New Finds in New Guinea *Hydriastele*

William J. Baker
Royal Botanic Gardens, Kew, Richmond, Surrey, TW9 3AE, UK.
w.baker@kew.org

Charlie D. Heatubun
Fakultas Kehutanan, Universitas Papua, Jl. Gunung Salju, Amban, Manokwari, 98314, Indonesia.
Badan Penelitian dan Pengembangan Daerah Provinsi Papua Barat, Jl. Brig. Jend. Mar. (Purn.) Abraham O. Atururi, Arfai, Manokwari, Papua Barat, 98315, Indonesia.
Royal Botanic Gardens, Kew, Richmond, Surrey, TW9 3AE, UK.

and

Peter Petoe
Royal Botanic Gardens, Kew, Richmond, Surrey, TW9 3AE, UK.

Four newly described species of *Hydriastele* from New Guinea are illustrated in this photo feature.

With 39 species, *Hydriastele* is the largest of the arecoid palm genera endemic to the Indo-Pacific islands east of Wallace's Line. Twenty-five species are found in New Guinea, the largest tropical island in the world and the focus of ongoing palm research by an international team of taxonomists (Baker 2002). A monograph of *Hydriastele* in New Guinea has recently been completed (Petoe et al., in press), which includes nine species discovered and described as new to science during our research program (Baker et al. 2000, Baker & Heatubun 2012, Petoe et al. 2018, Heatubun et al. 2018), ranging from slender understory palms to massive canopy emergents.

Here, we profile four of the slender new species, *Hydriastele apetiolata*, *H. divaricata*, *H. simbiakii* and *H. splendida*, which belong to two distinct species groupings within the genus. *Hydriastele apetiolata* (Figs. 1–3) belongs to a group of five species recognized by their slender to moderate habit and protogynous inflorescences (female flowers opening before male flowers) that also includes *Hydriastele kasesa*, *H. rheophytica*, *H. variabilis*, and the widespread *H. wendlandiana* into which the well-known taxon *H. microspadix* has been subsumed. *Hydriastele apetiolata* was first discovered in the vicinity of Timika, Papua province (Dransfield et al. 2000), but has since been found almost 1000km to the east in

1. *Hydriastele apetiolata* in cultivation near Timika, Papua, Indonesia. Note the undivided juvenile leaves. Photo by William J. Baker.

2. *Hydriastele apetiolata* in cultivation near Timika, Papua, Indonesia. Photo by William J. Baker.

3. Fruits of *Hydriastele apetiolata*, in cultivation near Timika, Papua, Indonesia. Note the undivided juvenile leaves. Photo by William J. Baker.

4. *Hydriastele divaricata* in cultivation at Nong Nooch Tropical Botanic Garden. Photo by Scott Zona.

5. *Hydristele splendida* in the wild in heath forest between Timika and Mt. Jaya, Papua, Indonesia.

6 (upper left). *Hydriastele splendida*, female flowers. 7 (upper right). *H. splendida*, fruits. 8. (bottom). *H. splendida*, habit. Cultivated at Floribunda Palms and Exotics, Hawai'i. Photos by William J. Baker.

9. *Hydriastele simbiakii*, a large clump of this rheophytic palm growing on the banks of the Sujak (Eyei) River, Tamrau Mountains, West Papua, Indonesia. Photo by William J. Baker.

10. *Hydriastele simbiakii*, inflorescences with open female flowers (left) and open male flowers (right). Photo by William J. Baker

southern Papua New Guinea. A handsome clustering palm, *H. apetiolata* is distinguished by its upright shuttlecock crowns with leaves that lack petioles and the entire juvenile leaves. In the Timika area, the species was collected from the wild for ornamental use, which raises the possibility that this species may already have appeared in cultivation more widely.

The remaining species belong to a group of seven species (also including *Hydriastele aprica*, *H. flabellata*, *H. montana* and the widespread *H. pinangoides*) previously assignable to the genus *Nengella*, which was subsumed in the genus *Gronophyllum* (Essig & Young 1985), before being transferred to *Hydriastele* (Baker and Loo 2004). This group comprises slender palms of the forest understory and mid-story, with leaves with conspicuously jagged tips and protandrous inflorescences (male flowers opening before female flowers) that are spicate or branched to one order with spirally arranged floral triads and pink to violet male flowers (and sometimes axes). Two of the new species, *H. divaricata* and *H. splendida*, were collected very near to each other on the same expedition as *H. apetiolata* in the heath forest between Timika and Mt. Jaya. *Hydriastele divaricata* (Fig. 4) is a very slender clustering palm with narrow linear leaflets that are widely spreading. It has inflorescences that are spicate or with two rachillae, which most closely aligns the species to *H. flabellata* and *H. montana*, but these two differ in other characters, such as endosperm condition (ruminate in *H. divaricata*, homogeneous in the other two).

Hydriastele splendida (Figs. 5–8) is perhaps the most spectacular of the new species, with its beautiful paddle-shaped, undivided leaf, deeply notched at the apex, with a rounded, jagged distal margin. It is undoubtedly closely related to the common *H. pinangoides* and could be interpreted as an entire-leaved variant thereof, although such leaves have never been observed in any of the other, numerous specimens of that species. This is a highly desirable ornamental palm that is already in cultivation, often incorrectly named *H. flabellata*, seed collections having been made and distributed by Gregori Hambali. We are aware of *H. divaricata* also being cultivated at Nong Nooch Tropical Botanical Garden; it is likely to have been introduced via the same route as *H. splendida*.

The third new species from the *Nengella* group is *H. simbiakii* (Figs. 9 & 10). This is an elegant rheophyte, known only from the banks of the Sujak (Eyei) River in the Tamrau Mountains of West Papua province. It forms large clumps with long flexible stems, and its leaves are unusual in their regularly arranged, linear leaflets. The species was collected during a joint expedition organized by Universitas Negeri Papua (UNIPA) and the Royal Botanic Gardens, Kew, and was named after Victor Simbiak, UNIPA botanist who drew the palm to the attention of the Kew palm team.

It is highly unlikely that New Guinea has given up all of its treasures in *Hydriastele*, but it is hoped that the new monograph will facilitate the further study and discovery of new species in this variable and poorly understood genus.

Literature Cited

Baker, W.J., R.A. Maturbongs, J. Wanggai and G.G. Hambali. 2000. *Siphokentia*. Palms 44: 175–181.

Baker, W.J. 2002. The Palms of New Guinea Project. Flora Malesiana Bulletin 13: 35–37.

Baker, W.J. and A.H.B. Loo. 2004. A synopsis of the genus *Hydriastele*. Kew Bulletin 59: 61–68.

Baker, W.J. and C.D. Heatubun. 2012. New Palms from Biak and Supiori, Western New Guinea. Palms 56: 131–150.

Dransfield, J., W.J. Baker, C.D. Heatubun and J. Witono. 2000. The Palms of Mount Jaya. Palms 44: 202–208.

Essig, F.B. and B.E Young. 1985. A reconsideration of *Gronophyllum* and *Nengella* (Arecoideae). Principes 29: 129–137.

Heatubun, C.D., P. Petoe and W.J. Baker. 2018. A monograph of the Nengella group of *Hydriastele* (Arecaceae). Kew Bulletin 73: (18).

Petoe, P., R. Cámara-Leret and W.J. Baker. 2018. A monograph of the *Hydriastele wendlandiana* group (Arecaceae: *Hydriastele*). Kew Bulletin 73: (17).