



***Sabinaria*, a new genus of palms (Cryosophileae, Coryphoideae, Arecaceae) from the Colombia-Panama border**

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Abstract

The new palm genus *Sabinaria* (Cryosophileae, Coryphoideae, Arecaceae) and the new species *Sabinaria magnifica* from the Colombia-Panama border are described and illustrated. *Sabinaria* differs from other genera in the tribe in the leaf blades with a single deep, medial, abaxial split, and short abaxial splits in each segment, mostly unisexual flowers with biseriata perianth, calyx connate with the corolla at a single place on its margin, large, tightly appressed, persistent rachis bracts that hide the pistillate flowers, and fruits tightly packed and hidden among leaf bases, often covered by litter.

Resumen

Se describen e ilustran el nuevo género de palmas *Sabinaria* (Cryosophileae, Coryphoideae, Arecaceae) y la nueva especie *Sabinaria magnifica*, de la frontera entre Colombia y Panamá. *Sabinaria* difiere de otros géneros en la tribu por la lámina foliar con una sola división abaxial central y cortas divisiones abaxiales en cada uno de los segmentos, flores principalmente unisexuales con perianto biseriado, cáliz connato con la corola en un solo punto en su margen, grandes brácteas del raquis fuertemente adpresas y persistentes, que ocultan las flores pistiladas, y frutos apiñados, ocultos entre las bases de las hojas y a menudo cubiertos por hojarasca.

Introduction

The Serranía del Darién, the mountain range that forms the border between Colombia and Panama, is one of the most poorly botanised areas in both countries, due to difficult access. Paradoxically, this area is of the utmost relevance, having been the bottleneck for the migration of the land biota between North America and South America after the final closure of the isthmus, now believed to have taken place in the Miocene, 15 Mya (Montes *et al.* 2012), rather than in the Pliocene, as formerly assumed (Taylor 1991). Recent exploration in the northern foothills of the Serranía (Hoyos-Gómez *et al.* 2013) has started to reveal a fascinating flora. Among palms, several interesting findings have been made, including a remarkable fan palm in the tribe Cryosophileae, which represents a hitherto undescribed genus.

Materials and methods

We first studied an incomplete herbarium specimen of the new species kept at JAUM and then collected specimens ourselves at the type locality, including flowers at anthesis and ripe fruits. We compared this material with available descriptions of all coryphoid genera (Dransfield *et al.* 2008) and with herbarium specimens and living plants of most genera in the tribe Cryosophileae.

2008), is found on the other side of the Andes, 1300 km away in northwestern Amazonia. *Schippia*, on the other hand, is weakly supported either as sister to *Cryosophila* (Roncal *et al.* 2008), or to a clade comprising *Zombia*, *Coccothrinax*, *Hemithrinax*, *Leucothrinax* and *Thrinax* (Baker *et al.* 2009). The nearest population of *Schippia* is located ca. 1500 km northwest of *Sabinaria*. As it has been hypothesised that the uncarpellate condition evolved independently in *Itaya* and *Schippia* (Rudall *et al.* 2011), the discovery of a third uncarpellate member in the group, located in an area intermediate between them, may help clarify relationships in the tribe, particularly the uncertain position of *Schippia*.

Conclusions

The finding of this new genus adds one more element to the intriguingly disjunct distribution of most genera of the Cryosophileae and to their particular flower structure. Molecular, anatomical, and developmental studies of *Sabinaria*, as well as comparative studies of reproductive biology among members of the tribe may throw light on the evolution and dispersal of New World members of the Coryphoideae.

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References

- Baker, W.J., Savolainen, V., Asmussen-Lange, C.B., Chase, M.W., Dransfield, J., Forest, F., Harley, M.M., Uhl, N.W. & Wilkinson, M. (2009) Complete generic-level phylogenetic analyses of palms (Arecaceae) with comparisons of supertree and supermatrix approaches. *Systematic Biology* 58: 240–256.
<http://dx.doi.org/10.1093/sysbio/syp021>
- Burret, M. (1933) *Schippia*, eine neue Palmengattung aus Brit. Honduras. *Notizblatt des Botanischen Gartens und Museums zu Berlin-Dahlem* 11: 867–869.
<http://dx.doi.org/10.2307/3994638>
- Castaño, F., Crèvecoeur, M., Pintaud, J.C. & Stauffer, F.W. (2011) Floral structure in the neotropical palms *Chelyocarpus* Dammer, *Cryosophila* Blume and *Itaya* H. E. Moore (Arecaceae). *Candollea* 66: 65–79.
- Dransfield, J., Uhl, N.W., Asmussen, C.B., Baker, W.J., Harley, M.M. & Lewis, C.E. (2008) *Genera Palmarum. The Evolution and Classification of Palms*. Kew Publishing, Royal Botanic Gardens, Kew in association with the International Palm Society and the L.H. Bailey Hortorium, Cornell University, 732 pp.
- Galeano, G. & Bernal, R. (2010) *Palmas de Colombia. Guía de Campo*. Editorial Universidad Nacional de Colombia, Bogotá, 688 pp.
- Hoyos-Gómez, S.E., Idárraga, A., Betancur, J. & Upegui, A. (2013) *Costa y Bosque-Plantas del Chocó Darién-Caribe*. Corporación Fragmento, Medellín, 187 pp.
- IGAC (1977) *Zonas de vida o formaciones vegetales de Colombia*. Instituto Geográfico Agustín Codazzi, Bogotá, 238 pp.
- McNeill, J., Barrie, F.R., Buck, W.R., Demoulin, V., Greuter, W., Hawksworth, D.L., Herendeen, P.S., Knapp, S., Marhold, K., Prado, J., Prud'homme Van Reine, W.F. Smith, G.F., Wiersema, J.H. & Turland, N.J. (2012) *International Code of Nomenclature for algae, fungi, and plants (Melbourne Code) adopted by the Eighteenth International Botanical Congress Melbourne, Australia, July 2011. Regnum Vegetabile* 154. Koeltz Scientific Books, Koenigstein, Germany.
- Montes, C., Cardona, A., McFadden, R., Morón, S.E., Silva, C.A., Restrepo-Moreno, S., Ramírez, D.A., Hoyos, N., Farris, D., Bayona, G.A., Jaramillo, C.A., Valencia, V., Bryan, J. & Flores, J.A. (2012) Evidence for middle Eocene

and younger land emergence in Central Panama: implications for Isthmus closure. *Geological Society of America Bulletin* 124(5-6): 780.

<http://dx.doi.org/10.1130/B30528.1>

Moore, H.E. (1972) *Chelyocarpus* and its allies *Cryosophila* and *Itaya* (Palmae). *Principes* 16: 67–88.

Roncal, J., Zona, S. & Lewis, C.E. (2008) Molecular phylogenetic studies of Caribbean palms (Arecaceae) and their relationships to biogeography and conservation. *Botanical Review* 74: 78–102.

<http://dx.doi.org/10.1007/s12229-008-9005-9>

Rudall, P., Ryder, R.A. & Baker, W.J. (2011) Comparative gynoecium structure and multiple origins of apocarpny in Coryphoid palms (Arecaceae). *International Journal of Plant Science* 172: 674–690.

<http://dx.doi.org/10.1086/659459>

Taylor, D.W. (1991) Paleobiogeographic relationships of Andean angiosperms of Cretaceous to Pliocene age. *Palaeogeography, Palaeoclimatology, Palaeoecology* 88: 69–84.

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