

A Subtropical Quest to Discover Wild *Trithrinax*

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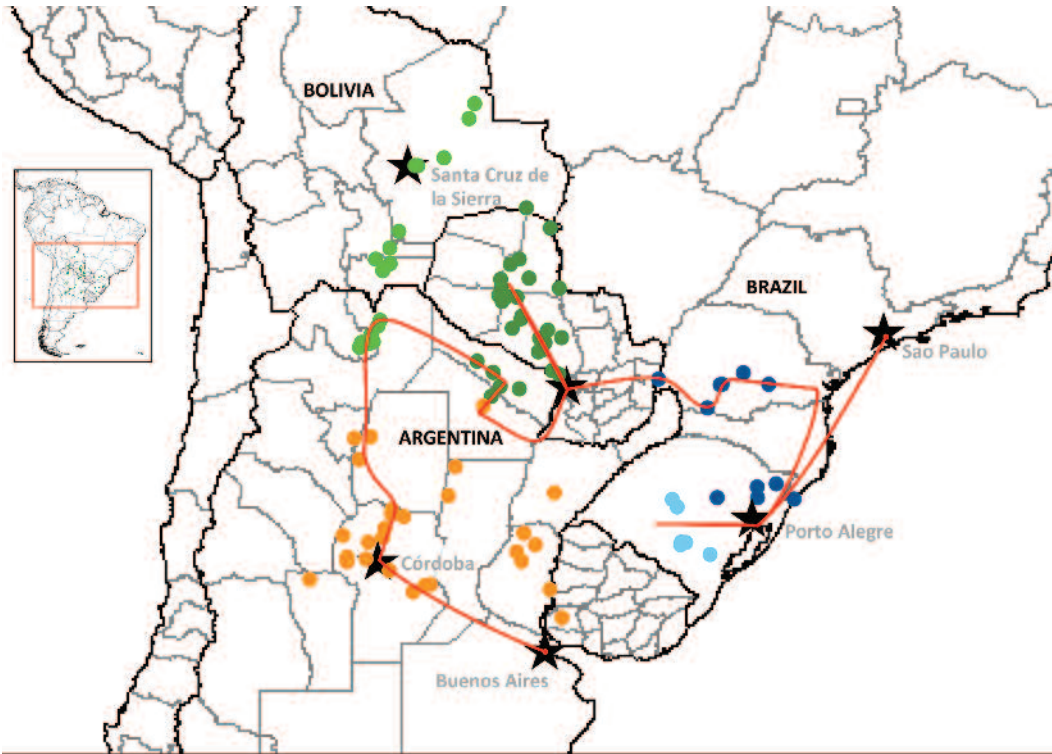
This paper describes fieldwork partly funded by the IPS Endowment Fund aimed at collecting and understanding fan palms in the genus *Trithrinax*.

Trithrinax Mart. was until very recently one of the few neotropical palm genera lacking a modern taxonomic revision, the last one by the Italian palm expert Odoardo Beccari published posthumously in 1931. In the Conservatoire et Jardin Botaniques of Geneva I decided to tackle different interesting questions about this palm genus, the most striking one probably being why was the genus forgotten for such a long time? Is it because of its reduced number of species, potentially less interesting as a scientific challenge for palm experts? Is it because it is a palm group endemic to the southern subtropics of South America, and then less exotic to deal with when compared with tropical and more “exotic” palms? Is it because most of the species grow in hardly accessible thorny dry forests? Or is it finally because *Trithrinax* species are difficult to collect due to the presence of dangerously-spiny leaf-sheaths? I could not guess what the right answer was without starting the revision itself, and now that I successfully accomplished the work (Cano et al. 2013) I would check “all of the above” and add many other reasons that I discovered during this adventure.

By the time I started the revision in 2010, three species – *T. brasiliensis* Mart., *T. campestris* (Burmeist.) Drude & Griseb. and *T. schizophylla*

Drude – were accepted for the genus (Henderson et al. 1995, Govaerts & Dransfield 2005, Dransfield et al. 2008). Meanwhile, *T. acanthocoma* Drude was proposed as a synonym of *T. brasiliensis* and *T. biflabellata* Barb. Rodr. was proposed as a synonym of *T. schizophylla*. My goals were to define the real number of species composing the genus and to evaluate the taxonomic status of these synonyms. In order to do so, a visit to the natural populations of *Trithrinax* was mandatory. I needed to collect complete herbarium specimens of each species and to take abundant pictures of the palms in their natural environments. So, an expedition was planned (Fig. 1), my bags were packed, and I took a plane from Geneva to Sao Paulo on the 13th of February 2011.

From the beginning I was in contact with the well-known Brazilian botanist Harry Lorenzi, who had recently published the interesting and nicely illustrated book “Brazilian Flora: Arecaceae (Palms)” (Lorenzi et al. 2010). I wanted to visit his living palm collection in the Jardim Botânico Plantarum. Thus, I took a bus for two hours to Nova Odessa, where I was received by Lorenzi, who kindly hosted me for two days and showed me his magnificent garden, specialized in the Brazilian flora. It was a perfect introduction for my trip, very useful



1. Itinerary followed during my fieldwork trip to Brazil, Paraguay and Argentina (red line). Stars represent the main cities and dots represent *Trithrinax* taxa (light blue *T. brasiliensis* var. *brasiliensis*, dark blue *T. brasiliensis* var. *acanthocoma*, light green *T. schizophylla* var. *schizophylla*, dark green *T. schizophylla* var. *biflabellata* and orange *Trithrinax campestris*).

to prepare myself for the real fieldwork of the next days.

My next destination was Santa Maria (Rio Grande do Sul), a small city in southern Brazil. I arrived there on the 17th, and met Kelen P. Soares who had worked with *Trithrinax* for his forest engineering studies in the Universidad Federal de Santa Maria. He showed me the most important localities for *Trithrinax brasiliensis* (Fig. 2), known by local people as *burity*. I also met Dr. Ademir Reis, curator of the Barbosa Rodrigues Herbarium, who joined our expedition. For three days we visited extraordinary places such as Quevedos, a mountainous locality near the green Toropi River, or Guaritas, near Caçapava do Sul, where we had to climb on to rocks to find *burity* and had the chance to enjoy the spectacular landscape around us. I was able to see this palm in places where mature palms were still well conserved. However, I also noticed sadly strong habitat destruction in nearby areas, where there was evident a lack of seedlings and saplings due to anthropogenic fires and cattle. Thanks to Kelen's knowledge and to the collections we made, I could observe the main

distinctive characters of *Trithrinax brasiliensis*, namely solitary, rarely taller than three meters, with thin, flexible leaf blades and unarmed, deeply bifurcated segments.

Having observed all critical characters in the field I was ready to compare this palm with the synonym proposed by most authors – *Trithrinax acanthocoma*. My next step was to travel to the city of Curitiba, where I met Mario A. Virmond, a forest engineer who showed me several populations of *T. acanthocoma* in the Brazilian state of Paraná. He started by showing me all the cultivated *Trithrinax acanthocoma* in the city. I was deeply surprised when I saw those seven meter palms, evidently much taller than the ones I saw in Santa Maria. I thought it was an exception given that those were cultivated individuals; however, in our next stops, Turvo, Pato Branco and Laranjeiras do Sul, I confirmed that this palm could really reach impressive heights, up to 15 m also in the wild (Fig. 3). That was not the only difference I noticed. The base of the stem displays a long (1–3 m long) cone of aerial-roots, the leaves have a thicker blade and many more segments, the latter presenting spiny,



2. *Trithrinax brasiliensis* var. *brasiliensis* and the author, near Santa Maria, Rio Grande do Sul, Brazil.



3. *Trithrinax brasiliensis* var. *acanthocoma* in Turvo, Paraná, Brazil. Note the cone of aerial roots.

shortly-bifurcated apices. I noticed also that although the vegetative organs of both taxa showed several remarkable differences, the inflorescences and the flowers were rather similar.

Trithrinax acanthocoma was also reported in a locality in the border of Brazil and Paraguay, so we crossed the State of Paraná and reached the City of Puerto Iguazú, where I said goodbye to my friend Mario and crossed the border to the Paraguayan City of Ciudad del Este. Irene Gauto, a palm biologist who studied the diversity, distribution and conservation status of Paraguayan palms while in Geneva (Gauto et al. 2011), her husband Pier Cacciali and Guillermo Caballero Marmori (curator of the ITAIPU herbarium) were waiting for me and we all headed to the Refugio Biológico Pikyry. A very sad sight was waiting for us there; in the middle of a soya (soybean) crop, two old *T. acanthocoma* individuals were the last representatives of *T. acanthocoma* in Paraguay (Fig. 4).

I continued my travel hoping to get better news concerning *Trithrinax* species growing in the Paraguayan Chaco. On the 26th, I ventured through this wild, hot, and spectacular region. After seven hours drive, I finally arrived at the

private natural reserve *Estancia Salazar*. There, I was helped by a local guide and I found my way through a thorny dry forest where I saw for the first time the slender, caespitose and short palm I was looking for – *Trithrinax biflabellata* (Fig. 5). I could observe its leaves, which presented fewer segments than those I saw in Brazil, the lamina divided in the middle by a deep split. My guide explained to me that the leaves and the spines of this palm are used to make handicrafts such as baskets, fans and a variety of useful objects, and that the palm heart or *palmito* is eaten by local *Guaraní* indigenous people. I continued my journey through the wild Chaco and traveled several kilometers towards Filadelfia in the Department of Boquerón. This outstanding region showed me its richness in birds, reptiles, mammals and arthropods. I even could observe a big tapir crossing the road a few meters in front of our car. But animals were not the target of my mission, and thankfully the Chaco also showed me fertile individuals of *Trithrinax biflabellata*. There I could identify the distinctive net-like peduncular bracts and the contorted corolla that characterize this palm.

I drove back to civilization, and from Asunción I caught a bus to Corrientes (Argentina) on the 4th of March. In the Corrientes herbarium of the Instituto de Botánica del Nordeste (IBONE), I met with the legendary Argentinian botanist Dr. Antonio Krapovickas, whose palm collections were very useful for my revision and whose knowledge about *Trithrinax* is very extensive. He kindly recommended me the best places to observe the Argentinian populations of *Trithrinax*. I was ready to go back to the field and, guided by Luis Ventura, a seed merchant, I travelled throughout the Argentinian Chaco, in the provinces of Chaco and Formosa. Again, I observed the slender *Trithrinax biflabellata*, usually surrounded by magnificent individuals of *Chorisia speciosa* (Malvaceae) and *Opuntia quimilo* (Cactaceae). I then reached the westernmost region of Argentina, near the Bolivian border, and visited the localities of Embarcación, Pichanal (Salta) and Chalicán (Jujuy). I noticed that individuals of *Trithrinax* in that area were more robust, with wider stems, many more leaves and thicker laminas, these with more segments and spiny apices. I realized that I was in front of *Trithrinax schizophylla* (Fig. 6) and to me it was evident that these palms were very different from those I saw in the Chaco (*T. biflabellata*, considered by several authors as a



4 (top). Last wild individuals of *Trithrinax brasiliensis* var. *acanthocoma* in the Refugio Biológico Pikyry (Alto Paraná, Paraguay), surviving in a soya crop. 5 (bottom). *Trithrinax schizophylla* var. *biflabellata* in the private natural reserve Estancia Salazar, Presidente Hayes, Paraguay.

synonym of *T. schizophylla*). I additionally noticed some similarities between the two palms; the leaves presented bifurcated laminas and the inflorescence and flowers showed

relatively the same morphology. One of the populations I visited in Chalicán was close to a farm, where some of the constructions were thatched with leaves of *Trithrinax schizophylla*.



6. *Trithrinax schizophylla* var. *schizophylla* in Embarcación, Salta, Argentina.

My last target was *Trithrinax campestris* (Front Cover), and in order to visit wild populations I travelled south to Pozo Hondo (Santiago del Estero). I soon learned that this palm is a record maker within the genus; the leaf-blade is much harder and thicker than in the rest of

the genus, it is definitely the fiercest representative of the group, combining long and nasty leaf-sheath spines with extremely spiny and woody segment tips. I learned that when you collect this palm you must be extremely careful in order to avoid the spines

getting into your eyes. Despite all these scary characteristics this is, in my opinion, also the most beautiful and elegant *Trithrinax*, with its marcescent leaves covering the stem and its greyish-silvered shiny leaf-blade. I kept driving south and I saw these palms in different areas near the road between Santiago del Estero and the city of Córdoba. On my last fieldwork day (March 9), I visited a beautiful population of *T. campestris* near Chilibroste (Córdoba). There, the palms presented big, heavy infructescences. To quench my curiosity, and knowing that they are not toxic, I tasted a bit of one of those yellow, juicy drupes. It was not a good idea as the flesh was bitter and astringent. Later I was told that the fruits are used to prepare alcoholic beverages.

In order to take my plane back to Switzerland, I traveled to Buenos Aires, and before leaving, I enjoyed what I believe was a very much deserved typical *asado argentino*.

It was a month of hard work, during which I learned a lot, but certainly not all the secrets, about *Trithrinax*. Based on my observations and on the analysis of several herbarium specimens, I concluded that *Trithrinax acanthocoma* is a variety of *T. brasiliensis*, and that *T. biflabellata* is a variety of *T. schizophylla* (Cano et al. 2013). These taxa present evident differences and should not be treated as synonyms. I also noticed that all the species of the genus are threatened specially due to habitat destruction; the natural populations are being replaced by soya and corn crops and by fields to feed cattle. I hope that local authorities will implement conservation strategies, as suggested by Irene Gauto for Paraguayan species, in order to stop the reduction of wild populations of these beautiful palms.

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