



Bahamas Marine Mammal Research Organisation

Conservation of marine mammals and their habitats through scientific research and educational outreach

Winter 2012

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Climate change likely cause of Sea of Abaco bottlenose dolphin population decline

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As part of a continuing study of the Sea of Abaco bottlenose dolphin population, BMMRO Research Associates Dr. John Durban and Holly Fearnbach (NOAA's Southwest Fisheries Science Center) return to Abaco each October to survey for dolphins in the waters between Little Harbour and Green Turtle Cay. Data have been collected on this population since the early 1990's when BMMRO's research centre was located on Tilloo Cay. In 2011, a total of 41 different dolphins in 17 groups were documented. Unfortunately, this represents a significant decrease in sighting



Sea of Abaco dolphins face a number of threats including coastal development, boat traffic and climate change.

frequency compared to previous years. Notably, a relatively high proportion of the dolphins displayed fresh shark-bite wounds, likely acquired around the time of hurricane Irene in August. During intense storms, the dolphins may seek slightly deeper water, exposing them to larger predatory sharks or more sharks may frequent the inshore waters following a storm to scavenge. This finding is consistent with observations immediately following previous hurricanes, and although most dolphins survived shark attacks, some individuals may also have died as a result. As part of her PhD, Fearnbach recently completed analyses of these long-term data and found that this population is in fact declining. This decline in abundance began in 1996 when the first hurri-



This dolphin was observed with extensive shark bite wounds after Hurricane Irene.

cane hit Abaco in 31 years and the most abrupt decline occurred in 1999 when 3 storms occurred. Continued monitoring over future years will allow us to quantify this mortality, and assess the viability of this dolphin population as climate change affects the environment in the Sea of Abaco. Thank you to *Friends of the Environment* for supporting this work.

BMMRO teams up with Florida researchers to study manatees in The Bahamas

The number of West Indian manatees found in The Bahamas has increased over the past 2 decades. These animals are originating from Florida where the once endangered population is now growing. If this trend continues we can expect more of these wayward travellers in our waters. Although manatees occurred historically in The Bahamas, lack of fresh water may have limited population growth here. The response to recent sightings



Mother & young calf in Bullock's Harbour, Berry Is. (29 Dec 2011).

has ranged from capturing and returning animals to Florida which is costly to doing nothing at all which may put the animal at risk of dehydration. The health of animals found here has varied as well — at least one needed immediate medical care while most appear healthy. Of note, a young female, "Gina" (known previously from Florida), has been residing in Great Harbour Cay since 1999 and produced 3-4 offspring, all of which have remained in the area! So what is special about Great Harbour Cay that provides good habitat for manatees, how are they using the area, are they finding natural sources of fresh water, and what threats do they face, e.g. boat traffic? To answer these questions, Kendria Ferguson (BMMRO) has undertaken training from Dr. Jim Reid (US Geological Survey) to learn how to track manatees and assess their habitat use. Kendria has travelled to Bullock's Harbour to deploy underwater temperature sensors and gather sighting information from locals. *More to come on this exciting project!*



BMMRO educator & researcher Kendria Ferguson worked with Dr. Jim Reid from the Sirenia Project, US Geological Survey to learn how to track manatees.

TO LEARN MORE, PLEASE VISIT OUR WEBSITE: www.bahamaswhales.org



President's Message



Well, the wind certainly blew this quarter! Every night as the wind dropped, BMMRO and all Bahamian fishermen got their hopes up, but every morning the wind was waiting. The wind undoubtedly affected our 2 week visit to AUTEK. Although 3 species were sighted, no whales

Charlotte Dunn were successfully tagged for tracking through one of the military sound exercises as hoped. The annual East Abaco dolphin survey that took place in October (page 1), was more fruitful, providing invaluable data post hurricane Irene.

We have made use of the time ashore though. Kendria spent time training under Dr Jim Reid to prepare for a new study of manatee habitat use in The Bahamas with our colleagues from Florida (page 1). We supported fellow Bahamian, Nick Higgs, in his study of deep-sea worms (to right). In November, we had a visiting scientist, Marta Bayona from Spain, to help with a very interesting study on sperm whales (see below). BMMRO also attended the biennial Marine Mammal Conference held in Tampa, Florida this year (page 3) and were well represented in workshops and talks, with many references made to the value of our long-term dataset.

And last but by no means least, BMMRO has continued to secure grants in a difficult economic climate and are pleased that two of our recent grants are from Bahamian sponsors, for the benefit of educating our Bahamian children (page 4). Many, many thanks!

Life after death: the importance of whale carcasses as deep sea ecosystems

In October BMMRO provided a beaked whale skull to scientists investigating what happens to whales after they die. Whales that strand on our shores represent only a small proportion of the whales that die each year. In most cases the carcasses end up on the deep seafloor, where they provide a food-

bonanza for a diverse variety of animals living there. One bizarre but beautiful group of animals, *Osedax*

worms, specialize in living off the whale bones.

Bahamian PhD student Nicholas Higgs and supervisor Dr. Adrian Glover, from

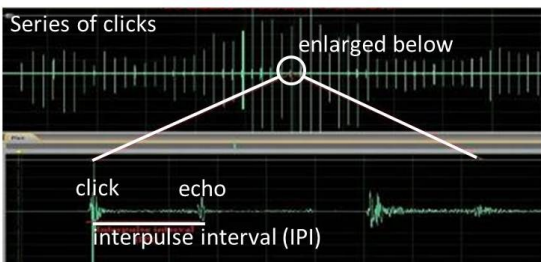
the Natural History Museum in London, are carrying out an experiment to hopefully discover new species of these bone-eating worms in the Bahamas. They have deployed parts of the skull at depths from 30-200 ft and will return in March to document animals that have colonised the bones.



Osedax worms on a whale bone.

If you would like to receive an e-copy of BMMRO's newsletter, please contact us at info@bahamaswhales.org to be added to the list.

Using sound to determine body length of sperm whales in The Bahamas



The top panel shows multiple echolocation clicks recorded from a sperm whale. The bottom panel shows one click enlarged.

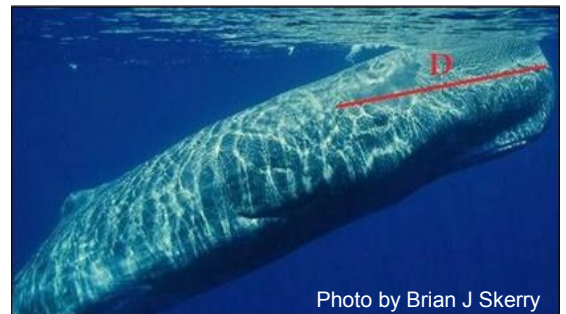
Sperm whales are the largest toothed whales that inhabit the oceans of our world and they are one of the more common marine mammals that live in the waters of The Bahamas. They use sound such as echolocation clicks to communicate with each other and to find food (squid). Sound for them is like our eyes and voice. They produce a particular short click which will return an echo when it hits an object, allowing them to locate their prey.

Recordings of these clicks can be used to calculate the size of the animal, and thus estimate its age.

This is possible because sperm whales produce

clicks from the front of their nose, and each of these clicks has an echo from bouncing off the back of the skull. The time between the production of the click and the echo is known as the interpulse interval (IPI).

We can transform this time into distance because we know that sound travels through the spermaceti organ located in the sperm whale's head at 1,395 metres per second. So from these data we can calculate the length of the sperm whale's head (shown as D in the photo at right). With this length we can then extrapolate the total length of the sperm whale, using stranding records and data from historical whaling. Imagine that someone can measure your size just by listening to your voice!



The distance (D) can be measured as sound travels through the spermaceti organ in the head of a sperm whale.

BMMRO presents our work at International Marine Mammal Conferences



In November, BMMRO staff took part in two international conferences. Supported by a grant from BMMRO and Friends of the Environment, Olivia Patterson attended the 2nd International Conference on Marine Mammal Protected Areas in Martinique. (**O Patterson and D Claridge**. The Status of Marine Mammal Conservation in The Bahamas).

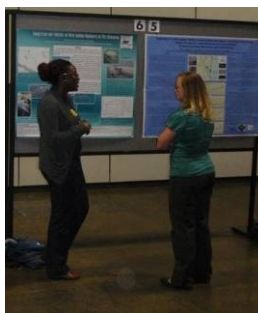
BMMRO scientists co-authored the following presentations at the 19th Biennial Conference on the Biology of Marine Mammals in Tampa, Florida:

D Claridge, J Durban, L Thomas and P Hammond. Abundance and density of beaked whales around Navy ranges in the Bahamas estimated using visual line transect surveys.

C Dunn and H Moors. New sounds identified in two different species of beaked whale.

H Fearnbach, J Durban, K Parsons and D Claridge. Tropical cyclones increase predation risk for bottlenose dolphins on Little Bahama Bank, leading to punctuated survival trends and seasonal calving.

K Ferguson and D Claridge. Long-term site fidelity of West Indian manatees in The Bahamas



False killer whale stranded in Abaco

This animal live-stranded on Guana Cay, just north of Nipper's on December 2nd. Some beachgoers discovered the whale and pushed it back to sea. They described it as having numerous lacerations and fresh scars about the body and laboured breathing. The whale later re-stranded on No Name Cay and was reported to have died. BMMRO attempted to find the animal the following day to conduct a necropsy, but the carcass had washed out to sea. A special thank you to: Tim Lyne and family, Captain Rolle of "Imagine", Troy Albury, Adiran Lowe, Tom Sawyer and Ossie Hall for their efforts. If anyone finds the skeleton or has photos please send them to us so we can confirm the species.



Photo by Adrian Lowe

Test your marine mammal knowledge!

Which of the following is true?

- A) Manatees have toenails
- B) Manatees eat turtles
- C) Manatees have baleen and are filter feeders
- D) Manatees don't need fresh water

2011 Winter Cetacean Sightings in The Bahamas

There have been 50 sightings of 11 different species of marine mammals throughout the Bahamas from October-December 2011!

These include the following:

Toothed whales

- Atlantic spotted dolphin (*Stenella frontalis*)
- Blainville's beaked whale (*Mesoplodon densirostris*)
- Bottlenose dolphin (*Tursiops truncatus*) — coastal ecotype
- Cuvier's beaked whale (*Ziphius cavirostris*)
- Dwarf sperm whale (*Kogia sima*)
- Pantropical spotted dolphin (*Stenella attenuata*)
- Sperm whale (*Physeter macrocephalus*)

Baleen whales

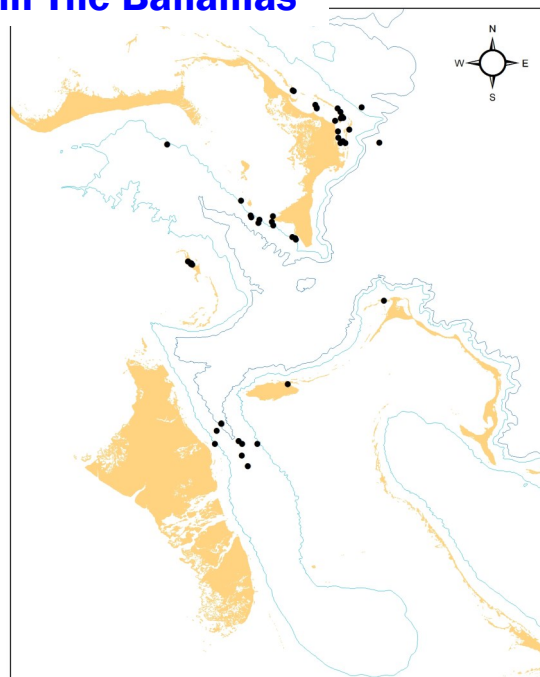
- Humpback whale (*Megaptera novaeangliae*)

Sirenians

- West Indian manatee (*Trichechus manatus latirostris*)-Florida subspecies

Many of these records have been from sightings reported to BMMRO from the public. These data are vital to understanding the distribution and occurrence of these species and is greatly appreciated.

THANK YOU !!!!



Three exciting ways to report sightings:

1. Complete our sighting report form to www.bahamaswhales.org/sightings (click on "Report Sightings" tab).
2. Email the sighting information directly to us at info@bahamaswhales.org.
3. Post on our Facebook page.

Don't forget to send us your marine mammal sightings!

BMMRO's educational outreach continues and gets new funding boost!

BMMRO's Education Officer, Ms. Kendria Ferguson continues to raise awareness about marine mammals in The Bahamas. Ms. Ferguson ended the fall 2011 school term with 7 primary school visits and 4 high school visits. Students of all ages were introduced to the marine habitats and the ecology of dolphins and sperm whales. In addition, Ms. Ferguson and the students of J.A. Primary School conducted a coastal cleanup along the shores of Sandy Point and the students learned how improper waste disposal affects the marine environment.



The students of JA Pinder Primary collected trash as part of International Coastal Cleanup Month efforts. Information gathered during the cleanup is contributed to a global database on marine debris.

BMMRO's outreach work got a major boost this fall. THANK YOU for your support!



The Lyford Cay Foundation has provided support for the production of 5 educational films on marine mammals in The Bahamas. The films will be produced by Loggerhead Productions and will be shown in schools, community television and on the internet.

The Cable Cares Foundation has provided funds to cover costs to develop materials for educational outreach! Stay tuned to learn more as we develop these education projects!



Remember to contact Ms. Ferguson if you are interested in having her visit your school, contact her at: kferguson@bahamaswhales.org or 366-4155.

Our Mission:
To promote conservation of marine mammals and their habitats through scientific research and educational outreach.

Our Vision:

- 1) To conduct scientific field studies in the Bahamas to increase the understanding of species' biology and conservation needs.**
- 2) To disseminate results that raise awareness and appreciation of marine mammals in the Bahamas and ultimately influence policy makers.**
- 3) To remain a small professional non-profit organisation, proportional to the needs of the Bahamas.**

BMMRO's Board of Directors & Staff

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 Kendria Ferguson, *Educator & Research Assistant*

Special THANK YOU
 to **Abaco Air** for
 transportation of
 whale bones to Nick
 Higgs!

WE APPRECIATE YOUR HELP!

Thank you to all who have helped BMMRO by reporting sightings, volunteering your time, providing financial support, and donating resources. Without your valuable contributions, the scientific research conducted, AND educational opportunities created for young Bahamians, would not be possible.



Contact Us

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And don't forget to look us up on Facebook!

Trivia Answer

A) Manatees have toenails!

REMEMBER that pas-
 sive observation
 (observing from a dis-
 tance) is the best way to
 protect manatees and all
 wildlife.



Photo by Ken Kurtis

BMMRO is a registered Bahamian non-profit organisation and accepts US and Canadian tax-deductible contributions through its partnership with PERC, a US registered 501(c)3 organisation.