How Old is a Silver Palm?
by Daniel B. Ward and Robert T. Ing

Formula: To estimate age of Coccothrinax argentata, multiply 6.5 by the height in feet.

Silver palm (Coccothrinax argentata [Jacq.] Bailey) is a small tree native to southeastern Florida and the Bahama Islands. While it once formed appreciable stands in coastal Dade and Broward counties and on the Florida Keys, it has now been reduced to a few protected populations and scattered individuals preserved as specimen trees in residential developments. In 1979 it was designated as a "threatened" species by the Florida Committee on Rare and Endangered Plants and Animals, and in 1993 it was classified as "endangered" by the Florida Department of Agriculture.

The increasing rarity of this small palm has begun to bring it to the attention of those who would understand its biology. But, as is equally true of the vast majority of Florida’s native plants, little information about its life history has been recorded.

Among the unknown parameters of the silver palm is its longevity. Unlike typical dicotyledonous woody plants in which age may be determined by counting the concentric layers of xylem laid down annually by a vascular cambium, palms have no meristematic tissues in their mature stems and thus cannot grow in diameter. Palms do, of course, grow in height, and each year produce a new crop of leaves. The number of these leaves may be counted, and the vertical distance occupied by the leaf scars that mark the stem when the leaves have fallen may be used to estimate the year’s growth in height. If one wishes, the growth in height during a single year may be divided into the tree’s total height, to yield an estimate of the tree’s age. In some genera, as in Phoenix, where the leaf scars remain clear and are not covered by persistent leaf bases, a patient observer may count leaf scars over the entire trunk and perhaps gain some additional accuracy. But fluctuations in the number of leaves produced and the inherent difficulty of counting their scars makes leaf-number estimates of age of palms tedious and erratic.

An obvious approach to the problem of estimating age of palms is to monitor their height at different dates; then from the observed rate of growth, extrapolate to the full height of the tree. But, given the imprecision of measuring tree height, measurements over a single year or a short span of years are only marginally useful. Measurements are needed over a span that is a significant proportion of the tree’s age. And such data are scarce.

Data useful in estimating tree growth are beginning to accumulate from the Division of Forestry’s Florida Champion Tree Project. Since 1967 this project has encouraged the gathering of measurements from throughout the state on many of its native and introduced tree species. As the same individuals — if they have survived the vicissitudes of time — are remeasured, useful and interesting data are produced.

In February, 1976, Clifford Shaw, a Dade County urban forester, and George Avery, a skilled observer of plants of the Florida Keys, measured a large silver palm in the newly formed Bahia Honda State Park, Monroe County, and recorded its data for the Champion Tree Project. They found the tree to have a trunk circumference at breast height of 22 inches, a height of 22 feet, and an average crown spread of six feet. By the formula used by the American Forestry Association (now American Forests), Washington, D.C., for determining comparative tree size, these dimensions merited a ranking of 46 points. In the absence of any other nominee, the Shaw-Avery tree was declared the “national champion.”

Shortly thereafter John A. Baust, then superintendent of Bahia Honda State Park, found a nearby silver palm that appeared larger than the one nominated by Shaw and Avery. In March, 1979, Baust measured the new tree as having a circumference of 19 inches, a height of 27 feet, and a crown spread of six feet; these dimensions merited a ranking of 48 points. Because the two trees were so close in overall size, each became a "national co-champion."

Recently, these two trees have been remeasured. Though trunk circumference and crown spread have not appreciably changed, height has increased. The Shaw-Avery tree has grown three feet in 18 years, while the Baust tree has grown two feet in 14 years. These height measurements
thus show an average growth of 6.5 years per foot (or, in reciprocal, 1.85 inches per year).

The growth of many species of tree slows with age, but in a palm with no growth in diameter and thus no exponential increase in the vascular cambium that must be supported by the foliage, growth may indeed be linear in rate as well as in direction. The determinant for longevity in a palm in some cases is known to be the progressive death of the phloem in the vascular bundles of the trunk, which — unlike angiosperms in which the phloem is renewed each season — is laid down when the trunk is first formed. In other cases longevity is determined simply by wind shear, as with Hurricane Andrew, which snapped the trunk of the national champion buccaneer palm (*Pseudophoenix sargentii*) on Elliott Key.

One may thus now make an estimate of the longevity of silver palms. The Baust tree, the largest for which a record is available, at its present height of 29 feet, and assuming a constant rate of growth, would have attained its present height in 188 years, while the Shaw-Avery tree would have required 162 years. Since a seedling is always slow to become established, one may be justified in adding a few years to these numbers. Perhaps a reasonable estimate for the age that a silver palm may reach in the Florida Keys is approximately 200 years.

The age these Bahia Honda palms have reached may best be appreciated by placing their years in the context of South Florida human history. Access to Bahia Honda by a means other than boat was attained only in 1912 with completion of the Florida East Coast Railway; these palms even then would have been between 12 and 16 feet tall. In 1846, construction of Fort Jefferson was begun on Garden Key; these palms were then of a size to grace the commandant's door-yard. In 1823, Key West became an English possession, the beginning of permanent European settlement on the keys; the taller of these palms was then a healthy two-foot seedling. It would seem that the older silver palms of Bahia Honda, modest though they may be in absolute size, have survived from an era when their only human associates were the native Caloosas and the transient buccaneers.

We are grateful to John Baust for searching his memory for the information without which we would have been unable to relocate these two trees, and to Monay Markey, Bahia Honda ranger, for her skill in remeasuring these trees and in submitting detailed nomination documentation.

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Silver palm inflorescence