

Orchid resilience: A case of a logged-over forest in Sabah, Malaysia

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Abstract: Taliwas River Conservation Area (TRCA) is a lowland dipterocarp forest located 36km from Lahad Datu town. The area was logged in the 1970s by forest concessions and was treated with silvicultural practices for restoring ecosystems and conserving biodiversity. TRCA is one of the earliest logged forest that been treated with silvicultural activities and enriched with dipterocarps trees. This study was aimed to evaluate the species diversity of orchids in treated logged-over forest of TRCA. Convenience sampling was conducted due to the orchids' sporadic distribution pattern. The orchids were photographed and all morphological features were documented for further identification. A total of 45 species were identified to their respective genera, with 16 genera recognised as epiphytic orchids, three as terrestrial, one as lithophyte and one as climber. From this study, orchid species was shown to be remarkably resilient in logged forest, through their advance morphological features such as pseudobulb, seed dormancy and epiphytic growth habit. The results from this study can be used as baseline data to support conservation and development plan of the Taliwas logged-over forest area.

Keywords: Conservation, deforestation, forest regeneration, Lahad Datu, Orchidaceae

INTRODUCTION

The omnipresent character of orchids is utilised by many researchers to aid in the understanding of ecosystem functions of a locality such as the pollination process, nutrient acquisition and others. It consists of several dynamic components of which the resilience towards environment instability is acknowledged to be challenging to assess, especially in the enigmatic structures of tropical rainforests (Reiter *et al.* 2016). Orchids' resiliency is often associated with their unique botanical characteristics such as; a) having pseudobulb, thick leaves or stem that enable them to grow in dry conditions, b) having growth habit as epiphyte that allow some of the species to benefit from the micro-environment of the tree canopy and c) long seed dormancy period that can ensure their survival during the extreme conditions (Whigham *et al.* 2006). Therefore, the orchids' resilience can infer to the current health of an ecosystem, whether it is well-functioning, deteriorating or recovering (Hundera *et al.* 2013, Newman *et al.* 2015) – which is the highlight of this study with an example of a logged-over forest in Sabah, Malaysia. This study was initially anticipated to be opportunistic due to the long history of anthropogenic activities in TRCA, but turned out to provide a different perspective on the plant's resiliency within a disturbed forest ecosystem. Data collected from this expedition act as information to support the potential for the conservation and development plan of the logged forest area.

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