

Rhopalostylis baueri on Norfolk Island

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1. A group of *Rhopalostylis baueri* along Mount Pitt track. The spreading and arcuate leaves distinguish the species from *R. sapida*, which has a tight and erect crown.



***Rhopalostylis baueri* occurs on tiny Norfolk Island where its survival is threatened by introduced weed species.**

Norfolk Island, in the Southwest Pacific (29°04'S, 167°56'E), covers an area of only 34 km² (7.5 × 8.5 km) and its summit, Mount Pitt, is just 316 m high. The island is a midpoint on the Norfolk Ridge, a large mountain range of Gondwanan origin, now submerged except at its northern and southern ends, New Caledonia and a part of North Island of New Zealand, respectively. Norfolk Island is not a high, emergent peak of the ridge, but the result of a recent (3 million years

old) volcanic epiphenomenon. As the island is entirely basaltic, it erodes rapidly, forming high cliffs along most of its 32 km long coastline (Green 1994).

When I was based in New Caledonia a few years ago, there was a direct, week-end flight from Nouméa to Norfolk Island, which is just 650 km to the South. I took this opportunity to make various trips to Norfolk Island, especially in summer, to escape the hot and humid New Caledonian weather and refresh in



2. Cylindrical crownshaft and prominently pedunculate inflorescences also characterize *Rhopalostylis baueri*.

the cool climate of the small island. The contrast between to two islands is indeed surprising. With its extensive green pastures, quiet cows and coniferous forests, Norfolk Island looks more like a European countryside than a subtropical island. Even more surprising is that the cloud forest begins at only 250 m elevation, making the modest hills of the center of the Island look like the summit of

Mont Panié (1618 m), the highest mountain of New Caledonia, with a scenery of tree ferns, araucarias and palms.

Despite its tiny size, Norfolk Island gained a worldwide notoriety since its discovery by Captain Cook on his second circumnavigation in 1774. It immediately appeared strategic for sailing ships as an abundant supply of materials for repairing ships, with its forests of

tall Araucarias – an ideal provision of masts – and native flax (*Phormium tenax*) from which fibers can be extracted. Then Norfolk Island as a penal settlement became notorious for the inhuman treatment of the prisoners. As the penal settlement closed in 1856, the island remained free to receive the descendents of the Bounty mutineers, led by Fletcher Christian, who initially settled in the remote and even smaller Eastern Pacific island of Pitcairn in 1789. Nowadays, almost half of the ca. 2000 inhabitants of Norfolk Island are descendants of the Pitcairn community. Their

colorful language, mixing 18th century English and Polynesian, is still spoken on both islands. When I first landed on Norfolk Island and asked for Mrs. Christian, working for the National Park, I was answered “Well, there are hundreds of Christians here.” I nevertheless found her quickly, and we soon became good friends.

Norfolk Island is also well known to plant growers as some endemic species, especially *Araucaria heterophylla*, are widespread in cultivation. Another sought-after plant from



3. A dense, monospecific stand of *Rhopalostylis baueri*, showing good regeneration. The numerous scars, almost without internodes on the larger trees, suggest a very slow growth rate.



4. A pristine upland forest with numerous crowns of *Rhopalostylis baueri* and tree ferns emerging from the species-rich canopy.



5. After invasion by *Psidium cattleianum*, most of the original vegetation has been eliminated and only a few crowns of tree ferns and *Rhopalostylis* are still visible.

the island is its only palm, *Rhopalostylis baueri*. The Norfolk Island population is of special taxonomic interest, because it is the type of the species (which also includes a variety in Raoul Island in the Kermadec Archipelago), and also the type of the genus *Rhopalostylis* (Wendland & Drude 1875). *Rhopalostylis baueri* is a beautiful palm, adaptable in warm temperate and humid subtropical climates, just as its New Zealand relative, *R. sapida*. The two species are actually very similar. Vegetatively, *Rhopalostylis baueri* is distinguished by its cylindrical crownshaft (prominently bulging in *R. sapida*) and its spreading, distinctly recurved leaves, as opposed to the "feather duster" crown of erect leaves in *R. sapida* (Figs. 1 & 2).

Ecology of *Rhopalostylis baueri*

The species is found throughout the island. At low elevations, it is mostly found in shaded and humid gullies, where it grows among tree ferns. Further up in the hills, it becomes a dominant component of the forest (Dowe 1989). Locally it even forms pure stands, as do many other Pacific islands palms. However, contrary to other species such as *Kentiopsis oliviformis* and *Satakentia liukuensis* (Pintaud & Hodel 1998, Pintaud & Setoguchi 1999), *Rhopalostylis baueri* does reproduce well within the stands, as individuals of all sizes can be seen (Fig. 3). It is likely that the smaller size of *R. baueri* reduces the impact of leaf fall on

seedlings and the survival of juveniles. Another noteworthy feature is the very high number of rings on the trunks of adult palms, without evident internodes, which indicates a very slow growth, as reported for *R. sapida* in natural stands in New Zealand (Enright 1985).

Conservation in the wild

Conversion of most of the lowland areas into pastures has severely restricted the range of the species. It is now almost confined within the National Park, above 200 m elevation (Dowe 1989). Outside the park, only a few isolated plants survive in some gullies. However, even within the remaining upland forests, the future of the palm is not secure, due to the invasion of the strawberry guava tree (*Psidium cattleianum*), a small tree introduced in most tropical countries, with disastrous effects on many small islands. The plant aggressively invades the understory of primary forest and eventually replaces all existing vegetation, forming dense thickets. The staff of the National Park manually removes the plants in the protected forests, but it is still hard to control the invasion. The major problem is a conflict of interest with the islanders who cultivate guavas (*P. cattleianum* and *P. guajava*, the latter less invasive) to make jam, which is advertised as an island speciality and sold in tourist shops. It is therefore impossible to eradicate *Psidium* from the island, and birds eating the fruits continuously

disperse seeds within the National Park, promoting the invasion (Figs. 4 & 5). In conclusion, *Rhopalostylis baueri* can be considered to be vulnerable on Norfolk island.

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