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## POPULATION STRUCTURE OF NEPENTHES FROM ADJACENT AREA OF TAMAN TUN FUAD STEPHEN IN KOTA KINABALU, SABAH

Jumaat H. Adam

### ABSTRACT

*Nepenthes gracilis* and *N. rafflesiana* were recorded in the two study plots from the study area. A total of 242 pitcher plants were recorded from these plots, equaling an area of 0.02 hectare. Of these, 154 (63.64%) belonged to *N. gracilis*, followed by *N. rafflesiana* with 88 (26.56%) plants. These species showed a very strong tendency to grow in the open area and along the fringe or in the gaps of bushy fern *Dicranopteris linearis*, locally known as resam. The  $X^2$  test indicated that the population dispersion pattern of seedlings, saplings and matured plants of *N. gracilis* and seedlings and sapling of *N. rafflesiana* in Plot 1 were significantly different from random. Similarly were seedlings and saplings of *Nepenthes gracilis* and seedlings of *N. rafflesiana* in Plot 2. Their  $I_d$  values greater than 1 (2.89-6.11) respectively showed the mentioned life stages of both species in these Plots were significantly contagious. The population structure showed variation for both species. There were more seedlings and juveniles than mature plants in all species thus indicating regenerating populations.

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## INTRODUCTION

*Nepenthes* plants are capable of reproducing new plants by germination of seeds and rooting of vegetative shoots. Plant of seedling stage has a rosette of leaves spreading on all sides of a suppressed stem and very short inter node, each but not all leaf normally produces a pitcher at the tip of very short tendrils. The

plant may remain at rosette stage for several years (Green, 1967); it grows rapidly when the plant become erect (Holtum, 1954) and the inter nodes gradually lengthen with increasing age attaining 20-30 cm in length when the plant is upright. During seedling and sapling stages the plants produce ground pitchers only and these plants were unable to produce inflorescence. The stem of matured plants then elongates continuously and, with the support of curled tendrils, it can climb up the trees in primary forest but confined to the forest gap, or on to *Dicranopteris linearis* (ferns) or shrubby simpoh (*Dillenia suffructicosa*) and common tropical senduduk (*Melastoma malabathricum*) in secondary vegetation on degraded soil (laterite).

Matured pitcher plants can produce lower and upper pitchers which depending on species is similar or different in shape. Pitcher plants capable of growing in tall canopy forest, in open area, and secondary vegetation includes *Nepenthes ampullaria*, *N. bicalcarata*, *N. macrovulgaris*, *N. gracilis* and *N. rafflesiana*. These species are capable of climbing up to the canopy top preceding flowering. In open area, species such as *N. ampullaria* produce flower when the plant is several metres long but the same species found growing in the dipterocarp forest have to climb to 30 m height up to the canopy before flowering (Adam *et al.*, 1994; Adam, 1995). If the stem fails to find the support, the stem lies on the ground, rooting abundantly at the nodes, and producing short lateral branches with dense clusters of leaves with reduced laminae and large pitchers (Macfarlane, 1908). The switch from the lower to upper pitcher type appears usually to coincide with the onset of flowering (Juniper *et al.*, 1989).

The main objectives of this study were to determine species composition and density of the *Nepenthes* present; secondly, to produce a population map of every species identified; thirdly, to identify the population distribution pattern.