

## A strange palm of the genus *Trithrinax* Mart. in the collection of Arecaceae at the Florence Botanical Garden.

By Sergio Quercellini, Paolo Luzzi & Gianni Gasparrini

Abstract: All known species of the genus *Trithrinax* have in common two features: aerial trunk and long spines on it. In the Florence Botanical Garden is an old *Trithrinax* specimen, grown in a pot, that shows a subterranean trunk with lacking spines. A similar specimen is growing in the Buenos Aires Botanical Garden. After some considerations about the genus *Trithrinax* and its species, the specimen growing in Florence is described in detail. - With 9 figures.

Keywords: Corypheeae - South American palms - taxonomy - *Trithrinax*

In this article we describe a strange and particular specimen of the genus *Trithrinax* Mart. growing in a pot in the Florence Botanical Garden. This specimen differs from all other *Trithrinax* species in completely lacking spines on the trunk. As far as we know, such a morphotype has not been observed in the wild up to date. We had the opportunity to observe this specimen in the Florence Botanical Garden for a long time. A further specimen of this morphotype, possibly the mother or the sister palm of the Florence one, is growing in the Buenos Aires Botanical Garden, Argentina.

There is no doubt that the Florence specimen derives from the genus *Trithrinax* because a molecular analysis has been undertaken in the Geneva Botanical Garden, Switzerland. The DNA was extracted from samples of this palm making two independent PCR procedures and sequencing two nuclear DNA regions (PRK and RPB2).

On the bases of our long-term observations, we explain in detail why we think this palm is different from other *Trithrinax* species known and described so far. At first we present the *Trithrinax* genus and then focus on differing botanical characters between the accepted *Trithrinax* species and the specimen in Florence. Finally we give our conclusions.

The genus *Trithrinax* comprises four to five species spread in the Subtropics of Latin America. Commonly they are rather cold-hardy and drought-tolerant. They are either solitary or clustered with trunks of variable height, ranging from 2 to 15 m. *Trithrinax* palms have fan leaves and the trunks are totally or partially (near the crown) covered by strong and long spines.

The presence of these long spines, in particular at the top of the trunk, is typical of all known species according to Uhl & Dransfield (1987). They are namely: *Trithrinax acanthocoma* Drude, *T. brasiliensis* Mart., *T. campestris* (Burmeist.) Drude & Griseb. and *T. schizophylla* Drude.

*Trithrinax biflabellata* Barb. Rodr. is considered by

some authors as synonym of *T. schizophylla* and has been described as having long spines in the terminal part of the trunk by Barbosa Rodrigues protologue (1899): “Caudex erectus, gracilis vaginis in spinas validissimas excurrentibus horridus, foliis rigidis biflabellatis longe petiolatis, [...] lamina usque probe



Fig. 1 Botanical samples of *Trithrinax biflabellata* by Barbosa Rodrigues (1899)

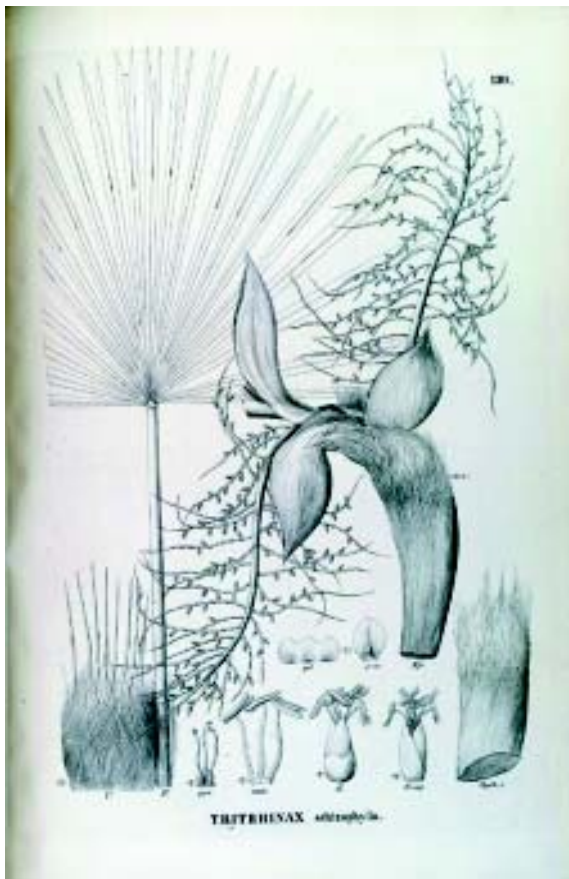


Fig. 2 Botanical samples of *Trithrinax schizophylla*, by Martius (1837)

basem profundis incisa laciniis linearibus in acumina duo pungentia profunde fissis.” The English translation is: Erect trunk, bristling with very strong spines, stiff biflabellate leaves with long petioles, [...] leaf blade deeply split nearly up to the base by straight segments very divided in the final part in two sharp ends (Fig. 1).

As far as *Trithrinax schizophylla* is concerned, Martius (1837) relates in his protologue: “Caudex depressus, gracilis vaginis in spinas validas excurrentibus horridus, foliis tenacibus rigidis utriusque glabris longe petiolatis, [...] lamina usque supra 2/3 et ad basem profundissime in lacinias anguste lineares profunde bifidas incisa.” In English it is: Low trunk with strong spines, rigid leaves everywhere smooth with a long petiole, [...] lamina divided up to 2/3 or more in deeply bifid segments (Fig. 2).

We here omit the protologues of *Trithrinax acanthocoma* and *T. brasiliensis* because the differences between the specimen of *Trithrinax* growing in the Florence Botanical Garden and these other two species are obvious by the aerial trunk, the structure of the leaf blade and the number of segments.



Fig. 3 The *Trithrinax* palm growing in the Florence Botanical Garden, Photo by Andrea Grigioni, Museo di Storia Naturale dell'Università di Firenze



Fig. 4 Detail of the subterranean trunk of the Florence palm, Photo by Andrea Grigioni, Museo di Storia Naturale dell'Università di Firenze

From the aforementioned descriptions of *Trithrinax biflabellata* and *T. schizophylla* unequivocally turns out that both species show aerial trunk with long spines, leaf blade divided in segments. Every segment has at the top a deep division in two sharp parts and there are more than 20 segments per lamina.

Nonetheless, Barbosa Rodrigues (1889) stated that *Trithrinax biflabellata* has to be considered as species because its carpel styles are three times longer than the ovule part, while they in *T. schizophylla* are four times longer. Beccari confirmed (1907) this character. However, these comparable characters led Henderson et al. (1995) to consider *T. biflabellata* as synonym of *T. schizophylla*.

In the collection of Arecaceae at the Florence Botanical Garden is a specimen of the *Trithrinax* genus carrying features that do not match at all any of the species as mentioned above.



In particular:

1. the spines are absent on the trunk, even at the apical part;
2. the palm (105 years old) has no aerial trunk, the trunk in turn is subterranean with four short suckers; as this specimen grows in a pot (Fig. 4), it can be easily checked that its trunk developed horizontally and it is partially on the ground surface because of the limited space in the pot. Sometimes it happens that palms with subterranean trunk emerge a little from the ground if the specimen is very old. This explains why the trunk of the similar *Trithrinax* specimen (Fig. 9) growing in the Buenos Aires Botanical Garden emerges a little from the ground giving this palm a dwarf shape;
3. the number of segments per lamina is 5–8;
4. the segments are not “deeply” divided in two sharp ends.

Therefore, it is important to stress that the palm shows two unambiguous features, these are:

1. absence of spines on the trunk;
  2. subterranean trunk;
- as well as two variations:
3. number of segments per leaf;
  4. segment leaf tips shortly divided (Fig. 3–7).

Following all these observations, we conclude that our palm is different from all the species of the *Trithrinax* genus mentioned above.



Fig. 5 Detail of the marcescent basic parts of the leaves at the Florence palm, Photo by Andrea Grigioni, Museo di Storia Naturale dell'Università di Firenze

The specimen in the Florence Botanical Garden (Giardino dei Semplici) has been sowed in 1907, then labelled by catalogue number 2657 (nowadays its number is 1259). The seeds were acquired from the Buenos Aires Botanical Garden (Argentina) where a similar specimen still grows in that Garden (Fig. 8 and 9). We do think the Buenos Aires specimen can be its mother or sister palm. We cannot exclude that further specimens are growing in the wild in Argentina.



Fig. 6 Detail of the leaves of the Florence palm, Photo by Andrea Grigioni, Museo di Storia Naturale dell'Università di Firenze

At the time of the Florence palm sowing, Pasquale Baccarini was the director of the Garden (Giardino dei Semplici, 1900–1919). He made a strong effort in improving the Garden, importing the library, the Herbarium and all the living collections from another Botanical Garden, located at the Specola, in Via Romana. Due to this moving, many plants and seeds originally came from foreign Botanical Gardens, among them our specimen that has survived up to date.



Fig. 7 Detail of the terminal part of the leaves, Photo by Andrea Grigioni, Museo di Storia Naturale dell'Università di Firenze

#### Description of the palm

The specimen is growing in a pot. It is a small and clustering palm (see Fig. 3) and presents a subterranean trunk, parallel to the ground and very poorly raised from the soil with aerial and visible roots, 4 suckers about 14 cm long, raising from the ground, covered by leaf sheaths (Fig. 4). From the leaf sheaths are disintegrating strong fibers about 5 cm long on the basal parts of the suckers (Fig. 5). The fibers cover the trunk to

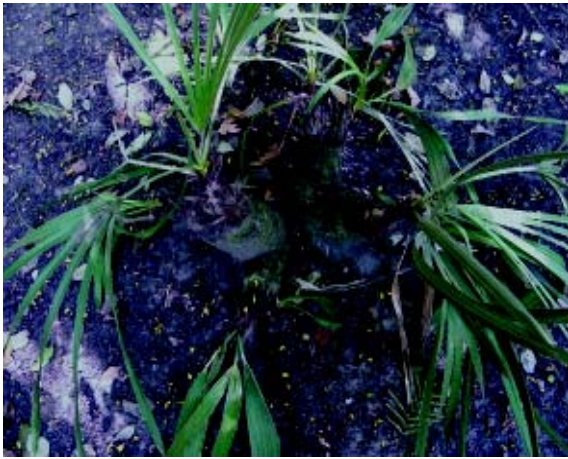


Fig. 8 The *Trithrinax* palm growing in the Buenos Aires Botanical Garden, Argentina. Photo by Graciela Barreiro, Buenos Aires Botanical Garden



Fig. 9 Detail of the base of the *Trithrinax* palm growing in the Buenos Aires Botanical Garden, Argentina. Photo by Graciela Barreiro, Buenos Aires Botanical Garden

the top and form a reticulum. Laminae are  $35 \times 45$  cm, they show  $5/8$  segments (Fig. 6). Segments are 1,5 cm wide on average, 26–35 cm long, generally split almost down to the base of the lamina, stiff, pale glaucous-green adaxially, more tomentose-pruinose abaxially with a prominent rhyme in the middle. About half of the segments are shortly divided at the tip (1–1,5cm.) where they show two short but very strong terminal spines (Fig. 7). The other half has a single and not divided prickly tip. The segments division increases with the leaf age, that is the same leaf shows deeper divisions when older, therefore it is less evident in young or very young leaves. Inflorescence and fruits are unknown.

Concluding, our palm could be referred to one of the following cases:

- it could be a *T. campestris* morphotype of unknown origin.
- It could be a genetic mutation of a *Trithrinax* species most likely *T. campestris* as which the similar plant is labelled in Buenos Aires.
- It could be an undescribed species of the *Trithrinax* genus.

Further details about this specimen in the future will tell us which case finally applies to the plant in Florence. This article should be considered a first information note. We plan to report about the description of the inflorescence and fruits as soon as it will be possible to observe them. Unfortunately the palm in Florence did not flowered during the last 20 years.

#### Acknowledgments

We like to thank Ing. agr. Graciela Barreiro, Director of the Buenos Aires Botanical Garden, Argentina, for precious informations and for the photos of the similar

palm growing in that Garden. She was very kind, available and patient. We also thank Angela Cano of the Geneva Botanical Garden, Switzerland, who kindly performed the molecular analysis using samples of the Florence palm.

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