





# To the Moon and Back . . . America's Moon Trees

By Johnnie Everitt, Colbert County Forestry Management Specialist,  
Alabama Forestry Commission

For those of us living in the 1960s and '70s, the count-down, "ten . . . nine . . . eight . . . seven . . . six . . . five . . . four . . . three . . . two . . . one . . . Houston, we have lift-off," will always remind us of the United States of America's Apollo Space Program. Who among us was not in awe of the towering Saturn V rockets which were engineered and tested at Marshall Space Flight Center in Huntsville, Alabama, propelling men into space with a moon-landing objective? Television pictures were as not clear in those days as they are today. Rabbit ears and roof-top antennas were no match for today's cable or satellite systems. Fortunately, we had Walter Cronkite with CBS News describing what was going on as the rockets climbed into the sky.

The Apollo program lasted a little over a decade. In that time, the U.S. launched several successful Apollo missions, but the program was not without its trials and tribulations. During a practice launch on Apollo 1, a fire tragically resulted in the loss of three astronauts' lives. A second incident was depicted by the movie *Apollo 13*, where the mission to the moon was aborted in order to safely bring the crew home following an explosion in space. The cost of space exploration was high. However, the benefits – ranging from scientific breakthroughs to national pride – are still with us today.

In fact, one unusual experiment involved pairing North American Space Administration (NASA) with the United States Forest Service (USFS), through a former forest firefighter named Stuart Roosa. Born August 16, 1933, in Durango, Colorado, Roosa grew up in Claremore, Oklahoma. As a young man in the early 1950s, he took a job with the U.S. Forest Service as a "smoke jumper" based in Oregon, parachuting into wildfires to put them out. Roosa never forgot his roots in forestry or the U.S. Forest Service when he later graduated college, joined the U.S. Air Force, and earned his pilot's wings. His flight experience and aeronautical engineering background led him to become a test pilot at Edwards Air Force Base, California. Made famous by the movie *The Right Stuff*, this base produced many of our nation's first astronauts. Joining NASA's elite corps of astronauts in 1966, Roosa would remain with NASA and the U.S. Air Force until his retirement in 1976 at the rank of colonel. During his career, he made one space flight on Apollo 14 and was backup command pilot for Apollo 16 and 17. It was on the Apollo 14 mission that forest history was made.

On January 31, 1971, Apollo 14 lifted off the ground from Kennedy Space Center in Florida for a scheduled landing on the moon. On board for what would be our country's historic third

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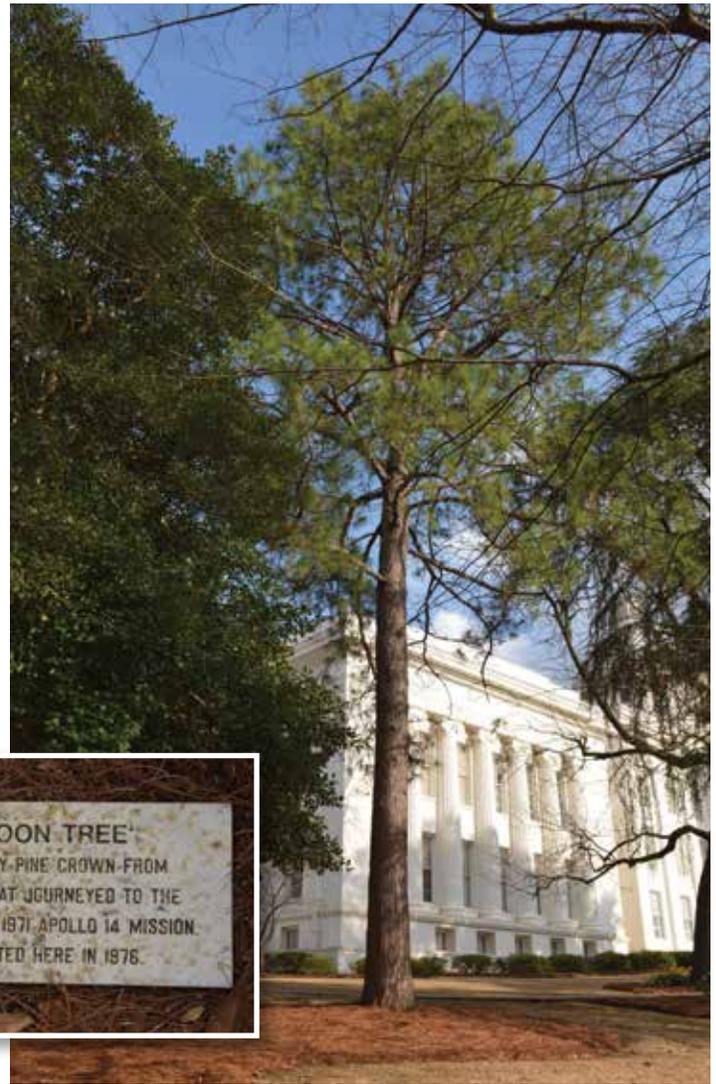
# America's Moon Trees

(Continued from page 17)

lunar landing were astronauts Stuart Roosa, Alan Shepard, Jr., and Edgar Mitchell. Traveling in space along with these three men were 400 to 500 tree seeds, carried by Roosa through his continued connections with Ed Cliff, Chief of the U.S. Forest Service. The objective was to see if weightlessness would affect successful seed germination. FSFS geneticist Stan Krugman was placed in charge of this project, and his team chose various types of seeds for the experiment including loblolly pine, American sycamore, sweetgum, redwood, and Douglas fir.

Five days after liftoff, Commander Shepard and Lunar Module Pilot Mitchell successfully landed on the moon, while Command Module Pilot Roosa orbited the moon 34 times in command and service module "Kitty Hawk" with the seeds carried in his personal kit. Several mission objectives were met during the flight in addition to the U.S. Forest Service project, including collecting moon rock samples, high resolution photography, and moon surface mapping. It was said that the scientists on the ground were as excited about the seeds returning to earth as they were moon rocks! A side note: this was also the mission in which Commander Alan Shepard, Jr. hit a couple of golf balls prior to leaving the moon surface. Apollo 14 splashed down in the Pacific Ocean on February 9, 1971, completing its ten-day mission.

Upon splashdown back on earth, the seeds were returned to the U.S. Forest Service. Krugman sent them to USFS stations for germination in Gulfport, Mississippi, and Placerville, California. Surprisingly, a majority of the seeds successfully germinated. In fact, in comparison to their earth-bound seed counterparts, no major differences were noted. A sampling of the trees was checked 20 years later with



*This Moon Tree, a loblolly pine, stands on the west grounds of the Alabama State Capitol building in Montgomery.*

no major growth or survival differences. Once germinated, these seedlings became known as the "Moon Trees."

The majority of the Moon Trees were given to several state forestry agencies for tree planting ceremonies in 1975 and 1976 as part of our country's bicentennial celebration.

Colonel Roosa was on hand to help plant the first Moon Tree in Washington Square in Philadelphia, Pennsylvania. Several other trees of varying species were planted throughout the United States at places of historic significance, including a loblolly pine at the White House in Washington, D.C. Moon Trees were also given to other countries such as Japan, Switzerland, and Brazil as good will gestures.

On a personal note, while my family was on vacation a couple of years ago, we visited Old Washington Historic State Park in Washington, Arkansas. A guide giving a group tour of the park came across a rather large loblolly pine tree and asked if anyone knew its particular significance. Much to our surprise, the kids answered that it was a Moon Tree. The tour guide congratulated them, saying that was the first time anyone correctly answered the question. As a registered forester, I was proud. As parents, we were happy to see that they had actually



*Command Module Pilot Stuart Roosa*

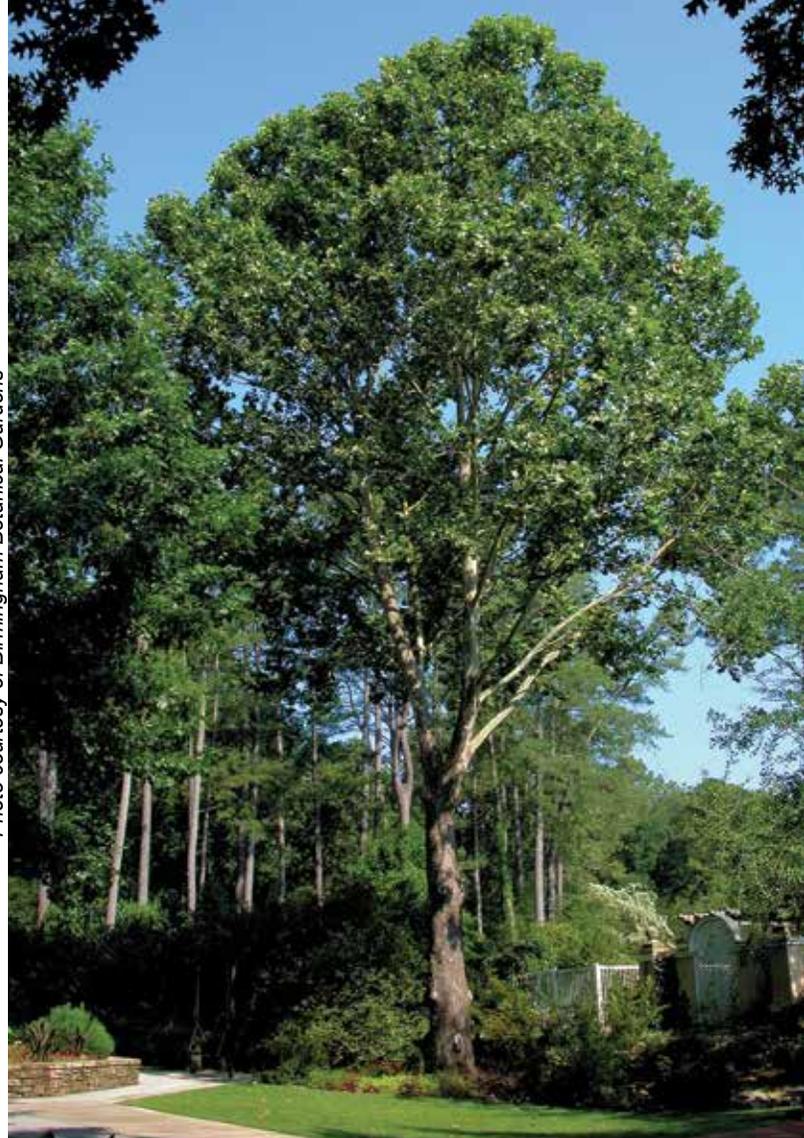
*Photo courtesy of JSC Digital Image Collection/NASA*

paid attention to another Moon Tree seen in Alabama on an earlier outing.

Records indicate that several Moon Trees were planted in our state during 1976 with the assistance of the Alabama Forestry Commission: seven loblolly pines and seven American sycamore trees. Today, the only three surviving pines trees are located at Ivy Green in Tuscumbia, the Alabama State Capitol building in Montgomery, and the Pioneer Museum of Alabama in Troy. The last known surviving American sycamore is in Birmingham at the Botanical Gardens. A clone of this tree was presented to Huntsville Botanical Gardens two years ago by Henry Hughes, Director of Education with Birmingham Botanical Gardens. Each of the remaining trees has a plaque giving a brief history of the famous tree.

One problem with the Moon Tree project was in the record-keeping area. It appears that no one really kept a complete list of where the original seedlings went. Perhaps the best records have been compiled by Dr. Dave Williams, a curator at NASA's Goddard Space Flight Center in Greenbelt, Maryland. Dr. Williams is asking for the public's assistance in tracking down whereabouts of these trees. If you are interested in this project and happen to know the location of an unlisted original Moon Tree, a second generation "Half-Moon Tree," or a cloned Moon Tree, Dr. Williams would like to hear from you. Send him an online message from either of these websites: [nssdc.gsfc.nasa.gov/planetary/lunar/moon\\_tree.html](http://nssdc.gsfc.nasa.gov/planetary/lunar/moon_tree.html) or [science.nasa.gov/science-news/science-at-nasa/2002/13aug\\_moontrees/](http://science.nasa.gov/science-news/science-at-nasa/2002/13aug_moontrees/)

Photo courtesy of Birmingham Botanical Gardens



*Above: The lone surviving hardwood Moon Tree in Alabama, an American sycamore, is located at the Birmingham Botanical Gardens.*

In conclusion, these trees serve as a reminder of our nation's resolve to carry out President John F. Kennedy's desire to put a man on the moon. They stand as a testament to the men and women who worked on the Apollo program – including my father, a former NASA engineer, as well as some of our very own TREASURE Forest landowners. Unfortunately, Colonel Roosa passed away in 1994. In an interview conducted in 2003, his son, Jack Roosa, stated, "I think my father always knew these trees would serve as a long-lasting, living reminder of mankind's greatest achievement – the manned missions to the moon."

Do yourself a favor while time permits and visit one of Alabama's lesser known treasures, our state's Moon Trees. Over 40 years old now, a few of these trees have already succumbed to weather and disease-related problems. It is certainly a trip worth taking. After all, how many people can say they have actually seen and touched a living space voyager?

*The author would like to thank Patsy Thompson for her assistance in researching this article.*

*Left: Another loblolly pine Moon Tree can be found at Ivy Green, the birthplace of Helen Keller, in Tuscumbia.*

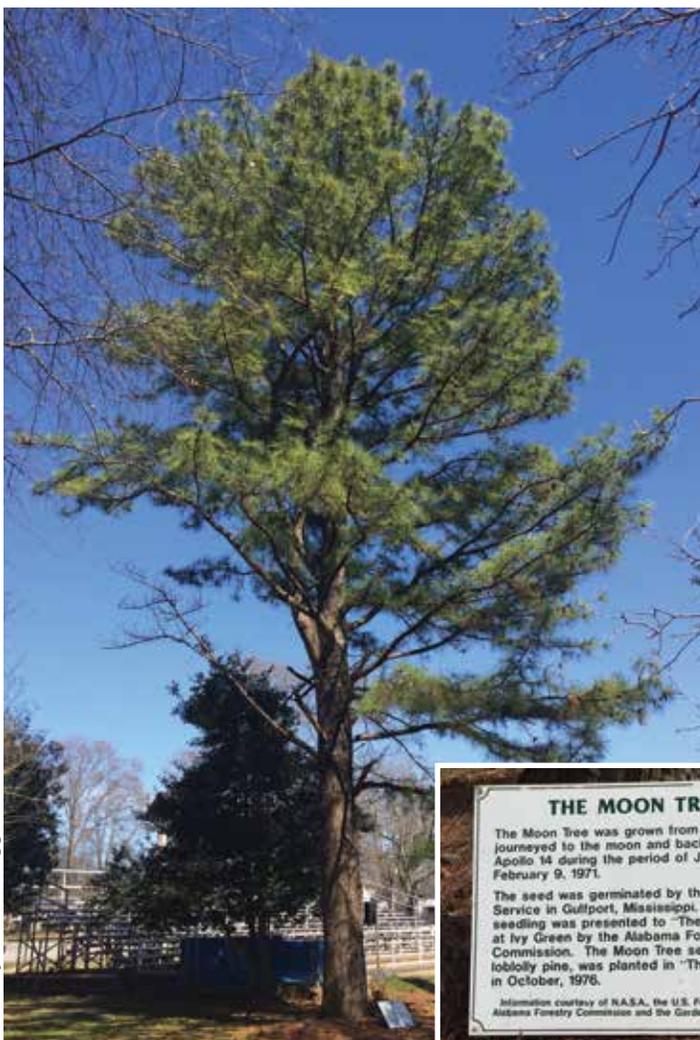


Photo by Daniel Goggans