

Rabbits, Turtles and Bees, Oh My!

Turtles and healing honey at the Georgia Sea Turtle Center

Jennifer Berry

Last Summer I rescued a tiny baby rabbit. His nest had been invaded and his two siblings killed by a coyote, raccoon or some other predator. In a panic to save this little guy I turned to the internet for help. I typed in “what to do with a baby rabbit” and immediately the information appeared. It said that baby rabbits are extremely delicate and will most likely die unless handled by a person trained in wildlife rehabilitation. Not being certified in that area I contacted a trained professional and she agreed to take the precious little guy off my hands but I would have to drive the 120 miles to meet her. No problem.

I packed him into a box with the remains of his nest and took off like a bullet. Of course during the ride I continually stuck my hand into the box to see if the noise of the truck or the sound of that ambulance racing

by or the drama of being removed from his nest hadn't just sent him into shock. So far, so good. About half way there, speeding down a windy country road, I ran over a medium size turtle, literally. He was in the middle of the lane and I missed him completely. A sigh of relief was quickly replaced with, “Oh my, he'll be surely hit if I don't pick him up”. It was just after 5:00 p.m. and the traffic on the road was horrible. But as I drove away, I looked in my rear-

view mirror and saw the little guy still hunkering down as the car behind me barely missed him. About a mile down the road, there was a place to turn around. Cars were racing by as I waited, for what seemed like hours, to get back on the road. I dreaded the fact that he had probably been hit by now. I got a break, pulled out and raced back. There he was, still in one piece and not moving. I pulled over on the side of the road. Again it seemed like hours before I could even open my door to get out due to all the cars whizzing by; but the turtle was still alive and I wasn't about to sit and watch him die.

Finally there was a break in the traffic. I jumped out, ran across the road, scooped him up and made it to the other side just as the pickup truck sped by blasting his horn. Guess he wasn't too happy to see someone in the middle of the road as he came around the corner. But the turtle was safe and unharmed, however now the task of getting back to my truck. Hmmm? Just to let you know, the

little rabbit made it and was successfully released and so was the turtle.

Ok, rabbits, turtles, what does this have to do with bees? Well, actually you'll be surprised. Last December I spoke at the annual Georgia Farm Bureau Commodities meeting at Jekyll Island. Right after I spoke Dr. Terry M. Norton, DVM, from the Jekyll Island Sea Turtle Center gave such an interesting talk I just had to find out more. Now be patient, much like the tortoise, and not the hare, to

find out how sea turtles and bees are connected.

Dr. Terry M. Norton is the director and creator of the Georgia Sea Turtle Center. He received his BS degree at Mexico State University and his Doctorate in Veterinary Medicine from Tufts University in Massachusetts. He then interned in small animal medicine and surgery in Washington, DC. Next he completed his two year residency at the University of Florida College of Veterinary Medicine in Zoo and Wildlife Medicine and became board certified in the same field. Afterwards he worked for the White Oak Conservation Center in NE Florida, the Riverbank Zoo in South Carolina, and the North Carolina Zoo, focusing his attention on what he loved most, zoo and wildlife medicine. During this period he would also travel to St. Catherines Island every two weeks to provide medical, surgical and preventative health care for a variety of endangered, captive mammals, birds and reptiles. St. Catherines Island is a 10 mile long island owned and managed by the St. Catherines Island Foundation. The island is located off the coast of Georgia and a center for endangered species breeding and research.

Working in wildlife medicine Dr. Norton realized that a native wildlife health program was desperately needed for coastal Georgia. Thus, he ambitiously went to work. From 2001 to 2006 the Georgia Sea Turtle Center slowly began to materialize. In February 2006, renovations began and in June 2007, the Georgia Sea Turtle Center, a marine turtle rehabilitation, research, and education facility, opened on Jekyll Island. After six long years the vision was now reality.

Prior to the center opening, injured turtles were shipped to facilities in Florida, South Carolina, and North Carolina. Now Georgia has a facility



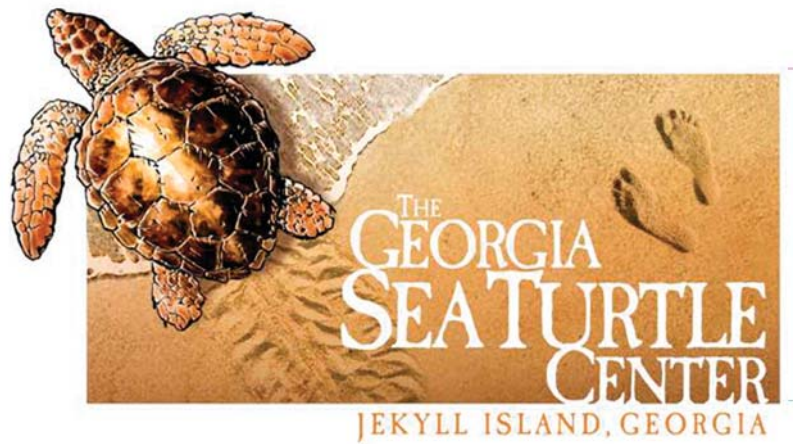
that has the ability to “not only provide state of the art emergency care to sick and injured turtles but also opportunities in research and long-term treatment.”

Another goal of the center is to engage the public and offer educational programs by increasing the “awareness of habitat and wildlife conservation challenges, promote responsibility for ecosystem health and empower individuals to act locally, regionally, and globally to protect the environment.” Not an easy task but well worth the effort. Education is a powerful tool and the center strives to educate anyone willing to listen. Once you create awareness about the plight of our environment, folks understand the urgency and become involved. If people can make the connection with nature, they take this home and become more active in conservation.

With the continual development of coastal areas, turtles and other marine life are losing their nesting and breeding sites. Plus with increased human population along the coast comes the desire and need to be entertained and fed. Hence the number of boats and jet skis increase to meet these demands. One of the major problems marine life faces is fishing gear entanglements. Birds, turtles, manatees, etc may become entangled in the gear which may eventually lead to severe injuries and even death. They may also ingest hooks, lines, and lures. Dredging and trawling activities also take their toll. Propellers are another danger which causes about 20% of the injuries observed in turtles.

Approximately 300 terrapins on the Jekyll Island causeway alone are hit by cars during their nesting season from May to July. The terrapins are attracted to higher ground for their nesting and the causeway forms the perfect habitat for this. Unfortunately it is a death trap for the terrapins if they try to cross.

Various pollutants such as runoff from golf courses, lawns, sewer systems, roads, the fuel from boats, and sediment from dredging compromise the health of sea turtles and other marine wildlife. The ecosystem created is now out of balance (similar to what we are seeing with CCD). Not only are sea turtles affected and declining in numbers, but 1000’s of other species, all interconnected,



are affected as well. The center was established to address these issues that disrupt coastal areas and coastal wildlife.

In June of 2008 a large loggerhead turtle was found with a severe propeller injury. The propeller had sliced through the leg and shell of the turtle. Early prognosis wasn’t good. He was named Duffy. Now imagine a gapping wound from a propeller that has sliced through the shell of a turtle. How would you possibly mend that? There is a machine called a VAC that is used to help heal non-healing wounds in humans and animals. It rests directly onto the wound where the suction created promotes and improves blood supply to the area while pulling out debris and infection. It permits healthy tissue to form allowing the wound to heal faster. However, this can only be used on land, not in water. So when applied to aquatic turtles they need to be removed from the water. It is stressful for an aquatic animal to be out of the water.

In the past, Dr. Norton had used honey for wound care in other animals, so he applied honey to

Duffy. Unfortunately, the honey kept washing out because the turtle was returned to a water tank. A student worker at the center, Katie Haman, suggested packing the wound using honeycomb to hold the honey in place. Sure enough it worked and the wound began to heal. Duffy will be released back into the ocean this May.

The newest patient at the center receiving honey treatments is Varun, a green turtle. He was brought to the center with a horrible injury; a deep gash caused by a boat propeller that exposed his lung and body organs. Again, the early prognosis wasn’t good. The process for healing Varun’s wound is using sterile gauze with honey. They are used as bandages to aid in healing burn victims or diabetic wounds. These MediHoney gauze bandages don’t come cheap. They run \$10 a strip and can only be used for one day. While interviewing Dr. Norton he told me that the day before his visit was the first day the Varun’s injuries were beginning to improve.

Honey, especially in other countries, is routinely used to treat all



Dr. Norton examining an injured turtle.



Duffy's wounds after being treated with honey.



Rehabilitated turtle being released back into the ocean.

sorts of maladies in humans, including healing wounds. Honey inhibits the growth of most bacteria because it produces hydrogen peroxide when exposed to tissue. Here is a simplistic overview of the process. Honey by itself has a low pH of around four, so it's acidic. Depending on the floral type, honey averages about 30% glucose. While bees are ripening honey they add an enzyme, glucose oxidase, to the honey. This enzyme oxidizes glucose and forms gluconic acid. The acid formed aids in the stability of honey against fermentation. Also, for every molecule of glucose oxidized one molecule of hydrogen peroxide is formed. This too helps keep the honey from spoiling. When skin and body fluids are treated with honey the environment is just right for the glucose to break down and release hydrogen peroxide. These antibacterial properties from the creation of hydrogen peroxide help wounds heal faster. Remember that nasty cut your mother poured liquid into while you writhed in pain? More than likely it was hydrogen peroxide and it was killing all sorts of bacteria, which was a good thing even though it didn't seem like it at the time.

Since the center has opened 18 sea turtles have been successfully rehabilitated and released. Currently there are 12 sea turtle patients. Most of these will be released in late spring. As of May 31, 2008, Dr. Norton and his staff treated 256 diamondback



Injured sea turtle at the center.

terrapins with 69 releases. They have hatched 131 terrapins from eggs recovered from dead or injured terrapins. Roughly 52 turtles (freshwater, gopher tortoises and box turtles) have been treated at the center.

Along with Dr. Norton, the sea turtle center is staffed with a hospital coordinator, three rehabilitation technicians, a husbandry intern, an educational coordinator, an education and outreach coordinator, a marine field program coordinator, several interns, a gift shop manager, hourly employees and hundreds of volunteers. Rescuing wildlife takes people with passion and knowledge.

This year Dr. Norton was selected to join the Institute for Georgia Environmental Leadership. The Institute was started in 2001 to create a diverse group of state environmental leaders to work together and address environmental challenges in the state of Georgia. And it doesn't stop there.

He has been awarded 12 research grants, collaborated on numerous research projects and has served on many national committees. He is an Adjunct Professor at the University of Florida, North Carolina State University and the University of Georgia Colleges of Veterinary Medicine. He has published 35 articles and is the associate editor for the Journal of Zoo and Wildlife Medicine. In 1992 Dr. Norton was honored by being awarded the distinction of Diplomate in the American College of Zoological Medicine. Dr. Norton also organizes, teaches and lectures to groups ranging from the general public, to local veterinary associations, to zoos, to universities, scientific meetings and even beekeepers.

If you ever find yourself visiting our lovely state take a day or two and go see the center.

It is open to the public Tuesdays through Sundays. Admissions collected help with operational costs along with the expense for rehabilitating the injured or sick patients. Check out their website for more information. www.georgiaseaturtlecenter.org

Quoted lines in this article were taken directly from the Georgia Sea Turtle Center's website.

See Ya! **BC**

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