



Transcript

Sea Turtles: Threats and Solutions

Lucas Meers: I'm Lucas Meers, marine science graduate at Jacksonville University and conservation program officer at the Jacksonville Zoo and Gardens. For six years I've been walking the beaches of Northeast Florida looking for and marking sea turtle nests, and recently I spent a summer in Tortuguero, Costa Rica, working with the sea turtle conservancy.

Join us as we learn about the conservation efforts that are allowing this group of threatened and endangered animals to make a comeback. We travel to Gainesville to discuss the Endangered Species Act and threats to sea turtles with the Executive Director of the Sea Turtle Conservancy. At the Florida Fish and Wildlife Conservation Commission in Jacksonville, we discuss the statewide nesting program with a wildlife biologist, and then we bring you on turtle patrol with volunteers in Ponte Vedra Beach to search for turtle nests and share in the delight of rescuing baby sea turtles.

Florida's soft sands and warm waters provide some of the most important habitat in the world for five species of sea turtles: the leatherback, the largest and most ancient of the species; green, which are mainly vegetarians; hawksbill, whose beautiful shell has been prized for centuries; Kemp's Ridley, the rarest and smallest species; and the loggerhead, the most common species in Florida.

At the Sea Turtle Conservancy in Gainesville, Florida, I caught up with David Godfrey to talk turtles.

David Godfrey: We are seeing right now in Florida and in other places in the United States some very encouraging trends in turtle population numbers, so last year, for example, was a record year for green turtle nesting in this state. That began with the Endangered Species Act, and when all species of sea turtles were included under federal protection by the Endangered Species Act in the mid-1970s that made it so that you couldn't go out and harvest turtles for consumption. You couldn't go out and take their shells anymore. You couldn't use them for meat, and at that time turtles were on the menu everywhere, green turtles in particular. Through the ages, sea turtles have been killed for just about everything you can think of.

Lucas: The beautiful shell of the hawksbill led to their downfall. This confiscated turtle was stuffed to be a wall ornament, and using their shell for jewelry is where the tortoiseshell style came from. These boots were made from turtle flippers. Even the oils from turtle fat were used in face cream.

David: The passage of the Endangered Species Act stopped our direct harvesting of them and gave them a fighting chance. Since that time, a lot of work has been done to change human behavior, to protect important nesting sites, to identify other sources of mortality like interactions with commercial fisheries, in particular shrimp trawls, and things like our behavior on the beach at night, lighting up the beach with our homes and condos. We've learned a lot about the things that we do that harm these animals, and protecting them really began with that Endangered Species Act.

Lucas: Now let's explore shrimp trawls and turtle excluder devices. Since sea turtles must surface to breathe air, they easily drown when caught in nets, unable to reach the surface. When nets are outfitted with turtle excluder devices, sea turtles and other animals can be shuttled out of the net instead of dying as by-catch. Most shrimp trawls in the southeastern U.S. are required to use turtle excluder devices, but not all do. Let's see it in action.

The shrimp trawl scours the coastal bottom. A sea turtle has been captured, where it will drown if it does not get out. Instead of getting trapped in the end of the net it gets pushed up against the bars, allowing it to use the escape hatch. By increasing the use of these devices as well as modifications to long line fishing, more sea turtles will live another day.

Back on land, a different type of innovative solution is turtle safe lighting. Traditional lighting is prevalent on Florida's coasts and can distract and disorient sea turtles, leading to entry and death. Turtle safe lights, however, use longer wavelengths of light in the red orange spectrum and have little effect on sea turtles, allowing their natural instincts to be fulfilled. This business is one of many that has made the switch to turtle safe lights.

Now that we see how turtle excluder devices and turtle safe lights can make significant impacts, let's explore just how important nests are in conservation efforts.

Back at the Jacksonville Zoo and Gardens where I work, I visited the FWC field lab to discuss the statewide nesting program in Florida.

Allen Foley: The purpose of our nesting survey programs are to give us some information on how well the population is doing. This gives us a chance to count actually in the end, to count the numbers of mature females in a sea turtle population in Florida.

When the sea turtles come up to nest on the beach they have to drag big, heavy bodies across soft sand and they leave very easy to see tracks, and the tracks are even identifiable to species, so a loggerhead leaves a different track than a green turtle, different track than a leatherback, so you can go along the beach in the morning and look at tracks, identify what species they're from, and by looking at the characteristics of the track and any digging that's been done, tell whether the turtle nested or not, so if you do this on all the beaches in Florida every day during the nesting season, you can actually determine how many nests loggerheads made, how many nests green turtles made, how many nests leatherbacks made, so each year you can see what the total number of nests are, and over the years you can see if those are increasing or decreasing.

Lucas: Allen showed me nesting data that can be found at the FWC website.

Allen: You can see here on the late 80s to mid 90s the numbers each year were going up. There was a period here where they were going down for about 10 years and there was a lot of worry, and there's a lot of different potential reasons for that, but the good news is that they're going up again.

Lucas: Without these and other data, we would not understand that loggerhead sea turtles are increasing in number and that green turtles just had a record year, so how does FWC obtain these data?

Allen: This is a huge undertaking that goes throughout all of Florida. This is covering all the sandy beaches of Florida for a pretty long period of the year, say, early spring to late fall, to count all the nests by all the species in all areas of Florida, so from Pensacola to Key West to Jacksonville people are out counting. In Northeast Florida, it's really all the sandy beaches. Northeast Florida has about 150 miles of sandy beach that all have to be surveyed. There are about 17 different groups that do those surveys in Florida, so it's a total of about 500 associated personnel and they provide summary data, the overall picture of the data to the state so that we can put that together to look at what the numbers are statewide.

Lucas: As Allen mentioned, there are about 150 miles of sandy beaches in Northeast Florida, and they provide important nesting grounds for these ancient creatures. Let's head to the beach to learn about these nests.

About a month ago, a loggerhead sea turtle emerged from the ocean, trekked up the sand, and settled at a spot near the dunes where she laid perhaps 100 eggs. Just a foot below the surface of the sand, the eggs are developing into baby sea turtles. If all goes well, in about a month the turtles will hatch and climb out in a flurry of tiny flippers and head immediately toward the ocean using the reflection of the moonlight on the water as their guide. Just last year, over 1300 loggerhead nests were laid on beaches of Northeast Florida.

Every morning during the nesting season, groups of volunteers are out in force on turtle patrol. Kaitlyn, Stephanie, and I are part of a group of about 45 people that monitor four miles of sand around Mickler's Landing in Ponte Vedra Beach, just south of Jacksonville. We searched the beach for new nests and checked the previous nests to see if anything has changed.

Maybe a nest got predated by a dog, a crab, or was infested with fire ants. We're sure to know any subtle changes to paint an accurate picture of what happens to each nest. So far this season we've been walking for 15 weeks. Eighty-eight nests have been documented as we near the end of the nesting season.

Okay, so this is at 45 days. We're going to need to do green tape.

From years and years of data, we know loggerhead turtle nests generally hatch or merge between 50 and 60 days, so when we approach a nest that's been incubating for 45 days we'll mark it with green tape to remind us to keep an extra close watch for the next few days. After hatchlings emerge from the nest, there are telltale signs. Like miniature tractors rolling over the sand, turtle hatchlings make subtle impressions. A whole slew of tracks are seen stemming from a central location: a depression located in the center of the marked nest, where the baby sea turtles emerged the night before.

We document the emergence and take photos to help paint the picture of what's happened to the nest, such as whether crabs or fire ants have invaded the nest. We clear the debris in front of the emergence area in case any other turtles emerge on successive nights.

Three days later, another team excavated this nest and found many empty shells and discovered that those tracks came from 87 young turtles. This is nest 44, which was laid eight weeks ago. Hatchlings emerged three nights ago, right on schedule.

It is now time for us to excavate this nest to obtain data for the FWC and to save any hatchlings that might be trapped. As I dig, I'm careful, gently feeling for any differences in the texture of the sand. I can feel that I've reached the first turtles. The limpness of their bodies tells me they are dead.

Dead turtle after dead turtle is pulled out of the egg chamber and passed to Kaitlyn to get counted. The smell is horrible. Death permeates the air.

I'm only getting dead hatchlings.

The lineup of the dead hatchlings is growing. Sometimes things go wrong with nests and the turtles don't make it. They hatched, but why didn't they emerge from the nest? I didn't see any fire ants or crabs, so I wonder if being trapped in the sand caused them to be cooked by the hot sun.

Okay, so I reached a big section of the eggs. The turtles actually hatched and actually went above the eggs and they were trying to get out but couldn't, so that explains why I'm just now getting to the egg shells, because the egg shells were actually below the hatchlings.

Lucas: A live turtle.

Lucas: Right here we have a loggerhead hatchling. This guy is barely moving, but you can still clearly tell that he is alive, some slight movement, but he's very weak. He's been trapped down there for a few days, actually, with all of his brothers and/or sisters.

We put the freed hatchling in a bucket that serves as a holding area until it is released, and not long after ...

Here's another live hatchling. He's a little more active than his sibling, so we're actually going to put him in the bucket to join his sibling.

By counting the number of egg shells, we can determine the number of hatchlings that made it out on their own. This nest had 85 dead turtles, making it one of the least successful nests of the season in terms of hatchling survival. While it is difficult to see all of these dead hatchlings, knowing that they are sources of nutrients for the ecosystem puts it into proper perspective. By placing the dead turtles and eggshells back in the nest, we allow nature to take its course. Ninety-five eggshells have been counted, so with the 85 dead hatchlings and the two sea turtles we saved today, we determined that only eight turtles had emerged from the nest on their own.

Now rescued, these two turtles receive a helping hand to make it to the next step in life's journey.

Lucas: Come on, little guy.

Lucas: Some need a little encouragement. Now it's October and we have a few turtle enthusiasts joining us. This is nest 78, the last nest my team will excavate this season. We have excavated five nests since the dreaded death pit, and we're hoping we'll end the season on a high note. I worry that the hard, compact sand made it too difficult for hatchlings to make it out, and I brace myself for another nest of dead sea turtles, but there, a nose of a hatchling peeking out

I'm going to slowly dig it out, trying not to injure it. He's having trouble getting out because the sand is really compact from all the waves washing over. I'll let him get out by himself. He's so cute. Oh, I see there's another hatchling. This one I'm going to put in the bucket. There we go. There we go.

We then encounter a turtle covered in fire ants.

This guy is really weak, but he's still alive.

If we had not liberated these trapped hatchlings from the compacted nest, fire ants may have eaten them. We quickly rinse her off in the ocean before putting her in the holding bucket.

I got another turtle, too. He's struggling, but he's doing it. Yeah, there we go.

So far, all of the hatchlings we have encountered have been alive.

Diana: He's a mover and shaker.

Lucas: Yeah. He's really active.

We have 10 hatchlings in the bucket. Here, we encounter a turtle partially in its shell. We call this a pip. This pip and the rest of the turtles we liberated bring our count to a total of 15 live hatchlings.

One dead hatchling? Okay.

Diana: Number of shells?

Lucas: Empty.

Kaitlyn: 20, 30, 40, 50, 60, 70, 80.

Lucas: 70, 80.

Diana: 83.

Lucas: 83.

We take the bucket of turtles a few feet down the beach to release the hatchlings. To double check our number of freed turtles, we count them one by one until the bucket is empty.

Lucas: One.

Diana: One.

Lucas: Two. Three

Diana: He looks wonky.

Lucas: Four.

Diana: Five.

Lucas: 6, 7, 8, 9, 13, 15.

Diana: 15.

Lucas: Total of 15.

Some of these hatchlings have weak flippers. Sometimes we see this when the sand is really compact like we saw in this nest, so some hatchlings are slow-moving and struggle to move forward. Others are active and move straight toward the water.

Under the watchful eye of the volunteers, all these rescued hatchlings make it safely to the ocean. We know only one to two turtles out of every 1000 make it to adulthood. This year, on just this four-mile stretch of beach, our data shows 7,700 baby sea turtles made it out of their nests. Maybe, just maybe, 15 of those will become magnificent adults, maybe even this one.

Only 3 inches long, young Pip faces many hungry predators in her new world. By instinct not fully understood by scientists, Pip swims toward her new home many miles offshore in the Sargasso Sea. The Sargassum seaweed provides important cover from predators, and the increase of Sargassum seaweed also means an increase in food. She will spend the next 10 or so years of her life growing up to 3 feet long and 200 pounds. Now with her increased size, her only natural predators are large sharks.

Pip will now travel the long journey back toward the beach from which she came. How she knows where to go and how to get there is not fully understood, but researchers have shown that loggerhead turtles respond to the Earth's magnetic field. She's not the only turtle to have made the long journey, and she, along with other turtles, will spend the next 20 years going into an adult in a relatively shallow area along the coast.

Now, at reproductive age, she finds a suitable mate. About two weeks later, Pip emerges from the ocean she has called home for the past 30 years to take her first nest. There she lays upwards of 100 eggs to begin the next generation of sea turtles. Pip then returns to the shallows, where she will make up to six more times, depositing hundreds and hundreds of eggs by the end of the summer.

After 50 to 60 days, the turtles are fully developed and begin to hatch from their leathery, golf ball sized eggs. The hatchlings will wait below the surface of the sand until the temperature drops, signaling nightfall. Under the cover of darkness, when the predators are less active, they will emerge from the nest and make their trek to the ocean. Those that escape their predators will swim to the Sargasso Sea, just as Pip did 30 years before, a journey that has been repeated by countless generations of loggerheads.

Lucas: Long before humans first set foot on these beaches, they provided essential nesting habitat for sea turtles, and all sea turtles that nest here on this beach started out here as hatchlings years ago. They are true locals, and instinct brings them back here year after year. It is our duty to be good stewards to this habitat, and fortunately, there are easy things that you can do to help reduce our impact on sea turtles.

Don't litter. Not only is it unsightly, but it can kill turtles of all sizes. Trash like this can entangle hatchlings when they emerge from the nest, and many times turtles can mistake our trash as food. A lot of different plastics have been found in the stomachs of sea turtles, including plastic bags, and remember, trash on the sidewalks and in the streets eventually end up in the ocean.

If you live or work directly on the coast, use turtle safe lighting. Incorrect lighting can repel females from nesting and disorient hatchlings from going to the ocean, leading to their deaths. If you see a sea turtle or a nest, enjoy watching it, but make sure not to disturb it. Just let it do its thing. If you see a dead or injured sea turtle or someone disturbing and nest or a sea turtle, dial *FWC on your cell phone to report it. You can purchase a sea turtle license plate. Proceeds from this specialty plate go to fund grants for conservation, research, and education, and is the main source of funding for the FWC Marine Turtle Protection Program.

Volunteer to be a citizen scientist, or just tag along with the turtle patrol team. That's how most of us get our start. Thanks again for joining us, and next time that you're on the beach, be sure to look out for our ancient friends on the beach and in the water. For more videos and information on sea turtle conservation and other sciencey topics with a Northeast Florida focus, visit us at thescienceofju.edu.

David Wiffen: Okay, I'm just a tourist over from England and I'm just walking the beach and getting involved with these guys. This is so important to a wildlife project to keep these guys alive, and these guys are doing a terrific job doing that.

Stephanie: I came out for a nest evaluation one day and just fell in love with it.

Kaitlyn: Just getting the information, the data, about the nest is very important, and also as a volunteer on the patrol you have the opportunity to help educate.

Diana Fox: Being here on a night like tonight, where we were able to rescue these 15 beautiful little babies and help them find their way to the ocean, is really important, and it's a really great feeling to be part of such a beautiful thing.

Bob Davenport: Who'd have believed that this kind of life lives right here on our coast? I always thought it was only on TV and Jacques Cousteau.