

Georgia WILD Newsletter: November 2009

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The Georgia Department of Natural Resources teamed with the National Oceanic and Atmospheric Administration's (NOAA) Oceans and Human Health Initiative and Marine Mammal Health and Stranding Response Program and other scientists to catch, examine and release nearly 30 bottlenose dolphins off Brunswick and Sapelo Island in August. The effort was part of a continuing probe into levels of contaminants such as PCBs in resident dolphins, with related work involving dolphin identification and movements.

In the following Q&A, DNR Wildlife Resources Division biologist Clay George answers questions about the project, and the challenge of corralling these popular, intelligent and powerful mammals.

Q. Please give us a little background on this project.

A. The idea began in 2003, thanks to work by researchers at the Skidaway Institute of Oceanography. They were studying environmental contaminants in fish collected from Brunswick and the surrounding area. Their results suggested that contaminants from contaminated industrial sites in Brunswick are accumulating in fish and emanating into the surrounding ecosystem. They immediately wondered whether these contaminants are accumulating in resident dolphins. Bottlenose dolphins are a top-end predator, they can live for decades and they have abundant blubber that can accumulate large amounts of fat-soluble contaminants.

In response, NOAA and Georgia DNR biologists began collecting blubber biopsy samples from live bottlenose dolphins in the Brunswick and Sapelo Island areas. Dozens of blubber samples were sent to Skidaway and the National Institutes of Standards and Technology for contaminants analysis. Because very little was known about residence patterns of bottlenose dolphins in Georgia, a photo-identification component was added to the study in 2007, thanks to help from the University of North Carolina at Wilmington and the Chicago Zoological Society. Exposure to PCBs, or polychlorinated biphenyls, has been linked to a number of diseases in humans and other mammals, such as liver disease, anemia, reproductive problems, weakened immunity and cancer. Could PCBs be affecting dolphins similarly?

In 2008, planning commenced for a large-scale dolphin capture and health assessment project in the Brunswick and Sapelo areas. Last August, a team of more than 50 biologists, veterinarians and researchers from over a dozen agencies and organizations gathered in Brunswick to help. The project was a huge success. In two weeks, we caught, examined and released unharmed 29 bottlenose dolphins. Twenty-eight of the dolphins were fitted with temporary tracking devices so their movements after the capture can be documented. Tracking continues through this

month. Preliminary contaminants analysis should be complete by the end of 2010. Some results will be released earlier next year.

Q. How do you capture a marine mammal like a dolphin?

A. Capturing dolphins is simple in concept: You go out in a boat, find some dolphins, encircle them with a large gillnet and apprehend them. Sounds simple enough, right? In practice it's much more complicated.

Dolphins can use their echolocation sonar to find gaps or holes in the net. So often they swim out, under or jump over the net. If you're lucky enough to catch some, dolphins are also a lot larger than most people realize. Adult dolphins can be longer than 8 feet and weigh hundreds of pounds. If an animal rolls or thrashes in the net, it can be quite a challenge to restrain them safely, which is why we had so many people involved on the health team.

But like most work in field biology, most of the challenges are logistical. A typical dolphin capture project may require seven or eight boats, 50 people and a lot of equipment. Trying to coordinate an effort of that size is very challenging.

Q. What kind of information can you obtain from the samples?

A. Each dolphin received a thorough veterinary exam to evaluate its health. The exams combined should provide a rough picture of the health of the resident populations. The data collected from each dolphin is extensive, including measurements and weight, a dorsal fin photo and freeze-brand for subsequent identification, a tooth for aging, urine for urinalysis, fecal and stomach content for parasitology, a blubber biopsy and milk (in the case of lactating females) for contaminants analysis, skin for genetics, blowhole swabs for viral and microbiology tests, and blood for a wide variety of tests and analyses. Samples from this project were submitted to more than 25 different labs across the country.

If contaminants from the Brunswick area are affecting the local populations negatively, this could manifest itself clinically in a variety of ways. For example, high white cell counts could indicate things such as immune suppression, high parasite counts and high viral titers. (A titer is a measure of concentration.)

In addition to the health information, data obtained from the tracking devices will give us a better understanding of dolphin movements, residency patterns and habitat use.

Q. How will the data contribute to dolphin conservation, or conservation and management of other marine mammals?

A. One of the primary goals of the project is to determine whether resident dolphins are being affected negatively by contaminants in the Brunswick area. If so, this information can be incorporated into clean-up efforts at industrial sites in Brunswick.

Another goal of the project is to estimate the size of the contamination footprint associated with industrial sites in Brunswick. We hope to examine this issue by comparing health parameters of the Brunswick resident dolphins with resident dolphins from the Sapelo area. Results could also have implications for human and ecosystem health. Like humans, dolphins are long-lived, they consume food from the same ocean food web that many humans do, they can accumulate large amounts of fat-soluble contaminants in their fat stores and they are prone to similar diseases. For these reasons, dolphins are considered excellent sentinels of human and ecosystem health.

Q. Did you have any interesting encounters while taking the samples?

A. One of the most interesting things about handling dolphins is the variety of vocalizations they make after being captured. While some dolphins tend to be rather quiet, others make a seemingly constant stream of high-pitched clicks and whistles. I can't help but wonder what they see when they echolocate out of water.

Another strange encounter that occurs when capturing dolphins is when a dolphin exhales or blows in your face. Imagine being sneezed on very forcefully with wet fish breath.

Q. What advice regarding dolphins would you give to boaters or others visiting the coast?

A. We certainly want people to enjoy watching dolphins, but please remember that dolphins are wild animals, not pets. People should never feed, touch or try to swim with wild dolphins, even if they approach you and appear to beg for food. Feeding by humans can alter dolphins' behavior and diet, making them more susceptible to boat collisions, fishing line entanglement and disease, and is a violation of the Marine Mammal Protection Act. In some cases habituated dolphins have even been known to attack people, so there is a real human safety concern as well.

We recommend that boaters maintain a safe distance of 50 yards from dolphins. Avoid throwing out your bait when dolphins are nearby and always recycle your fishing gear and line.

Additional Information available on the web from NOAA:

- Marine Mammal Health and Stranding Response
Program: http://www.nmfs.noaa.gov/pr/health/db_public.html
- "Protect Dolphins"
Campaign: <http://www.nmfs.noaa.gov/pr/education/protectdolphins.htm>
- Southeast Regional Viewing
Guidelines: <http://www.nmfs.noaa.gov/pr/education/southeast/>
- Southeast Regional Bottlenose Dolphin Conservation
Program: <http://www.nmfs.noaa.gov/pr/interactions/trt/bdtrp.html>

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