Gardens' Bulletin Singapore 67(2): 253–259. 2015
doi: 10.3850/S2382581215000204

Cryptocarya nitens (Lauraceae), a new species record for Singapore

R.P.J. de Kok

275 Cricklewood Lane, London, NW2 2JJ, U.K.
dekokrogier@gmail.com

ABSTRACT. *Cryptocarya nitens* (Blume) Koord. & Valeton is newly recorded for Singapore. It was discovered during surveys in Bukit Timah Nature Reserve and the Nee Soon Swamp Forest. A description is given, together with a key based mostly on vegetative characters for all *Cryptocarya* species occurring in Singapore. A short overview of the Lauraceae of Singapore shows that, in total, 57 species belonging to 14 genera have been recorded, of which 47 species in 13 genera are native. *Cryptocarya nitens* is lectotypified in addition to two of its synonyms.

Keywords. *Cryptocarya, Endiandra*

Introduction

Species of the Lauraceae (Laurel Family) are of major ecological and economic importance in Southeast Asia as they comprise a major part of almost any forest in the region. The family is very complex, posing many challenging taxonomic and systematic questions, and for various reasons the identification of species is problematic. Some systematic work has been done, for instance Kostermans (1952, 1957a, 1957b, 1964) wrote a series of papers on various genera or parts of genera during his career, and he also dealt with some aspects of the higher taxonomy. The most recent overview of the family as a whole was by Rohwer (1993). In Eastern Asia and Australasia, only for Peninsular Malaysia (Kochummen, 1989), China (Li Xiwen et al., 2008) and Australia (Le Cussan & Hyland, 2007) are recent treatments available, dealing with all species occurring in their territories. The classification and delimitation of the genera within the Lauraceae has always been problematic. The general framework of characters which has been employed by most authors was first established by Nees von Esenbeck (1836) in his classification of the family. However, the outcome of such a classification can vary greatly, depending upon the weight given to each particular character. Recently, with the help of molecular data, some taxonomic relationships are becoming clearer (Rohwer et al., 2014).

The checklist for Singapore records 57 species of Lauraceae, of which only 47 are native (Chong et al., 2009). This is a high percentage (82%) of native taxa for a plant family as the average for Singapore is 51.3% (Chong et al., 2009). Amongst the native species of Lauraceae, the vast majority have a widespread distribution, occurring also in Peninsular Malaysia and at least one other area, such as Borneo and/or Sumatra. No Lauraceae are restricted to Singapore and only two species found in

Singapore are endemic to the Malay Peninsula (*Actinodaphne malaccensis* Hook.f. and *A. pruinosa* Nees). According to Kochummen (1989) and De Kok (in press I & II), almost all Lauraceae species native to Singapore are found growing in lowland forest and usually also in hill or montane forest, or rarely also in swamp forest in Peninsular Malaysia. Two species are restricted to swamp forest (e.g. *Litsea gracilipes* Hook.f and *Nothaphoebe coriacea* Kosterm.).

Most of the species recorded from Singapore are reported as common in Peninsular Malaysia (Kochummen, 1989; De Kok, in press I, in press II). However, in Singapore, these taxa have been assigned a wide range of of conservation assessments (Fig. 1, column 1), from extinct (ex), critically endangered (ce), endangered (en), vulnerable (vu) to common (co) (Chong et al., 2009). In contrast, those species that are reported to be rare, uncommon or scattered in Peninsular Malaysia have been assigned to a more restricted set of conservation assessments, namely extinct, endangered or critically endangered (Fig. 1, column 2).

Most genera recorded as native in Peninsular Malaysia are also native in Singapore, with three exceptions. The first two are not problematic: *Hexapora* Hook.f. is a monotypic genus endemic to Penang Island; *Cinnadenia* Kosterm. is a genus of two species which is represented in Peninsular Malaysia by only one species from the hill forests of Selangor and Negeri Sembilan. However, the third exception, *Endiandra* R.Br., is curious. It does not seem to be native in Singapore as the two recorded

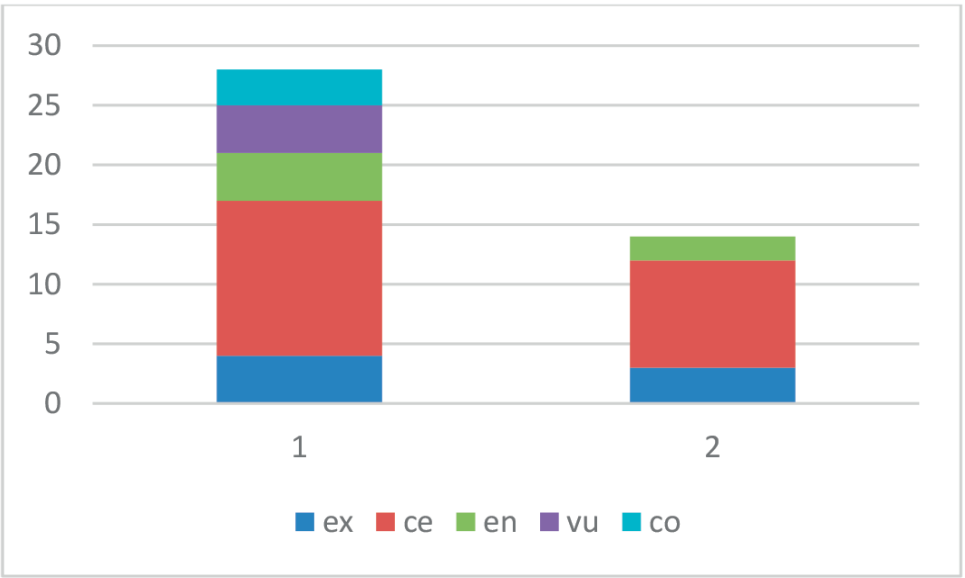

Fig. 1. The conservation status of Lauraceae in Singapore. Column 1 shows the conservation status in Singapore for species that are common in Peninsular Malaysia; Column 2 shows the conservation status in Singapore for those that are rare, scattered or uncommon in Peninsular Malaysia. ex = Extinct, ce = Critically endangered, en = Endangered, vu = Vulnerable, co = Common in Singapore (based on Chong et al., 2009).

species, *Endiandra impressicosta* C.K.Allen and *E. longipedicellata* C.T.White & W.D.Francis, are only known from cultivation and are originally from Australia and New Guinea, not from Peninsular Malaysia (Kochummen, 1989). Of the ten species in this genus that are native to Peninsular Malaysia, most are reported to be rare, with only two (*Endiandra macrophylla* (Blume) Boerl. and *E. maingayi* Hook.f) said to be common in lowland forest (Kochummen, 1989). As stated earlier, species that are considered uncommon in Peninsular Malaysia tend to be (critically) endangered or extinct in Singapore (see Fig. 1, column 2), so the absence of *Endiandra* as a native genus in Singapore is possibly the result of local extinction (before a single specimen could be collected), rather than a natural phenomenon.

New record for Singapore

During my visit to the Herbarium of Singapore Botanic Gardens in May 2015, I was able to confirm the identification of *Cryptocarya nitens* (Blume) Koord. & Valeton, which is a new record for Singapore. This species was collected twice in 2006 from Bukit Timah and more recently, but sterile, from a survey of the Nee Soon Swamp Forest.

Cryptocarya nitens (Blume) Koord. & Valeton, Meded. Lands Plantentuin 68: 220–223 (1904); Kochummen, Tree Fl. Mal. 4: 136 (1989). – *Tetranthera nitens* Blume, Mus. Bot. 1: 375 (1851). – Type: [Indonesia] Java, *Blume* s.n. (lectotype L [L0036214], designated here; isolectotype L [L0036213]). (Fig. 2)

Cryptocarya areolata Gamble, Bull. Misc. Inform. Kew 1910: 144 (1910). – Type: [Peninsular Malaysia] Perak, May 1884, *King's collector 6171* (lectotype K, designated here; isolectotypes BM [BM001124601], L [L0036209, L0036210], P [P02010230], SING [SING0209177, SING0209178]).

Cryptocarya bubongana Gamble, Bull. Misc. Inform. Kew 1910: 144 (1910). – Type: [Peninsular Malaysia] Ulu Bubong, July 1886, *King's collector 10570* (lectotype K [K001084494], designated here; isolectotypes K [K001084495], SING [SING0046590]).

Cryptocarya nativitatis Rendle ex Baker.f. in Andrews, Monogr. Christmas Isl. 187 (1900). Type: [Australia] Christmas Island, Phosphate Hill, 1897, *Andrews 158* (holotype BM [BM000799315]; isotypes BO, K [K000768438], SING [SING0069586].

Trees 8–30 m tall, dbh 15–30 cm. ***Bark*** smooth or scaly, grey-brown, inner bark brownish, wood cream coloured with spicy odour. ***Twigs*** strongly angular when young, velutinous, hairs brown. ***Leaf lamina*** leathery, elliptic to lanceolate, ovate to

obovate (6–)7.5–23 × (2.2–)3.5–10.5 cm, apex acute to acuminate, base cuneate or rounded, slightly unequal; pinnately veined, secondary veins 5–10 pairs, tertiary veins scalariform; upper surface glabrous, sometimes with hairs on midrib and secondary veins, midrib sunken, secondary veins sunken, tertiary veins faint, shiny, (light to yellow) green, drying greenish brown; lower surface glabrous sometimes with hairs on midrib and secondary veins, midrib and secondary veins raised, tertiary veins faint, light blue, pale green, glaucous. ***Petiole*** slender, 10–30 mm long, velutinous. ***Inflorescences*** 10–15 mm long, velutinous, greenish white; bracteoles triangular 0.5–0.6 mm long, caducous. ***Flowers*** pale green to yellow or white, hairs yellowish; perianth tube 1.2–1.6 mm long, velutinous; perianth lobes elliptic to lanceolate, 1.3–1.8 × 0.8–1 mm, apex acute, velutinous, greenish white. ***Stamens*** 1.2–1.6 mm long, hairy, dull greenish yellow, anther bright yellow-orange. ***Ovary*** clavate, 1–1.2 mm, glabrous; style 1.2–1.6 mm long, linear; stigma inconspicuous. ***Fruit*** (dried) globose, 8–16 mm diameter, shallowly ridged, sparsely hairy, black when mature. ***Stalk*** slender when mature.

Distribution. Peninsular Thailand, Malaysia, Singapore, Indonesia (Sumatra and Java), Australia (Christmas Island).

Ecology. Over its general range it is found on riversides in open, mixed (including bamboo) hill to lowland forest, growing on limestone, sandstone and granite, at 0–250 m altitude. In Singapore recorded from swamp forest and along water courses.

Provisional regional IUCN conservation assessment. Least Concern.

Phenology. Flowering from March to October; fruiting from January to November.

Notes. In the original description of *Tetranthera nitens* Blume (1851: 375), only one collection is cited, of which there are two morphologically virtually identical L specimens available for lectotypification. The specimen L0036214 is selected here as lectotype because the label mentions at least some of the additional information cited in the original description, while the other specimens lacks any label data.

In the original description of *Cryptocarya areolata* Gamble (1910: 144), four different collections are cited: *King's collector 6017, 6171, 8630* and *Wray 2456.* Gamble's top set of specimens are housed at K and from these the duplicate of *King's collector 6171* is selected here as the lectotype. It, uniquely amongst the syntypes, has dissected flowers glued on a card with notes in Gamble's handwriting.

In the original description of *Cryptocarya bubongana* Gamble (1910: 144), only one collection is cited: *King's collector 10570.* From the two virtually identical K collections (both morphologically and in label date), one is selected here as the lectotype [K001084494].

This species is easy to distinguish from the other Singaporean *Cryptocarya* species as the under surface of its leaves is glabrous. In all other species have small appressed hairs can be seen with a × 10 hand lens.

Fig. 2. *Cryptocarya nitens* (Blume) Koord. & Valeton, twig with fruits photographed from the Bogor Botanic Gardens, tree no. XX.B.59. (Photo: Jens Rohwer)

Selected specimens examined. SINGAPORE: Bukit Timah Nature Reserve, Public Utilities Board Catchment, 27 Jun 2006, *Khoo KMS 14* (SING); ibidem, 7 Jul 2006, *Chua CSC 1* (SING).

Key to the *Cryptocarya* species in Singapore based mostly on vegetative characters

1a. Lower surface of mature leaves glabrous apart from veins ..... *C. nitens*
1b. Lower surface of mature leaves sparsely hairy to velutinous 2

2a. Midrib sunken at base on upper leaf surface 3
2b. Midrib raised at base on upper leaf surface 5

3a. Petiole channelled; bracteoles elliptic, < 1 mm long ..... *C. ferrea*
3b. Petiole half terete; bracteoles elliptic to lanceolate or linear, > 1 mm long 4

4a. Leaves leathery; bracteoles elliptic to lanceolate, (1.5–)2–3.5 mm long .... *C. rugulosa*
4b. Leaves thinly leathery; bracteoles linear, 1.1–1.8 mm long ..... *C. kurzii*

5a. Leaves bullate; petiole swollen ..... *C. griffithiana*
5b. Leaves not or only slightly bullate; petiole slender 6

6a. Leaf base symmetrical, hairs rusty to dark brown (when dried) ..... *C. impressa*
6b. Leaf base slightly oblique, hairs light brown (when dried) ..... *C. malayana*

ACKNOWLEDGEMENTS. This research was supported in 2015 by a Singapore Botanic Gardens Research Fellowship which is gratefully acknowledged. The author is grateful to Dr Helen Fortune-Hopkins who corrected my English, to Dr Jens Rohwer who kindly gave permission to use his pictures, and to the curators of the BM, BO, K, KEP, L and SING herbaria for access to the specimens used in the present study.

References

Blume, C.L. (1851). *Museum Botanicum Lugduno-Batavum*, vol. 1. Lugduni-Batavorum: E.J. Brill.

Chong, K.Y., Tan. H.T.W. & Corlett, R.T. (2009). *A Checklist of the Total Vascular Plant Flora of Singapore: Native, Naturalised and Cultivated Species*. Singapore: Raffles Museum of Biodiversity Research, National University of Singapore.

De Kok, R.P.J. (in press I). A revision of *Cryptocarya* R.Br. (Lauraceae) of Peninsular Malaysia. *Kew Bulletin*.

De Kok, R.P.J. (in press II). A revision of *Beilschmiedia* Nees (Lauraceae) of Peninsular Malaysia. *Blumea*.

Gamble, J.S. (1910). New Lauraceae from the Malayan region I. *Bull. Misc. Inform. Kew* 1910: 142–153.

Kochummen, K.M. (1989). Lauraceae. In: Ng, F.S.P. (ed) *Tree Flora of Malaya* 4: 98–178. Kuala Lumpur: Longman Sdn. Bhd.

Kostermans, A.J.G.H. (1952). A historical survey of Lauraceae, part II. *J. Sci. Res. (Jakarta)* 1: 113–127.

Kostermans, A.J.G.H. (1957a). Lauraceae. *Reinwardtia* 4: 193–256.

Kostermans, A.J.G.H. (1957b). Lauraceae. *Communi. Forest Res. Inst. Bogor* 57: 1–64.

Kostermans, A.J.G.H. (1964). *Bibliographia Lauracearum*. Bogor, Indonesia: Departemen Urusan Research Nasional.

Le Cussan, J. & Hyland, B.P.M. (2007). Lauraceae (excluding *Cassytha*). In: Wilson, A.J.G. (ed) *Flora of Australia* 2: 106–486. Melbourne: CSIRO Publishing.

Li Xiwen, Li Jei, Huang Puhua, Wei Fa'nan, Cui Hongbin & Van der Werff, H. (2008). Lauraceae. In: Wu Zhengyi & Raven, P. (eds) *Flora of China* 7: 102–254. Beijing: Science Press and St. Louis: Missouri Botanical Garden.

Nees von Esenbeck, C.G.D. (1831). Lauraceae. In: Wallich, N. *Plantae Asiaticae Rariores*, vol 2: 58–76. London.

Rohwer, J.G. (1993). Lauraceae. In: Kubitzki, K., Rohwer, J.G. & Bittrich, V. (eds) *The Families and Genera of Vascular Plants*, vol. 2: 366–391. Berlin: Springer-Verlag.

Rohwer, J.G., De Moraes, P.L.R., Rudolph, B. & Van der Werff, H. (2014). A phylogenetic analysis of the *Cryptocarya* group (Lauraceae), and relationships of *Dahlgrenodendron*, *Sinopora*, *Triadodaphne* and *Yasunia*. *Phytotaxa* 158: 111–132.