The Trash Bag

Volume XIV Issue 1, Summer 2011

Record Turtle Nesting Season on Wassaw Island

The July 24th Wassaw cleanup was greatly enhanced by the participation of the Caretta Research Project (CRP) volunteers who carried our heavy trash bags on their ATVs and transported volunteers to areas normally beyond our reach. With their help we cleaned 1,000 lb. of trash from five miles of beach.

The CRP volunteers patrol the beach on Wassaw every night during turtle nesting season, monitoring the nesting activity and conducting research studies.

Project leader Chris Williams reported that they have located 162 loggerhead sea turtle nests so far this season exceeding last year's record-breaking 159 nests.

Above: Clean Coast volunteers pose with ATVs and 1,000 lb. of trash. Photo by Carol Barnard.

Tybee Turtle Set Free

On August 4, Clean Coast member and Johnson High School science teacher, Amy Capello, said goodbye to Clover, the loggerhead sea turtle that she and Kristin Peney raised from a tiny hatchling at the Burton 4-H Center on Tybee Island.

In front of a huge crowd on onlookers, Clover seemed to have difficulty locating the Atlantic Ocean. Amy provided assistance by lifting the 25 lb. juvenile turtle and placing her in the surf where she quickly swam away to a chorus of cheers.

Clover has been fitted with a transmitter so that her movements can be tracked by satellite. You can follow Clover's movements on the website www.seaturtle.org.

Below: From right to left Amy Capello, Kristin Peney, and Joe Capello escort 3-year-old loggerhead sea turtle Clover to freedom. Photo by Karen Grainey.

Important Update!

This is the last paper newsletter! We have decided to save both time and money by fully embracing 21st Century communication technology. From now on the Trash Bag will arrive in your email box instead of being delivered to your door by the mailman. We do not have everyone's email address so if you want to ensure that you will continue to receive this newsletter please send an email to mailbox@cleancoast.org with the word newsletter in the subject line.

Scripps Study Finds Plastic in Nine Percent of 'Garbage Patch' Fishes

(Reprinted with permission from Scripps News website http://scrippsnews.ucsd.edu/Releases/?releaseID=1174. Originally published on June 30, 2011.)

The first scientific results from an ambitious voyage led by a group of graduate students from Scripps Institution of Oceanography at UC San Diego offer a stark view of human pollution and its infiltration of an area of the ocean that has been labeled as the "Great Pacific Garbage Patch."

Two graduate students with the Scripps Environmental Accumulation of Plastic Expedition, or SEAPLEX, found evidence of plastic waste in more than nine percent of the stomachs of fish collected during their voyage to the North Pacific Subtropical Gyre. Based on their evidence, authors Peter Davison and Rebecca Asch estimate that fish in the intermediate ocean depths of the North Pacific ingest plastic at a rate of roughly 12,000- to 24,000 tons per year.

Their results were published June 27 in the journal *Marine Ecology Progress Series*.

During the SEAPLEX voyage in August 2009, a team of Scripps graduate students traveled more than 1,000 miles west of California to the eastern sector of the North Pacific Subtropical Gyre aboard the Scripps research vessel *New Horizon*. Over 20 days the students, *New Horizon* crew and expedition volunteers conducted comprehensive and rigorous scientific sampling at numerous locations. They collected fish specimens, water samples and marine debris at depths ranging from the sea surface to thousands of feet depth (See SEAPLEX Oceanographic Equipment).

Of the 141 fishes spanning 27 species dissected in the study, Davison and Asch found that 9.2 percent of the stomach contents of mid-water fishes contained plastic debris, primarily broken-down bits smaller than a human fingernail. The researchers say the majority of the stomach plastic pieces were so small their origin could not be determined.

"About nine percent of examined fishes contained plastic in their stomach. That is an underestimate of the true ingestion rate because a fish may regurgitate or pass a plastic item, or even die from eating it. We didn't measure those rates, so our nine percent figure is too low by an unknown amount," said Davison.

The authors say previous studies on fish and plastic ingestion may have included so-called "net-feeding" biases. Net feeding can lead to artificially high cases of plastic ingestion by fishes while they are confined in a net with a high concentration of plastic debris. The Scripps study's results were designed to avoid such bias. The highest concentrations of plastic were retrieved by a surface collecting device called a "manta net," which sampled for only 15 minutes at a time. The short sampling time minimizes the risk of net feeding by preventing large concentrations of plastic from building up, and also by reducing the amount of time that a captured fish spends in the net. In addition to the manta net, the fishes were also collected with other nets that sample deeper in the water column where there is less plastic to be ingested through net feeding.

The new study focused on the prevalence of plastic ingestion, but effects such as toxicological impacts on fish and composition of the plastic were outside of the study's goals.

The majority of fish examined in the study were myctophids, commonly called lanternfish because of their luminescent tissue. Lanternfishes are hypothesized to use luminescence for several purposes, including counter-illumination (thwarts predators attempting to silhouette the lanternfish against sunlight), mate attraction and identification and illumination of prey. Such fish generally inhabit the 200- to 1,000-meter (650- to 3,280-foot) depth during the day and swim to the surface at night.

"These fish have an important role in the food chain because they connect plankton at the base of the food chain with higher levels. We have estimated the incidence at which plastic is entering the food chain and I think there are potential impacts, but what those impacts are will take more research," said Asch.

Rather than a visible "patch" or "island" of trash, marine debris is highly dispersed across thousands of miles of the North Pacific Subtropical Gyre. The debris area cannot be mapped from air or space, so SEAPLEX researchers collected samples in 132 net tows (130 of which contained plastic) across a distance of more than 2,375 kilometers (1,700 miles) in an attempt to find the boundaries of the patch. The region, a "convergence zone" where floating debris in water congregates, is generally avoided by mariners due to its calm winds and mild currents. The North Pacific Subtropical Gyre has been understudied by scientists, leaving many open questions about marine debris in the area and its long-term effects on the marine environment.

"This study clearly emphasizes the importance of

directly sampling in the environment where the impacts may be occurring," said James Leichter, a Scripps associate professor of biological oceanography who participated in the SEAPLEX expedition. "We are seeing that most of our prior predictions and expectations about potential impacts have been based on speculation rather than evidence and in many cases we have in fact underestimated the magnitude of effects. SEAPLEX also clearly illustrates how relatively small amounts of funding directed for novel field sampling and work in remote places can vastly increase our knowledge and understanding of environmental problems."

Loggerhead sea turtle with plastic bag in mouth. Floating plastic bags resemble the jelly fish which are part of the sea turtle diet.

Plastic Bag Ban Ordinances Supported by Sea Turtle Science

New report details deadly impacts of plastic bags in the ocean

Berkeley, California – A new report titled *Leading the Way Toward a Clean Ocean – Communities Around the World Take Action Against Single-Use Plastic Bags* signals a new era of action to reduce harmful impacts on the ocean and to sea turtles. Featuring a green sea turtle on the cover, the report received praise from a prominent sea turtle scientist.

"Plastic bags can be deadly to endangered sea turtles" said marine biologist Chris Pincetich, Ph.D. with the Sea Turtle Restoration Project.

Dr. Pincetich has found that 50 years of published research proves plastic pollution, including plastic bags, to be the most hazardous of all types of coastal pollution to endangered sea turtles. The leatherback sea turtles that feed on jellyfish every summer in the cold California Current swim over 6,000 miles from nesting beaches in Indonesia, the longest known reptile migration. One third of all leatherbacks have ingested plastic inside them, and many die from the resulting malnutrition or blockage.

"Reducing our use of disposable plastic is an easy action we can all take to help healthy oceans and sea turtles" continued Pincetich," The problem of plastic pollution has reached all ocean gyres and is a global epidemic"

"Nothing we use for 5 minutes should end up polluting our environment for 500 years. We want cities to ban plastic bags and we want the state of California to follow the lead of the locals to ban plastic bags statewide " said Dan Jacobson of Environment California, the organization who authored the new report.

In 2010, Pincetich authored a report linking plastic bag ban advocacy to current sea turtle science.

Tybee Awarded Grant to Combat Marine Debris

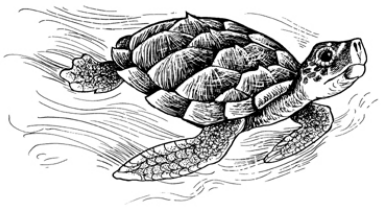
The Georgia Department of Natural Resources/Coastal Resources Division's Coastal Management Program recently announced the selection of 20 projects to receive Coastal Incentive Grants for the upcoming year. $964,881 has been awarded to a variety of projects including construction of public access, community development, education programs and research. One project stands out as of particular interest to Clean Coast.

The City of Tybee Island will receive over $60,000 including their own matching funds to reduce litter and marine debris and educate the public. Clean Coast submitted a letter in support of this funding and has high hopes that Tybee will become a model for other coastal communities to follow.

Photos from Recent Cleanups

Clockwise from left: Loading the skiff with trash on Wassaw Island, July 24;
Skiff laden with trash leaving north end of Ossabaw Island, May 21;
Group poses with trash on south end of Ossabaw; June 18; Our youngest volunteers examine beach find on Wassaw Island, July 24.

Photos by Julie McLean.



Loggerhead Sea Turtle Profile

(From NOAA Fisheries website http://www.nmfs.noaa.gov/pr/species/turtles/loggerhead.htm)

Status: Threatened throughout its range.

Weight: 250 lbs (113 kg) on average for adults in the southeastern U.S.; hatchlings average 0.05 lbs (20 g)

Length: 3 feet (~1 m) on average for adults in the southeastern U.S.; hatchlings average 2 inches (4 cm)

Appearance: Loggerheads were named for their relatively large heads, which support powerful jaws and enable them to feed on hard-shelled prey, such as whelks and conch. The top shell (carapace) is slightly heart-shaped and reddish-brown in adults and sub-adults, while the bottom shell (plastron) is generally a pale yellowish color. The neck and flippers are usually dull brown to reddish brown on top and medium to pale yellow on the sides and bottom.

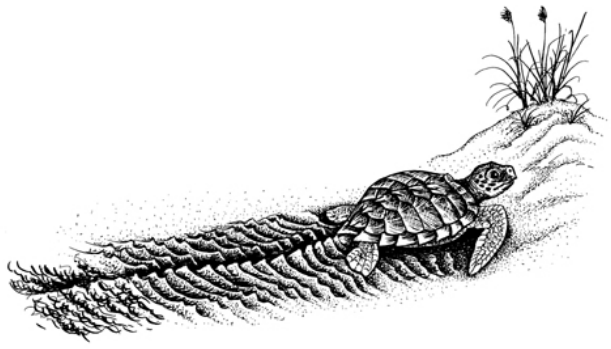
Lifespan: Unknown, but they reach sexual maturity at around 35 years old.

Diet: Whelks and conch

Reproduction: In the southeastern U.S., mating occurs in late March to early June and females lay eggs between late April and early September. Females lay three to five nests, and sometimes more, during a single nesting season. The eggs incubate approximately two months before hatching sometime between late June and mid-November.

Habitat: Loggerheads occupy three different ecosystems during their lives:

- beaches (terrestrial zone)
- water (oceanic zone)
- nearshore coastal areas ("neritic" zone)



Loggerheads nest on ocean beaches.

Immediately after hatchlings emerge from the nest, they begin a period of frenzied activity. During this active period, hatchlings move from their nest to the surf, swim, and are swept through the surf zone, and continue swimming away from land for several days.

After this swim frenzy period, post-hatchling loggerheads take up residence in areas where surface waters converge to form local downwellings. These areas are often characterized by accumulations of floating material, such as seaweed (for example, *Sargassum*), and, in the southeast U.S., are common between the Gulf Stream and the southeast U.S. coast, and between the Loop Current and the Gulf Coast of Florida. Post-hatchlings within this habitat are observed to be low-energy float-and-wait foragers that feed on a wide variety of floating items. They may linger for months in waters just off the nesting beach or become transported by ocean currents within the Gulf of Mexico and North Atlantic.

Once individuals get transported by ocean currents farther offshore, they've entered the oceanic zone. Within the North Atlantic, juvenile loggerheads have been primarily studied in the waters around the Azores and Madeira. Other populations exist (for example, in the region of the Grand Banks off Newfoundland), but data on these populations are limited. The juvenile turtles around the Azores and Madeira spend the majority of their time in the top 15 feet (5 m) of the water column.

Somewhere between 7-12 years old, oceanic juveniles migrate to nearshore coastal areas (neritic zone) and continue maturing until adulthood. In addition to providing critically important habitat for juveniles, the neritic zone also provides crucial foraging habitat, inter-nesting habitat, and migratory habitat for adult loggerheads in the western North Atlantic. To a large extent, these habitats overlap with the juvenile stage, the exception being most of the bays, sounds, and estuaries along the Atlantic and Gulf coasts of the U.S. from Massachusetts to Texas, which are infrequently used by adults. The predominate foraging areas for western North Atlantic adult loggerheads are found throughout the relatively shallow continental shelf waters of the U.S., Bahamas, Cuba, and the Yucatán Peninsula. Migration routes from foraging habitats to nesting beaches (and vice versa) for a portion of the population are restricted to the continental shelf, while other routes involve crossing oceanic waters to and from the Bahamas, Cuba, and the Yucatán Peninsula.

CALENDAR

- August 1, Business Meeting, 7 p.m. at JEA
- August 20, **Little Tybee Island Cleanup**
- September 6, Business Meeting, 7 p.m. at JEA
- September 17, **International Coastal Cleanup** (Wassaw Island—north end)
- October 3 , Business Meeting, 7 p.m. at JEA
- October 29, **Hayner's Creek Rivers Alive Cleanup**
- October 15, **Blackbeard Island Cleanup**
- November 7, Business Meeting, 7 p.m. at JEA

You can enroll for each trip online at www.cleancoast.org. Registration closes the Wednesday before the trip. There is no need to sign-up for the monthly business meetings which are held at 7 p.m. on the first Monday (unless otherwise indicated) at the Jewish Educational Alliance (JEA), 5111 Abercorn St.

MEMBERSHIP FORM

Use this form to become a member or to renew your membership.

Student or Senior Citizen ($15)_____ Individual ($25)_____ Family($35)_____

Sustaining ($100)_____ Patron ($500)_____ Life ($1000)_____

NAME:_____

ADDRESS:_____ CITY:_____STATE_____ ZIP:_____

TELEPHONE

Home:_____ Work:_____ Cell:_____

Email:_____

BEST TIME TO CONTACT:_____a.m._____p.m.

DO YOU OWN A BOAT SUITABLE FOR OUR TRIPS?_____

IF YES, HOW MANY CAN IT CARRY?_____

HOW MANY LIFEJACKETS ARE ABOARD?_____

Dues and contributions to Clean Coast are tax-deductible (IRS No. 58-1984908). Make checks payable to Clean Coast, Inc. and mail to Membership Chairman , P.O. Box 13322., Savannah GA 31416.

Clean Coast
Volunteers Working for Litter-Free Beaches
P.O. Box 13322
Savannah, GA 31416
Ph: (912)239-9663

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