Asian Scholarship Program for *in-situ* Chelonian Conservation

Asian Scholar-2009
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Experiences at the Georgia Sea Turtle Center

Jekyll Island, Georgia

Duration: May 14th-24th, 2009

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Georgia Sea Turtle Center

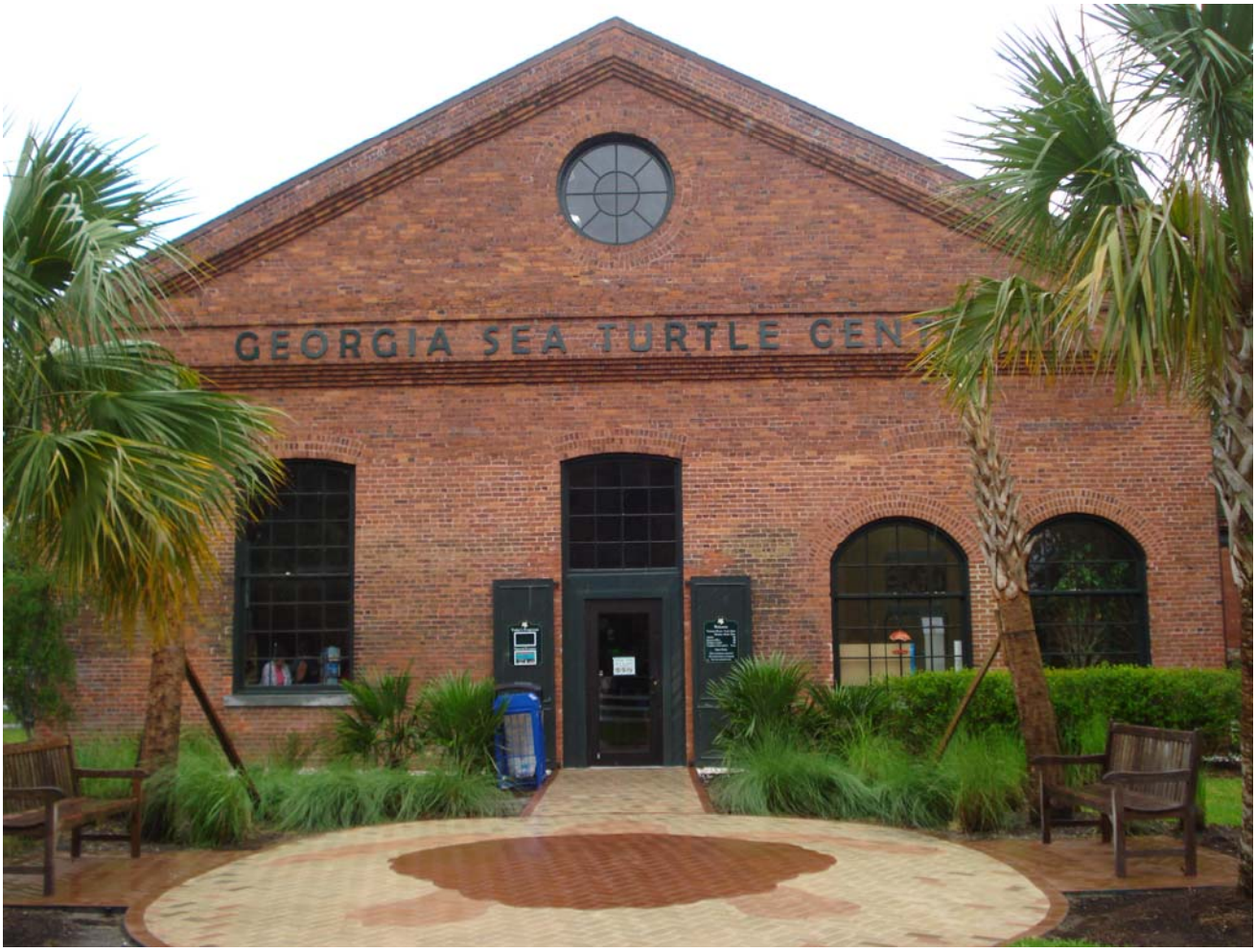

Figure 1: Georgia Sea Turtle Center

The Georgia Sea Turtle Center opened in June 2007 and provided state-of-the-art-emergence care to sick and injured sea turtles, with opportunities for scientific research and long-term treatment.

Jekyll Island is an ideal site for the new rehabilitation center. With an active sea turtle monitoring programme since 1972, Jekyll Island is unique among Georgia's developed islands for its significant annual turtle nesting.

Through sea turtle rehabilitation, research and education programmes the Georgia Sea Turtle Center will increase 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.

I learned new techniques at the center and participated in different activities, described below;

1. Tagging of Sea Turtles

1.1. Satellite telemetry

Sea turtles are long-lived species who don't reach maturity until late in life. They are solitary and highly migratory animals who spend their entire lives in the ocean (with the only exception when the females come ashore to lay eggs). These aspects of their life history make them hard to study.

Satellite telemetry is an effective method of monitoring turtle movements and behaviour. It enables us to follow their movements, get a glimpse of where they go during their various life stages and during different seasons. Through scientific interpretation of this data, their behaviour can be assimilated. This valuable information is a major contributor towards the current research, understanding and conservation of sea turtles.

Procedure to install satellite transmitters

- ❑ Weigh turtle and take measurements of carapace width and length;
- ❑ Cover the turtle's head lightly with a towel to protect it from accidental splashes of soap or acetone.
- ❑ Remove epibiota from turtle shell with the help of a scraper;
- ❑ Clean up turtle skin (grove between neck and flipper) with iodine, take blood sample and insert microchip by using syringe;
- ❑ Attach flipper tag with the help of plier;
- ❑ Scrub the carapace with sandpaper where transmitter will be attached;
- ❑ Wash carapace with water and acetone;
- ❑ Dry area thoroughly;
- ❑ If the bottom surface of the transmitter is smooth, score opposing diagonal lines into the bottom surface of the transmitter with a semi-sharp object such as a screw driver or metal putty knife.
- ❑ Have caulk gun loaded with 2-part Foil Fast epoxy, and secure nozzle in place on gun;
- ❑ Thoroughly mix 2 oz of Sonic Weld epoxy by hand;
- ❑ Roll the Sonic Weld epoxy by hand to make coils and place them around the edge of the bottom of the transmitter.
- ❑ Completely cover the entire bottom of the transmitter with a generous amount of Foil Fast epoxy;

Figure 2: Applying epoxy on satellite transmitter

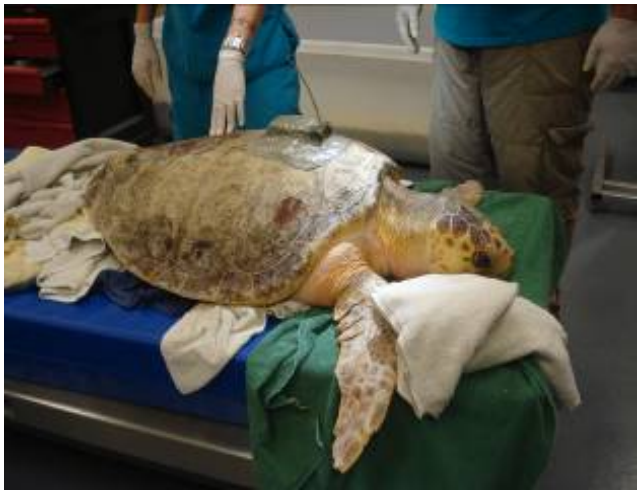

Figure 3: Turtle with a satellite transmitter

- ❑ Place the transmitter in the correct position on the turtle and press the transmitter firmly against the carapace.
- ❑ Spread epoxy with the help of stick and let it dry;
- ❑ Regularly check temperature of epoxy;
- ❑ Apply two more layers of epoxy to firmly hold the transmitter.

1.2. Passive Integrated Transponder (PIT) tags

Passive Integrated Transponder tags, or "PIT tags," are small microchips (about the size of a grain of rice) that are injected into a turtle's shoulder muscle using a hand-held applicator/syringe. PIT tags are based on a passive RFID (Radio Frequency Identification) technology. The PIT tag consists of inert wire, a chip and a capacitor encased in glass. When a scanner is passed over the site where the PIT tag was injected, the radio frequency of the scanner will excite the PIT tag, which in turn will reflect the radio waves back to the scanner. In this way, the scanner can detect the unique alphanumeric code of the PIT tag.

Scanning turtles for PIT tags allows identifying turtles that have been previously tagged on nesting beaches.

Equipment needed: Microchips, syringe, scanner, iodine, and acetone

Procedure for installation of PIT tags

- ❑ Shoulder muscle of front flipper is used to insert PIT tag in marine turtles, while in the case of diamondback terrapin, cavity between stomach and rare leg is the suitable location for pit tagging.
- ❑ Apply acetone and then iodine on turtle skin;
- ❑ Take syringe with microchip fitted in it;
- ❑ Inject microchip;
- ❑ Apply iodine on the turtle skin where microchip is injected;
- ❑ Scan by using scanner and record the chip number.

1.3. Flipper tag

Flippers tags are the most common tags that are used to mark sea turtles. They are made either from metal or plastic, and are attached by piercing through the skin of the turtle on the flipper. The tags usually have a unique number on one side and a return address on the other (in case someone finds the turtle far away from where the turtle was tagged). The benefits to using flipper tags include the fact that they are easy to see, they are relatively easy to attach, and they are cheaper than other types of tags.

Equipment needed: Tags, pliers, iodine, acetone

Procedure for installation of Flipper tags

- ❑ Flipper tags can be tagged on the scale of flipper or between two scales;
- ❑ Apply acetone and then iodine on turtle's flipper;
- ❑ Fit flipper tag in plier;
- ❑ Place plier on turtle's scale or between two scales and press hard;
- ❑ Apply iodine.

Figure 4: A flipper tag

2. Beach monitoring programme

2.1. Night and dawn patrolling at the Georgia Sea Turtle Center

Objectives

During these patrols, team search for turtle tracks, signs of animal depredation, human interference, tidal inundation, signs of hatching and saturation tagging.

Equipment needed: Caliper, Measuring tape, flipper tags and pliers, micro-chips kit (microchips, microchips reader, syringes), iodine with cloths, gloves, towels, camera, data sheets, GPS, marking flags, torches.

Dawn Patrol

The Jekyll Island's beach is monitored every morning from May 1 through the end of hatchling season, in October. These patrols are often referred to as Dawn Patrols because they begin as close to dawn as possible, with some influence from the tides.

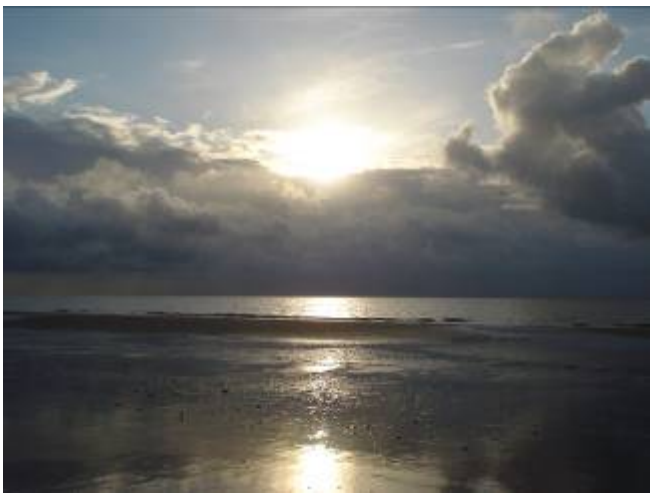

Figure 5: Dawn at the Jekyll Island

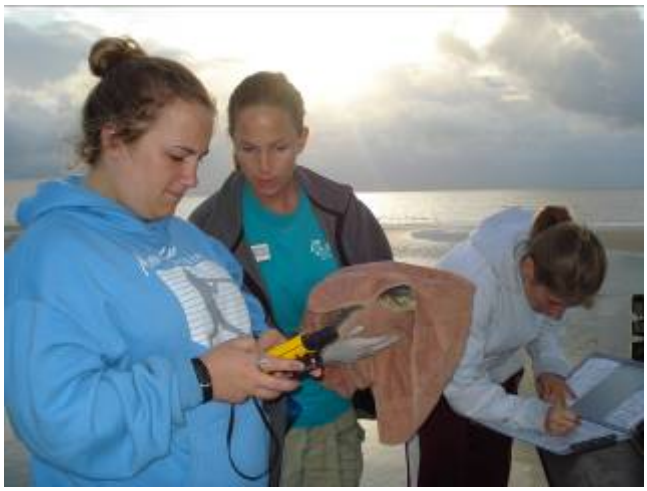

Figure 6: *Patrol* a sea turtle was found at Jekyll Island

Night Patrol

Night time surveys (9 PM to 6 AM) are the part of beach monitoring that are conducted from May 15th to the end of nesting season, sometimes in August. During these patrols, in addition to the routine patrol activities, saturation tagging is also conducted to check the existing tags on nesting female turtles and new tags are applied as needed. All numbers and associated data is recorded and submitted to the Department of Natural Resources, Georgia as required by the permit.

Figure 7: Logger-headed turtle

Figure 8: Night patrol activities

2.2. Visit to Sapelo Island

Sapelo Island is a state-protected island, located in McIntosh County, Georgia. The island is only reachable by boat. Approximately 70 percent of the island is owned by the State of Georgia and is managed by the Georgia Department of Natural Resources; the remaining is under private ownership. Most inhabitants of the town are Afro - Americans, part of the *Gullah* or *Geechee* community and have been living on the island since many generations.

Georgia Department of Natural Resources at St. Sapelo Island

The Georgia Department of Natural Resources takes care of beaches of this island for sea turtle conservation.

Beach monitoring

- ❑ Beach is monitored throughout the nesting season of logger headed turtle to mark and protect turtle nest.
- ❑ A turtle nest is covered with a sheet of meshed nets to protect eggs from ghost crabs and raccoons.
- ❑ Sand layer formation is used to check false nesting.

Figure 9: Sand pattern used to identify nests

Figure 10: Turtle nest of last year

2.3. Visit to St. Catherines Island

St. Catherines Island, also known as Santa Catalina, is one of the Sea Islands or Golden Isles on the coast of the US. state of Georgia, 50 miles (80 km) south of Savannah in Liberty County. The island is 10 miles long and from one to three miles wide, located between St. Catherine's Sound and Sapelo Sound. More than half of their 59 km2 areas are tidal marshes and wetlands. About half of it is salt marshes, about quarter is wooded and it contains fine beaches.

It is owned by the St. Catherines Island Foundation, and the island's interior is operated for charitable, scientific, literary and educational purposes. The foundation aims to promote conservation of natural resources, the survival of endangered species, and preservation of historic sites, and to expand human knowledge in different disciplines of science and education. The island is involved with the conservation of the ring-tailed lemur. Some of the other animals that have been raised and protected on this island include Grevy's Zebras, Gazelles, St. Vincent Parrots, Rhinoceros Hornbills, Florida Sandhill Crane and the Galapagos Tortoises.

St. Catherines Island Sea Turtle Conservation Programme

This programme has three major components;

- ❑ Conservation of nesting sea turtles on the Georgia Coast;
- ❑ Research into the nesting ecology of Georgia's sea turtles; and
- ❑ Education of teachers in science content and science process skills.

Beach monitoring

- ❑ Beach is monitored every morning in the nesting season of logger-headed turtle to mark and protect turtle nest.
- ❑ A turtle nest is removed from its original place if it is not found at a suitable location.
- ❑ Nest is dug to count eggs.
- ❑ An egg is preserved from each nest for DNA analysis.

Figure 11: First turtle nest at St. Catherines Island

Figure 12: Turtle eggs

3. Turtle husbandry

3.1. Treatment of patient turtles

The Georgia Sea Turtle Center has had a variety of patients come through its doors since opening in June 2007. While each patient is unique in its needs based on their injury or illness upon arrival, each receives the best care possible at this facility.

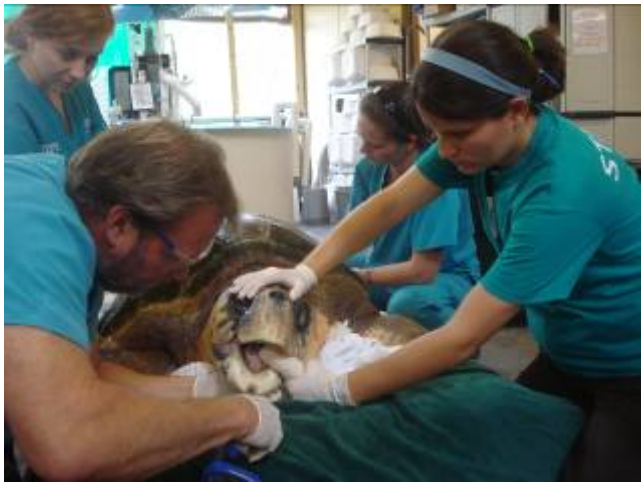

Figure 13: Treatment of a patient sea turtle

3.2. Release of turtles

Turtles are released back to their natural environment after appropriate medical treatment at the Georgia Sea Turtle Center. Three marine turtles were released in the Atlantic Ocean in Florida on May 16th 2009. These included one Logger-headed turtle and two Green Sea turtles.

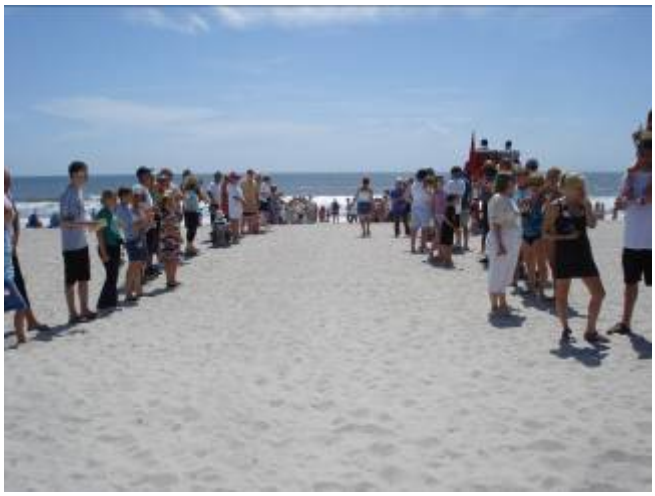

Figure 14: People lined up for turtle release

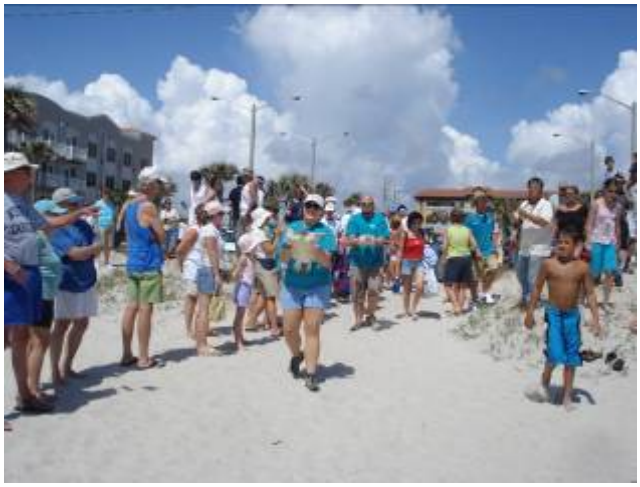

Figure 15: Release of turtles at Amelia Island, Florida

3.3. Necropsy

A necropsy is a postmortem examination. Necropsies can provide important information about the cause of death, and this information can be used in a wide variety of ways. Necropsies on animals are routinely performed when a new disease breaks out, to determine which animals carry the disease, and what the effects of the disease on animals might be. In areas where zoonotic diseases are endemic, a necropsy may be ordered on any suspicious animal death, to determine the cause of animal's death and to see if the death should be a cause for concern.

During a necropsy, the person who performs the examination first inspects the exterior of the body, making notes for the record. These notes will include any signs of trauma to the body, along with general observations about the physical health. Evidence such as blood draws and samples of substances found on the body may also be collected at this time. Once this examination has been performed, the body is opened up, allowing the internal organs to be inspected.

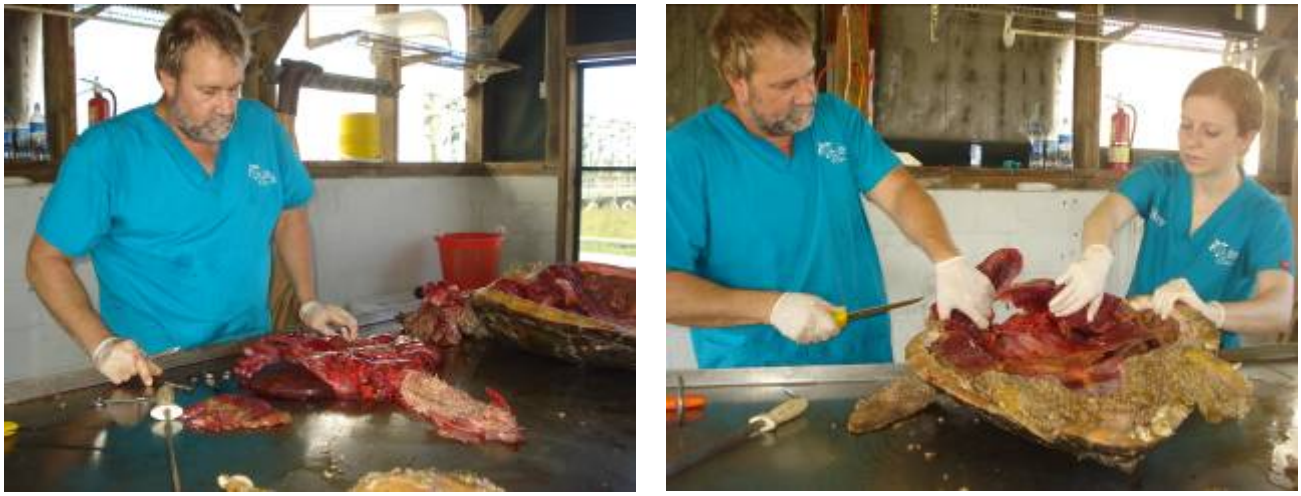

Figure 16: Turtle Necropsy at Georgia Sea Turtle Centre

4. Diamondback terrapin project

In May 2006, the Georgia Sea Turtle Center and its collaborators started to develop a conservation plan for diamond-back terrapins. In order to compensate partially for the loss of females killed by automobiles, they nurse injured terrapins back to health and collect eggs from turtles killed by motor vehicles. The eggs are then hatched and hatchlings are raised to a size deemed less likely to be predated upon (approximately 9 months) and then released back into their natural habitat. Turtle mounds have been established for terrapins to provide them suitable nesting places along the Jekyll Island Causeway.

The focus is also given to the terrapins' basic biology by documenting the clutch size, egg size, hatchling success rates, hatchlings sizes and growth rates. Additionally, they also look into the health of terrapin population in Georgia by conducting autopsies of dead terrapins found on the road and by taking samples from live turtles captured in seine nets and then released.

Release of diamondback terrapins

The diamondback head-starters are microchipped before releasing into the wild. 12 head-starters were released on May 15th 2009.

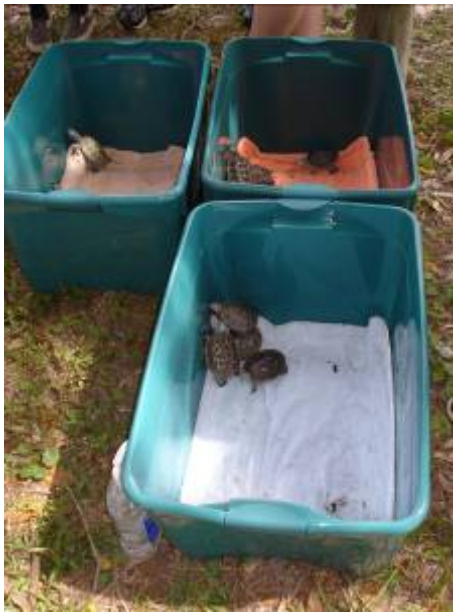

Figure 17: Diamond-back terrapins

Figure 18: Release of Diamond-back terrapins by school students

5. Education and awareness programme

Through various age appropriate interactive exhibits, daily presentations, group programmes, curriculum development and web-based learning environment, individuals and group can learn from the Georgia Sea Turtle Center's Education Staff.

Students who visit the center are briefed about sea turtles in an interactive manner in the lecture room.

Figure 19: Education activities at the center

In the rehabilitation department, they are told about each patient turtle individually, and the treatment the turtles are getting. Watching the surgical procedures through the treatment room window is always exciting for children and it also helps them sensitise about the care of wild animals.

Figure 20: Parts of turtles for education purpose

Wild Amelia Nature Festival, 2009

The Wild Amelia Nature Festival was held at the Atlantic Recreation Center on Amelia Island on May 16th 2009. Theme chosen for this year was the *Northern Right Whale* that comes to the waters of Amelia Island each year to give birth. A team from the Georgia Sea Turtle Center also participated in this conservation activity. The education team was present at stalls in both the Kids Niche and the Exhibition Hall with turtle static games, crafts, specimens and awareness material.

Figure 21: Wildlife Amelia Nature Festival

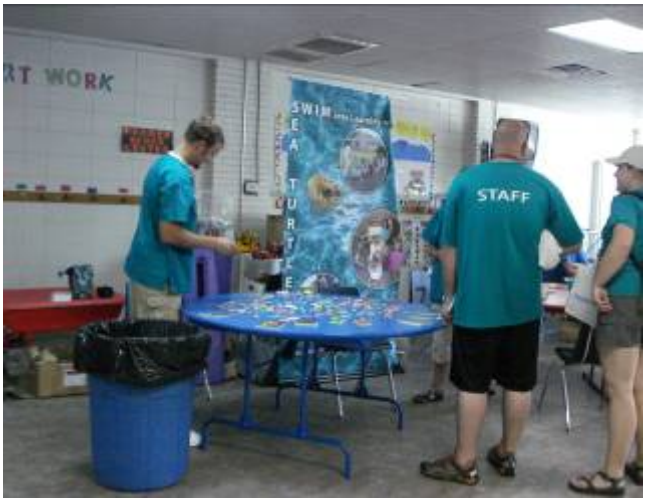

Figure 22: Stall of Georgia Sea Turtle Center