Tracking Down Alcide d'Orbigny's Chonta Palm in Bolivia

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***Astrocaryum chonta* was first described and named based on material collected in Bolivia. In this article, the author attempts to refind the palm in its type locality.**

The famous French naturalist-traveller, Alcide d'Orbigny, was born two hundred years ago and visited South America from 1826 to 1833, collecting 160 mammals, 860 birds, 115 reptiles, 166 fishes, 980 mollusks, 5000 insects and 3000 plants, as well as many fossils and geological pieces for the National Museum of Natural History in Paris (Gioda & Roux 2002). He finally held the chair of palaeontology of this institution and was 55 years old when he died on 30th June 1857. Philosophers of the Enlightenment period in the 18th century deeply influenced d'Orbigny as a studious teenager. Jean-Jacques Rousseau's writings and the myth of the noble Savage in particular drove the still young New World explorer to observe Amerindians' customs and habits fervently. The importance of the palms in their daily life could not escape him.

The palms collected by d'Orbigny were studied by Martius (1844) who named and described 34 new species, among them *Acrocomia totai*, *Attalea princeps*, *Euterpe precatoria*, *Geonoma brongnartii*, *G. jussieuana*, *G. orbigniana*, *Iriartea lamarckiana* (= *Dictyocaryum lamarckianum*), *Oenocarpus tarampabo*, *Trithrinax chuco* (= *Chelyocarpus chuco*), *Astrocaryum huaimi* and A. *chonta*. According to Glassman (1972), 18 of the 34 type specimens were still conserved at Paris Herbarium, while the others were impossible to locate.

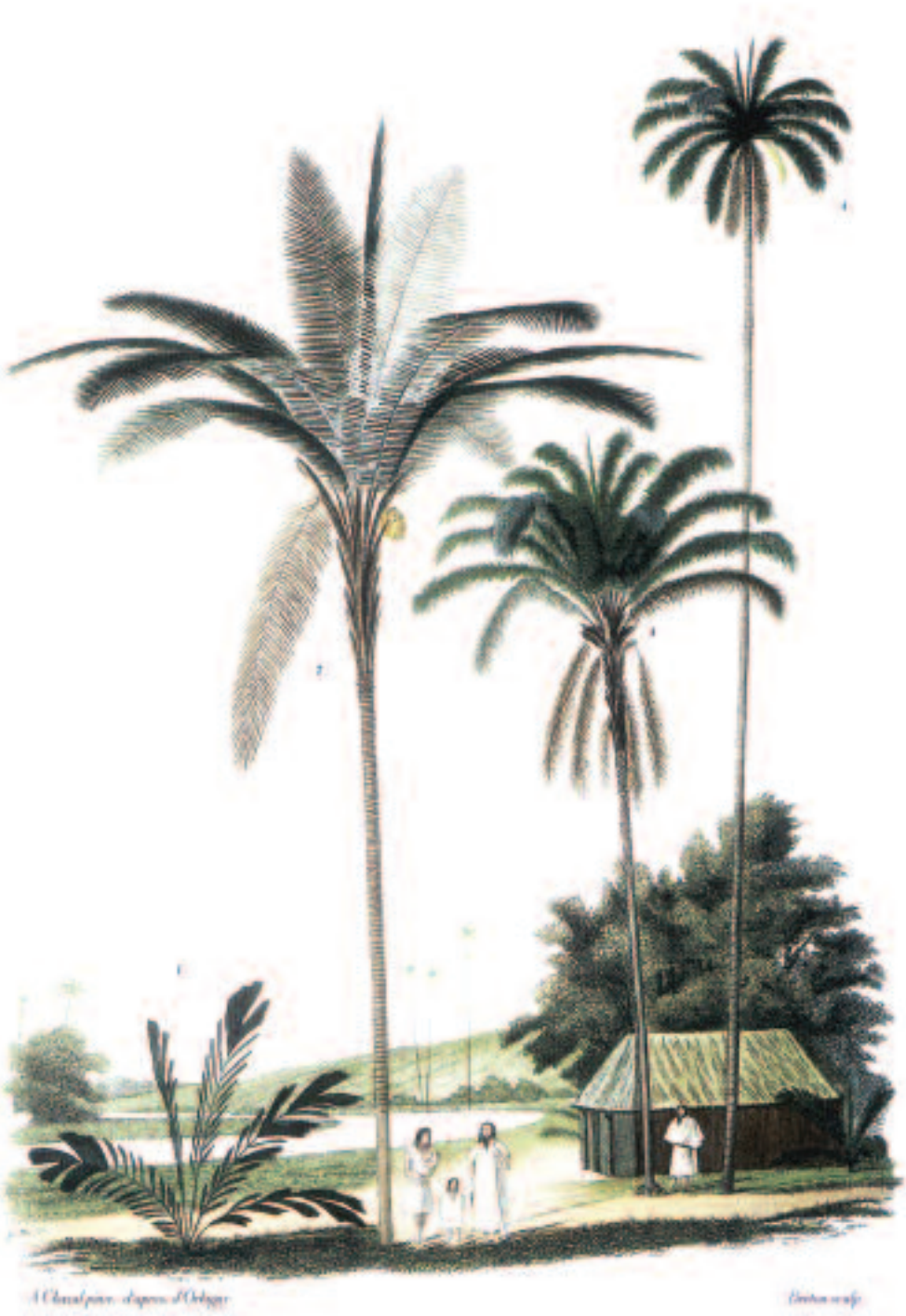
A type specimen is a plant voucher collected from a single individual and designated as the standard for a species name. An identification obtained from a comparison with the type material is generally more reliable than one matched from descriptive words, or even a drawing. The loss or the destruction of a type specimen generates confusion that can baffle the taxonomist. The problem remains solvable when the collector provides good data on the locality where the material was collected. Looking for a species in the type locality is usually successful, and taxonomists proceed in this way to complete data or to collect new material when the type is no more available.

Dealing with *Astrocaryum* taxonomy I had to observe the type of *Astrocaryum chonta* (*d'Orbigny 15*). Some fruits collected by d'Orbigny are still conserved in the carpotheca (fruit collections) in Paris Herbarium and labeled "F628, *Astrocaryum chonta* Martius, palmier chonta, Santa Cruz, M. d'Orbigny." Leaf parts and flowers were not found.

Then, in June 1995, I successfully tracked down the chonta palm in the Bolivian forests where d'Orbigny had first reported it.

What I knew of d'Orbigny's chonta palm

According to Martius (1844), the species was first collected by Pavón in Peru – "*in Peruvia lecta est a*



1. *Astrocaryum chonta* (1 – juvenile; 2 – adult) and other palms in an idyllic Amazonian landscape by d'Orbigny.

Pavonio, cujus specimen, floribus destitutum, nunc in Herbario cl. amici Barker Webb conservatur" (collected in Peru by Pavón, specimen without flower, now conserved in Barker Webb's herbarium).

We found it in the lower Ucayali valley in the Peruvian Amazon (Kahn & Millán 1992). It commonly grows on periodically flooded alluvial soils, where forms dense stands (Kahn & Granville 1992). The characters of the pistillate flower –

calyx cupular, corolla twice as long as calyx, staminodial ring membranous, low in the corolla, free at margin, minute 6-denticulate – as well as those of the fruit and perianth, correspond very well with the description by Martius and to the detailed drawings of staminate and pistillate flowers and of fruit.

Astrocaryum chonta (Fig. 1) is a medium-sized, single stemmed palm, reaching up to 15 m in height. The leaves are up to 7 m long with about 100 pairs of pinnae regularly arranged in one plane. The inflorescence and infructescence are erect between leaf bases. The fruit is elongate-obovate with the pericarp covered in hairs; the mesocarp is usually floury and not very fleshy at maturity. D'Orbigny, however, noted that the fruit had a very fleshy mesocarp at maturity. This contradictory point will be discussed below.

The ecology of the palm was reported by d'Orbigny in the following terms: "La chonta des habitans de Santa Cruz de la Sierra croît, par cantons seulement, au plus épais des bois humides, tant au bord des rivières, que loin de celles-ci dans les forêts inondées." (The chonta of the inhabitants of Santa Cruz de la Sierra grows only in patches, deep in the heart of the wet forests, on river margins as well as, far from these, in flooded forests).

Searching fruitlessly for the chonta palm in Bolivia

The locality on d'Orbigny's specimen label refers to "Santa Cruz" only. Nevertheless, d'Orbigny's comments after the description of *Astrocaryum chonta* by Martius provide more information on the region where he saw the palm. He wrote: "Je l'ai vue principalement aux environs de Bibosi, près de Santa Cruz (Bolivia), au pays des sauvages Guarayos, entre les provinces de Chiquitos et de Moxos, sur les bords des rivières, près de Loreto (Moxos) et sur le cours du Piray." (I have mainly seen it in the area around Bibosi, near Santa Cruz (Bolivia), in the region of the Guarayos savages, between Chiquitos and Moxos provinces, on riverbanks, near Loreto (Moxos) and along the river Piray).

The name Bibosi is no longer used on the current maps. It was found on an old map, spelt as Vivosi, at a place currently called Montero, a small town at about 60 km north of Santa Cruz. Driving through Montero by the main street I noted a small refreshment stall called "Vivosi bar" as if to confirm that I was on the right way to the chonta palm. The landscape had been drastically disturbed since d'Orbigny's stay in the region; the deep forests had disappeared and sugar cane fields seemed to stretch out endlessly. A small group of three *Astrocaryum* palms was finally found growing near a small stream.

And finding a relative species at Bibosi

I did not find *Astrocaryum chonta* near Montero. The species found – also called "chonta" in the region – was *Astrocaryum gratum* Kahn & Millán. Parts of a leaf and a dry inflorescence still bearing abortive pistillate flowers were collected (*Kahn & Moussa* 3592, CEN). The pistillate flower is characterized by the calyx ovoid to pear-shaped, clearly longer than the corolla; it cannot be confused with that of *A. chonta*, the calyx of which is cupular and clearly shorter than the corolla. *Astrocaryum gratum* was described from Madre de Dios, Peru. This species is also frequent in Beni, Bolivia.

Astrocaryum chonta was found again in the region of Santa Cruz. I identified material of this species (*Nee 36034*, BH; *Saldias sn*, NY) collected in 1988 and 1989 in Amboro National Park near Ichiola by Rio Saguayo, about 200 km air distant from Montero. The fact that d'Orbigny did not distinguish the two species during his stay in Santa Cruz is not at all surprising. Both species were unknown to botanists when d'Orbigny visited those regions of South America, and their habit is similar enough to make a non-specialist mistake one for the other. How could he have distinguished them? He collected material of *Astrocaryum chonta* and probably assumed that all the chonta palms growing in the region belonged to a single species. The fruits conserved in Paris Herbarium as well as the flowers and fruit drawn by d'Orbigny undoubtedly belong to *Astrocaryum chonta*. It cannot be excluded, however, that observations from both species have been mixed in his comments. As he noted for the fruit of the chonta palm: "son fruit [...] est pourvu d'une pulpe charnue, jaune d'un goût très sucré, mais d'une saveur peu agréable ; on ne le mange pas dans le pays" ("its fruit [...] has a fleshy, yellow pulp, with a very-sweet taste, but the flavor is not very agreeable; it is not eaten in the country"). This description corresponds better to the fruit of *Astrocaryum gratum* than that of *A. chonta*, the mesocarp of which is somewhat floury and not so fleshy. Furthermore his drawing of the adult palm bearing a slightly pendent bunch with yellowish ripe fruits is more reminiscent of *A. gratum* than of *A. chonta*.

Moreover *Astrocaryum chonta* and *A. gratum* both grow in wet areas. They differ in their ecology in a way perhaps too subtle to be caught by a generalist, as d'Orbigny was in respect to botany and plant ecology. The former species is strictly

located on alluvial soils regularly flooded by rivers, while the latter species is found on seasonal swamp borders, as well as on poorly-drained sandy soils. The presence of two *Astrocaryum* species within a region in two adjacent ecosystems, respectively, is rather common. This is the case in wet forests on low terraces in the lower Ucayali valley in Peru where *Astrocaryum javarense* grows close to swampy areas within a few hundred meters of dense stands of *Astrocaryum chonta*, these located on the alluvial riverbanks.

Literature Cited

GIODA, A. AND J.C. ROUX. 2002. Alcide d'Orbigny, voyageur. Pour la Science 296: 68–74.

GLASSMAN, S.F. 1972. A revision of B.E. Dahlgren's Index of American palms. J. Cramer Verlag, Lehre.

KAHN, F. AND J.-J. DE GRANVILLE. 1992. Palms in forest ecosystems of Amazonia. Springer Verlag, Berlin.

KAHN, F. AND B. MILLÁN. 1992. *Astrocaryum* (Palmae) in Amazonia. A preliminary treatment. Bull. Inst. fr. Ét. andines 21 (2): 459–531.

MARTIUS, C.P.F. VON. 1844. Palmetum Orbignianum. Descriptio palmarum in Paraguaria et Bolivia crescentium, secundum Alc. de Orbigny exempla, schedulas et icones digessit. In: Voyage dans l'Amérique Méridionale, A. d'Orbigny, Tome VII, Botanique 3e partie.