

Singapore as a type locality for angiosperm taxa

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Abstract. Currently accepted names of angiosperm taxa at the rank of species or below for which Singapore is the type locality are reviewed. The various ways by which Singapore has become a type locality are considered with relevant examples. Cases of uncertainty are also highlighted. Singapore is relatively important as a type locality for plant species, and sites such as Bukit Timah Nature Reserve, Nee Soon freshwater swamp forest and the Botanic Gardens' Rainforest all have an important legacy as original localities of type collections.

Key words. Botanic Gardens' Rainforest, Bukit Timah Nature Reserve, flowering plants, lectotype, Nee Soon, neotype

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INTRODUCTION

One of the central principles of taxonomy is that the application of a scientific name is fixed by the designation of a type. So now when a name, such as the binomial given to a species, is published, a type must be designated for the new name. Generally, the type is a preserved specimen that was used by the author while preparing the description of the new taxon. Types are important as they act as a hopefully permanent reference point for researchers investigating the systematics and nomenclature of a group of organisms.

Singapore is a relatively small nation but it has a diverse native flora largely thanks to its position in the wet tropical equatorial belt. Among the plant taxa found in Singapore, some have types that came from Singapore. In other words, Singapore is the type locality for some taxa. In this paper, I want to explore further the concept of type locality in relation to Singapore and the currently accepted correct names for its native angiosperm species and infraspecific taxa.

The taxonomy of plants is governed by a set of rules now known as the International Code of Nomenclature for Algae, Fungi, and Plants (<https://doi.org/10.12705/Code.2018>). The rules are not immutable, and they have changed considerably since they were first formulated and continue to be regularly updated. For higher plants, the accepted starting point of scientific naming is 1 May 1753 when the Swedish botanist Carl von Linné (Carolus Linnaeus) published the first edition of *Species Plantarum*. This is roughly two hundred years before rules relating to typification became consolidated into something like the current system. Therefore, most older names were published without reference to a type and subsequent authors have had to clarify the typification of these names which can be both challenging and controversial.

SINGAPORE TYPES

The most straightforward examples of species names with types from Singapore are those names validly published under contemporary rules that require the holotype to be clearly designated in the publication. The Rubiaceae are well represented (e.g., *Canthium malayense* K.M.Wong, *Canthiumera robusta* K.M.Wong & X.Y.Ng (Fig. 1), *Gynochthodes praetermissa* W.W.Seah & K.M.Wong, *Neonauclea kranjiensis* K.M.Wong & W.W.Seah, *Psychotria deltata* I.M.Turner, *Urophyllum malayense* K.M.Wong), as is the genus *Hanguana* (*Hanguana neglecta* Škorničk. & Niissalo, *Hanguana rubinea* Škorničk. & P.C.Boyce, *Hanguana triangulata* Škorničk. & P.C.Boyce). The oldest example is *Syzygium ngadimanium* (M.R.Hend.) I.M.Turner which Henderson first described (as *Eugenia ngadimaniana*) in 1947, citing a holotype, before it was mandatory. *Thunbergia dasychlamys* Bremek. from 1955, *Calophyllum wallichianum* var. *incrassatum* (M.R.Hend. & Wyatt-Sm.) P.F.Stevens in 1956, *Horsfieldia punctatifolia* J.Sinclair, *Knema communis* J.Sinclair and *Knema rubens* (Sinclair) W.J.de Wilde in 1958, *Artocarpus fulvicortex* F.M.Jarrett and *Artocarpus hispidus* F.M.Jarrett in 1960, *Knema curtisii* (King) Warb. var. *paludosa* J.Sinclair in 1961 and *Freycinetia corneri* B.C.Stone in 1968 are other early examples. Other more recent cases are *Calophyllum dispar* P.F.Stevens, *Calophyllum rufigemmatum* M.R.Hend. & Wyatt-Sm. ex P.F.Stevens, *Mangifera subsessilifolia* Kosterm., *Mangifera paludosa* Kosterm. ex



Fig. 1. *Canthiamera robusta*, an example of a species with a holotype collected in Singapore. (Photograph by: Ng Xin Yi).

S.K.Ganesan, *Utania austromalayensis* Sugumaran, *Utania nervosa* K.M.Wong & Sugumaran and *Zingiber singaporense* Škorničk. *Lasianthus attenuatus* var. *minor* H.Zhu is an example of an infraspecific taxon with a Singapore holotype.

Another class of names with Singapore types are older ones based on only one or more collections from Singapore. There was no requirement for authors between 1753 and 1952 to refer to types, and indeed the concept would have been unknown or uncertain to many botanists during that period. However, if all the original material for a taxon came from Singapore, Singapore must be the type locality. For instance, William Jack was one of the earliest collectors in Singapore and he stated Singapore as the only locality for a number of species that he described (*Elaeocarpus ferrugineus* (Jack) Steud., *Euthemis leucocarpa* Jack, *Euthemis minor* Jack, *Helixanthera coccinea* (Jack) Danser, *Macrosolen retusus* (Jack) Miq., *Nepenthes rafflesiana* Jack and *Styphelia malayana* (Jack) J.J.Sm.).

Similarly, Nathaniel Wallich visited Singapore in 1822. He subsequently described species based solely on his collections from Singapore. Currently accepted taxa include *Ampelocissus gracilis* (Wall.) Planch., *Gardenia tubifera* Wall., *Jackiopsis ornata* (Wall.) Ridsdale, *Polyosma fragrans* (Wall.) Benn. and *Ziziphus elegans* Wall.

Later authors also described species based only on Singapore material. These included: Christian Nees von Esenbeck (*Litsea costalis* (Nees) Kosterm.); George Don (*Adenia macrophylla* var. *singaporiana* (Wall. ex G.Don) W.J.de Wilde); Robert Brown (*Aeschynanthus wallichii* R.Br.); William Griffith (*Linostoma pauciflorum* Griff.); Karl Müller (*Elaeocarpus polystachyus* Wall. ex Müll.Berol.); Jacques D. Choisy (*Calophyllum pulcherrimum* Wall. ex Choisy); Odoardo Beccari (*Rhopaloblaste singaporensis* (Becc.) Benth. & Hook.f., *Thismia aseroe* Becc.); Joseph D. Hooker (*Maasia hypoleuca* (Hook.f. & Thomson) Mols & al., *Polyalthia cauliflora* Hook.f. & Thomson, *Psychotria maingayi* Hook.f., *Secamone maingayi* (Hook.f.) Rodda, *Willughbeia flavescens* Dyer ex Hook.f.); Alfred Bennett (*Xanthophyllum obscurum* A.W.Benn.); Charles B. Clarke (*Gaertnera grisea* Hook.f. ex C.B.Clarke, *Gaertnera obesa* Hook.f. ex C.B.Clarke, *Gaertnera viminea* Hook.f. ex C.B.Clarke, *Mastixia trichotoma* var. *maingayi* (C.B.Clarke) Danser); Henry N. Ridley (*Bulbophyllum rugosum* Ridl., *Bulbophyllum singaporeanum* Schltr., *Canarium grandifolium* (Ridl.) H.J.Lam, *Clerodendrum myrmecophilum* Ridl., *Dendrobium lacinosum* Ridl., *Dioscorea tenuifolia* Ridl., *Erycibe leucoxyloides* King ex Ridl., *Ficus microsyce* Ridl., *Habenaria singaporensis* Ridl., *Hypobathrum coniferum* (Ridl.) Kiew, *Lasianthus chryseus* Ridl., *Magnolia singaporensis* (Ridl.) H.Keng, *Oberonia dissitiflora* Ridl., *Pandanus tetradon* Ridl., *Planchonia grandis* Ridl., *Calophyllum ferrugineum* Ridl., *Heritiera elata* Ridl., *Schoenorchis secundiflora* (Ridl.) J.J.Sm., *Stachyphrynium parvum* Ridl., *Vrydagzynea tristriata* Ridl., *Zingiber puberulum* var. *chryseum* (Ridl.) Holttum); George King and James S. Gamble [separate or together] (*Alangium ridleyi* King, *Drepananthus ridleyi* (King) Survesw. & R.M.K.Saunders (Fig. 2), *Litsea ridleyi* Gamble, *Ryparosa hullettii* King, *Madhuca sessilis* (King & Gamble) Baehni, *Meliosma pinnata* (Roxb.) Maxim. subsp. *ridleyi* (King) Beus., *Palaquium microphyllum* King & Gamble, *Palaquium ridleyi* King & Gamble, *Soejatmia ridleyi* (Gamble) K.M.Wong, *Strychnos ridleyi* King & Gamble, *Syzygium singaporense* (King) Airy Shaw); David Prain (*Kunstleria ridleyi* Prain, *Spatholobus ridleyi* Prain); John G. Baker (*Dracaena cantleyi* Baker, *Neuwiedia zollingeri* Rehb.f. var. *singaporeana* (Baker) de Vogel); Dietrich Brandis (*Shorea gibbosa* Brandis); Robert H. Chodat (*Xanthophyllum discolor* Chodat.), Ludwig E.T. Loesener (*Ilex nervulosa* (Loes.) S.Andrews); Andrew T. Gage (*Macaranga recurvata* Gage) and Michel Gandoger (*Knema latericia* Elm. subsp. *ridleyi* (Gand.) W.J.de Wilde).

However, there are some possible complications. Firstly, does the original material survive? William Jack left relatively few specimens as he died quite soon after arriving in Sumatra and his main collection of specimens was destroyed in a fire onboard a ship in 1824. If no original material can be found, a neotype can be designated. The neotype does not have to be from the same locality as the original collections, so it would be possible to shift the type locality by neotypification (or epitypification).

Another possible problem is errors or falsification in collecting locality. It is well known that the nineteenth-century plant collector Thomas Lobb often made errors in the geography of his collections, possibly deliberately to confuse rival horticultural collectors (van Steenis, 1950). *Capparis lobbiana* Turcz. and *Murraya crenulata* (Turcz.) Oliv. are based on Lobb collections from Singapore, but the species are not known from anywhere nearer to Singapore than the Philippines. Similarly, *Rothea macrostachya* (Turcz.) Leerat. & Chantar. is not found closer than Thailand; and species such as *Kopsia macrophylla* Hook.f. and *Trigonostemon capillipes* (Hook.f.) Airy Shaw probably have types collected in Penang, rather than Singapore as Lobb indicated. Even when the native status of the species in Singapore is accepted, e.g., *Casearia lobbiana* Turcz. and *Thottea dependens* Klotzsch, a Lobb type engenders a degree of uncertainty over the type locality.



Fig. 2. *Drepananthus ridleyi*, an example of a species with all syntypes collected in Singapore. (Photograph by: Ng Xin Yi).

Vagueness and confusion may also have to be taken into account. Wallich sometimes seems likely to have confused his collections between Singapore and Penang, and it may be that he included collections from what are now Johore or Riau with his ‘Singapore’ material. For instance, Wallich noted that he found *Jackia ornata* Wall. [now *Jackiopsis ornata* (Wall.) Ridsdale] on several of the ‘small islands in the immediate vicinity of Singapore’. Similarly, *Trichosanthes wawrae* Cogn. was described as being from ‘prope Singapore’ [near Singapore] though the specimens state simply ‘Singapore’.

There is also the question of species described from plants growing in cultivation. With its long history and continuous presence of botanists, the Singapore Botanic Gardens has had various species described from its living collections. Technically, this makes Singapore the type locality for these plants, but generally the original planting material came from outside Singapore, so the type locality then has little relevance to the biology of the species. For instance, the bamboo *Gigantochloa ridleyi* Holttum was described from a clump in the Botanic Gardens, but this was propagated from material collected in Province Wellesley [Seberang Perai] in Peninsular Malaysia. Even being named after Singapore does not necessarily mean the species is from Singapore — *Diospyros singaporensis* Bakh. was described from a tree growing in the Singapore Botanic Gardens, but the species is from Peninsular Malaysia and has never been found wild in Singapore. But things can sometimes be less clear-cut. The orchid *Thrixspermum fulgens* (Ridl.) Schltr. was described from material found in a private Singapore garden, but it was not known to have been introduced there.

It should not be thought that such problems were confined to the distant past. *Sabia erratica* Water was described based solely on a specimen in the herbarium of the Royal Botanic Gardens Kew, UK, collected from Bukit Timah. It is clear however that the label on the type specimen should have been attached to a specimen of *Scaphium macropodum* (Miq.) Beumee ex K. Heyne (Kiew & Turner, 2003), and that *Sabia erratica* is actually from the Cameron Highlands, not Singapore. However, further complication has been added by the recent collection of sterile material of what seems to be *Sabia erratica* from the Central Catchment (D.J. Middleton, pers. comm.).

A name can become based on a Singapore type through the process of lectotypification. If multiple gatherings are cited in the original publication (syntypes) including material from Singapore and outside Singapore, a lectotype can be designated subsequently selecting one specimen as the ‘type’. Ridley, the father of Singapore botany, is an example of an author who often cited multiple gatherings without referring to a type when publishing new taxa. Therefore, many Ridley names require lectotypification to clarify which is the type specimen. King and his collaborators also often published names falling into this class. Of course, a non-Singapore specimen may be chosen and the type locality will be fixed elsewhere.

Examples of names that have been lectotypified to specimens from Singapore are given below. The reference for the lectotypification follows each name. Reference to the place of publication of the species names can be found on the International Plant Name Index website (<http://www.ipni.org>), often with links to online copies of the publication. *Acriopsis ridleyi* Hook.f. (Minderhoud & de Vogel, 1986), *Alangium ridleyi* King (Wijedasa et al., 2014), *Alstonia angustifolia* Wall. ex A.DC. (Sidiyasa, 1998), *Benstonea parva* (Ridl.) Callm. & Buerki (St. John, 1963), *Calamus ridleyanus* Becc. (Henderson, 2020), *Chassalia singaporensis* (Ridl.) A.P.Davis (Turner et al., 2018), *Cyrtophyllum giganteum* (Ridl.) Ridl. (Wong & Sugau, 1996), *Dasymaschalon wallichii* (Hook.f. & Thomson) Jing Wang & R.M.K.Saunders (Sinclair, 1955), *Dendrobium flexile* Ridl. (Seidenfaden, 1985), *Dichapetalum sordidum* (Hook.f.) Leenh. (Leenhouts, 1956), *Dioscorea polyclades* Hook.f. (Pagare et al., 2020), *Diospyros styraciformis* King & Gamble (de Kok & Puglisi, 2021), *Fagraea ridleyi* King & Gamble (Leenhouts, 1962), *Fimbristylis obtusata* (C.B.Clarke) Ridl. (Simpson, 2019), *Freycinetia confusa* Ridl. (Stone 1970), *Gardenia elata* Ridl. (Low & Wong, 2009), *Geophila pilosa* H. Pearson (Lim et al. in Wong et al., 2019), *Gluta wallichii* (Hook.f.) Ding Hou (Hou, 1978), *Gongronema wallichii* (Wight) Decne. (Rodda in Rodda & Middleton, 2019), *Hoya finlaysonii* Wight (Rodda, 2017), *Hoya wallichii* (Wight) C.M.Burton (Rodda et al., 2016), *Ixora concinna* R.Br. ex Hook.f. (Wong in Wong et al., 2019), *Ixora lobbii* Loudon ex King & Gamble (Wong in Wong et al., 2019), *Kopsia singaporensis* Ridl. (Middleton, 2004; Fig. 3), *Lasianthus chryseus* Ridl. (Zhu et al., 2012), *Mapania wallichii* C.B.Clarke (Simpson, 1992), *Melicope hookeri* T.G.Hartley (Hartley, 1994), *Memecylon lancifolium* Ridl. (Hughes, 2013), *Munronia breviflora* (Ridl.) Mabb. & Muellner (Muellner & Mabblerley, 2008), *Ophiorrhiza singaporensis* Ridl. (Turner et al., 2018), *Palaquium gutta* (Hook.f.) Burck (van Royen, 1960b – to a Lobb specimen from Singapore), *Pavetta wallichiana* Steud. ex Craib (Turner et al., 2018), *Piper protractum* C.DC. (Chew, 1972), *Polyalthia angustissima* Ridl. (Bunchalee & Chantaranothai, 2006), *Psychotria morindiflora* Wall. ex Hook.f. (Turner & Kumar, 2018), *Psychotria ovoidea* Wall. ex Hook.f. (Turner & Kumar, 2018), *Saprosma glomerulata* King & Gamble (Wong & Lua in Wong et al., 2019), *Schizostachyum gracile* (Monro) Holttum (Holttum, 1958, Wong in Veldkamp et al., 2019), *Sindora wallichii* Benth. (Hou in Hou et al., (1996), Choo & Ngo, 2020), *Strophanthus singaporianus* (Wall. ex G.Don) Gilg (Beentje, 1982), *Syzygium ridleyi* (King) Chantar. & J.Parn. (Chantaranothai & Parnell, 1993), *Tarenna ridleyi* (H.Pearson ex Ridl.) Ridl. (Wong, 1988), *Timonius wallichianus* Valetton (Wong in Wong et al., 2019), *Vrydagzynea lancifolia* Ridl. (Seidenfaden, 1978), *Zingiber puberulum* Ridl. (Theilade, 1996).

To balance things up slightly, there are examples where a non-Singapore syntype was selected as lectotype: *Amischotolype gracilis* (Ridl.) I.M.Turner (Duistermaat, 2012), *Embelia canescens* var. *glabrescens* Ridl. (Dubéarnès et al., 2015), *Lithocarpus cantleyanus* (King ex Hook.f.) Rehder (Soepadmo, 1970), *Madhuca kingiana* (Brace ex King & Gamble) H.J.Lam (van Royen, 1960), *Sundamomum hastilabium* (Ridl.) A.D.Poulsen & M.F.Newman (Turner, 2000).

Examples of names with a neotype from Singapore are: *Calamus oxleyanus* Teijsm. & Binn. ex Miq. (Henderson, 2020), *Dillenia pulchella* (Jack) Gilg (Hoogland, 1952), *Eurycoma longifolia* Jack (Turner, 2021) and *Hypolytrum nemorum* var. *proliferum* (Boeckeler) J.Kern. (Simpson, 2019).



Fig. 3. *Kopsia singaporensis*, an example of a species with a lectotype collected in Singapore which was selected from original material including specimens from Singapore and from outside Singapore. (Photograph by: Ng Xin Yi).

Although some type specimens do not have any details of the exact location in Singapore from where they were collected, most do have some place cited. Undoubtedly, the most important is Bukit Timah, which is the type locality of *Artocarpus hispidus* F.M.Jarrett, *Calophyllum rufigemmatum* M.R.Hend. & Wyatt-Sm. ex P.F.Stevens, *Calophyllum wallichianum* var. *incrassatum* (M.R.Hend & Wyatt-Sm.) P.F.Stevens, *Dendrobium flexile* Ridl., *Dioscorea tenuifolia* Ridl., *Diospyros styraciformis* King & Gamble, *Fagraea ridleyi* King & Gamble, *Gardenia elata* Ridl., *Hanguana neglecta* Škorničk. & Niissalo, *Hanguana triangulata* Škorničk. & P.C.Boyce, *Mangifera subsessilifolia* Kosterm., *Ophiorrhiza singaporensis* Ridl., *Palaquium microphyllum* King & Gamble, *Polyalthia angustissima* Ridl., *Ryparosa hullettii* King, *Soejatmia ridleyi* (Gamble) K.M.Wong, *Syzygium ngadimanianum* (M.R.Hend.) I.M.Turner, *Vrydagzynea lancifolia* Ridl., *Zingiber puberulum* Ridl. (Fig. 4). It is possible that some of the early collections labelled 'Bukit Timah' were not from what is now Bukit Timah Nature Reserve, but, as these are generally forest species, it is highly likely that they were from the hill.

The other large area of forest remaining, collectively the Central Catchment, also contributes various type localities. The freshwater swamp forest at Nee Soon, generally referred to in the past as Chan Chu Kang, is notably important, being the type locality of *Bulbophyllum rugosum* Ridl., *Canthium malayense* K.M.Wong, *Lasianthus attenuatus* var. *minor* H.Zhu, *Magnolia singaporensis* (Ridl.) H.Keng, *Tarenna ridleyi* (H.Pearson ex Ridl.) Ridl. and *Vrydagzynea tristriata* Ridl. (Fig. 5). Other Central Catchment locations which are type localities are Mandai Road: *Calamus ridleyanus* Becc., *Calophyllum dispar* P.F.Stevens, *Canthiumera robusta* K.M.Wong & X.Y.Ng; Bukit Mandai: *Thrixspermum ridleyanum* Schltr.; Reservoir Woods: *Knema rubens* (Sinclair) W.J.de Wilde, *Psychotria deltata* I.M.Turner, *Stachyphrynium parvum* Ridl.; MacRitchie Reservoir: *Urophyllum malayense* K.M.Wong, *Zingiber singaporensis* Škorničk.; Seletar Reservoir: *Freycinetia corneri* B.C.Stone; Upper Seletar: *Hanguana rubinea* Škorničk. & P.C.Boyce.

The little patch of remnant rainforest in the Singapore Botanic Gardens, generally referred to in the past as the Botanic Gardens' Jungle, is remarkably important as a type locality. The following species have types from it: *Artocarpus fulvicortex* F.M.Jarrett, *Calophyllum ferrugineum* Ridl., *Gynochthodes praetermissa* W.W.Seah & K.M.Wong, *Heritiera elata* Ridl., *Horsfieldia punctatifolia* J.Sinclair, *Hypobathrum coniferum* (Ridl.) Kiew, *Lasianthus chryseus* Ridl., *Knema communis* J.Sinclair, *Kunstleria ridleyi* Prain, *Planchonia grandis* Ridl., *Syzygium ridleyi* (King) Chantar. & J.Parn., *Xanthophyllum discolor* Chodat (Fig. 6).

Other Singapore type localities include Bidadari: *Utania austromalayensis* M.Sugumaran; Changi: *Drepananthus ridleyi* (King) Survesw. & R.M.K.Saunders; Chua Chu Kang: *Clerodendrum myrmecophilum* Ridl., *Habenaria singaporensis* Ridl., *Schoenorchis secundiflora* (Ridl.) J.J.Sm., *Zingiber puberulum* var. *chryseum* (Ridl.) Holttum [Stagmount]; Jurong: *Knema curtisii* (King) Warb. var. *paludosa* J.Sinclair, *Mangifera paludosa* Kosterm. ex S.K.Ganesan, *Piper protractum* C.DC. [Sungei Jurong]; Kranji: *Neonauclea kranjiensis* K.M.Wong & W.W.Seah, *Oberonia ciliolata* Hook.f., *Oberonia dissitiflora* Ridl.; Pasir Panjang: *Pandanus tetrodon* Ridl.; Pulau Seletar: *Dendrobium lacinosum* Ridl.; Pulau Ubin: *Benstonea parva* (Ridl.) Callm. & Buerki, *Utania nervosa* K.M.Wong & Sugumaran (Fig. 7); Serangoon: *Munronia breviflora* (Ridl.) Mabb. & Muellner; Sungai Morai: *Memecylon lancifolium* Ridl.; Tuas: *Calamus oxleyanus* Teijsm. & Binn. ex Miq., *Strychnos ridleyi* King & Gamble; Woodlands: *Rhopaloblaste singaporensis* (Becc.) Benth. & Hook.f., *Thismia aseroe* Becc.

Why is it important to know which species have types from Singapore? If the species is still present in Singapore, then knowing that living material is likely to be morphologically and genetically similar to the type means Singapore populations are of increased scientific and conservation value. Genetic resources are becoming ever more highly prized and Singapore should continue to cherish its biodiversity heritage. Programmes for the in situ and ex situ conservation of native plant species can gain greater prominence if they involve assisting 'Singapore type' species and localities, or reintroducing them to their old haunts. Growing, for instance, *Rhopaloblaste singaporensis* (Becc.) Benth. & Hook.f. in Woodlands and *Schoenorchis secundiflora* in Choa Chu Kang, would be both positive for conservation and also provide interest and local pride to the residents of those places.

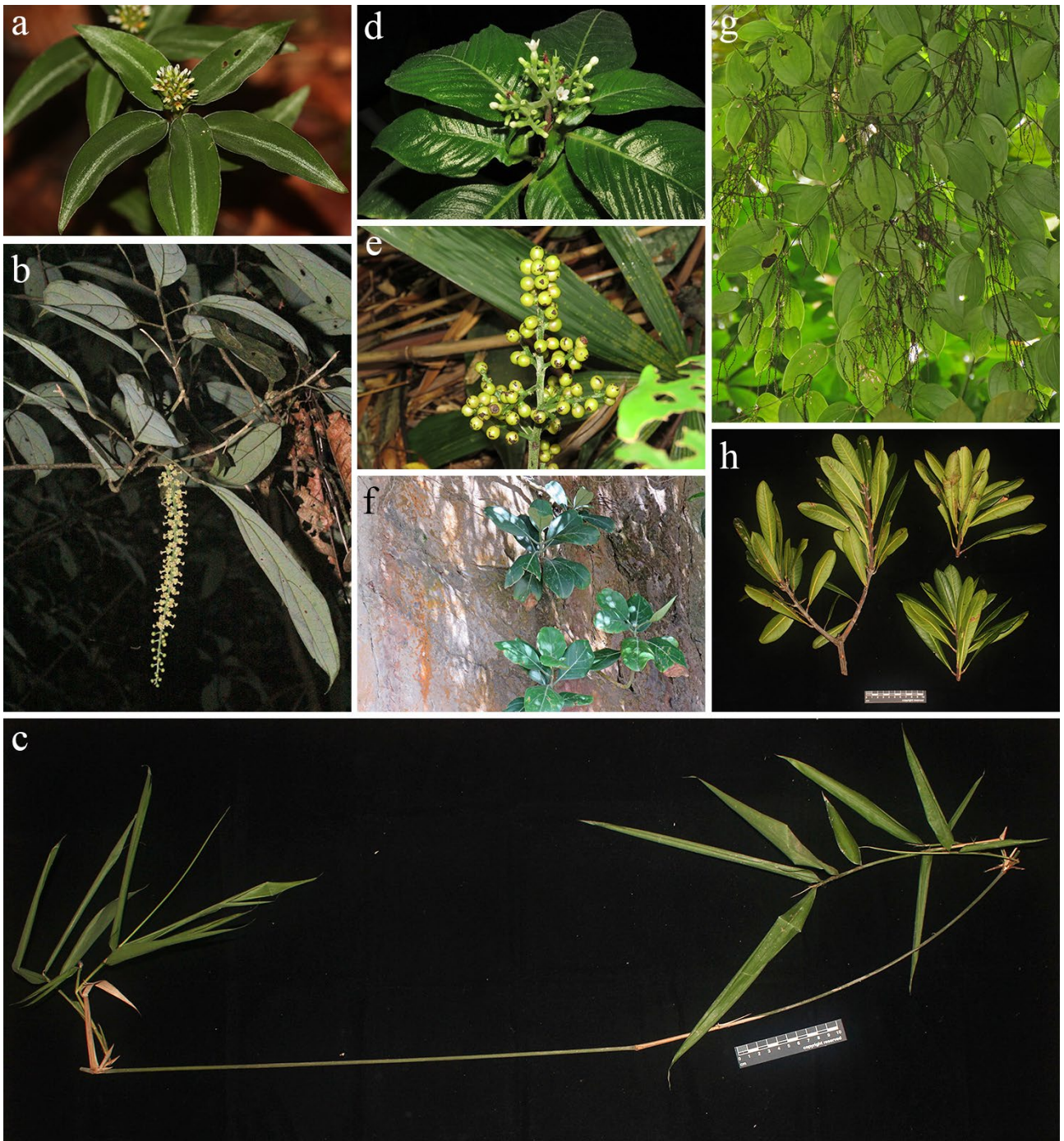


Fig. 4. Examples of species for which Bukit Timah Nature Reserve is the type locality: (a) *Vrydagzynea lancifolia*, (b) *Ryparosa hullettii*, (c) *Soejatmia ridleyi*, (d) *Ophiorrhiza singaporensis*, (e) *Hanguana neglecta*, (f) *Fagraea ridleyi*, (g) *Dioscorea tenuifolia*, (h) *Mangifera subsessilifolia*. (Photographs by: Ng Xin Yi [a–c, h], Reuben C. J. Lim [d–g]).



Fig. 5. Examples of species for which Nee Soon swamp forest is the type locality: (a) *Bulbophyllum rugosum*, (b) *Lasianthus attenuatus* var. *minor*, (c) *Magnolia singaporensis*. (Photographs by: Peter O’Byrne [a], Reuben C. J. Lim [b], Ng Xin Yi [c]).

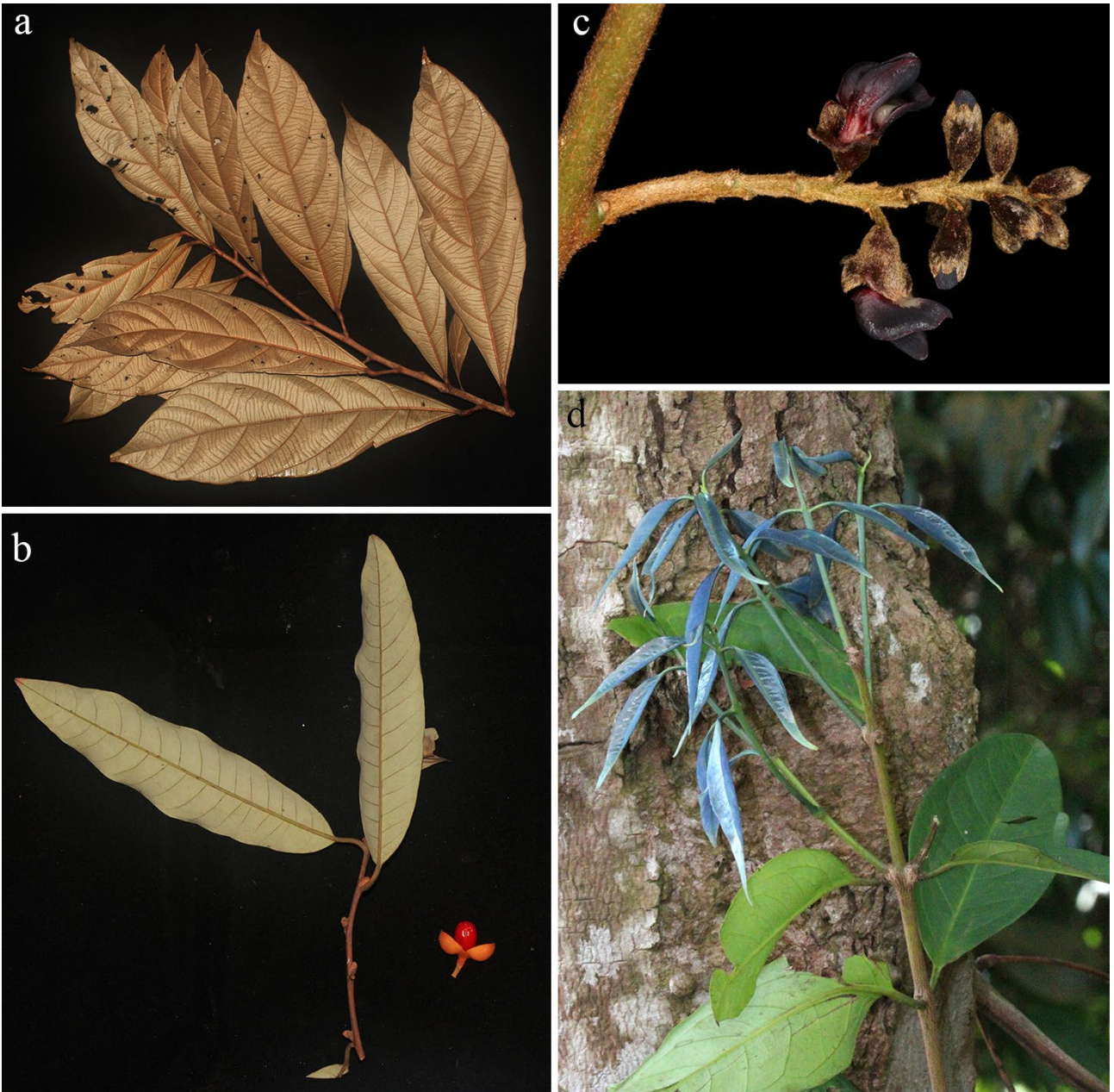


Fig. 6. Examples of species for which the Botanic Gardens' Rainforest is the type locality: (a) *Heritiera elata*, (b) *Knema communis*, (c) *Kunstleria ridleyi*, (d) *Syzygium ridleyi*. (Photographs by: Ng Xin Yi).



Fig. 7. Examples of species for which Pulau Ubin is the type locality: (a) *Benstonea parva*, (b) *Utania nervosa*. (Photographs by: Ng Xin Yi).

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