

Horseshoe Crab Program

Grades 1 and 2 version

50 minutes

	Graphic Aids and Materials <ul style="list-style-type: none">--Power Point CD--Kaliedescopes, blood, molts--Extraordinary HSC book--Crab Moon book--Map of Shorebird Flight
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Procedure

If the classroom is conducive to this: Most first and second grade classrooms have a place for story time. There's a chair for the teacher (volunteer); have the students sit in a semi-circle on the floor where everyone can see.

Introduction:

- Suppose I told you that last week I saw a stegosaurus in the grocery store eating all the lettuce. Would you believe me?
- Suppose I told you that on my way to your school today a T. rex walked right across the street in front of me. Would you believe me? Why not?
 - Are there any dinosaurs around today?
 - Do you think they were pretty big and scary?
- Well, suppose I told you that last summer at the beach I saw an animal that was around **before** the dinosaurs. Would you believe me now?
 - There really is one and some people think it looks big and scary (not as big and scary as a dinosaur)
 - Get out model and put on floor in front of students. Watch their reaction.
 - Does anyone know what it is? Does anyone know anything about it? *Tell them what it's called if no one knows.*
 - Does it look kind of big and scary?

Crab anatomy

Let's use the model to learn something about horseshoe crabs. They look big and scary but let's find out if they really can hurt you.

- Basic anatomy
 - Front part is like your head and chest
 - Back part is like your stomach
 - Tail is called a telson
- **Invertebrate**
 - Everybody reach back and touch the bumps on your back (demonstrate). What are those bumps? *Your backbone*
 - Horseshoe crabs don't have a backbone.
 - Do you know what an animal without a backbone is called? *Invertebrate*
 - Lots of other animals don't have a backbone; can you think of some? *Insects, worms, snails, jellyfish*
 - Do you have other bones? Feel your wrists. Where are your bones? *Inside* What would your body be like without bones? *Floppy*
 - HSCs don't have any bones inside so what keeps them from being floppy? Their bones are on the outside of their body; it's called an *exoskeleton* which means a skeleton on the outside. What else is it called? *Shell*
 - When you grow, do your bones grow or do you have to go get new bones? HSCs have a problem – their shell doesn't grow
 - Everybody feel your shoe. Is it sort of hard like a HSC's shell?
 - Do your shoes grow? What does it feel like when your shoes get too small?
 - What happens when you outgrow your shoes? *Buy new ones*. What do you do with the old ones? *Throw them away*.
 - Your shoes are sort of like a HSC's shell except that they don't buy a new shell; they make one (Have students imitate molting):
 - Take in a lot of water to make yourself bigger
 - Break open the front of the old shell and crawl out; leave the old shell behind

- Underneath is a soft stretchy shell; wait until it hardens; then you have room to grow
 - This is called *molting*; HSCs have to do this whenever they want to grow – as many as 17 times before they’re full grown, which is when they are 9-11 years old.
- **Eyes**
 - Look closely at the model. What can you see? *Most students will notice the large eyes.* How many big eyes do you see? Those big eyes are different from ours. (Pass out the kaleidoscopes.) What’s the difference?
 - How many eyes do you have? Where are they? Horseshoe crabs have 10 eyes and they’re located all over their body. (Point out the eyes and have students help you count them)
- **Tail (telson)**
 - What do you think this is for?
 - Use the model to demonstrate how the *telson* is used for steering (especially while swimming upside down when they are small) and for flipping right side up. They need it to flip themselves if they get turned over. They live at the bottom of the ocean, but if they are on a beach and can’t turn over they will dry out.
 - Is the telson for hurting you?
 - But you can hurt the telson. If you pick the crab up by the telson, it can break off. Then the crab can’t turn itself right side up.
- **Turn the model upside down.**
 - How many **legs** does it have? (Have one student count the legs)
 - What’s on the end of each leg? *Claws.* So can it pinch you? (Have students make a claw with two fingers of one hand and try to pinch the fingers of the other hand) Does it hurt? That’s pretty much what being pinched by a HSC feels like.
 - The front claws tell you if it’s a male or female crab.
 - If the front claws look like scissors, it’s a female; if the front claws look like mittens, it’s a male.
 - Who wants to look at the front claws of the model and decide if it’s male or female? *Female.*
 - This model is a full grown female; males aren’t as big.

- Can someone find the **mouth**?
 - Do you see any teeth? Horseshoe crabs don't have teeth; they have bristles like a toothbrush around their mouth.
 - They don't chew their food; they grind it up by wiggling their shoulders, which are connected to the bristles.
 - If they don't have any teeth, can they bite you?
- Point out the **book gills**. Does anyone know what gills are for? *They're what HSCs use to breathe in water.*
- So can a HSC hurt you? *No; it doesn't have teeth, the claws don't pinch, and the telson is not for stabbing people.*

Every spring, during the full moon, HSCs come up on the beach to dig a nest and lay eggs. (**Slide 1 – HSCs on beach**)

- **Slide 2 – Close-up of eggs** - What color is your blood? HSC's eggs are greenish-blue because their blood is greenish-blue
 - Open the model and show the eggs inside.
 - Pass around the fake eggs.
- Each nest is about 5 inches deep (show with your hands or use a ruler).
 - Each nest has 4,000 eggs; she may dig 20 nests each spring – that's 80,000 eggs! That is quite a lot.
 - **Slide 3 – Eggs on Beach** - That's so many eggs that some of them get washed out onto the beach.
 - **Slide 4 – Shorebirds** - But that's OK because HSC eggs are important food for shorebirds. If all those eggs hatched, that would be too many HSCs.
 - **Slide 5** - Look at the picture of the crabs inside the eggs. What's missing? *The telson*
 - **Slide 6 – Newly hatched HSC** - But a lot of them hatch out. Now what have they grown? *The telson*. Now the babies look just like the adults except that they're very light colored – and very small.
 - **Slide 7 – HSC molting** - How are they going to grow? Molting. (Pass around molt).
 - **Slide 8 – Series of HSC molts**

Unfortunately, we couldn't bring a live HSC today, but now that you know that HSCs won't hurt you, would you like to see a live one someday?

- How many of you have been to the beach? If you go to certain beaches, especially in Delaware, at the beginning of the summer, you might have a chance to see a horseshoe crab.
 - What do you think you would you do if you saw one?
 - Let's read a story about a boy just about your age when he saw HSCs for the first time and see what he did.
- **Read "Crab Moon"**. Be sure to show pictures.
 - How did Daniel know the HSC was alive? *It moved*. Was he scared at first? How do you know? *He put the crab down quickly*.
 - What did he do then? *Turned the crab right side up*.
 - Did that help the crab? How? *The crab was able to crawl back to the ocean*.

(Slide 9 – Child with HSC) So maybe someday, you can go to the beach when the moon is full, just like Daniel, and see an animal that's been around since before the dinosaurs.

- If you do, remember that they can't hurt you, and remember not to pick them up by the telson.
- If you find one caught upside down, what can you do? *Turn it over gently by the shell*.