

THE JAVANESE PALM FLORA, FIRST IMPRESSION

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In comparison with other South East Asian palm floras, the Javanese palm flora is relatively small; there are about 50 species native to the island. With the long history of botanical exploration in Java, and the large concentration of botanists in the island, it would seem surprising if much new remained to be discovered on the island. However, palms are usually neglected and after my first three months collecting in West Java and working in the Herbarium Bogoriense, it has become obvious that we still know very little of the Taxonomy and natural history of the native Javanese palms.

As one sorts through the Javanese palm collections in the herbarium, it becomes apparent that a relatively large percentage of the palms come from well known collecting localities such as Depok, Tjibodas, Pelabuan Ratu and Janalappa, and that some palms were collected year after year from the same locality. However some palms growing at the present day at some of these localities were totally neglected by earlier collectors and there are in fact many new discoveries to be made.

The two floristic palm accounts for Java - Backer and Bakhuizen van den Brink, Flora of Java, Vol. 3 and Koorders, Flora von Tjibodas-are both very misleading and oversimplified; I hope at the end of two years' collecting in Java and

other areas of West Indonesia, to be able to write a more definitive account of the palms of Java.

Perhaps the most well known botanical locality in Java is the mountain forest at Tjibodas; however, so far we have observed three palms as yet unrecorded. One of these is a giant Pinanga reminiscent of *P. kuhlii* Bl. (*P. coronata* in Backer and Bakhuizen van den Brink's Flora), but differing in size (it is about twice the size of the latter species), the fact that it is solitary rather than clustering, and in rather minor reproductive details. It seems probable that this represents *P. javana* of Blume, a long neglected species. This pinang is a rare palm at Tjibodas, but three beautiful specimens planted by Pak Nurta from the forest are readily seen at the top end of the garden. They were planted in 1950 and are already 5 metres tall. It is possible that the putative *P. javana* may represent a polyploid derivative of *P. kuhlii*. The two other new records for Tjibodas are *Calamus javensis* Bl. and *C. melanoloma* Mart., two widespread slender rotans, *C. javensis* grows abundantly in the fragment of forest by the lake in the Gardens, and *C. melanoloma* is rare near Tjibeureum.

Other important new palm records are 1) *Ceratolobus concolor* Bl. a Sumatran species which I discovered at Lengong (district Sukabumi): this species is quite distinct from the more common fish-tail/Pandanus zone at Pelabuhan Ratu. Previous collections of *C. concolor* from Java appear to be the rotan (*C. glaucescens* Bl. which occurs in abundance behind the

C. glaucescens. 2) an ant species of Daemonorops at Pelabuhan Ratu. The Daemonorops is a member of the group of species in the genus which have verticels of spines on the leaf sheaths - some pointing up and some pointing down, thus forming tunnels in which, live ants. This is apparently the first definite record of such a Daemonorops in Java. Unfortunately no flowers or fruit have been found, but there is a little evidence from old literature that this may represent D. mirabilis Mart., a misunderstood species first collected by Reinwardt, and thought by Beccari to have been collected in Borneo. As Reinwardt never collected in Borneo it seems more likely that the species stems from Java, but a solution to this problem awaits comparison with the type specimen and the collection of fertile material. The palm occurs in two clumps, both of which will be kept under observation.

Further information has now been obtained concerning the rotan Calamus burckianus Becc. which seems to suggest that this little known species was incorrectly described by Beccari. A huge 30 m rotan collected by me at Lengkonng seems referable in reproductive structures to C. burckianus, yet this species was first described as probably stemless - there is no mention of this rotan in Backer and Bakhuizen van den Brink's Flora, The species complex of Calamus heteroideus Bl. and C. horrens Bl. seems after preliminary observations to be more complex than the facile reduction of all three / C. reinwardtii

species to C. reinwardtii in in the Flora of Java would lead us to believe. Further observations are required. reinwardtii and C. heteroideus differ in habit, size and fruit characters - when growing together as at Lengkong, it is to see they are distinct taxa. C. horrens can be separated vegetatively and occupies a very distinct ecological niche - behind the mangrove.

An interesting problem for further research is the problem already alluded to of Pinanga in Java. Blume described many species and field observations are necessary to elucidate this taxonomic problem. The reduction of all the species to P. coronata is probably unjustified. The flowering behaviour of Pinanga also represents an interesting problem. The inflorescences are released when the outermost leaves fall off - flowering appears to follow immediately. It would be interesting to discover what controls anthesis - whether it is the release of pressure, or the exposure to light or drying conditions, or whether the expansion of the inflorescence is itself responsible for the falling of the outermost leaf.

Few collections of palms from Ujung Kulon exist in the herbarium Bogoriense and if well collected areas can yield new records, it seems more than likely that much remains to be discovered in this large tract of relatively undisturbed forest.

We still know very little of the ecology of palms especially of rotans. It is not obvious why some rotans are

so localized - for example the exquisite dwarf hairy rotan, Calamus ciliaris Bl, in the Lengkong area, is confined, as far as I know, to the forest around Tjiletuh - it is unaccountably absent from Tjimonjet and Lengkong itself. Similarly the putative Calamus burckianus exists as a solitary clump of male stems at Lengkong. Although I searched the area quite thoroughly, I could find no sign of further plants. Pollination ecology of some rotans is also puzzling. Sometimes one can find a solitary female specimen bearing mature fruit with no sign of male plants in the "vicinity; for instance at Tjibeureum above Tjibodas, there is one plant of Zalamus melanoloma bearing fruit; although I searched hard there was no sign of male plants nearby. The possibility that some rotan fruits are produced parthenocarpically, cannot be ruled out.

Many native palms, although thought to be rare, are found to be widespread in the remaining forest fragments. It would be shameful if all these forest fragments were to disappear; they can have little economic importance and would be better preserved as the last refuges of the Javanese flora.