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Ancient whale fossil repaired in collaboration

By Renee Stein

The Carlos Museum's Parsons Conservation Laboratory undertook last spring an unusual collaborative project with the University of Georgia to repair a 35,000-year old whale fossil.

The fossilized left lower jaw bone of an Atlantic Grey Whale was discovered in 2006 off the Georgia coast between Gray's Reef and J-Reef, about 45 miles southeast of Savannah. The UGA team led by Ervan Garrison, Scott Noakes and Greg McFall excavated the fossil from its underwater burial in summer 2008 with assistance from the National Oceanic and Atmospheric Administration.

The fossil was transported to Athens, where it was washed, dried and cleaned in preparation for assembly. UGA scientists identified and dated the fossil, now recognized as the oldest grey whale specimen yet found on the Atlantic coast and the first from Georgia, outdating the oldest fossil find by over 20 millennia and thereby extending the historic record for this species. Although the Atlantic species has been extinct for centuries, the grey whale currently migrates along the North American Pacific coast.

Unique collaboration

The UGA team contacted the Carlos Museum for guidance in joining the many fossil fragments. Conservator Renee Stein suggested that the project be coordinated as a collaboration involving students from both universities. Lauren Appelbaum '09C and Rebekah Cordiero '09C were among the volunteers who assisted with the project last spring, including research, treatment and packing. Atlanta-based conservator Katherine Singley, who specializes in underwater objects, consulted on the project.

Behind the scenes

The whale fossil was treated to promote both structural stability and visual unity by rejoining fragments and filling cracks. The fragments were first documented with digital images and line drawings to record the fossil's condition, including breaks and other losses. These images also capture details about the bone's morphology, such as inner cavities and vascular networks.

Having been rinsed and dried by the excavation team, the fragile fragments of bone were consolidated with acrylic resin upon arrival at the Carlos.

The fragments were then rejoined using acrylic resin bulked with paper pulp. Stainless steel pins were inserted between large fragments to support the repairs. Selected gaps were filled with putty made of the same acrylic resin and paper pulp. These fills were recessed slightly and toned with acrylic emulsion paint to correspond with adjacent fossil surfaces.

The fossil is now safely stored at UGA, where future steps include professional photography, publication of research, as well as possible molding and casting to create an accurate replica for study and display.

"We acknowledge... all [of Emory's] excellent work in preparing this fossil find for publication and ultimate display," says Garrison, professor of geology and anthropology at UGA. "The importance of this collaboration cannot be understated."