Conservation status and lectotypfication of *Alangium ridleyi* (Cornaceae) in Singapore

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ABSTRACT. *Alangium ridleyi* King is lectotypified and the conservation status updated from Nationally Extinct to Endangered in Singapore and Endangered in Peninsula Malaysia.

Keywords. *Alangium ridleyi* King, Endangered, lectotypification, Peninsula Malaysia, Singapore

Introduction

The genus *Alangium* Lam. in the family Cornaceae comprises 24 species of woody trees and climbers distributed in the tropical and subtropical regions of the Old World (Berhaman, 1995; Feng et al., 2009). Five species of *Alangium* have been recorded in Singapore, of which one, *Alangium ridleyi* King, has been presumed to be nationally extinct in Singapore (Tan et al., 2008; Chong et al., 2009).

Based on observations of the population of this species in the Singapore Botanic Gardens, H.N. Ridley, Director of Singapore Botanic Gardens (SBG) from 1888 to 1912, believed this tree could be a new species. When the trees eventually did flower in 1892, Ridley collected specimens and sent them to his colleague, Sir George King, the superintendent at the Royal Botanic Garden, Calcutta, who subsequently described the species as *Alangium ridleyi* in 1902 in honour of Ridley. The flowering in 1892 was documented by Ridley and the Gardens' botanical artists of the time, J.B. de Alwis and C.G. de Alwis. The painting is deposited in the SING library (Fig. 1).

There is some confusion on the exact type locality of this tree in the Gardens. In the *Flora of the Malay Peninsula*, Ridley (1922) stated the following: 'I have only seen one tree. Singapore, rockery in Gardens.' The rockery, during Ridley's time, was the location of the current Fernery, which is adjacent to the Gardens Jungle and consisted of trees which originally belonged to the Gardens Jungle. While King's description includes specimens from Singapore and the Malaya Peninsula, he lists the distribution as 'SINGAPORE, in the Botanic Garden Jungle, Ridley 4941' with no mention on the number of sheets nor the herbaria in which the specimens were deposited, as such all material are syntype material. We lectotypify the species based on a study of the

Fig. 1. The 1892 painting of *Alangium ridleyi* King by J. De Alwis, H.N. Ridley and C. De Alwis. Reproduced with permission from the Singapore Botanic Gardens.

available material at SING, CAL and K. We also assess the conservation status of *Alangium ridleyi* in Singapore and Peninsular Malaysia.

A recent prolonged dry spell in Singapore, which lasted for a period of nine weeks from mid-January 2014 through to mid March 2014 saw new records for the driest month since records began in 1869 as well as the windiest month in the last 30 years (National Environment Agency, 2014). Only 0.2 mm of rain were recorded in February 2014, compared to average monthly rainfalls of 161 mm since 1869. Since the dry spell, many species of plants in various habitats throughout Singapore have been observed to flower, including the *Alangium ridleyi* mentioned here (Fig. 2). This has stimulated new interest in this species.

Taxonomic notes

Alangium ridleyi King, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 71(1): 78. (1902); Ridley, Fl. Malay Penin. 1: 893 (1922). TYPE: Singapore Botanic Gardens, 1892, *H.N. Ridley 4941* (lectotype SING! [SING0059170], designated here; isolectotypes CAL!, K! [K00007704].

Conservation Status

To assess the conservation status of *Alangium ridleyi* we used herbarium specimen distribution data from SING and KEP (Fig. 3) for Peninsular Malaysia and Singapore to calculate the extent of occurrence (EOO) and area of occupancy (AOO) using GeoCAT (Bachman et al., 2011) – a software used to generate IUCN Red List assessments (IUCN, 2001) using distribution area alone. While a Global Biodiversity Inventory Facility (2014) search revealed the potential presence of this species in Indonesia, Thailand and Vietnam, this could not be verified. As such the conservation assessments are national ones for Singapore and Malaysia where identity of the specimens is confirmed.

Our assessment of the IUCN conservation status of *Alangium ridleyi* in Peninsular Malaysia assessed by GeoCAT was Endangered (EN B2ab(iii)) based on an estimated area of occupancy (AOO) of less than 100 km^2 (using the IUCN default cell width of 2 km). Of the 32 documented specimen localities, eight (i.e. 25%) are within protected areas while a further fifteen (46%) appear to be in forested areas outside of protected areas and subject to disturbance and decline.

In Singapore, the latest version of the Singapore Red Data Book (Davison et al., 2008) and the checklist of vascular flora for Singapore (Chong et al., 2009) list the conservation status of this species as Nationally Extinct. However, remnants of the original population of trees in the Botanic Gardens still exists. In addition two additional trees, one in MacRitchie reservoir and another in Mandai forest, have recently been observed although they lack specimens for verification. This is a reduction from the

Fig. 2. *Alangium ridleyi* King. **A.** Flowering branch. **B.** Close up of flowers. Photographed at Singapore Botanic Gardens, Lawn H, Acc. No. 00/7051*A. (Photo: Edmund Chia)

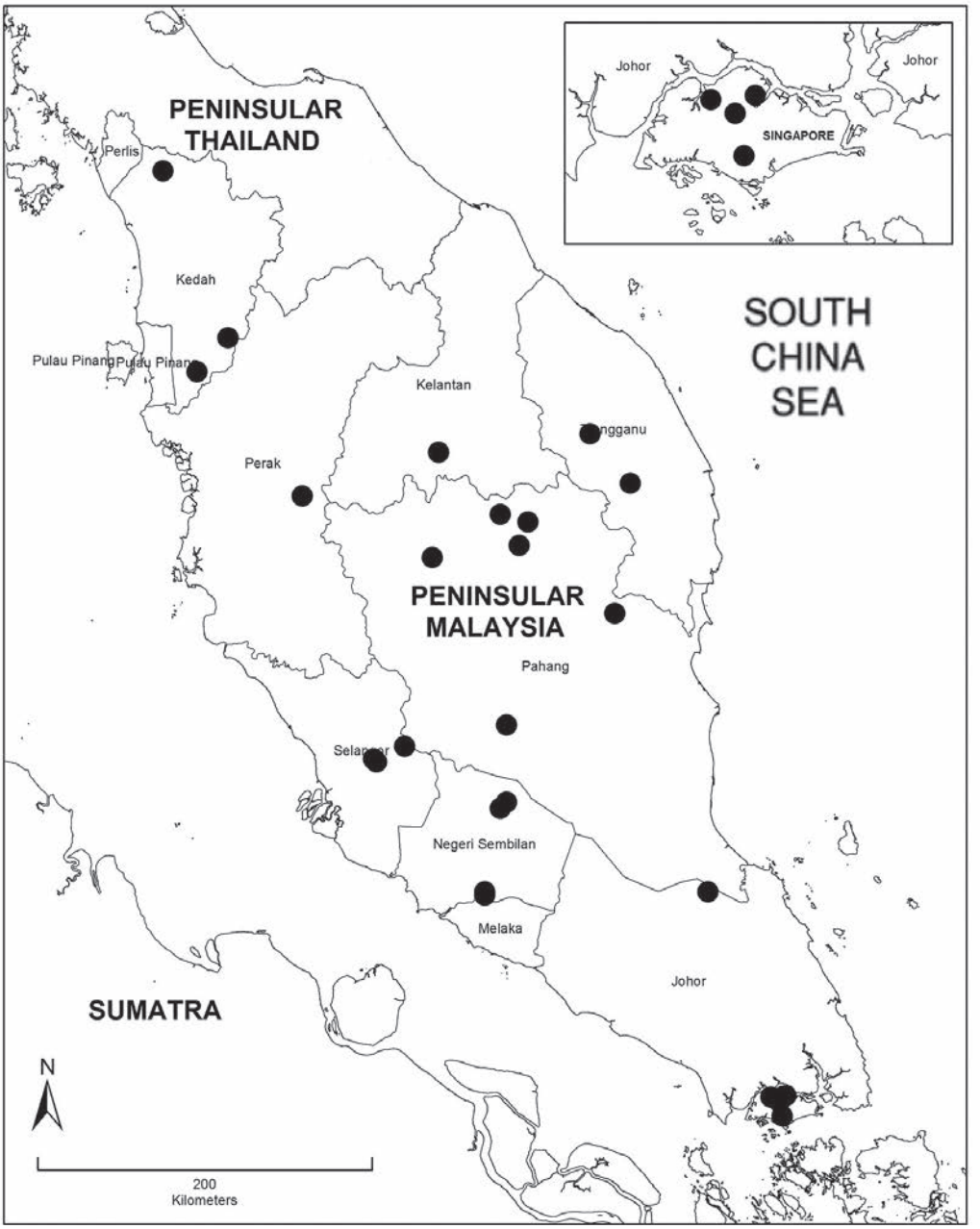

Fig. 3. Distribution of *Alangium ridleyi* King in Peninsular Malaysia and Singapore. (Distribution data are from SING and KEP).

former distribution based on specimen data (Table 1). Our conservation assessment for Singapore is Critically Endangered (CR D) based on the very small number of remaining individuals in Singapore.

Table 1. Previous collections of *Alangium ridleyi* in Singapore in herbaria.

Collector	Herbarium	Collector Number	Date Collected	Locality
Samsuri, A.	SING	158	29 July 2003	Nee Soon Swamp Forest
Tang, E.	SING	393	27 March 1995	SBG
Ngadiman, I.	SING, KEP	36136	23 April 1940	Bkt. Timah
Kiah, S.	SING	s.n.	20 August 1940	Bkt. Mandai
Ridley, H.N.	SING, K	4941	1893	SBG, Rain Forest
Cantley, N.	SING	s.n.	1880	

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