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SHORT COMMUNICATION

The mangrove understory: some additional observations

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KEY WORDS: Malaysia, mangrove, swamp forest, understory.

Janzen (1985) states that mangrove forest is unique among tropical forests in lacking reproducing understory herbs and shrubs and in the absence of the vine life-form. He suggests three hypotheses to explain these observations, all depending to some extent on the metabolic demands of salt tolerance. Observations in Singapore and southern Malaysia suggest that Janzen’s statement and hypotheses are oversimplified.

The exceptionally rich mangrove flora of this region includes at least one understory shrub, Brownlowia tersa (L.) Kosterm. (Tiliaceae), and a large woody vine, Finlaysonia obovata Wall. (Asclepiadaceae). B. tersa is a shrub, 1-2 m high, with narrowly elliptic leaves, which commonly grows under a canopy of mangrove Rhizophoraceae, where it is inundated by normal high tides. On the Benut river, on the west coast of Johor, Malaysia, it forms a sometimes dense understory under Rhizophora species and Bruguiera species where it flowers freely. I cannot be certain that it would do the same in pristine mangrove, which does not exist in this area, but it appears to be shade tolerant and does not invade cleared areas. F. obovata is usually found at higher levels than B. tersa but, on river banks, it is sometimes found rooted among and growing over Rhizophora species in areas inundated by normal high tides. Its seeds are dispersed by water (Ridley 1930).

It is undoubtedly true, however, that most mangrove forests do lack an understory and vines. Moreover, these life-forms are probably always absent in the seaward mangrove zone, occupied by Avicennia species and Sonneratia alba in this region. But the metabolic cost of salt tolerance is only one of the problems faced by mangrove plants which can be invoked to explain this apparent
anomaly. In south-east Johor, there is another forest type where the view
through the understory is, in Janzen's words, 'largely of sun-dappled and shaded
trunks, stilt roots, pneumatophores and little foliage'. This is the pioneer forest
on mud banks in the freshwater tidal region of rivers. Corner (1978) calls this
forest type the 'mempisang-belt', after its most characteristic species, Poly-
althia sclerophylla. Corner includes some herbs and shrubs in his species list
for this forest type but my observations on a surviving remnant at Mawai, on
the Sedili Besar river, suggest they are usually confined to the margins. His
plate 11 gives an idea of the understory of this community, which is very
mangrove-like in appearance. In addition to the peg-like pneumatophores of P.
sclerophylla, there are species with knee-roots (e.g. Horsfieldia irya) and stilt-
roots (Elaeocarpus macrocerus), all illustrated by Corner. This region of the
river, about 30 km from the sea, has a tidal range of around 2 m and salt water
only intrudes in periods of exceptional drought. Irregular rain-floods of many
metres depth also occur (Corner 1978).

The similarity of the understory of this forest to that of mangrove suggests
that it is not salt which is the major factor but tidal flooding, perhaps through
instability of the substrate. Interestingly, seasonally-flooded swamp forests
have an understory more like that of dryland rain forest. Detailed studies of
the establishment and regeneration of these non-saline, tidal forests might give
fresh insights into the biology of the mangrove ecosystem.

LITERATURE CITED

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