

NERR or Far!

The Reserves Are Where You Are

Episode 7: Estuarine Creature Feature

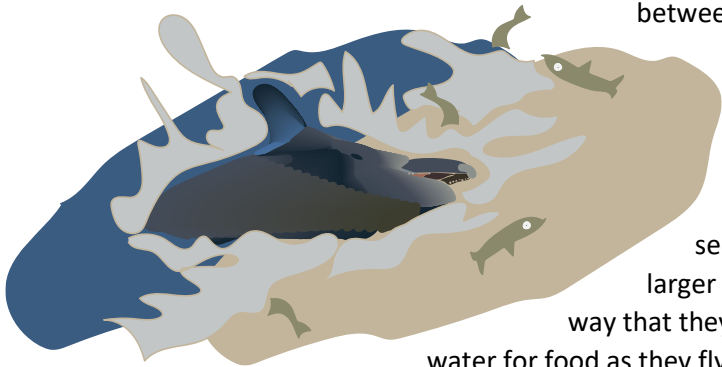
Estuaries are teeming with life! One type of animal that is particularly **speciose** in these types of environments is crabs. An important crab you might see in the southeastern estuaries in particular is the **fiddler crab**. Fiddler crabs can be seen commonly in slightly salty or **brackish** intertidal mudflats in salt marshes, as well as various other types of brackish or saltwater wetlands. They're called fiddler crabs because the male crabs have one claw much larger than the other that they hold somewhat like a violin. This is a sexually dimorphic trait. **Sexual dimorphism** is a difference in appearance between males and females of the same species, whether it's color, shape, size, or a unique structure. My favorite example is lions. Males have manes while females do not. In fiddler crabs, the males have a major claw that is much larger than their minor claw and females have claws of equal size. Males will wave this big claw in a display as a form of **female courtship**. Females choose mates not only based on class size, they also note the quality of the waving display. Research suggests that claw size is **correlated** with burrow width, which influences **incubation** temperature. This means that females will choose a male mate whose class size will provide the best environment for her eggs, and the vigorous waving display will show that he is a strong, healthy crab. Males also fight with this large claw. If they lose it, the lost claw will become the new small claw and his minor claw will grow bigger!

Fiddler crabs are **detritivores**, which means that they obtain nutrition by feeding on organic matter made up of dead plant and animal material or **detritus**. They obtain this by using their mouth to sift through chunks of sand. Anything they can't use, they roll up into a little ball and replace what they took from the ground. This feeding habit plays a very important role in preserving coastal wetlands like salt marshes. By sifting through the sand, fiddler crabs **aerate** the substrate and prevent **anaerobic** conditions. It's kind of like how worms help plants grow by aerating and breaking up the soil. Fiddler crabs have a pretty cool name that they earn for the way they look and how they move. Some other creatures in the estuary are named for how they sound! One way to listen to animals in the estuary is by using a **hydrophone**. A hydrophone is a type of microphone that detects sound waves underwater. Fish make some really awesome sounds across a range of pitches, manatees and dolphins make little squeaks and whistles, and you might even be able to hear right whales if they aren't too far offshore.



One thing you might notice while listening is that lots of fish are given common names by the sounds they emit. Toadfish, croakers, drums, all sorts of species make sense after you hear them on a hydrophone or on a recording.

You don't need to use a hydrophone to hear dolphins strand feed, you'll definitely see it! What is **strand feeding**? During strand feeding, dolphins herd and trap fish by forcing them up onto mud banks, shorelines or sandbars. It's called "strand" feeding because of the way dolphins beach themselves momentarily, pushing prey ashore before sliding back into the water. Strand feeding is a **learned behavior** passed down from mother to calf, which means that not all dolphins are able to perform this behavior. Learning strand feeding typically occurs in the calf stage, so many dolphins learn somewhere



between six to eight years old. Another coastal species with a unique feeding strategy is the black skimmer. Let's talk about this incredible seabird! **Black skimmers** are medium-sized seabirds with long wings and a unique bill that is longer on the bottom half than the upper half. If you've ever seen a gull on your trip to the beach, they're slightly larger than gulls. Black skimmers earn their name for the way that they feed. Skimmers use their unique bill to skim the

water for food as they fly over, dropping the long, narrow bottom beak to help them feel for fish as they go along. Because they feed mostly by touch, they can even **forage** at night. These birds are black on top and white underneath, with a reddish-orange and black beak and red-orange legs. Even more unique than their funny beak? Their calls sound like dog yips!

Black skimmers lay their eggs directly in the sand and shells of beaches and the higher parts of some salt marshes in what are called **scrapes**. They make these cone-like depressions themselves using their beaks and feet to carve away at the sand. Do you like sandy beaches? Me too. I mean, who doesn't? Sadly though, because of the popularity of suitable seabird nesting habitat, skimmers are threatened by development and can experience a lot of human disturbance. Skimmer nests can be hard to spot by beachgoers and can be destroyed by anything from roaming dogs to vehicles driving on the beach. Storms and sea level rise also threaten black skimmer nests, as high waters can swamp and wash out eggs and **hatchlings**. Because of these factors and the declining skimmer population, black skimmers are listed as a species of high concern. You can help do your part by keeping your distance around seabird nesting colonies, obeying shorebird signs and refraining from flushing or scaring off birds that you see in coastal areas. Together we can help conserve black skimmers and other bird species on our southeastern coast. If you want to get out and see some cool coastal birds and learn more, there are lots of places to go birding at the reserves.

So what is **birding**? Birding is a hobby in which you observe birds in their natural habitat. Someone who birds is called a birder, and guess what? Anyone can be one. You can bird anytime, anywhere, whether it's in your backyard, at a reserve, or out in the street. There's no right or wrong way to observe birds, and getting started is easy and low cost.

Binoculars and a bird ID guide are helpful, but not required. There are lots of ways to learn more about our feathered friends. You can join a club or attend a program at a local park or reserve, you can download mobile apps like **iNaturalist** or **eBird** to help with identification, you can learn more



about your local birds from sites and organizations like the **National Audubon Society**, or you can simply sit in nature and familiarize yourself with the calls and behaviors of different local species.

One reserve site that is great for birding is St. George Island, a part of the Apalachicola **National Estuarine Research Reserve (NERR)** that sits along the **Great Florida Birding and Wildlife Trail**. The trail is managed by the Florida Fish and Wildlife Commission, and it is a statewide trail highlighting places where people who are traveling around the state can pull off and potentially experience some really neat wildlife sightings! St. George Island in particular is an undeveloped part of a **barrier island** on the **bay** side of the reserve where migrating species often land and can get some food, water, and rest after flying from thousands of miles away. It's an important stop not only for birds, but also for butterflies. Some of the migrating butterfly species that pass through Florida are quite colorful, so it's a neat sight if you get a chance to stop by! In addition to self-guided opportunities like the Great Florida Birding and Wildlife Trail, many NERRs also offer kayak and boat tours. Regardless of method, there's some pretty cool and unexpected animals that you can spot in estuarine habitats here in the southeast. East Coast and southern bears are not nearly as big as Western bears, but they do live in southern coastal areas! You can also spot otters in estuaries, various wading birds, alligators, deer, even troops of wild turkeys!

There are a multitude of unique and interesting creatures in our estuaries, from crabs, to dolphins, to seabirds and beyond. The National Estuarine Research Reserves are working to better understand and protect these species through research, stewardship, coastal training and education. You too can learn more about these species by visiting a reserve near you. You never know what you might find and experience in one of the world's most productive ecosystems.

QUESTION TIME

1. What is sexual dimorphism? Can you think of another example of a species that exhibits this?

Sexual dimorphism is a difference in appearance between males and females of the same species, whether it's color, shape, size, or a unique structure. Some examples include **cardinals** (males are a vibrant red, while females are sort of brownish and muted-looking), **peacocks** (males have the dramatic tail feathers while females do not), **elephant seals** (males have the funny nose/trunk while females do not, and males can be up to 10x larger than females), deep sea **anglerfish** (females are much bigger than the males, who attach themselves to the female).

2. What does the fiddler crab mating display tell female crabs?

Research suggests that claw size is correlated with burrow width, which influences incubation temperature. This means that females will choose a male mate whose claw size will provide the best environment for her eggs, and the vigorous waving display will show that he is a strong, healthy crab.

3. How do fiddler crabs help improve the health of coastal environments?

By sifting through the sand, fiddler crabs aerate the substrate and prevent anaerobic conditions. It's kind of like how worms help plants grow by aerating and breaking up the soil.

4. What types of aquatic animals make sounds detectable by hydrophones? What is a hydrophone?

Fish, manatees, dolphins, and right whales, amongst other species. A hydrophone is a type of microphone that detects sound waves underwater.

5. What is the meaning of the term learned behavior?

A learned behavior is a behavior that an animal learns by watching another animal or by being directly taught (it is not innate/present at birth).

6. What are some ways that you can learn more about birding?

You can join a club or attend a program at a local park or reserve, you can download mobile apps like iNaturalist or eBird to help with identification, you can learn more about your local birds from sites and organizations like the National Audubon Society, or you can simply sit in nature and familiarize yourself with the calls and behaviors of different local species.

7. What are some threats to black skimmers? How can we help?

Because of the popularity of suitable seabird nesting habitat, skimmers are threatened by development and can experience a lot of human disturbance. Skimmer nests can be hard to spot by beachgoers and can be destroyed by anything from roaming dogs to vehicles driving on the beach. Storms and sea level rise also threaten black skimmer nests, as high waters can swamp and wash out eggs and hatchlings. Because of these factors and the declining skimmer population, black skimmers are listed as a species of high concern. You can help do your part by keeping your distance around seabird nesting colonies, obeying shorebird signs, and refraining from flushing or scaring off birds that you see in coastal areas.

ACTIVITIES

- Estuarine Frankenstein! Take features from each of the animals we discussed (and even add some extra options of your own) and have the students create a make-believe creature. They will explain to their group how the animal parts/behaviors dictate their lifestyle!
- Students research bird species they might see in their state and present on one that they're interested in. What habitat do they prefer? What do they eat? Do the males of

the species look like the females? What does their call sound like? How big are they?
What kind of beak do they have and how does this help them eat their specific diet?