

## A tropical rain forest fragment in a botanic garden

S. Lai<sup>1,\*</sup>, K.Y. Chong<sup>1</sup>, S.Y. Soh<sup>1</sup>, P.J. Chan<sup>1,2,3</sup>, E.J.J. Chia<sup>1</sup>, T.Y.S. Choo<sup>1</sup>, and P.Y. Tan<sup>1</sup>

<sup>1</sup>Singapore Botanic Gardens, Singapore

<sup>2</sup>School of Environment, The University of Auckland, Auckland, New Zealand

<sup>3</sup>School of Biological Sciences, The University of Auckland, Auckland, New Zealand

\*Corresponding author email: [lai\\_simin@nparks.gov.sg](mailto:lai_simin@nparks.gov.sg)

Keywords: arboriculture, fragmentation, regeneration, tree demography, tropical rain forest, weeding

A 6ha fragment of lowland tropical forest was left unlogged within the grounds of the Singapore Botanic Gardens when it was established in 1859. The original floristic composition of this forest fragment was well documented through collections by Henry Nicholas Ridley, the first Director of the Gardens from 1888–1911, i.e., within three to five decades of the Gardens' establishment. Formerly known as the Gardens' Jungle and today the Singapore Botanic Gardens Rain Forest, it has been actively managed as a nature area for education and outreach purposes. It provides a unique forest experience with paved trails alongside large trees in downtown Singapore. In the early 1990s, this forest fragment was surveyed comprehensively to serve as a unique case study of the persistence of tropical forest fragments in close proximity to attention by botanists and horticulturalists. Following recommendations made during the study in the 1990s, stem-thinning of hyperabundant (albeit native) *Calophyllum ferrugineum* var. *ferrugineum* was carried out. A road previously running through the forest was expunged and replaced with a wooden boardwalk. Weeding campaigns targeted aggressive non-native climbers such as *Dioscorea sansibarensis*. More recently, non-native tree species that have established populations within the Rain Forest such as *Hevea brasiliensis* and *Castilla elastica* have also been removed, enhancement planting with native trees has intensified, and it is now a site for research and reintroductions of species under the national Species Recovery Programme. One of the biggest challenges is the mortality of the large trees, several of which have been brought down by strong wind events. The Rain Forest is an important and unique feature that contributes to the Gardens' World Heritage Status, but it also necessitates intensive management for public safety and aesthetics. Continuing regular surveys will provide the data to monitor the long-term outcomes of forest management by the Gardens.