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## THE GENUS *PANDANUS* (PANDANACEAE) IN MADAGASCAR (PART 8)

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*Mots-clés*: Pandanacées, *Pandanus*, Taxonomie, Madagascar

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### Résumé

Une espèce nouvelle de *Pandanus* de Madagascar est décrite (*P. validus* Huynh & Callmander).

### Summary

A new species of *Pandanus* is described from Madagascar (*P. validus* Huynh & Callmander).

### Zusammenfassung

Eine neue *Pandanus*-Art aus Madagaskar wird beschrieben (*P. validus* Huynh & Callmander).

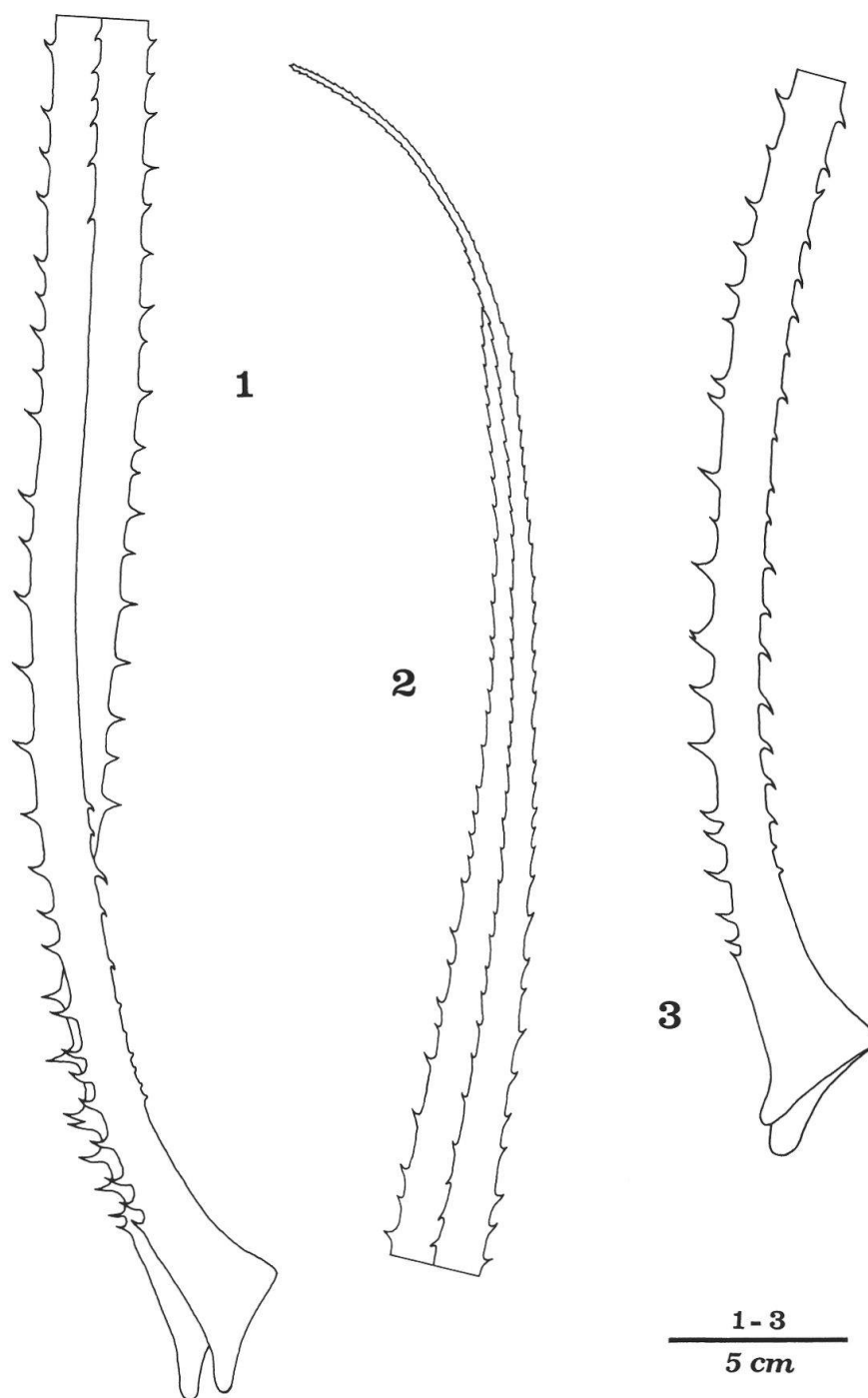
### INTRODUCTION

An unknown species of *Pandanus* was recently observed in Madagascar. Although its sectional position is not known given that its pistillate features, especially fruits, necessary to establish the position remain unknown, it can be recognized by its leaves which are peculiar. Therefore, it is described below, waiting for an opportunity of finding its pistillate plant and using its fruits to describe its pistillate characters, like other species in the family Pandanaceae that are known only by leaves (for example *Pandanus flagellaris* B. C. Stone and *Freycinetia verruculosa* Warb.).

### DESCRIPTION

#### ***Pandanus validus* Huynh & Callmander, spec. nova (fig. 1-3)**

Frutex. Folia 70-75 cm longa, ca. 2.5 cm lata in medio (dentibus marginalibus non inclusis) 2.3-2.5 cm prope basim, e medio ad apicem sensim attenuata, ca. 8 cm caudata; lamina in sicco coriacea, viridula in pagina abaxiali, viridula/brunneola in adaxiali, tessellata in dimidio infero paginae abaxialis; plicis inermibus, prope basim leviter canaliculatis; venis longitudinalibus densis, utrinque visibilibus sed paulo magis in pagina abaxiali; venis transversalibus visibilibus in partibus tessellatis; dentibus brunneolis, raro



**Figures 1-3:** *Pandanus validus* Huynh & Callmender (*Bogner s. n.*, holotype): – **1, 2:** Lower half and upper half of a leaf viewed at the abaxial face, showing marginal prickles, costal prickles, the laterally expanded leaf base, and the curvature of both the apex and the base of the midnerve towards the abaxial face. – **3:** Lower part of another leaf folded along the midnerve, showing costal prickles on right, marginal prickles on left, the laterally expanded leaf base, and the curvature of the base of the midnerve towards the abaxial face (the marginal prickles of the superimposed longitudinal half are not shown).

apice atrobrunneis; marginibus e ca. 4.5 cm supra basim ad apicem armatis, dentibus  $\pm$  perpendicularibus vel antrorsis, prope basim interdum retrorsis vel bifurcatis, in dimidio infero 4-8 mm longis 4-5 mm latis usque ad 1.3 mm crassis, ad 2 cm inter se separatis, aliquot infimis utrinque perspicue convexis, in dimidio supero brevioribus, usque ad 1 cm inter se separatis; costa media prominenti, infra apicem et supra basim curvata versus paginam abaxialem, e ca. 6 cm supra basim ad apicem armata, dentibus plerumque  $\pm$  tam separatis quam marginalibus proximis sed perspicue brevioribus (praeter caudam:  $\pm$  tam longis), usque ad 7 mm longis prope basim, in dimidio infero plerumque retrorsis, interdum in longo spatio carentibus, in supero omnibus antrorsis; vagina perrigida, coriacea, utrinque brunneola nitida non-nervata, 5 cm longa, 4.5 cm lata in apice 9 cm in basi, ibi 1 cm lateraliter expansa.

**Typus:** *Bogner s. n.* (holo-, PH! under PH.973654); Madagascar, Massif de l'Ankarana or Montagne des Français, 1969; cult. Munich no. 300/69.

The Massif de l'Ankarana and the Montagne des Français are two near mountains in the northern end of Madagascar. Their central positions are at about 12°54'S 49°07'E and 12°21'S 49°22'E respectively.

According to Josef Bogner (pers. comm.), in February 1969 a young plant of *Pandanus* was collected by him from a sterile population in the Massif de l'Ankarana or, more probably, in the Montagne des Français; the young plant was sent to the Munich Botanical Garden where it was cultivated under no. 300/69; after several years of cultivation, it gave a shrub devoid of proproots, then died without having fruited or flowered. However adult leaves have been collected from the shrub, and they now constitute the type specimen of *P. validus*.

*Pandanus validus* is named in reference to its stout prickles. The abaxial epidermis

of its leaves is zonate, being divided into zones with stomates and without stomates. The stomates are entirely smooth, having no processes of any sort, either on the polar cells (stomates of class I: see HUYNH, 1974: 199) or the lateral cells. Most of the other epidermal cells in both zones have a low but wide verruca whose cuticle is very thick. This stomate class suggests that *P. validus* belongs to sect. *Souleyetia* or sect. *Mammillarisia*. However the sectional position of this species cannot be established unless some of its pistillate features, especially drupes, are known. Thus, *P. validus* is the second Madagascan species known only by leaves, the other species being *P. flagellaris* (STONE, 1975), from the Analamera Forest, whose central position is at about 12°48'S 49°25'E.

Martin W. Callmander and Sébastien Wohlhauser visited the Massif de l'Ankarana in November 1999 and the Montagne des Français in November 2002 with the purpose of observing and collecting the pistillate plant of *P. validus* for establishing its sectional position, keeping in mind the peculiar features of its leaves (see below) for recognizing it. However they did not find it in either area, while they found *P. analamerensis* Huynh in the Montagne des Français, and both *P. pristis* B. C. Stone and *P. biceps* B. C. Stone in the tsingy of the Massif de l'Ankarana, and further south *P. coriaceus* Huynh on limestone in dry forests.

Although its sectional position remains unknown, *P. validus* can be recognized by its leaves (fig. 1-3), using especially these three peculiar features. Firstly, the margins are armed in the lower part with very stout prickles, up to 8 mm long, 5 mm wide, 1.3 mm thick; in particular, some of these prickles are strongly convex at both faces. Secondly, the midnerve is armed along the lower half mostly with retrorse prickles. Thirdly, the sheath base is expanding at both sides by about 1 cm. Only *P. pristis*, a species endemic to the Massif de l'Ankarana, has similarly stout marginal prickles,

which are up to 8-9 (-10) mm long (STONE, 1971); however, in other features, its leaves are quite different.

In fact, the leaves of *P. validus* cannot be confused with those of *P. pristis*, as revealed by a comparison of its type with that of *P. pristis* (Bogner 351), which is being cultivated in Munich and a fresh specimen of which has been supplied by J. Bogner (see HUYNH, 2001: 55). Actually, the leaves of *P. pristis* are much shorter but wider (40 x 4 cm); they are spatulate and distinctly widening at the middle (see also STONE, 1971: fig. 2a); they are membranaceous in dry state; the marginal prickles are much less rigid and much thinner, at most 0.5 mm thick for the largest of them, and none are convex; the costal prickles are all antrorse, as observed in those leaves where the midnerve is armed almost from the base to the apex; the sheath is subco-

riaceous, 2.5 cm long and 3.5 cm wide, never expanding laterally, and its abaxial face is nerved throughout while its adaxial face is nerved near the margins. A most peculiar feature to date observed in *P. pristis* only, consists in a sort of striped pattern on the leaf blade, especially in the lower part of the abaxial face (see HUYNH, 2001: fig. 12).

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