

FROM SOUTH GEORGIA LIMESTONE

BY THOMAS THURMAN

The village of Tivola in Houston County, south of Macon, appeared on many maps from the early 1900s. It is extinct now. Tivola's railroad depot stood about six miles east of Perry, where A.E. Harris Road meets the railroad tracks today. This was the shipping point for the local quarry mining fossil-rich Tivola Limestone. Geologists confidently estimate this limestone is 35-million-years-old because it contains abundant *Periarchus* sand dollars and other fossils and was created during one of many periods when sea level was much higher than it is today.

The limestone deposits formed in a warm, fertile sea moved by the Suwannee Current, which was strong enough to carve a large canyon, the Gulf Trough, in what is now South Georgia. Later, erosion backfilled the canyon. Filled with erosional clay and sand deposits today, the prehistoric canyon stretches from Bainbridge to Statesboro.

Once known as Ocala Limestone because of its similarity to deposits in Florida, the limestone in Houston County was renamed in 1986 for the extinct village of Tivola when researchers showed that it was

distinct from the Florida limestone. Cemex currently mines this limestone. It's been continuously mined for more than a century.

The Tivola Whale fossil came from the Tivola limestone. Miners discovered this fossil in 1932. The whale, a *Basilosaurus cetoides*, is the most complete specimen of this species Georgia has yet produced. About 60 feet in length, this was the first great whale species. It shows up in the fossil record about 37 million years ago according to scientific estimates.

Other whales inhabited Georgia waters at the same time. Six large lumbar vertebrae from a *Cynthiacetus maxwell*, a closely related species about the same age and maybe 10% smaller, were collected by Georgia paleontologist C. Wythe Cook in 1925 in Crisp County. At the Museum of Arts and Sciences in Macon, you can see a killer whale-sized *Durodon serratus* skeleton discovered by amateur geologist Bill Christy in Twiggs County and recovered in 1973 by University of Georgia paleontologist Michael R. Voorhies. Both whales are members of the basilosaurid family, closely related to the Tivola Whale.

An older and more primitive whale, *Georgiacetus vogtensis*, was discovered, described, and recovered in Burke County, near Augusta. That team included paleontologists Dr. Richard C. Hulbert and Gale A. Bishop. The fossil is displayed at the Georgia Southern Museum in Statesboro. Known as the Vogtle Whale, some researchers

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Georgiacetus might be a direct ancestor to the basilosaurids. Its teeth are similar to, though less complex than basilosaurid teeth. The basilosaurids are widely accepted by scientists as the ancestors to all modern whales.

Basilosaurid fossils occur globally. They're the state fossil for both Alabama and Mississippi, and they're also well-known in Egypt. The basilosaurids became extinct 34 million years ago, about a million years after the Tivola whale lived, but their ancestors populate all the world's oceans and several rivers.

The Tivola Whale

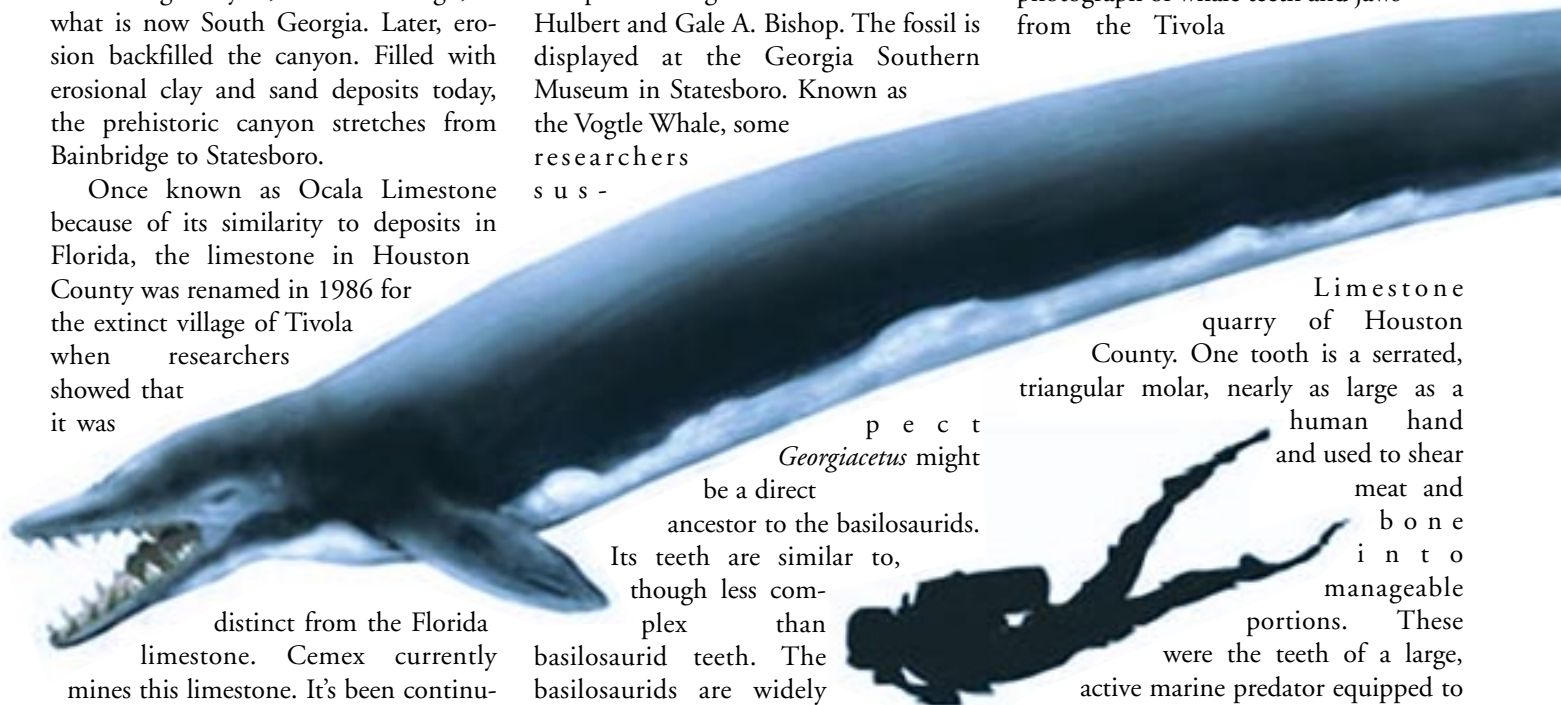
Today, the Tivola Whale fossil is housed in the Smithsonian Institution, cataloged as #USNM V 13690. That means "United States National Museum, Vertebrate collection, #13690." Everything from the teeth to vertebrae share the same catalog number.

In 1936 Remington Kellogg, Director of the National Museum of Natural History (the Smithsonian), published *A Review of Archaeoceti*. "Archaeoceti" means ancient whale. Kellogg was the world's leading expert on whales, modern and archaic. His book, wonderfully illustrated, took a detailed look at whale fossils and natural history. It quickly became, and remains today, the leading work on cetacean (whale) fossils.

Plate 8 in Kellogg's whale guide is a photograph of whale teeth and jaws from the Tivola

Limestone quarry of Houston County. One tooth is a serrated, triangular molar, nearly as large as a human hand and used to shear meat and bone into manageable portions. These were the teeth of a large, active marine predator equipped to deal with large prey.

When I first saw the picture, I was intrigued, because I live in Houston County. I reached out to Yolanda Young, a librarian in Perry, whom I knew from my fossil presentations at the library. She replied to my September 14, 2018, email inquiry with copies of two 1932 *Houston Home Journal* newspaper articles about the fossilized remains. These would turn



QUARRY TO THE SMITHSONIAN

out to be critical to our understanding of the Tivola Whale.

The Discovery

In September of 1932 miners blasted a fresh exposure of limestone. As the dust settled, they discovered the remains of a sea monster. The *Houston Home Journal* reported that Professor Leon Smith of Macon's Wesleyan College was called to advise the mining company. He soon received permission to remove the fossils due to their scientific value. He recovered a single, amazingly complete *Basilosaurus cetoides*. Only one animal was represented as there was no duplication of bones.

The September 8, 1932, *Houston Home Journal* article detailed the recovery of

“23 sections of vertebrae, several head bones, two large pieces of jawbones with teeth, a large box full of fractions of rib bones, neck vertebra, a large lower vertebra from near the pelvis, bone from the base of the skull, large vertebra from middle of the back, one very large rib bone.” This represented a large portion of the animal's forward skeleton since a *Basilosaurus cetoides* possesses a total of 58 vertebrae.

The 1932 *Houston Home Journal* article continued, reporting: “Several other portions of pre-historic whales have been found in Georgia, including one poking out of the banks of the Flint River, near Cordele, when the stream was low in 1925. [This would be the *Cynthiacetus* collected by C. Wythe Cooke.] Another individual, species unknown, was collected at a kaolin mine in Dry Branch in the late 1870s. A single *Basilosaurus cetoides* fossil was collected at Clinchfield in 1924, its housed at the University of Pennsylvania.”

Additionally, a 1911 paper from the

Georgia Geologic Survey reported on fossils of another *Basilosaurus cetoides* found in limestone near Bonaire, just north of where the railroad tracks currently cross Ga. Highway 96. This was apparently a single vertebra.

As late as 2008, an end-of-tail basilosaurid vertebra was found in Houston County's Oaky Woods by Boy Scouts during a field trip. More recent whale fossils have also been recovered from Georgia.

Why Didn't Scientists

Report the Tivola Whale Find in 1932?

The Tivola Whale fossils were never reported in scientific literature. Typically, a find like this would be published in a peer-reviewed scientific journal, creating a lasting record to preserve not only the discovery but what was learned while studying it.

Then, as now, there was a Georgia Academy of Sciences. Today, the *Georgia Journal of Science*, which is published by the Georgia Academy, would be the logical publication for such a find. Professor Smith was an active member of the academy. He'd even been celebrated by the academy for his soil research. But he never published his find of or research about the Tivola Whale. He did plan to reconstruct the whale for display at Wesleyan, but that never happened.

The two newspaper articles from the *Houston Home Journal*, one each in September and November of 1932, provided the only contemporary record of the Tivola Whale. Thanks therefore go to librarian Yolanda Young, who brought the articles to light so that a contemporary record of the find is available for scientific consideration. Otherwise, this story would have been completely lost.

Newspaper articles aren't considered

peer-reviewed scientific reports for good reasons. They exist to sell newspapers, not to create a scientific record. Be that as it may, the *Houston Home Journal* articles are the closest thing we have to an inventory of what Professor Smith recovered that day in 1932, and it turns out they were accurate.

The failure to publish and create a record in the scientific literature created problems.

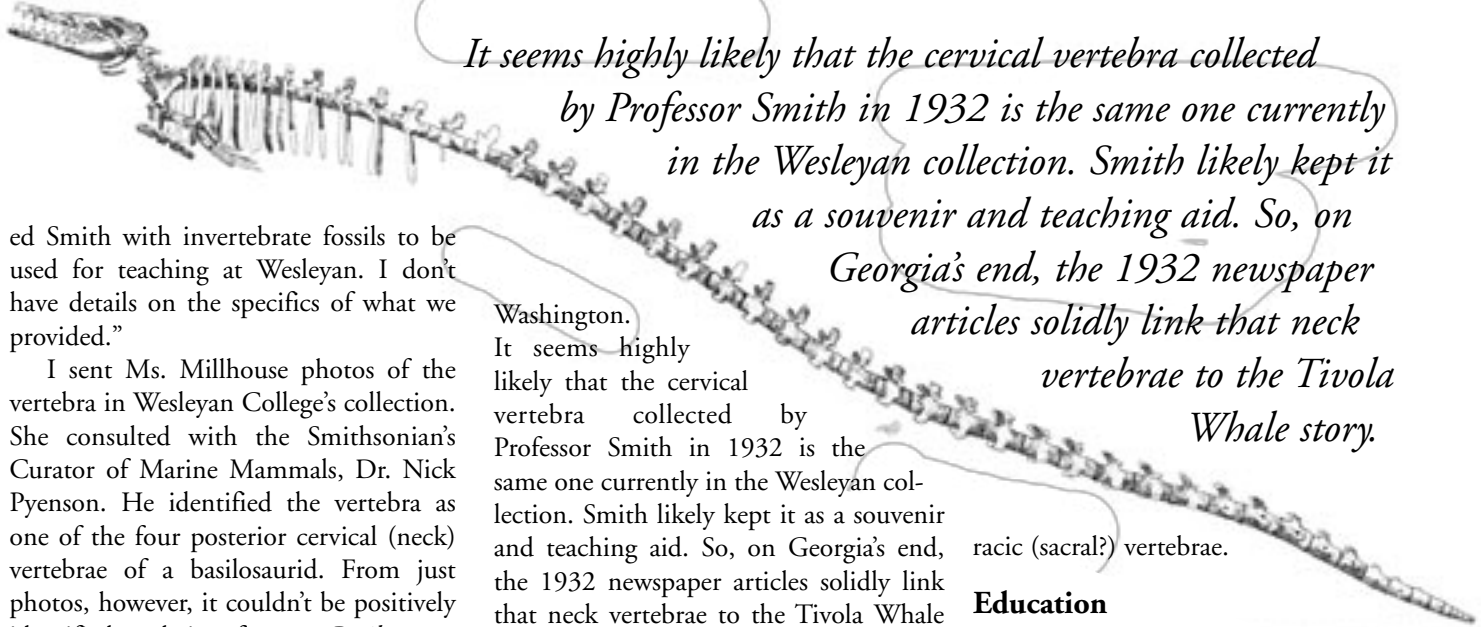
When researchers in 2021 found five vertebrae from a single fossilized whale along the Flint River near Albany, they reported it as the most complete *Basilosaurus cetoides* found in Georgia. They simply weren't aware of the Tivola specimen. One of them recently sent me an email acknowledging that the Tivola Whale is Georgia's most complete *Basilosaurus cetoides*.

Unravelling the Past

On April 21, 2025, Dr. Jim Ferrari, Professor of Biology at Wesleyan, replied to my email inquiry to say that he had a fossilized vertebra, its identity and history was unknown to him. It'd been in the college's collection longer than he'd been on staff, and its origin was unknown. He sent me several interesting images of the vertebra.

I then got in touch with Amanda Millhouse, Acting Lead Collections Manager for Paleontology at the Smithsonian, who investigated the matter. Her efforts greatly helped in unravelling this story.

By email dated May 20, 2025, she wrote: “Regarding how it [the Tivola Whale fossil pieces] got here, we acquired USNM V 13690 in December 1934 from Leon Smith [at Wesleyan] himself. He had been corresponding with the museum since October of that year and ultimately, we did an exchange with him. In return for the *Basilosaurus*, we provided



It seems highly likely that the cervical vertebra collected by Professor Smith in 1932 is the same one currently in the Wesleyan collection. Smith likely kept it as a souvenir and teaching aid. So, on Georgia's end, the 1932 newspaper articles solidly link that neck vertebrae to the Tivola Whale story.

ed Smith with invertebrate fossils to be used for teaching at Wesleyan. I don't have details on the specifics of what we provided."

I sent Ms. Millhouse photos of the vertebra in Wesleyan College's collection. She consulted with the Smithsonian's Curator of Marine Mammals, Dr. Nick Pyenson. He identified the vertebra as one of the four posterior cervical (neck) vertebrae of a basilosaurid. From just photos, however, it couldn't be positively identified as being from a *Basilosaurus cetoides* and there was no documentation, on the Smithsonian's side, linking it to the Tivola Whale and Professor Smith.

Basilosaurus cervical vertebrae, which are flat and comparatively small, aren't as robust as the larger vertebrae, so they aren't as frequently preserved in the fossil record. But the 1932 *Houston Home Journal* article mentioned a neck vertebra among the material Smith had collected. Such a vertebra isn't mentioned in Dr. Pyenson's list of material held in

Washington.

It seems highly likely that the cervical vertebra collected by Professor Smith in 1932 is the same one currently in the Wesleyan collection. Smith likely kept it as a souvenir and teaching aid. So, on Georgia's end, the 1932 newspaper articles solidly link that neck vertebrae to the Tivola Whale story.

Resting Safely in the Smithsonian Collection Drawers

Dr. Pyenson at the Smithsonian was kind enough to provide two images of the Tivola Whale fossils safely resting in their collection storage drawers. The first photograph showed the famous mandibles and teeth Remington Kellogg featured in his 1936 book. Whale researchers across the decades and all over the world have studied that black and white picture. The fossils are broken, and their edges are damaged. Most of this is because of the strong current pushing them along the sea floor before they became buried, which would have happened relatively quickly. Some of the damage might have been caused by scavengers.

In 1932 the *Houston Home Journal* reported "23 sections of vertebrae, several head bones, two large pieces of jawbones with teeth, a large box full of fractions of rib bones, neck vertebra, a large lower vertebra from near the pelvis, bone from the base of the skull, large vertebra from middle of the back, one very large rib bone."

Dr. Pyenson reported that the Smithsonian USNM V 13690 collection consists of about 40 items, including two incisors, left and right mandible, vertebral centra (dorsal?), ribs and rib fragments, lumbar vertebrae, and post tho-

racic (sacral?) vertebrae.

Education

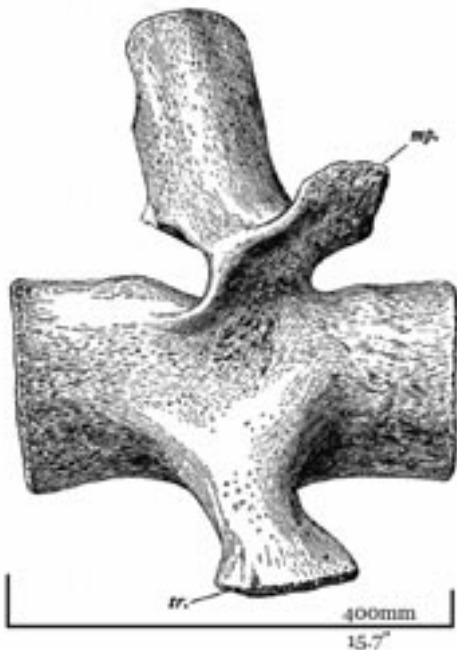
Houston County and Georgia educators are generally unaware of the Tivola Whale. Since you can't teach about what you don't know, there's motivation to share this bit of Georgia natural history and geology with our educators and all Georgians.

Dr. Ferrari plans to include the Tivola Whale as a case study in one of his classes at Wesleyan. "I think the Wesleyan connection to this specimen will really pique the students' interest and that we can eas-

Whale fossils discovered in 1932 in Houston County and collected by Wesleyan College professor Leon Smith. The fossils ended up at the Smithsonian.



Basilosaurus cetoides. Lateral view of the 7th lumbar vertebra.



ily spend a week or more on this topic,” he told me by email on June 28, 2025.

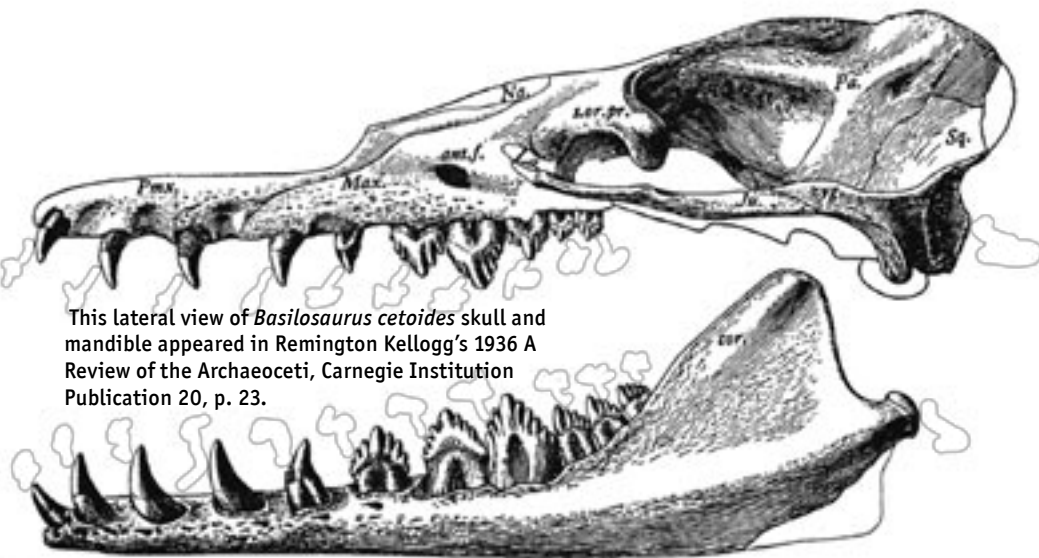
Houston County’s village of Tivola is long gone, but the name will linger in Georgia’s geologic literature for as long as such research is preserved by the state. Sadly, the Georgia Geologic Survey no longer exists. It was abolished in 2004, but its published research is still available online.

Other scientifically important fossils came from Tivola Limestone: smaller whales, a dozen sharks, and a terminator pig. Even today, researchers at the Florida Museum of Natural History in Gainesville are reviewing the snout of a terrestrial herbivore known as an oreodont, which came from the Tivola Limestone. The oreodont fossil will represent a scientifically important “earliest report in the Southeast” for a well-established genus and will extend the known range of the animal.

It took seven years to unravel the history of how whale fossils from Houston County passed through Wesleyan College, ended up at the Smithsonian Institution, and how they were included in Remington Kellogg’s important publication on the natural history of whales. It was a good journey.

In the meantime, limestone miners at Cemex continue to share with science unusual fossil finds. ■

Basilosaurid cervical vertebra image by Dr. James Ferrari, Wesleyan College, April 2025.



This lateral view of *Basilosaurus cetoides* skull and mandible appeared in Remington Kellogg’s 1936 *A Review of the Archaeoceti*, Carnegie Institution Publication 20, p. 23.

Thomas Thurman is a parts and service advisor and representative for tractor-trailers. Please visit his website, GeorgiasFossils.com, for more information about Georgia’s extensive and complex fossil record. He can also be found on Facebook as creator and administrator for Georgia’s Fossils Group.

Endnotes

Veatch, Otto, & Stephenson, Lloyd William, “Geology of the Coastal Plain of Georgia,” Geological Survey of Georgia, Bulletin 26, 1911.

“Pre-Historic Whale Bones Found in Mine Near Perry,” *Houston Home Journal*, Perry, GA, Thursday, 8/Sept/1932.

“Perry Whale Fossil Only One of Kind in N. America,” *Houston Home Journal*, Perry, GA, Thursday, 3/November/1932 (No author credited).

Kellogg, Remington, *A Review of the Archaeoceti*, Carnegie Institution, Pub. 20, Published 1936.

Huddleston, Paul F., Hetrick, John H., “Eocene Stratigraphy of Central & Eastern Georgia,” Bulletin 95, Page 24, Georgia Geologic Survey, 1986.

Manker, J.P.; Carter, Burchard D., “Paleoecology and Paleogeography of an Extensive Rhodolith facies from the Lower Oligocene of South Georgia and North Florida.” Society for Economic Paleontologists and Mineralogists (Now the Society for Sedimentary Geology) Published in *Palaos*, 1987, Vol.2, pg. 181-188.

Huddleston, Paul F., “The Oligocene, A Revision of the Lithostratigraphic

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Units of the Coastal Plain of Georgia.” Bulletin 105, Georgia Geologic Survey, Department of Natural Resources Environmental Protection Division. 1993.

Hulbert, Richard, Jr. Petkewich, Richard M; Bishop, Gale A.; Bukry David; & Aleshire, David P., “A New Middle Eocene Protocetid Whale (Mammalia: Cetacea: Archeoceti) and associated Biota from Georgia.” *Journal of Paleontology*, Vol.72, No.5, 1998.

Uhen, Mark D., “A Review of North American Basilosauridae Contributions to Alabama Paleontology,” Alabama Museum of Natural History, Bulletin 31, Vol.1, April 1, 2013.