

## A NOTE ON THE DISCOVERY OF *RHIZOPHORA X LAMARCKII* IN PENINSULAR MALAYSIA

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Encountering natural hybrids of mangrove tree species in the field is indeed a rare occasion. Recently, Baba (1994) reported encountering a possible new hybrid of *Rhizophora apiculata* and *R. mucronata* on one of the islands of Lombok in Indonesia. He has provisionally named the hybrid *R. X lomboensis*. As for Malaysia, the occurrence of mangrove hybrids has never been reported before. In this note, an account is given on the discovery of *Rhizophora X lamarckii*, a natural hybrid of *R. apiculata* and *R. stylosa*, on Pulau Burung (2° 29.5' N, 101° 50.3' E) in the west coast of Peninsular Malaysia.

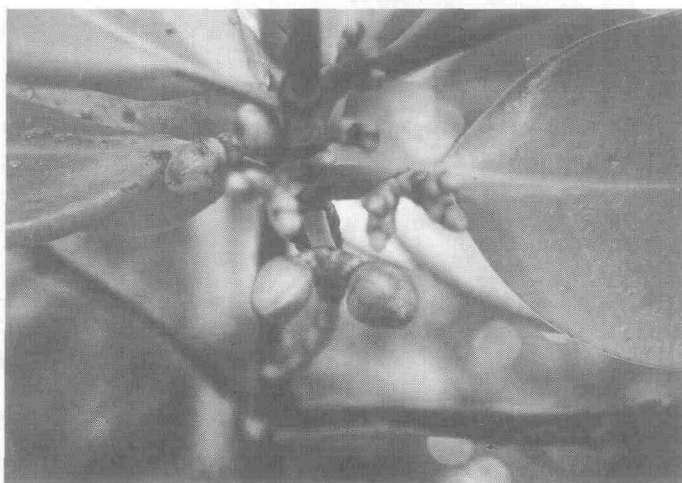
Located about 100 m off Kampung Sirusa in Port Dickson, Negeri Sembilan, Pulau Burung is a small uninhabited mangrove island of about a hectare in area. It is possible to walk to the island during the low tide as a sand bar has formed linking the island to the mainland. Several coastal habitat types of fairly rich species diversity are found on the island, the main type being the mangrove communities occurring on the littoral mud and sand flats interspersed with pockets of rocky shore. Species occurring are *Avicennia alba*, *Lumnitzera littorea*, *Sonneratia alba* and *R. apiculata*. Interestingly, *R. stylosa* which has been reported to occur only in Pulau Langkawi, Malacca and Johore (Kochummen 1989) is also found here. In the more elevated interior of the island, which is seldom inundated, sand ridges have formed and plant species typical of sandy beaches are found. They include *Calophyllum inophyllum*, *Cynometra ramiflora*, *Guetarda speciosa*, *Pandanus odoratissimus*, *Planchonella obovata*, *Scarvola taccada*, *Ximania americana* and *Terminalia catappa*. The presence of a few individuals of *Pterocarpus indicus*, *Cocos nucifera* and *Peltophorum pterocarpum* indicates that they may have been naturalised through water dispersal of seeds from the mainland.

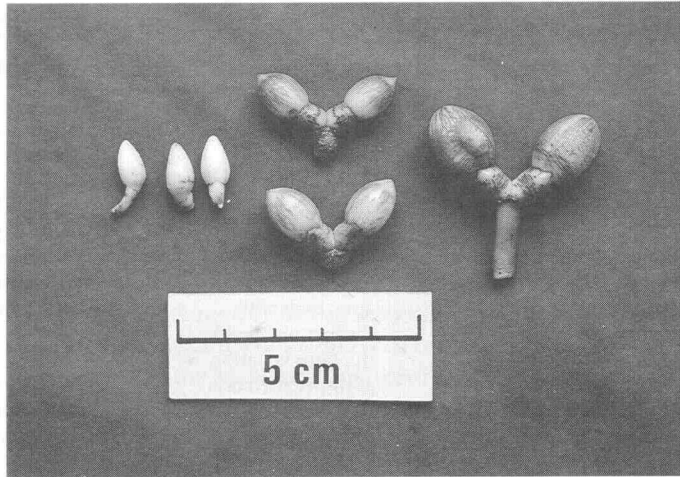
On Pulau Burung, the hybrid can easily be mistaken for *R. mucronata* as they are very similar in terms of leaf shape and size. The main morphological features that distinguish the two are in the number of buds per inflorescence, colour of the buds, length of style and presence/absence of fruits and propagules. *R. mucronata* has inflorescences that are branched 2-3 times bearing 4-8 cream coloured buds. The flower of this species has a stubby style measuring 0.5-1 mm in length and it produces fruits and propagules regularly. On the other hand, the inflorescences of *R. X lamarckii* bear a single pair of greenish buds although they are sometimes branched with up to four buds (Figure 1). The flowers have an elongated style of 2-3 mm and are reproductively sterile.

*R. X lamarckii* is generally acknowledged as a sterile F1 hybrid of *R. apiculata* and *R. stylosa*. As such, its diagnostic morphological features are consistently intermediate to its putative parents (Table 1). Like *R. apiculata*, *R. X lamarckii* often produces inflorescences with a single pair of greenish buds borne on a stout peduncle and has a bark with shallow fissures. Like *R. stylosa*, the hybrid has a pale green midrib and dark black dots at the under surface of the leaf which is broadly elliptic and ending in a distinct needle-like tip. Other similar characteristics with *R. stylosa* include petals which are hairy at the outer edge, stamens with distinct filaments and styles which are elongated. Figure 2 demonstrates the variations in the buds between the hybrid, *R. apiculata* and *R. stylosa*.

**Table 1.** Diagnostic morphological features of *Rhizophora apiculata*, *R. stylosa* and *R. X lamarckii*

	<i>R. apiculata</i>	<i>R. stylosa</i>	<i>R. X lamarckii</i>
Bark	Dark grey with shallow fissures	Reddish brown with no fissures	Brownish with shallow fissures
Leaf	Stalk 1.5-3 cm, midrib with pinkish tinge at under surface, elliptic-oblong to sub lanceolate, apex blunt to pointed, clear venation at upper surface, fine black dots at under surface	Stalk 2.5-3.5 cm, midrib pale green at under surface, broadly elliptic, apex ends with distinct needle-like tip, faint venation at upper surface, dark black dots at under surface	Stalk 1.5-2 cm, midrib pale green at under surface, broadly elliptic, apex ends with distinct needle-like tip, faint venation at upper surface, dark black dots at under surface
Inflorescence	Always with single pair of buds borne on stout peduncle	Branched 2-4 times with 4-8 buds borne on elongated peduncle	Often with single pair of buds borne on stout peduncle
Flower	Petals glabrous, stamens sessile, style 1 mm	Petals hairy on the outside, stamens with distinct filaments, style 4-5 mm	Petals hairy at outer edge, stamens with distinct filaments, style 2-3 mm
Fruit	Brown when ripe, 2-2.5 cm	Brown when ripe, ovate, 2 cm	-
Propagule	Hypocotyl cylindric, club-shaped with blunt tip, up to 30 cm	Hypocotyl cylindric, somewhat warty with pointed tip, up to 30 cm	-

**Figure 1.** A cluster of inflorescences of the hybrid *Rhizophora X lamarckii*. Each inflorescence often bears a single pair of greenish buds but occasionally up to two pairs



**Figure 2.** Variations in bud morphological features between the hybrid *R. X lamarckii* (right) and its putative parents, *R. apiculata* and *R. stylosa* (centre and left respectively)

On Pulau Burung, *R. X lamarckii* coexists with *R. apiculata* and *R. stylosa*. Like its putative parents, trees of *R. X lamarckii* are stunted and gnarled with multiple stems and extensive looping prop roots. Neither fruits nor propagules were observed on the hybrid individuals during the several visits of the island.

*R. X lamarckii* was first described from New Caledonia (Tomlinson 1986). It has also been reported to occur in isolated localities of Queensland, Papua New Guinea, the Solomon Islands and the New Hebrides. With the occurrence of *R. X lamarckii* in Peninsular Malaysia, its geographical distribution is therefore not confined to the Western Pacific region but may be extended to include Southeast Asia. However, it has yet to be established whether the hybrid is also found on other mangrove islands in the country where both *R. apiculata* and *R. stylosa* occur together.

### Acknowledgements

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### References

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