

COASTAL ECOLOGY – FISHING WITH SEINE NET

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So we've had the opportunity to look up close to the mangroves. So that's the plant contribution to this ecosystem. We've had an opportunity to look at the bottom-- look at the sediments that comprise what we're standing on right now. And, remember, it is a kind of a soft mushy bottom because it's a lot of mud and silt composition because of the plant material. And then now we're going to take an opportunity to look at what's swimming in the water column itself.

So we're using a very large net called a drag seine. This net in particular is about 50-feet long. And some parameters-- if we know the distance that we're towing the net, and we know the size of the net. So it's about 50-feet long with a 6-foot bag. So it's 6-feet deep. We can calculate then the volume of water that we're sampling and get an estimate of how many fish are within a given body of water.

So my wonderful team is doing all the heavy work right now by dragging that net for us. And then I'm going to go out and join them so that we can get a close up look at what they're catching in the net. And our goal is we do surveys every month of different systems so that we can monitor over time changes-- changes in the size of the fish-- changes in the composition of the fish-- what species are occupying the habitat, different seasons of the year, and how fast the fish are growing. So come with me. And we'll take a close-up look of what fish are here at this particular time in spring, almost summer, 2015.

So the way this works-- we drag the net a known distance. We know the dimensions of the net. And now we're going to see the biomass, or what we like to say, the fish-- what we've caught in the net. And, remember, it may not be just fish. We may catch a lot of invertebrates also as part of the sample. Anything that lives associated within the water column or the bottom.

So other things-- this is a great example. So part of our by-catch in the net are the actual sea grasses. So we'll learn-- later today, we'll do a segment on sea grasses and learn a little more about this. But this is just, again, part of that decaying plant material similar to the mangrove leaves. The sea grasses also decay and become part of the detrital food web.

So we want to take that out of the net so we can concentrate on these swimmers of the sea-- all these beautiful fish that we have here. So this is an indication how productive a habitat and a community this is in the sea grasses and the mangroves, which both provide for the benefit of the fish, provide protection. So this is a protected habitat. It allows the fish to grow to size. So juvenile fish occupy this region.

This is a fish that may be familiar to some of us. This is a baby mullet. So at this size, the mullet are hanging out in the mangroves and sea grasses. As they grow a little larger, they'll move into deeper waters.

So some of the things we do as fish biologists was my career before teaching-- was to actually spend a lot of time out in the water. So we catch the fish. We name the fish. We measure the fish. We release the fish. So that's our goal here. So we measure a fish using the standard length from the start of the tail to the head of the fish.

And we always metric units. So this fish is 5 centimeters, excuse me, 50 millimeters. And then we'll gently release the fish back into the water. And then part of our job-- and we've started our data collection here-- is to actually record the name of the fish, write down the measurements, and for statistical purposes, we try to gain 20 lengths of each species. And every additional fission that species group we just tally until we get a total number of each species.

So for research purposes, we would literally cut, measure, and count every fish that's in this net. And, again, we can then use that to extrapolate the productivity of fish within this particular body of water here at Mullet Key. And other data we would take are location, the type of gear we're using, and the date. And often the time is also recorded.

So this is all just part of getting a snapshot of what's happening in the community at this point in time here at Fort De Soto. So three hours from now, our catch may be completely different. The water temperature will have changed-- the salinity, the oxygen-- all those things are changing throughout the course of a day. We know that just from determining how to dress each day and how that changes throughout the day. We have another really interesting fish here. This is called a needle fish.

So what we look at on fish. We look at their shapes-- the body shapes, the location of their mouth, and their tail fin. And those help to give us an indication where the fish lives and how it survived. So both the mullet and this needle fish live close to the surface. And we have a measurement of 11.5 centimeters on this needle fish.

Unlike the mullet, this fish has teeth. So you can see within the jaw that is completely lined-- both the lower and upper jaw are lined with teeth. And this is a surface feeders. it's very good camouflage-- counter shading with a light, silvery bottom or belly-- the ventral area with a dark dorsal coloration. And what that allows is the fish to disappear as sunlight shines down on the fish. But if the fish were to show it's belly, it would be very visible.

So that makes it invisible to anything looking up into the sun. They see that silver color-- the fish disappears-- or a potential predator looking down on the fish. So we're going to let this needle fish go. There you go. Thank you for volunteering, fish. And you'll see most of our catch are what we call minnow-sized fish-- very small fish. But these can grow larger-- kind of like these are also silver sides-- lots of little silver sides.

So Paul is out here throughout the summer. He participates in our oceanography camp. And so he usually leads this field trip. So, Paul, what do you notice about the silver sides later in the summer?

They're getting actually a little bit larger in the size, of course, as we move along. And also, not as many, actually, when we're out here picking up. We're not getting as many silver sides.

OK, so later in the summer, they've moved probably away from the sea grass community out into a little deeper, more sandier bottom. We'll find silver sides even on the open beach area that we'll visit later. So that is our dominant species in this particular catch are the silver sides. And, again, similar adaptation to the previous two fish we've looked at-- surface dwellers with counter shading, a dark top, and a silver belly.

And we'll take a measurement. And, again, we would measure 20 of these and then count the rest. This one's a little over about 3.2 centimeters. And, again, we catch them, name them, release them after we measure them. We got another new one. Thank you. Whoa, check out the difference in this fish. So what you might notice at first is the shape of the body. So it has a very compressed body. This is a toadfish.

The toadfish doesn't live anywhere near the surface. It actually lives on the bottom. It's well-camouflaged for the bottom. So it would disappear. If you remember the coloration in our sediment course and kind of think of this fish laying on the bottom. It's very well-camouflaged. We'll flip it over just to see it has a very flat body. Whoa, hello. Flop. That was a nice catch, Ann. It's just dropped somewhere and the toadfish just jumped out of my hands, sports fans. For its namesake, it was hopping like a toad.

And here's a really popular bay fish also, something we might use for fishing bait. This is the pinfish-- totally different body shape-- very compressed. We'll go ahead and get a measurement here-- about six centimeters. And the pinfish is very common in grassy areas or long pilings. These vertical bars and horizontal bars actually are part of its camouflage. Camouflage, that again, has a lot more coloration than our previous fish. But, again, that's all part of the adaptations of this fish in a sea grass or mangrove community. And we'll release the pin fish.

So, again, the purpose of sampling is to monitor the fish throughout the year so we can make better management decisions. So the kind of data and the organizations that are taking this data every month are, for instance, our state agency-- the Florida Fish and Wildlife and Marine Research Lab. So they would have teams come out and sample every month and see how quickly what fish are occupying the habitat-- their sizes-- and how those sizes change over time.

This is a really popular-- it's a sheepshead minnow-- about 4.5 centimeters. This is one of those unique fish that can live in very low oxygen habitats. They're part of the cyprinodon group of fish. They can live in areas with extremely low oxygen-- very well-adapted. And, typically, in Tampa Bay, we have at least six different species of cyprinodons.

So we're going to release these fish. Again, we wanted to demonstrate for you how we would sample in the field and the kind of data we would gather both from the plant material and all of the living resources in the community as well as the water chemistry.