CIRCULAR

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Sabal palmetto, Our State Tree: Is It a Tree?

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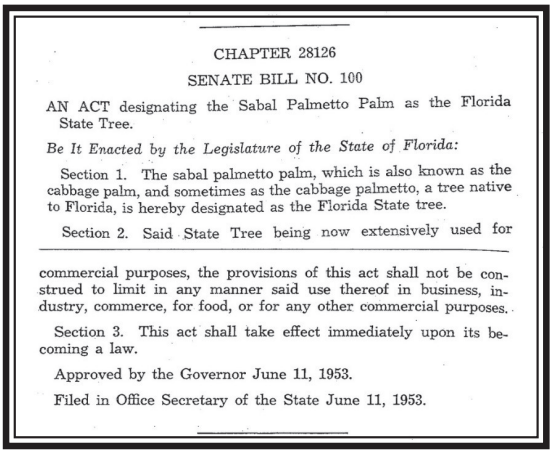
INTRODUCTION

Sabal palmetto, the cabbage palm, is among the most recognizable icons of Florida's natural treasures. The palm appears on the Florida state seal and state flag and is found growing in forests and swamps as well as in planted roadways and landscapes throughout the state. In 1953, the Florida legislature named the sabal palm as the state tree (Fig. 1), despite major support for two other species important to Florida's natural areas and the landscaping and timber industries, royal palms and slash pines. One reason for the selection of *Sabal palmetto* is its growing range throughout the state. This species has been documented in natural areas of almost every county in the state (Wunderlin *et al.* 2020), so the cabbage palm (Fig. 2) became the state tree. This palm is also the state tree of South Carolina. But still people ask, "Is a palm a tree?"



CHAPTER 28126

SENATE BILL NO. 100

AN ACT designating the Sabal Palmetto Palm as the Florida State Tree.

Be It Enacted by the Legislature of the State of Florida:

Section 1. The sabal palmetto palm, which is also known as the cabbage palm, and sometimes as the cabbage palmetto, a tree native to Florida, is hereby designated as the Florida State tree.

Section 2. Said State Tree being now extensively used for commercial purposes, the provisions of this act shall not be construed to limit in any manner said use thereof in business, industry, commerce, for food, or for any other commercial purposes.

Section 3. This act shall take effect immediately upon its becoming a law.

Approved by the Governor June 11, 1953.

Filed in Office Secretary of the State June 11, 1953.

Figure 1. *Sabal palmetto* proclaimed state tree of Florida, June 11, 1953.

Clearly, our state "tree" grows tall like a tree and is included in reference works such as *The Trees of Eastern North America* (Nelson *et al.,* 2014), but confusion persists because definitions differ among groups like botanists, naturalists and legislators. For botanists, and others in the biological sciences, a tree is defined as a tall, perennial plant with a single, woody stem and branches forming a crown well-above ground level. Shrubs are similarly defined, but they produce multiple stems at ground level. Palms, in contrast, are tall perennials, but rarely have the ability to form branches. The crown of a palm is made of its leaves. In addition, there is a striking difference in the ways trees and palms grow larger. Understanding these differing growth patterns depends on knowing the distinction between the woody trunk of trees and the fibrous stem of palms. This circular will explain these differences and provide additional information about *Sabal* palms in Florida, but deciding whether a palm is a tree might still be up to the beholder.

Figure 2. *Sabal palmetto*, cabbage palm.
Photo by Patti Anderson, FDACS-DPI

PLANT LINEAGES AND GROWTH PATTERNS

To understand why our state tree might not really be a tree, a reminder of the diversity of plant life can be helpful. Surprisingly to some people, palms are more closely related to grasses, gingers, heliconias, bromeliads and bananas than to pines or oaks. Most plant species in this lineage are herbaceous, not woody, and most are short in stature, although a few, like palms, develop a tall, wood-like stem. You might have seen cut stems or branches of common trees such as oaks, elms or maples and noticed rings in a light and darker pattern through the wood (Fig. 3). These rings are made from vessels, like the

Figure 3. Tree rings.
Photo by Nicolas Mahey, Wikipedia

Figure 4. Cut palm stem with scattered fibers.
Photo by Patti Anderson, FDACS-DPI

Figure 5. *Sabal palmetto* (cabbage palm), tall like a tree.
Photo by Patti Anderson, FDACS-DPI

blood vessels in animal bodies, that carry water from the roots and carbohydrates from the leaves to all parts of the plant. Trees grow larger each year when new vessels are formed from dividing cells. In spring, when water is abundant, the cells that make up these vessels are relatively large and appear lighter in color than the smaller, denser cells produced late in the season as the tree is preparing for winter hibernation. These cells harden and die, creating the wood that gives the tree support and gives us lumber. This kind of annual enlargement is called secondary growth because it differs from the first year of growth for trees. In contrast, palms and their relatives form no annual rings but have vessels that are scattered through their stems (Fig. 4). These vessels can be extremely strong and often contain silica and lignins. Palms show what has been called "sustained primary growth" (Riffle *et al.,* 2012; Tomlinson *et al*., 2011). Cells of the palm stem can enlarge, but they do not create new vessels each growing season. The term "tree" refers to a growth form, not to a related botanical group. This growth form consists of a trunk and branches, allowing trees to spread their leaves above shorter-statured plants to aid in the competition for light (Fig. 5).

SYSTEMATICS

Although plants share a common ancestor, the nearly 400,000 species of the world are strikingly diverse. Pines and cypress trees are cone-bearing seed plants, called gymnosperms. Both palms and trees, such as oaks and birches, are flowering plants, called angiosperms, and these plants arose later than the cone-bearing plants. An outline of the palm lineage shows a breakdown of these relationships (Stevens, 2001 onwards; Baker and Dransfield, 2016).

SEED PLANTS (in contrast with spore-bearing ferns and mosses)
ANGIOSPERMAE / MAGNOLIOPHYTA (flowering plants)
MONOCOTYLEDONS / MONOCOTYLEDONEAE (grasses, lilies, palms, yams, agaves etc.)
COMMELINIDS (grasses and close relatives with Silica (SiO_2) in their cells)
ARECALES (the plant family Dasypogonaceae and palms)
ARECACEAE or **PALMAE** (the palm family)
CORYPHOIDEAE (subfamily)
SABALEAE (tribe)
GENUS *Sabal*

The name *Sabal* was given to the genus of palms by Michel Adanson, a French botanist who might have made up the name or used a local name that was reported to him. We know he did not travel to Florida or to other countries where Sabals are native and no Caribbean language has an obvious similar name for these palms (Austin, 2004). The *palmetto* comes from the Latin *palma,* as the Romans called palms. The Spanish word *palmito* is also derived from the Latin word and might be an intermediary influence on the species name.

DESCRIPTIONS

Sabal species currently found in natural areas of Florida include *Sabal etonia, S. minor and S. palmetto.* To assist with identifying our state tree, information about all three species is provided below. (*Sabal miamiensis* is presumed to be extinct in the wild and is not included here, see Anderson, 2019).

All the Florida sabal species have leaves that are costapalmate (fan palm with leaf stalk extending into the leaf blade, forming a costa) (Fig. 6) with unarmed petioles (leaf stalks without teeth along the sides) (Anderson, 2011; Fox and Andreu, 2012; rev. 2019).

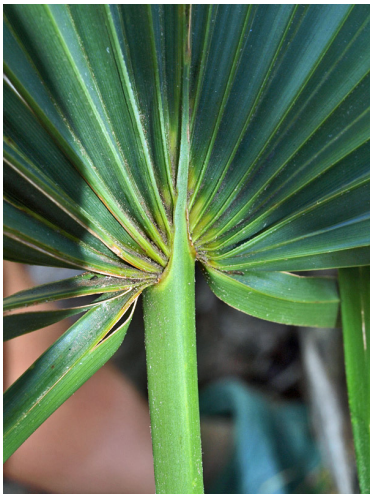


Figure 6. *Sabal* costa, extension of leaf stalk seen on underside of leaf.
Photo by Patti Anderson, FDACS-DPI

Key to Adult Sabals in Florida (based on Wunderlin and Hansen, 2011)

Leaf blades nearly circular, flat and lacking fibers shredding from the leaf margins; inflorescence longer than the leaf blades and rising upward above them ..... *Sabal minor*
Leaf blades held in a downward curving V-shape; abundant fibers shredding from the leaf margins; inflorescence longer than the leaf blades and curving to the sides
- Stem erect, to 20 meters tall ..... *Sabal palmetto*
- Stem rarely emerging beyond ground level ..... *Sabal etonia*

***Sabal etonia* Swingle ex Nash (scrub palmetto)** has a solitary, mostly underground stem although rare individuals can grow up to 2 meters tall. The yellowish-green leaves are strongly costapalmate with the blade pulled into a downward curving V-shape by the costa. The leaf segments have bifid tips (divided into two parts by a cleft or notch) and are split nearly to the base of the blade. Abundant fibers are shed along the margins of the leaf segments. The inflorescence is a densely branched cluster, shorter than or about as long as the leaves. When ripe, the fruits are spherical to ovoid, brown or black and 9-13 mm long. This palm is native to the scrublands of central and southeastern Florida.

***Sabal minor* (Jacq.) Pers. (dwarf palmetto or blue-stem palmetto)** has a solitary, mostly underground stem with rare individuals growing upright 1-2 meters. The bluish-green to grayish-green leaves are slightly costapalmate, circular in outline and slightly folded by the costa or held in a single plane. Leaf segments are split about half the length of the blade with few or no fibers between segments. Segment tips are slightly bifid. The inflorescence is a sparsely branched cluster, growing longer than the leaves. When ripe, fruits are spherical to ovoid, brown or black and 6-10 mm long. This palm is native to the southern United States from North Carolina to Texas and northeast Mexico, and is usually found in wetlands.

***Sabal palmetto* (Walter)Lodd. ex Schult. & Schult.f. (cabbage palm, sabal palmetto, sabal palm)** has a solitary, upright stem to 20 meters tall and 35 cm in diameter. The stem can be either smooth or covered with persistent leaf bases (called "boots" or "bootjacks"). The petioles (leaf stalks) split to form a crosshatched pattern on the stem as long as they persist. Even persistent leaf bases may fall way with age, leaving a partly smooth stem (Fig. 7a). The somewhat dull green leaves are strongly costapalmate

with the blade pulled into an exaggerated downward curving V-shape by the costa (Fig. 7b-c). The leaf segments are rigid (Fig. 7d), except drooping toward the tips, and the margins shed abundant fibers. The densely branched inflorescence equals or exceeds the leaves in length. If the palm has been excessively pruned, with only 2-3 leaves remaining, inflorescences may droop well below the leaves. The ripe fruits are black, spherical to a slightly flattened sphere (pear-shaped), 8-14 mm diameter, usually about the size and shape of a medium blueberry. This species is native to the Bahamas, Cuba and southeastern United States from North Carolina to Florida.

Immature *Sabal palmetto* palms maybe confused with *Sabal minor*, because a young *Sabal palmetto* can grow many years before its stem rises above ground. The two can be distinguished by the prominence of the costa, the downward curving V-shape of the *Sabal palmetto* costapalmate leaf and the abundant thread-like fibers found on the margins of its leaf segments.

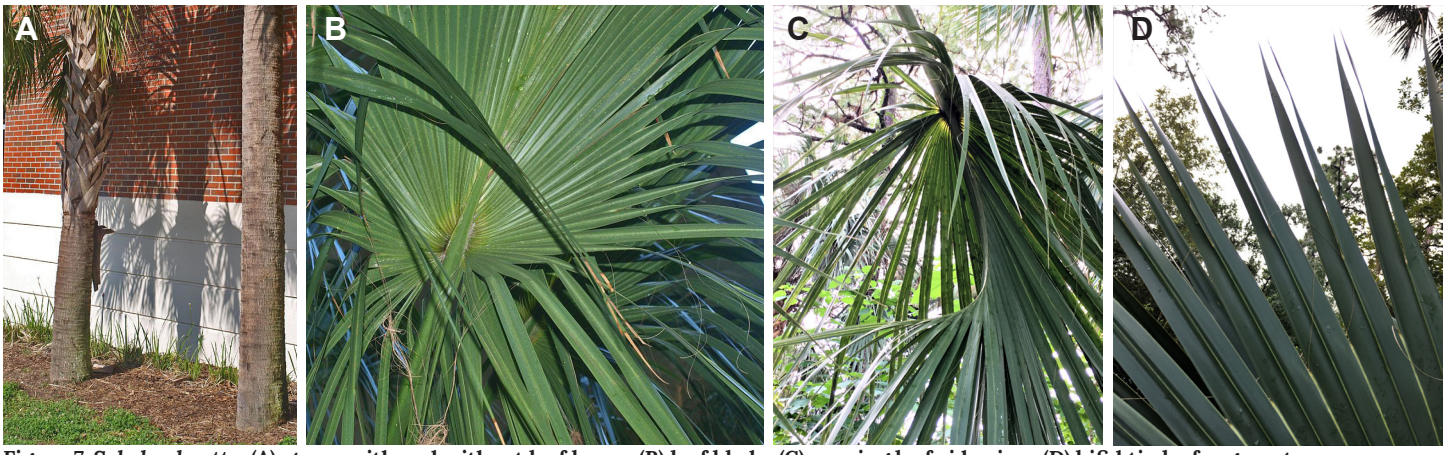


Figure 7. *Sabal palmetto*, (A) stems with and without leaf bases, (B) leaf blade, (C) curving leaf side view, (D) bifid tip leaf segments.
Photos by Patti Anderson, FDACS-DPI

USES

Indigenous people used *Sabal palmetto* leaves for clothing mats, roof thatching and various coverings. The fibers were separated and twisted to form threads that were then combined to make rope, cords, straps and even baskets. The stems are strong enough to serve as poles and piers for docks or other wood-like uses. Perhaps the best-known useful part of the palm is the palm heart, thought to taste something like cabbage, the source of the common name "cabbage palm." Interestingly, the heart of palm was not harvested until Europeans arrived with tools capable of cutting out the edible heart, the terminal bud. Sadly, harvesting this bud or cabbage kills the palm (Austin, 2004).

ECOLOGY AND THREATS

Sabal palmetto is common throughout the state of Florida, especially in swamps, hammocks and savannas. Its tolerance for drought, flooding and salt make it a robust member of the native plant communities in which it grows. Despite the hardiness of our state tree, rising sea levels leading to increased tidal flooding and soil salinity can prevent the growth of new palm seedlings, and eventually to a decline in the number of these palms in coastal forests (Williams *et al.,* 1999).
Sabal palmetto is resistant to disease and insect pests, but if an individual palm is under stress, from being transplanted for example, it can become susceptible to several threats. These include the insects palmetto weevil, *Rhynchophorus cruentatus* (Weissling and Giblin-Davis, 1997; rev. 2019) and palmetto scale, *Comstockiella sabalis* (Espinosa *et al.*, 2009; rev. 2019), as well as Ganoderma butt rot, a soilborne fungus; Thielaviopsis trunk rot, a fungus that enters wounds on the palm stem; and lethal bronzing, previously known as Texas phoenix palm decline (TPPD), caused by an insect-vectored phytoplasma similar to the cause of lethal yellowing in palms (Broschat, 1993; rev. 2017).

CONCLUSIONS

In spite of the obvious wisdom of the Florida legislature in naming *Sabal palmetto* the state tree, biologists are likely to cling to the technical definitions. Now you have the information to make your own decision and poetic license to call a palm a tree.

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