NC STATE UNIVERSITY
The Center for Marine Sciences and Technology
August 2016

Skeleton Crew!

"JOSIE," A REARTICULATED BOTTLENOSE DOLPHIN SKELETON YEARS IN THE MAKING FINALLY FLIES HIGH IN CMAST'S LOBBY

"Josie," a rearticulated bottlenose dolphin skeleton, is the newest addition to the CMAST family, now flying high in our lobby after a long journey from sea to ceiling.

CMAST's Dr. Vicky Thayer, Skeleton Crew Rearticulation Project Coordinator, saw the project through from inception to completion when it was installed in the CMAST Lobby in May 2016. Work on the skeleton has been in progress since the dolphin's 2009 stranding. Sixty-four generous contributors who "bought bones" funded this project, along with Dr. Thayer and Keith Rittmaster of the NC Maritime Museum, who purchased bones and contributed materials towards the project.

"Josie"–so named after one of the biologists who worked on the project, Josh Summers–was a 255 cm long mature female bottlenose dolphin that stranded on Ocracoke in December 2009. The necropsy team found that the dolphin had a stingray spine in the right lung which contributed to the cause of death, but the animal also had severe dental attrition and rib fractures.

Josh Summers did the lion's share of the work on the rearticulation, particularly the rib cage and drilling vertebrae. Mr. Summers, along with Mr. Rittmaster, are experts in the field and have rearticulated many whales and dolphins of all sizes; they knew what was needed in materials and labor.

Dr. Vicky Thayer and CMAST director Dr. David Eggleston with the donor plaques and "Josie."

"My favorite part of this project," said Dr. Thayer, "was seeing the incredible attention to detail, engineering, ingenuity, and repurposing that was required to make this happen. I have a new appreciation of skeletons of all sizes and shapes in museums everywhere after coordinating this project."

The skeleton is a striking addition to the CMAST lobby. It is hoped that Josie will be joined by a loggerhead sea turtle skeleton and whale skeleton sometime in the future.

CMAST would like to thank the following, for making Josie's new home possible: NC State CMAST personnel, NC State College of Veterinary Medicine, The 2016 Class of Semester @ CMAST students, North Carolina Maritime Museum, Carteret Community College, North Carolina Division of Marine Fisheries, Bill Winner and Terri Lomax, Daniel Solomon, Dave and Jenny Eggleston, Josh Summers, Keith Rittmaster, Meg and Bill Rawls, Charles Jason Smith, and all the rest of the donors and volunteers.

FROM THE DIRECTOR

One of the most gratifying human experiences is when volunteers come together with a common purpose to turn an idea or vision into reality.

In this issue of the CMAST Communicator, we highlight how a relatively large cast of volunteers and financial donors came together for what, on the outside, might seem like a relatively simple task, yet on the inside a very detailed and time-consuming job of re-articulating a dolphin skeleton for the CMAST lobby.

Under the leadership of Dr. Vicky Thayer, who leads the central NC Marine Mammal Stranding Network in coordination with NCSU/CMAST and the NC Division of Marine Fisheries, "Josie" became reality after a seven year process.

In this issue, we also highlight the final, hands-on research and educational outreach projects conducted by the 15 undergraduates for our inaugural Semester@CMAST Program during Spring 2016.

We are already looking forward to hosting our next cohort of Semester@CMAST undergraduate students during Spring 2017! I invite you learn more about us through our web-site, keep up with CMAST via facebook and twitter, visit our beautiful facility located on Bogue Sound in Morehead City, or contact any of our faculty, staff or students with any questions.

With best wishes,

Dave Eggleston

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It Took a Crew to Bring Josie Back to Life

TIMELINE

2009
The animal stranded.

2010
The animal was necropsied. The skeleton was buried after the flesh had been removed from bones.

2011
The bones were exhumed, cleaned, and soaked in ammonia.

2013
The bones were degreased at the NC State College of Veterinary Medicine. The pectoral fins were radiographed and the bones were weighed.

2014
The bones were soaked in hydrogen peroxide, painted with book binder's glue, put in order, weighed, and numbered.

2015
Holes were drilled through the vertebrae.

2016
A purposefully bent stainless steel rod was inserted through the vertebrae. Foam was cut and glued for growth plates between each vertebra. Teeth were placed and glued in the jaw. Plexiglass was cut for pectoral fins. Radiographs were traced onto the plexiglass and then the pec bones were glued into place as per the position markers. Hyoid bones and chevrons were drilled and attached. the pelvic remnants and the stingray spine were attached. Washers and cables were cut for hangers.

The skeleton was suspended from the ceiling of the CMAST lobby on May 5, 2016.

The necropsy team, led by Dr. Craig Harms (far right) found a stingray spine lodged in Josie's body. This detail was eventually incorporated into the final rearticulated skeleton. The necropsy took place in 2010.

Semester @ CMAST students helped with the final push to completion in 2016.

The following volunteers worked together to make this project happen:

Laura Blessing, Brooke Blosser, Marlu Bolton, Nan Bowles, Christy Bridges. Dail Bridges, Kristina Cammen, Austin, Cantrell, Brittany Carson, Noelle Dalhouse. Maureen Dougherty, Linda Dunn, Dave Eggleston. Abby Frankenfield, Maureen Goretti, Justin Harker, Craig Harms, David Harwood, Dana Henderson, Kat Jones, Wayne Justice, Michele Lamping, Verena Lawaetz, Nick Mantia BG McCutcheon, Bruce McCutcheon, Pudge McCutcheon, Emily McGuirt, Kyle McMilleon, Jill Miller, Ray Mroch, Paul Nader, Nelson Owens, Meredith Owens, Claire Pelletier, Caroline Pitt, Meg Rawls, Keith Rittmaster, John Russell, Melinda Ryan, Robert Ryan, Kate Sakowski, Carson Shields, Charles JasoSmith, Harlie Smith, Sicely Sohn, Carl Spangler, Jill Sullivan, Josh Summers, Lindsey Thayer, Steve Thornton, Jil Thullen, Jesse Vassos, Danielle Waples, Katie Willis, Logan Willis, Matt Willmot, Cody Winkler, Bill Wise, Ernie Yeager, and Heather Yonce.

(From right): Keith Rittmaster of the NC Maritime Museum, Dr. Vicky Thayer, and a volunteer exhume the skeleton in 2011.

Josh Summers of the NC Maritime Museum did the lion's share of the work on the project.

Bones were carefully placed on plexiglass, using radiographs of the fins as a guide.

Dr. Vicky Thayer, project coordinator, worked with students and volunteers to see the project to completion..

Semester @ CMAST Final Projects

On May 5, we bid our Semester @ CMAST students a fond farewell. Before they left, however, came the really special part of their stay with us: Their final presentations for projects they completed while at CMAST. Following is a summary of the work that was done. The presentations were Powerpoints, videos, and speeches, followed by question and answer sessions from the audience.

The presentations were followed by an unveiling of "Josie," the re-articulated bottlenose dolphin skeleton completed with the help of the Semester @ CMAST students, now hanging in the CMAST lobby.

The projects presented were as follows:

"Stewardship and research on the Rachel Carson Reserve: Water quality, horse monitoring, and site management" by Kat Jones and Emily McGuirt. Advisors: B. Puckett and P. Gillikin

"Survey of light sources and their potential impacts on sea turtle hatchlings on Atlantic Beach, North Carolina" by Nick Mantia and Laura Blessing. Advisor: M. Godfrey

"Comparison of stomach contents from stranded bottlenose dolphins (*Tursiops truncatus*) in North Carolina" by Maureen Goretti and Kate Sakowski. Advisor: V. Thayer

"Assessing ecosystem services of shellfish aquaculture: fish and crustaceans" by Cody Winkler and Brooke Blosser. Advisor: D. Eggleston

"Surveying the wild horses of Shackleford Banks using line transects," by Brittany Carson. Advisor: S. Stuska

"Testing ecological paradigms in a marine fouling community" by David Harwood. Advisor: D. Eggleston

"Temporal variation in larval influx through the Beaufort Inlet" by Justin Harker and Jesse Vassos. Advisor: D. Eggleston

"Remotely Operated Vehicles and a reflection on educational outreach" by Abby Frankenfeld. Advisor: P. Curley

"Blood gas level comparisons in black sea bass (*Centropristus striata*)" by Claire Pelletier. Advisor: C. Harms and J. Buckel

"Traditions gone but not forgotten" by Sicely Sohn. Advisors: B. Nash and P. Curley.