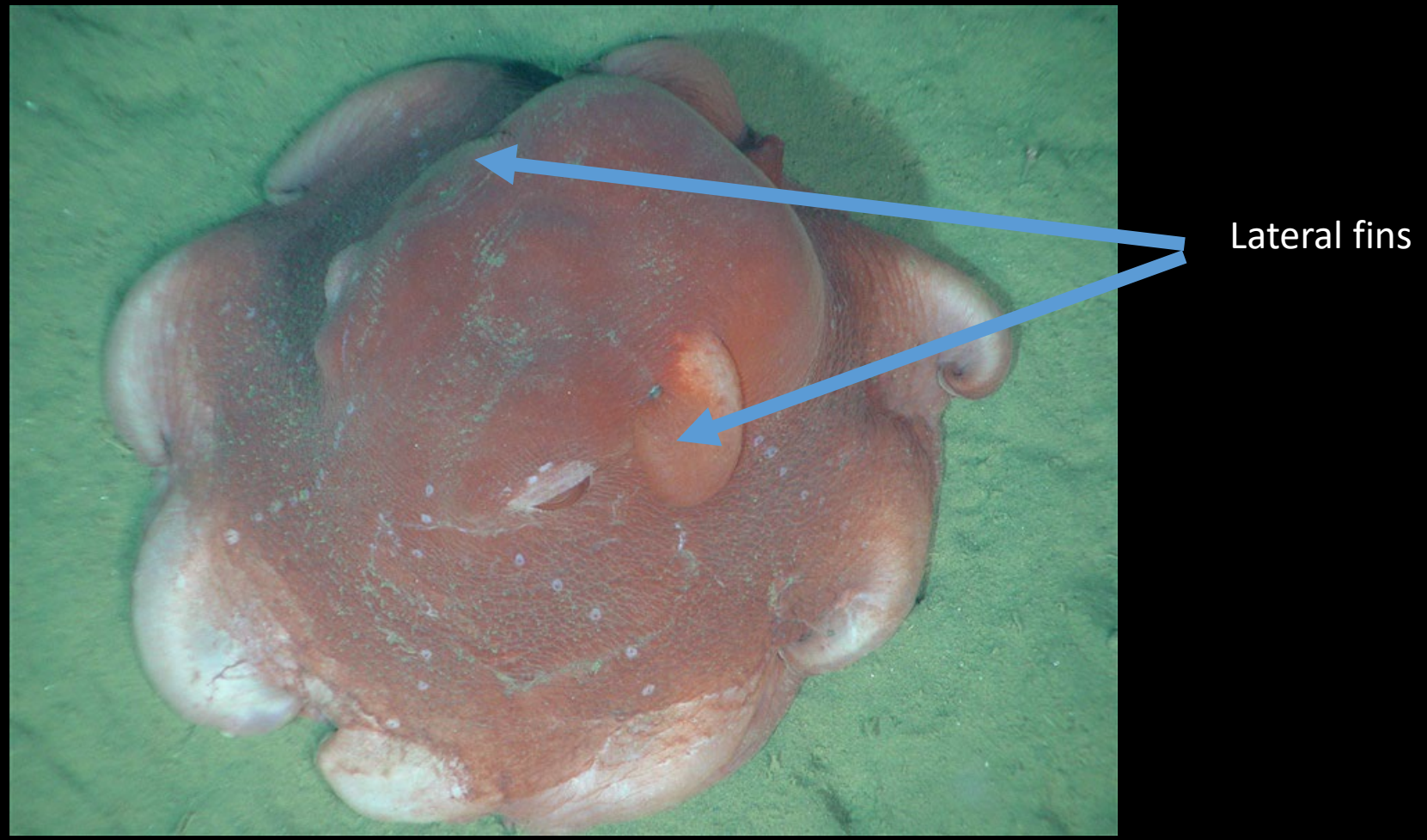
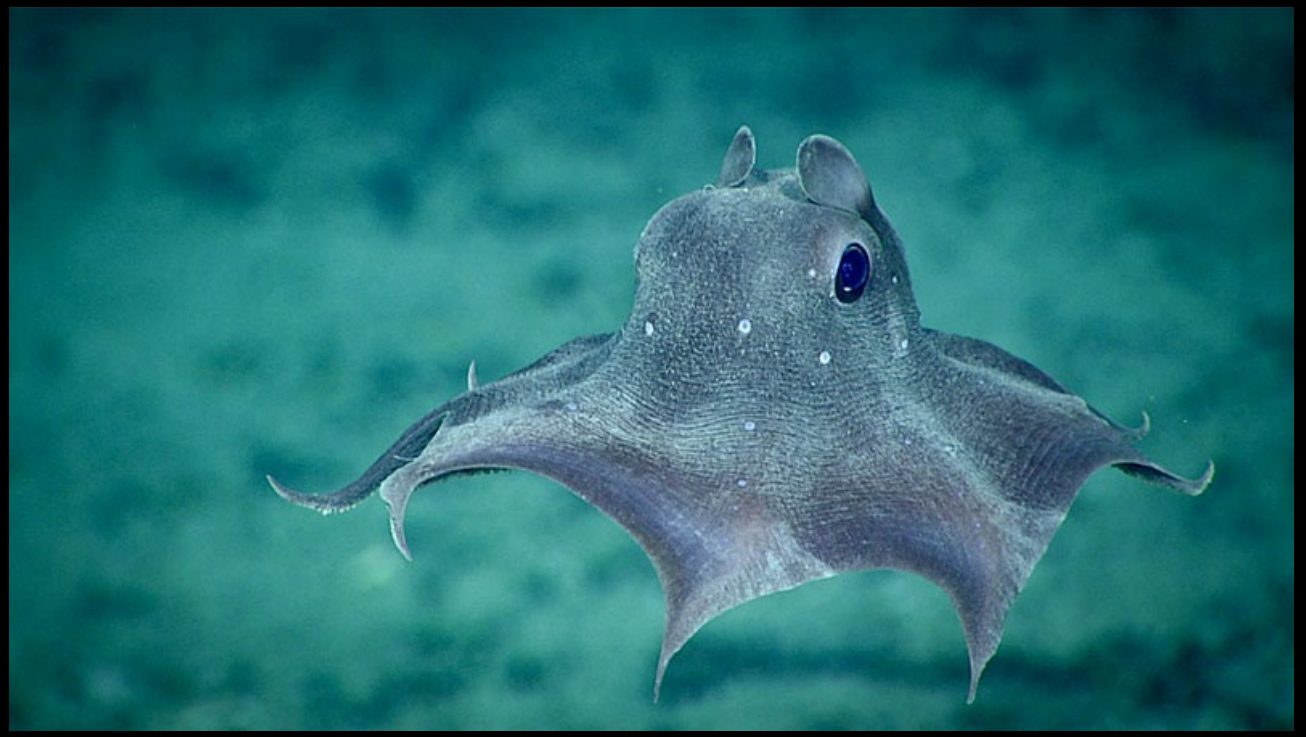
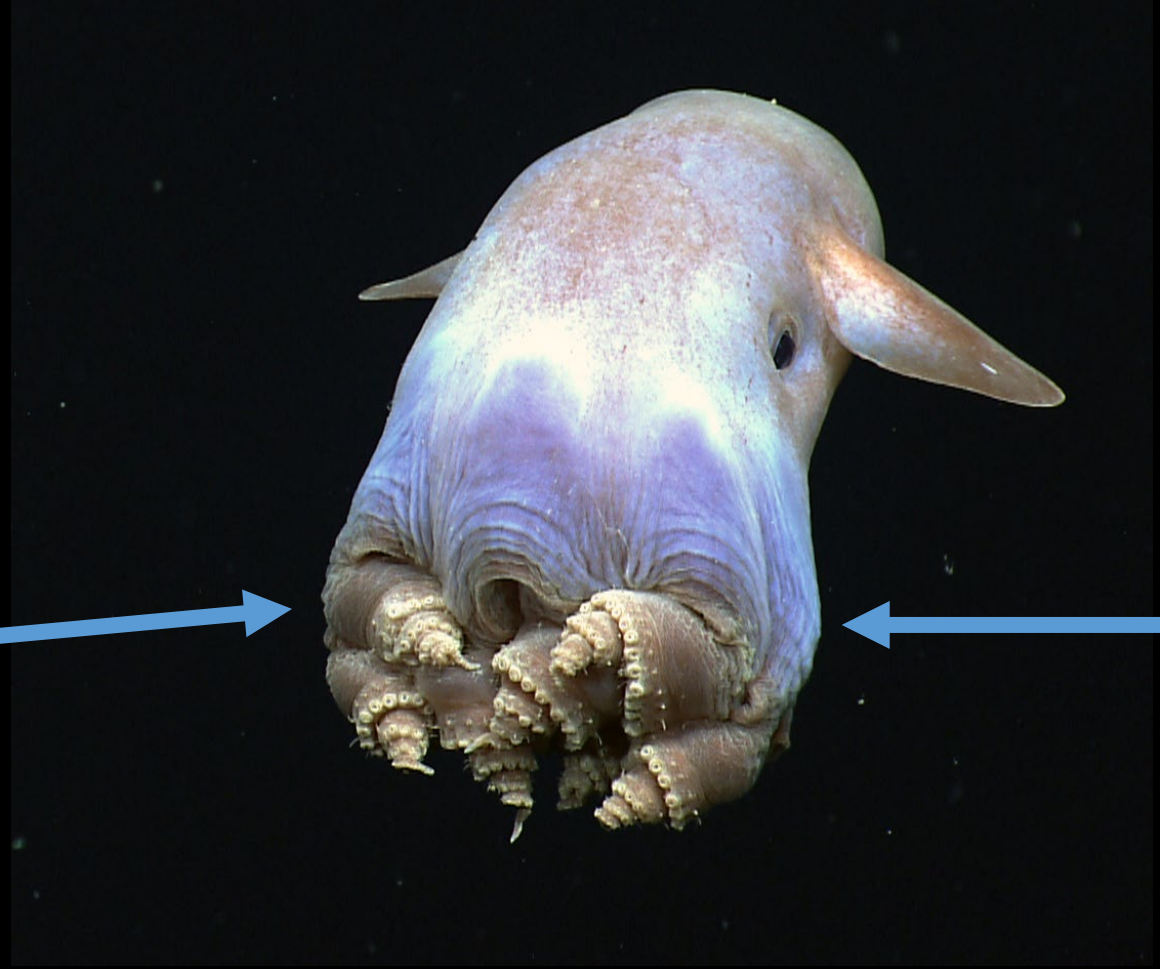


Opistoteuthis californiana. [opis–tho-tooth-is cali-for-ni-an-a]



Opisthoteuthis agassizii
[opis–tho-tooth-is
ah-gas-si-see-ī]

The coiling of the arms in this photo had never been seen before in this species.



Notice as this octopus coiled its arms, it created neatly folded layers of webbing which could be uncoiled easily at any time.

Grimpoteuthis [Grim-po-tooth-is]

Now, we're going to look at INCIRRATA [in-seer-rah-tah] octopuses.

INCIRRATA [in-seer-rah-tah] octopuses have:

A MANTLE that is bulbous like a bag or sac

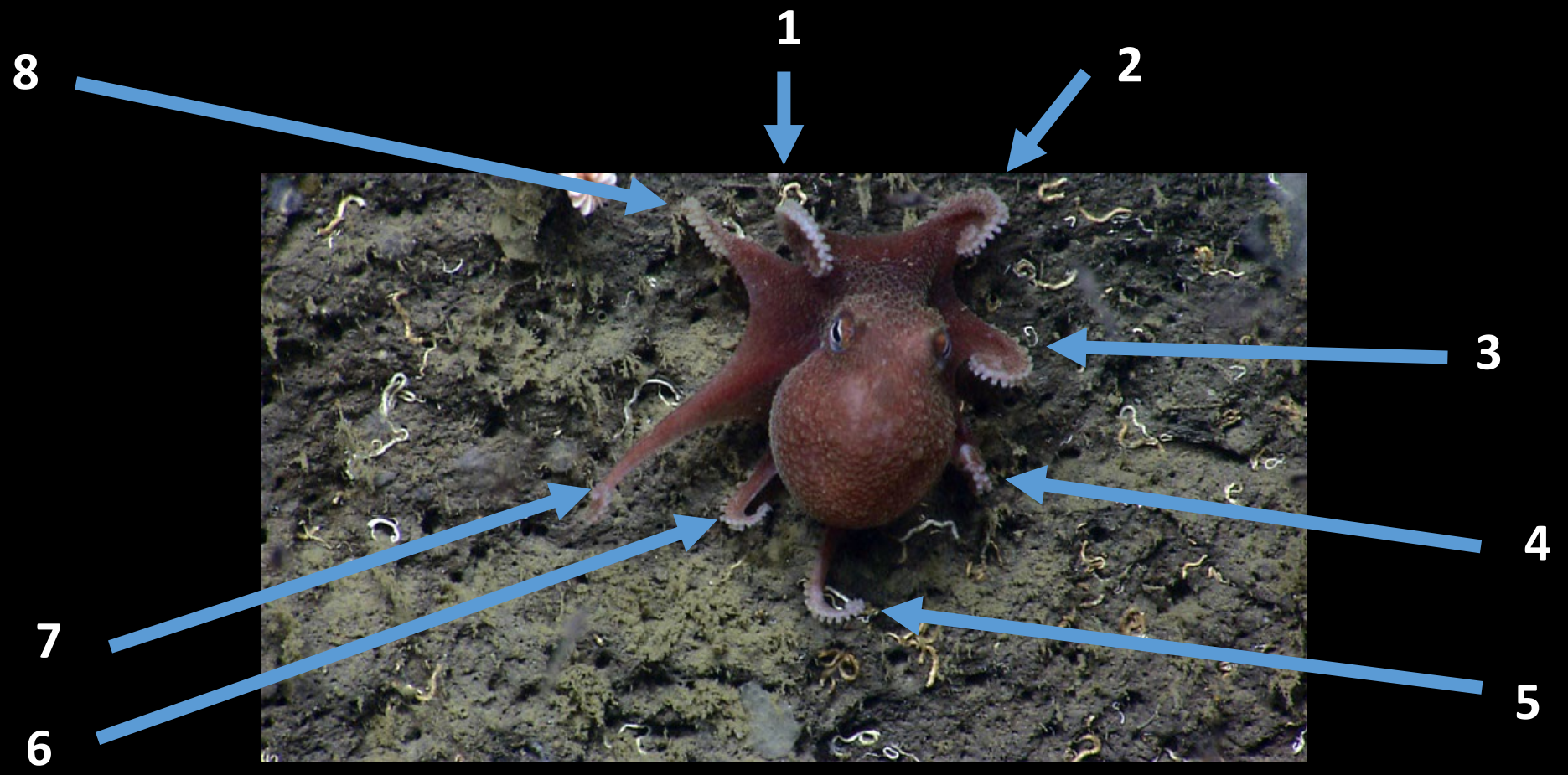
Skin that can change color and texture as camouflage protection

It shoots ink for protection to conceal its location while it makes a quick getaway.

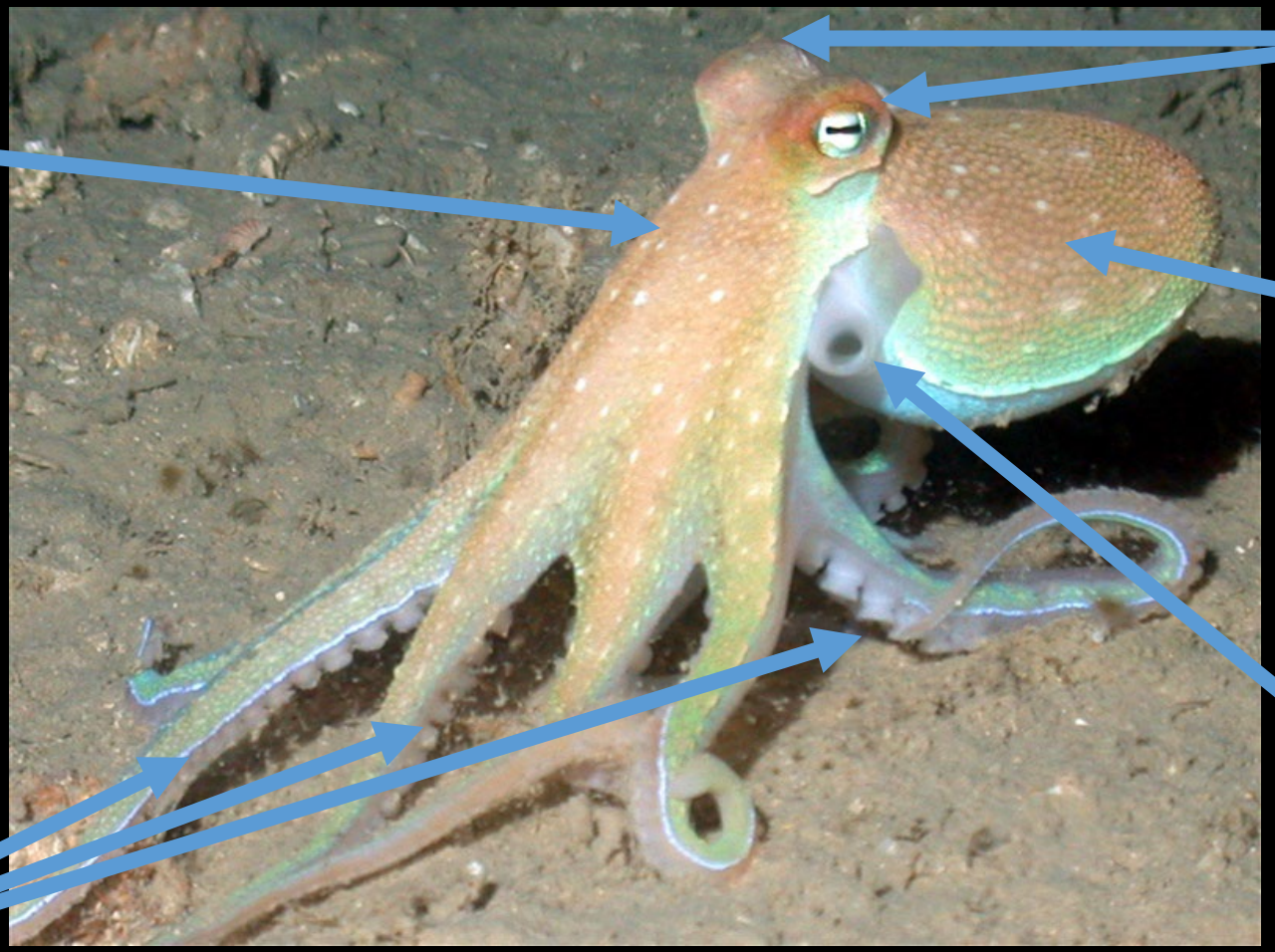
8 arms with suckers that extend up each arm

and more…

An INCIRRATA [in-seer-rah-tah] octopus, (meaning 8 footed) actually has 8 of what are referred to as ARMS. Arms on an octopus have suckers that line the whole length of the arm.



The suction like projectiles on its arms have sensory cells that send the octopus information about its prey. They also help to hold its prey.



The FRONT of an octopus

Highly developed bulging EYES, one on each side, that CAN look to the side and frontward.

The MANTLE is a strong muscled body part where the BACK of an octopus is. It holds many of an octopus's major organs.

Siphon/Syphon Tube

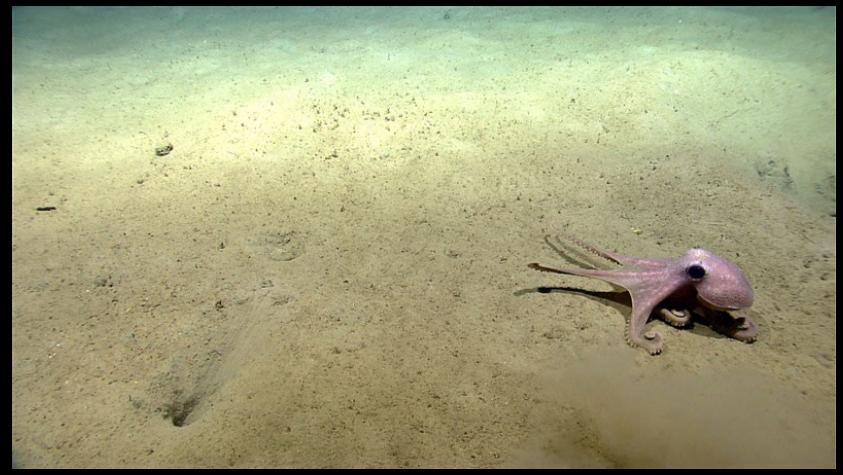
Suckers going the entire length of the ARMS.

The suckers on an Incirrata [in-seer-rah-tah] octopus work the same way an actual suction cup works. When pressure is applied, a vacuum is created, and causes the sucker to trap an octopus's prey. When the octopus uses its beak to break its prey in two, the vacuum is broken, and the octopus can take its prey into its mouth.

The MANTLE, (which is right behind the octopus's head) - protects most of an octopus's organs. The muscular action of the mantle helps with contraction, respiration, and movement. The mantle holds 2 gills and 3 hearts. Two smaller and weaker hearts are called the Brachial hearts. Each Brachial heart is also attached to one of the 2 gills. The gills get oxygen from the water. Each Brachial heart pumps blood through the gill it is attached to, so that it can be oxygenated, but there is only one problem. The blood is at low blood pressure. So, the largest, and most important heart is called the Systemic heart. It sends oxygen to the rest of the body EXCEPT the gills and raises the blood pressure to the normal level required for an octopus. The mantle also holds the reproductive glands, digestive system, salivary gland, its anus, the reproductive organs - gonad (in males) and the female has an oviduct, its ink sac, and even more. The Siphon/Syphon extends out from the mantle as well.

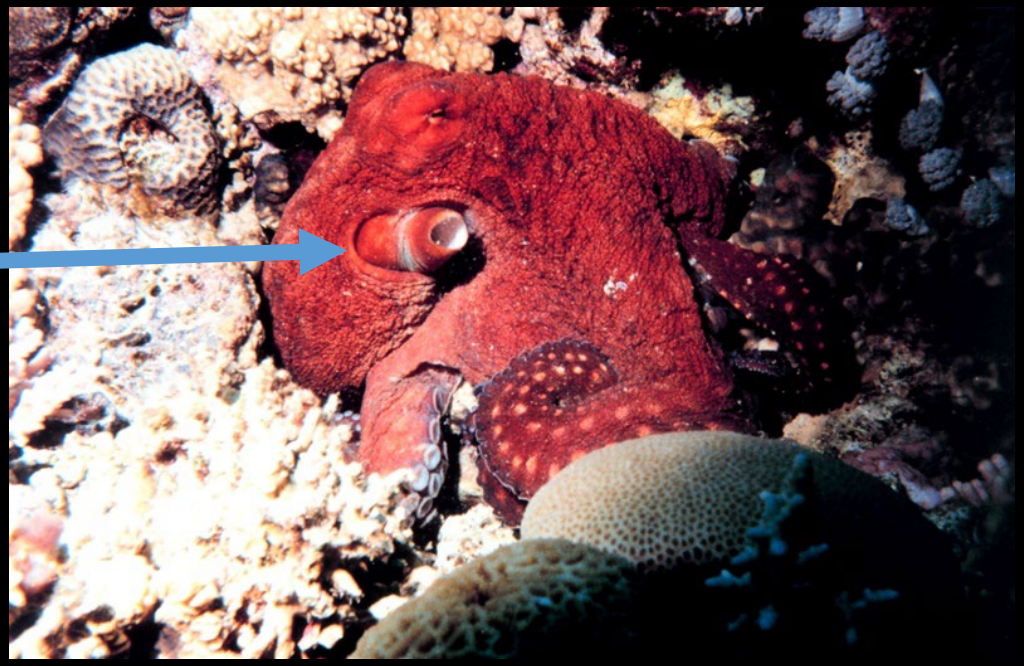
The blood of an octopus is blue. It's blue because, it contains a protein containing copper that binds to oxygen within the octopus.

Incirrata [in-seer-rah-tah] octopuses have a soft bag-like body, making it an invertebrate, meaning it has no spinal column internally or externally. As a result, an octopus moves in a fluid like fashion from place to place within the ocean. It moves by blowing out water from its Syphon tube on the side of its body which propels it through the water.



An INCIRRATA [in-seer-rah-tah] octopus can squeeze into the smallest holes and crevices to both hide and to pursue their prey. It also has a sac that releases an ink-like dark fluid that is used as a defense mechanism to conceal its location. The fluid contains a chemical called tyrosinase which prevents the predator from smelling and tasting. After releasing this fluid, the octopus itself must escape the fluid too or it can become sick or die. Octopus are usually solitary, meaning they usually live alone, but in recent years scientists HAVE discovered that they can live in groups.

Siphon/Syphon Tube

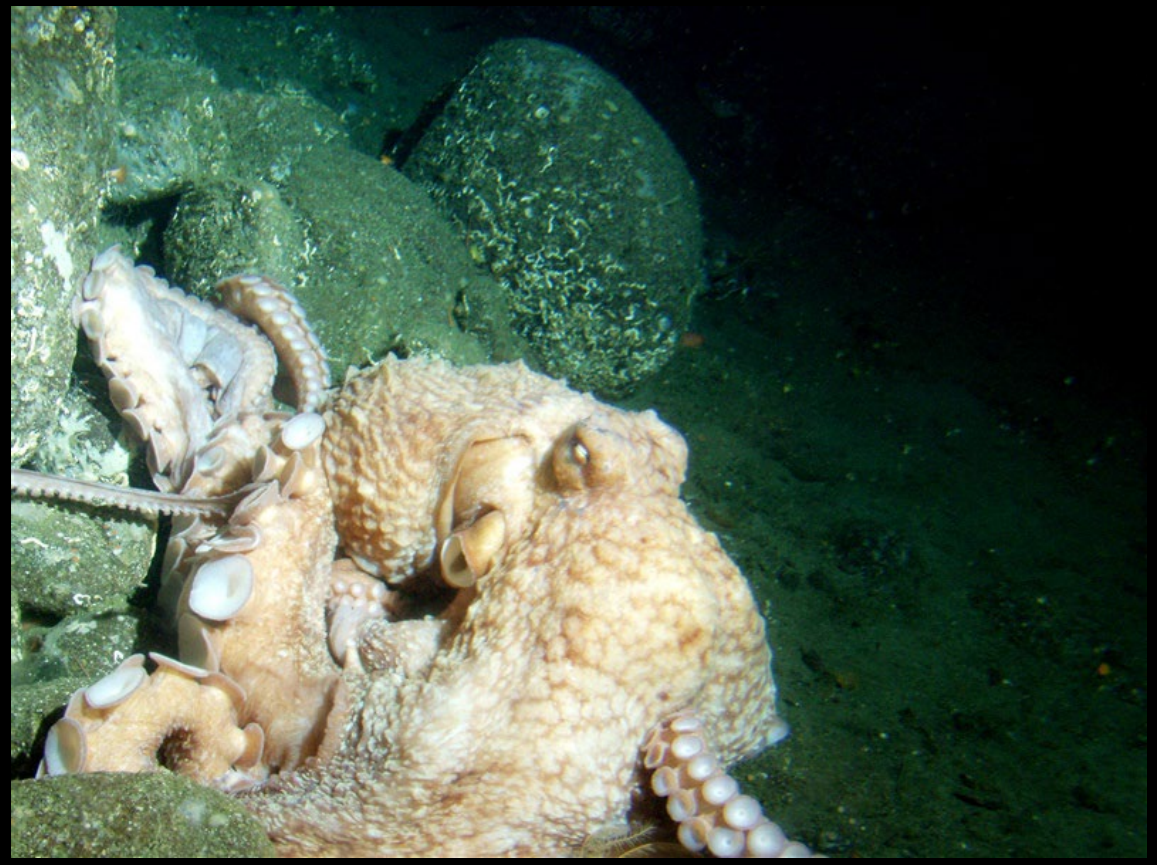


An octopus can change color and its outer texture to camouflage, (meaning to hide itself within its surroundings) which is often in coral reefs. Except when a female is guarding her eggs, they like to change their location every one to two weeks as a form of protection.

How is an Incirrata [in-seer-rah-tah] octopus able to do all of these transformations?

They have a CENTRAL donut shaped brain between their eyes. Their brain has about 35 lobes. Neurons are messengers that send information to other parts of the body. Octopus have approximately 500 million neurons over their entire body. If you think these numbers are too high, you are wrong. It was once thought that humans had about 100 billion neurons, but according to the Cleveland Clinic, scientists have adjusted that number to about 86 billion. In an octopus, about 10% or about 50 million are in their Central Brain, approximately 30% or about 150 million are in their optic lobes, and about 60% or about 300 million are divided equally between their 8 arms - approximately 37 million 500 thousand neurons per arm. This Central Nervous System structure helps octopuses to instantaneously blend into their surroundings, solve problems, mimic other animals, use tools, and learn through observation.

There are octopus living in every ocean all over the world. They vary in size. The adult Star Sucker Pygmy Octopus/Octopus wolfi is about less than 1 inch in length, while the Giant Pacific Enteroctopus dofleini can be about 29.5 feet long.



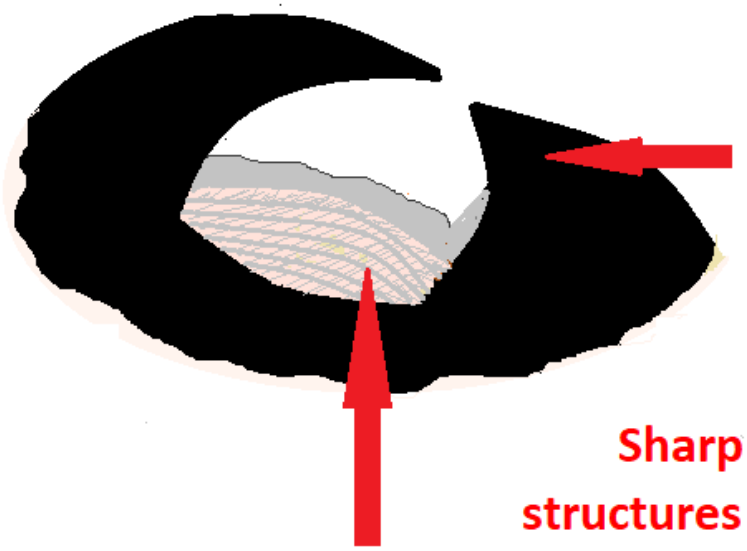
Giant Pacific Enteroctopus dofleini

Most octopus drop down from a higher position and using their 8 arms scoop an animal into its mouth. The Coconut Octopus, one of the most intelligent invertebrates, can even walk along the ocean floor and hide in unoccupied shells as a shelter. It even carries the shelter to new locations. It blasts out of the shell and uses its whole body to force prey into its mouth and teeth.

An octopus has a radula tongue which has sharp teeth that tears its food to pieces. It also has 2 parts within its mouth that are hinged like a human jaw. It is shaped like the beak of a predatory bird.

Radula and Beak of an Octopus

The beak of an octopus comes out of the hole on the center underside of its body to kill its prey. Crustaceans like: crabs, lobsters, and shrimp, as well as other sea creatures are crushed like a nut cracker would do or a predatory bird would do when it kills its prey with its beak.



Sharp teeth-like structures on the surface of the radula, (a type of tongue), helps to scrape food away from the shells of crustaceans and the bones of fish.

Here is what the underside of an octopus looks like.

The mouth is here. The radula (its tongue with razor like teeth on it), and its beak (used to grab crabs and other crustaceans) are located in here as well.

As far as humankind knows in 2023, for almost all species of INCIRRATA [in-seer-rah-tah] octopus, (both male and female) mating takes place only once in their lifetimes. (The exceptions that scientists speculate about are CIRRATA octopus.) In the Incirrata octopus, the male has a modified removable arm called a hectocotylus [hec-to-cot-i-lus] which contains his sperm. He either inserts it directly into the female's oviduct or removes the arm from his own body and gives it to the female to store in her MANTLE cavity until the eggs are produced. The sperm can remain within that cavity for many months - warmed and staying alive because of the warmth of the female's body. The sperm never touch the eggs once they are in her body until it is time for her to release them. The male dies a few months after mating. Then the eggs form within the female's body staying there for several months. During the last month before she lays her eggs – the female stops eating.

Once the eggs have been laid, the female spreads the sperm over the eggs. Some breeds of octopus lay about 150 eggs. Others can lay up to about 200,000 eggs. The brooding period for the eggs depends on the breed of octopus – some from about 2 to 10 months. Others take even longer, as much as about 4 years and 5 months (last confirmed by observation of a Graneledone boreopacifica.) All that time she sits on the eggs guarding them and pushing water over them to keep them clean, never leaving, and never eating. After her eggs hatch, the mother dies having given her life for her young brood.

A young octopus lives near the surface of the water feeding on plankton – a softer food. Just like a human baby that needs softer food first, so does the baby octopus. As the octopus grows, the teeth on its radula and also its beak have time to harden. Octopus DO grow quickly. Most species reach their maximum size in about 20 days.

As the octopus matures, it goes deeper into the ocean so that it can eat the hard-shelled crustaceans an adult octopus loves. Only about 1% of all young octopuses will live to adulthood. Predators that eat octopus are: large fish, seals, seabirds, sharks, sea otters, whales, other octopuses, and humans. This is why the mother lays so many eggs at one time – to better guarantee the preservation of the species.

If you need help with learning and reading God CAN help you.
Let us pray.

Just say, Lord Jesus the Christ,
I've made so many mistakes I must confess.
I repent of them now and turn from them.
I no longer want that mess.

Lord Jesus, I believe you are the Son of God
and believe in your resurrection.
I want to be a child of God
and receive your love and affection.

Lord Jesus the Christ, be my Savior.
Come into my heart.
Cleanse me now of all unrighteousness
and give me a brand-new start.

I ask for the baptism of the Holy Spirit
and the baptism by Holy fire too.
I WANT to be changed and to do the RIGHT things.
I need help from you.

Please help me to read, write, and do my math.
I want to start learning today.
I want my life to take a turn
and start in a whole new way.

Thank you Lord Jesus for helping me to learn.
I KNOW you can help make my ability,
greater than anyone ever imagined
and bring back my self-respect and dignity.

I ask this in the name of the Lord Jesus the Christ.
I say "Amen" and make it sure.
Now I'll start learning the RIGHT way.
I KNOW Lord Jesus, YOU are the door.

AMEN!

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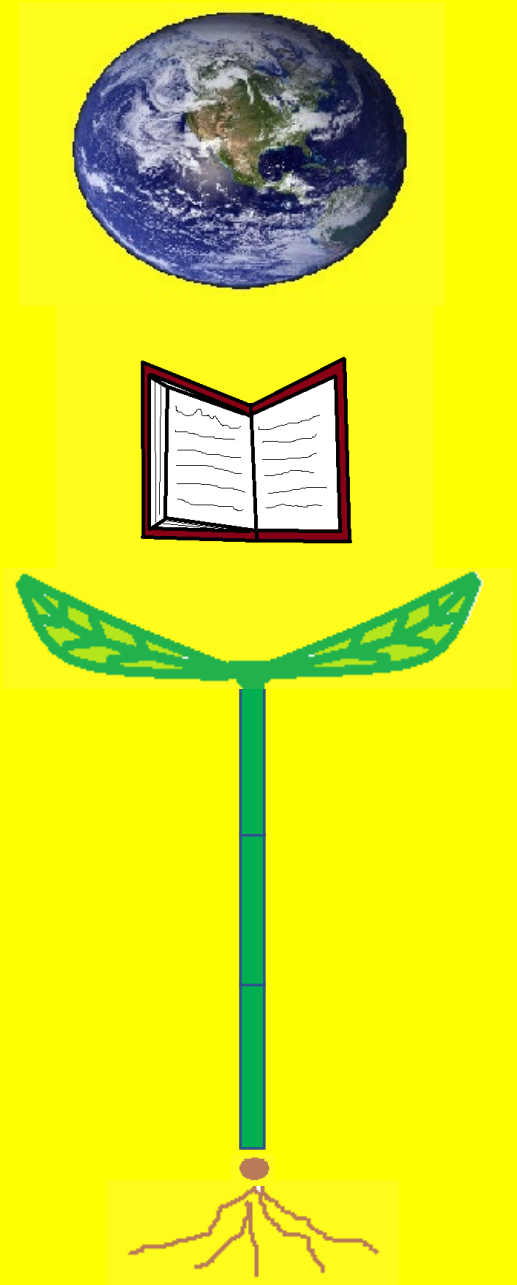

Isaiah 61:11

"11 For as the soil makes the sprout come up and a garden causes seeds to grow, so the Sovereign LORD will make righteousness and praise spring up before all nations." (NIV)