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Fossils of Earth's Oldest Trees Donated to State Museum

Fossils of the Earth's oldest trees have been donated to the New York State Museum after workers uncovered them during a project to reconstruct the Gilboa Dam in Schoharie County.

Engineers for the New York City Department of Environmental Protection (DEP) discovered the fossils in the same location where similar Gilboa stumps were uncovered in 1920 when the dam was constructed. Other smaller discoveries were made in the 1850s and in 1869. The new stumps will be added to what is now the world's largest collection of Gilboa stumps at the State Museum. The stumps are widely cited as evidence of the world's oldest forest.

For decades scientists did not know what the trees connected to the stumps looked like. This mystery was solved in recent years. For the first time, the entire tree was pieced together after Museum researchers found fossils of the tree's intact crown in 2004, and a 28-foot-long trunk portion in 2005. In 2007, *Nature*, a leading international journal of science, reported the discovery of the 380-million-year-old "stunning specimens" in Schoharie County, marking the first time paleontologists had seen the entire Devonian-Period tree. The discovery was named one of the "100 top Science Stories of 2007" by *Discover* magazine.

Linda Van Aller Hernick, the Museum's paleontology collections manager and one of the co-authors of the 2007 *Nature* article, discovered the tree's crown in 2004, along with colleague Frank Mannolini, Paleontology collection technician. The year before, Hernick wrote "The Gilboa Fossils" a book published by the Museum, about the history and significance of the fossils and their use in an iconic exhibition about the Earth's oldest forest. The exhibition, at the State Museum's former location in the State Education Department building on Washington Avenue in Albany, had a profound influence on multiple generations of paleontologists worldwide.

One of the exhibition's key planners was Winifred Goldring,

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the nation's first female state paleontologist who was based at the State Museum. She worked tirelessly to study and interpret the Gilboa fossils and named the trees *Eospermatopteris*. In 1924, her paper about the stumps, together with the Museum exhibition, brought the "Gilboa forest" to the attention of the world. Even today, the ancient Gilboa forest remains among the most famous and important fossil sites ever discovered for this geologic period.

"The original discovery of the Gilboa Forest fossils documented the earliest known forest in the history of the world and informs textbooks around the world," said Dr. Cliff Siegfried, State Museum director. "The recent discoveries that State Museum scientists and their colleagues have made at this site have advanced our understanding of life in a world hundreds of millions of years in the past. We're excited to be able to enhance our collections documenting these discoveries and want to acknowledge and thank DEP for partnering with us to make it possible."

Dr. William Stein, associate professor of biology at the State University of Binghamton and a co-author of the *Nature* article, noted that there are still many unanswered questions about the trees and their stumps. A paleobotanist who specializes in the Devonian period, Stein said that the new additions to the Museum collection are important because they will allow him to analyze multiple specimens of different sizes, including some that appear deformed, to learn more about how these plants grew and interacted with their environment.

The most recent discovery was made in the old Riverside Quarry in Schoharie County. Some of the DEP engineers at the site were familiar with the history of the area as a fossil site and were interested in helping to recover any fossils that might turn up as they excavated infill from the old quarry in the process of rebuilding the dam. The same quarry was used as a source of face rock when the former City of New York Board of Water Supply began constructing the Gilboa Dam in 1919. There, in 1920, workers discovered casts of fossil tree stumps in life positions. As with the most recent discovery, the State Museum was notified and the fossils were placed in the Museum's paleontology collection.

"These unique discoveries from the site of our \$350 million reconstruction of the Gilboa Dam help to tell the story of how the Schoharie Valley was formed," said Paul Rush, deputy commissioner of the Bureau of Water Supply for the New York City Department of Environmental Protection. "We are thrilled to be able to work with the New York State Museum to showcase these fossils to foster a better understanding of the geologic history of the watershed that provides drinking water to half the state's population."

The Gilboa Dam is part of New York City's Catskill water supply system, and is located at the northern point of the Schoharie Reservoir in the Town of Gilboa. The reconstruction of the dam started with emergency stabilization work in 2005. The upgrade will extend the useful life of the dam for 50 to 100 years and bring it into compliance with the latest state and federal standards. This includes an enhanced capacity to safely release water in the event of a dam safety emergency — a design feature critical to protecting the dam and communities downstream. The work is scheduled to be completed in 2016.

DEP is donating some of the recently discovered stumps to

the Gilboa Museum, which plans to hold an open house to unveil its new acquisitions on July 10. The Museum houses many rare fossils found only in the Gilboa area. It also contains artifacts and photos from the original town of Gilboa before it was transformed into a reservoir for New York City's drinking water.

"In addition to their scientific significance, the *Eospermatopteris* stumps also have profound cultural and historical significance to the State of New York," said Stein. "The building of the Gilboa Dam and the old village of Gilboa, now under the waters of Schoharie Reservoir, are history well worth cherishing. Properly conserved and protected, the stumps are a powerful reminder, and useful teaching tool."

The State Museum is a program of the New York State Education Department's Office of Cultural Education. Founded in 1836, the Museum has the longest continuously operating state natural history research and collection survey in the U.S. Located on Madison Avenue in Albany, the Museum is open Monday through Saturday from 9:30 a.m. to 5 p.m. It is closed on Thanksgiving, Christmas and New Year's Day. Admission is free. Further information can be obtained by calling (518) 474-5877 or visiting the museum website at www.nysm.nysed.gov.

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