Eng Soon Teoh

Orchid Species from Himalaya and Southeast Asia Vol. 1 (A - E)

Springer

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Coelogynne corymbosa in Sikkim (© Teoh Eng Soon 2020)

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For Teoh Phaik Khuan, John, Kristine, Chrissy, Ning,
and my orchid friends and mentors

Preface

In orchid circles today, discussions frequently centre on species, their discovery, identification and conservation. This publication reflects my effort to produce a photographic record of the orchid species that I have been privileged to come across.

This book is not a comprehensive *flora* of the region. No single sane person should try to write a comprehensive illustrated flora of the region, there being, I am told, 1256 species in India, 4000 species in Indonesia and new ones are continuously being added. Rather, the three volumes reflect a personal journey of half a century with *Orchidaceae*, this wonderful family of flowering plants. It features the orchid species that I have personally encountered and some of the hybrids that I have been privileged to see. It leaves out hybrids bred for the temperate regions because they are well covered by numerous experts in books and articles and I am not as familiar with these orchids.

Depending on where we live and our exposure, we each have our preferences, so the selected hybrids depicted here reflect my personal narrow perspective. Comments are kept as brief as possible to provide maximum space for pictures. Nevertheless, they need to contain information that will help in the identification of the species and data on their habitat. I tried to provide a historical perspective in the hybrid section because the past informs on the direction we should be heading. Readers who may wish to know more about orchid cultivation should consult my *Orchids of Asia* or similar publications.

Singapore, Singapore — Eng Soon Teoh

Acknowledgements

I made many friends through my long association with orchids and many of them accompanied me to search for orchids both in cities and in the wild. They were generous in sharing their time, knowledge, expertise, collections, photographs and connections. I am grateful to these special people. They will always be remembered, although here they will not be mentioned by name.

I thank the following friends who gave me permission to use their photographs: Henry Oakeley, Ong Poh Teck, Peter O'Byrne, Hubert Kurzweil, Bhakta Bhadur Raskoti, Nima Gyeltshen, Suranjan Fernando, C. Sathish Kumar, Syed Yusof Alsagoff, Joseph Yeo, Teo Woon Cheng and Ang Wee Foong as well as the Royal Botanic Gardens, Kew and the Orchid Society of South East Asia. My thanks also to the directors of the Singapore Botanic Gardens and the helpful library staff for assistance with my research.

Eng Soon Teoh

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About the Author

Eng Soon Teoh, MD, FRCOG, FACS, is a Singaporean gynaecologist with experience in laboratory and clinical research. He is a past president of the Orchid Society of South East Asia and an award judge of the society. His parents loved orchids. This inspired Dr Teoh to begin studying orchids over 50 years ago, focusing on Asian species and orchid biology. He is the author of several popular books and numerous articles on orchids. *Medicinal Orchids of Asia* (2016) and *Orchids as Aphrodisiac, Medicine or Food* (2019), both, published by Springer, received high praise by their reviewers.

Dr. Teoh's books on orchids are beautifully illustrated with his photographs and his earlier *Asian Orchids* (*Orchids of Asia*) sold 25000 copies. A recent work, *Lotus, Photographs and Chinese Poems* was praised by Dr. Henry Oakeley as 'truly beautiful, erudite, and a masterpiece'.

Introduction

1

Seeing thousands of orchids in bloom in their natural habitat in the wild is an awesome experience. When denied of that opportunity, one may still find pleasure in seeing plants in bloom in gardens, nurseries, shows or at home. Nothing beats seeing the actual flower. The next alternative is to view a photograph.

It is with this idea in mind that this book is conceived. Nevertheless, a volume on orchid species must endeavour to illustrate features which delineate the species. Hence, the character of the photographs. Texts will describe the distribution and habitats of species, also the altitude at which they occur because such information may be useful to everyone attempting to grow the orchid. Size and appearance of the plant as well as characteristics of the inflorescence and of individual flowers are additional essential information. Whenever the opportunity permitted, care was taken to focus on the lip, the structure of which is so important in separating species.

Electronic publication allows large pictures to be displayed because it is not restricted by consideration of cost. For purposes of identification, it is important to be able to see the details of the lip. Large pictures also impart impact. Since this book is also published in printed format, it is split into more than a single volume to prevent it from being too cumbersome to use for frequent cross-referencing. It should be noted that representation of species in any genus reflects their popularity rather than their actual numbers in nature.

I have participated in the judging of orchids for over 40 years, so I habitually use judging criteria whenever I look at an orchid in bloom. Fortunately, that has not prevented me from appreciating all orchid flowers regardless of their form, size or colour because, as a photographer, I try to capture the best features of any orchid that I photograph. I do not always succeed with my pictures, but when they come out well, they are reminders of the happy moments when I chanced on the flowers. This collection contains examples of such encounters. Whereas the emphasis is on species, some hybrids are included to showcase examples of the milestones in the successful transmission of desirable traits to hybrids and the elimination of less welcome traits. There is no denying that many hybrids are beautiful even though they may lack the graceful simplicity of species.

The Indo-Malesian Region, which comprises the Eastern Himalayas and Southeast Asia, is a biodiversity hotspot and is home to over 7000 orchid species with more still to be discovered. Approximately 10% of the species will be featured in the present work, classified according to genera. These are species that I encountered during the past 50 years and they should therefore be accessible to anyone who keeps a lookout for them.

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Orchid enthusiasts in Java and Singapore started making hybrids with tropical orchids during the late 1920s and they were later joined by Thai breeders who made great progress in the breeding of vandaceous and *Dendrobium* orchids. The spectacular advances in Phalaenopsis breeding conducted in Taiwan have benefitted ordinary folks throughout the world. Orchid enthusiasts can expect to be bewildered by future advances that are in the pipeline. Phalaenopsis is therefore featured in some detail. Calanthe, Cymbidium and Paphiopedilum are well suited for cultivation in temperate regions and nearly all the important breeding has been carried out in Europe, America and Australia. There are innumerable well-written articles by experts in the field and I do not have the experience to add to them. It is not the intention here to discuss orchid hybrids in detail but only to provide some idea of how orchid hybridization in Southeast Asia proceeded and occasionally to illustrate how a species may influence the appearance of its progeny.

* * *

Acampe Lindl.

2

Acampe is a genus of hardy, monopodial epiphytes that often form large clumps on trees. Stem is erect, rigid, branching. Leaves are oblong, bilobed at the tips, distichous, thick, leathery, sheathing the stem at their base. Inflorescence is axillary, short, bearing numerous overcrowded, rigid, dull-yellow flowers marked with horizontal maroon stripes on the tepals. Lip is white with fine purple spots (Fig. 2.1).

There are seven species with two additional varieties distributed in a semicircle from Southeast Asia to southern China, Himalaya, India, East Africa, Madagascar and the Comoros. *Acampe* is from Greek *akampes* (*rigid*) which refers to the overall characteristic of plants in the genus. Three species have medicinal usage (Teoh 2016).

Although their flowers are long-lasting, many species are large plants which are seldom cultivated. Hybridization with *Arachnis* failed to overcome the clustered arrangement of the flowers and the tendency to cupping of its tepals (Teoh 1980) but more might be achieved by breeding that reduces the influence of *Acampe.*

Fig. 2.1 *Acampe praemorsa* var. *praemorsa* (Roxb.) Blatt & McCain. (© Teoh Eng Soon 2020. All Rights Reserved)

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Acampe praemorsa (Roxb.) Blatt. & McCann (syn. *Acampe papillosa* Lindl.)

The first description of an *Acampe* is in van Rheede's *Hortus Indicus Malabaricus* (vol. 12, 1693) which described *Acampe praemorsa*, as *Thalia maravara*, in detail, down to the characteristics of the sap in the stem, leaves and roots. A robust species, *Acampe praemorsa* was common in Malabar where it was known as *Thalia* in the seventeenth century because the sap expressed from its leaves foamed like soap when stirred and shaken: from Malayalam *a thaali* (shampoo). The sap smelt like grass and tasted a bit salty. 'Roots are long, wrinkled, simple, ash-coloured, fleshy, filled with a strongly nerved filament, viscid fluid and light green flesh having the smell of green moss, slightly salty in taste. The stalk is the same as the preceding ones (i.e. similar to the stem of *Rhynchostylis retusa*), but more wrinkled, green, older ones ash-grey, with the inside filled with wooly filaments which are red and light green, beset with mucilage. The leaves are similar to the former ones but more thick and almost leathery, difficult to bend and break… flowers are like others but arising in fascicles, much smaller, yellow, as if undulating with reddish rays, of a very pleasing smell…This plant lives long, always sprouting forth, flowers once every year, in the month of October. The flowers alone detached from the trunk are preserved for a long time' (Manilal 2004; van Rheede 1693) (Fig. 2.2).

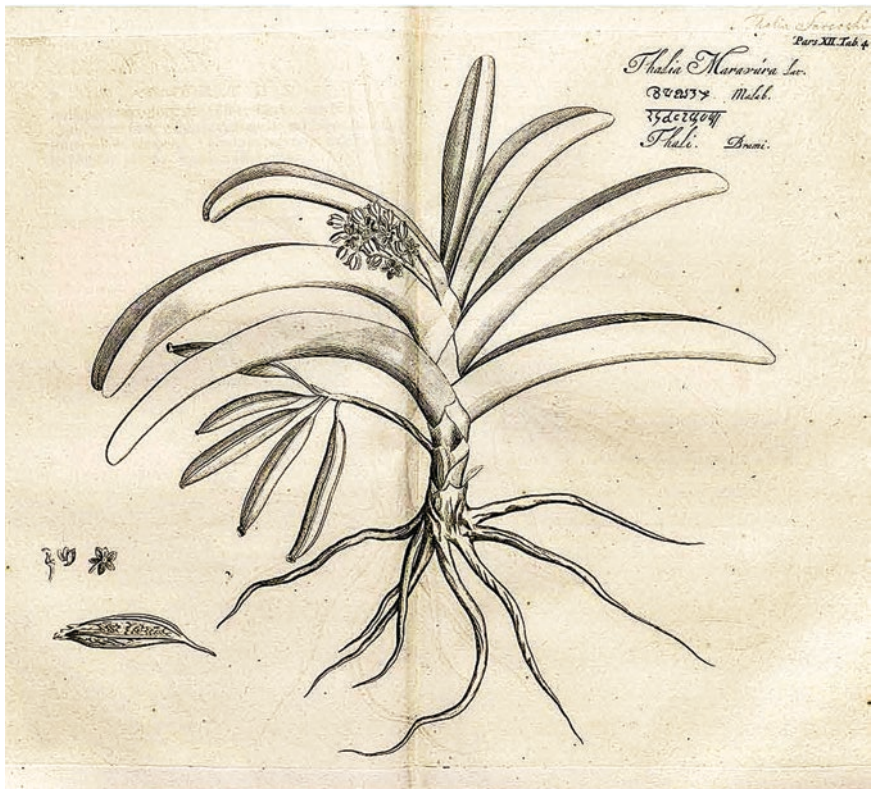

Fig. 2.2 *Acampe praemorsa* [as *Thalia maravara*] From: van Rheede H tot D, (1693): *Hortus Indicus Malabaricus,* vol. 12, p. 16 t. 4

Fig. 2.3 *Acampe praemorsa* var. *praemorsa*. (© Teoh Eng Soon 2020. All Rights Reserved)

Plants are up to 50 cm tall, flowers 0.8 - 1 cm across (max. 1.25 cm), 10 – 12 in an inflorescence (Fig. 2.3).

Acampe praemorsa var. *longipedunculata* (Trimen) Govaerts [syn. *Acampe rigida* (Buch.-Ham. Ex Sm.) P.F.Hunt]

It is a widely distributed, medium-sized, monopodial, epiphytic or saxicolous species with mildly fragrant flowers, 1.8 cm across. It is found from 300 to 800 m (up to 1600 m). This is a very coarse plant with stout stem; stout, thick leaves; and thick roots (Fig. 2.1). Tepals are broader than those of the type species (Fig. 2.4).

Fig. 2.4 *Acampe praemorsa* var. *longipedunculata*. (© Teoh Eng Soon 2020. All Rights Reserved)

Cultivation

On trees in tropical landscape, in baskets or bare-root in moisture-laden surroundings. In dappled sunlight.

Hybrids

Only 4 hybrids, one with *Arachnis*, another with *Vanda* and 2 with *Rhynchostylis*, have been registered with *Acampe* as a parent. *Aracampe* POSB Centenary registered by Singapore Botanic Gardens in 1977 is a primary hybrid of *Arachnis hookeriana* var. *luteola* and *Acampe praemorsa* var. *longipedunculata* (Teoh 1980; Elliott 2015) (Fig. 2.5).

Fig. 2.5 *Aracampe* POSB Centenary. ((© Teoh Eng Soon 2020. All Rights Reserved)

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Acanthephippium Bl.

3

Acanthephippium is a genus of terrestrial orchids first described in 1825 by Blume, who was possibly referring to the two parallel toothed crests on the flower's lip (Greek, *thorn saddle*) when he named the genus. There are 13 species distributed from Himalaya to Sri Lanka, China, Japan and Southeast Asia. They grow in shaded locations on the forest floor. Some species are mycoheterotrophic. Plants are large, with conical or cylindrical pseudobulbs bearing 1 - 4 elliptic, lanceolate, plicate, dark-green leaves that are marked by prominent veins. Inflorescence is short, erect, arising from the base and carries 3 - 10 tubular, white, scented flowers from late spring to early summer. Sepals are fused except near their tips at which point they are spread out. Petals are free. Lip is three-lobed and decorated with keels (Comber 2001).

Acanthephippium striatum Lindl.

Acanthephippium striatum thrives in the deep shade of warm, moist, broad-leaved forests at 600 - 1700 m from Eastern Himalaya to Taiwan and Peninsular Malaysia (O'Byrne 2011). Pseudobulbs are fleshy, up to 20 cm tall, growing close together, sometimes forming large clumps. Leaves are elliptic, lanceolate, 19 - 35 × 6 - 14 cm, dark green and marked by prominent longitudinal veins. Inflorescence arises at the base of the stem and bears 4 - 10 white flowers, 3 cm long, marked with longitudinal crimson veins. Flowering season is April to July (Gurung 2006) (Fig. 3.1)

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Fig. 3.1 *Acanthephippium striatum* Lindl. growing in deep shade at 1406 m in Rimchu, Punakha, Bhutan. (© Teoh Eng Soon 2020. All Rights Reserved)

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Acriopsis Reinw. ex Bl.

4

Acriopsis is a small genus with six or seven species which are distributed from Sikkim and Assam in India across Southeast Asia to the Solomon Islands. They are common in lowland forests and on roadside trees throughout Southeast Asia. Plants are small with short, thick rhizomes, crowded ovoid pseudobulbs and 2 - 4 lanceolate, glabrous, duplicate leaves. Inflorescence is terminal, simple or branching, loosely many flowered. Lateral sepals are fused, petals narrow and outstretched, whereas the column and the lip are joined to form a slim, long tube (Fig. 4.1). This gives the flowers the impression of a swarm of insects in flight. Hence the name *Acriopsis*, derived from Greek *acris* 'locust' and *opsis* 'resembling' (Schultes and Pease 1963).

Acriopsis densiflora var. *borneensis* (Ridl.) Minderh. & de Vogel

Endemic in lowland forests in Sabah at 50 - 1100 m, sometimes in kerangas forests or lower montane forests (Beaman et al. 2001), *Acriopsis densiflora* var. *borneensis* is a small epiphyte. Pseudobulbs are globose, clustered, 2 cm tall, bearing two apical oblong, obtuse leaves, 3.5 - 6 × 1.5 cm. Inflorescence arises from the base of the pseudobulb, up to 10 cm, bearing 15 close-set flowers arranged radially at the apex. Flowers are tetramerous, olive yellow, marked by brown blotches along the margin of the spreading petals. Dorsal sepal is linear, concave, hooked at the apex, olive yellow, lightly marked with brown. Petals are spathulate. Lip is three-lobed, side-lobed triangular, midlobe ovate, crenulate along the margin, white with purple bordering the callus at the centre. Column is white flushed with purple dorsally spreading into the paired filamentous extensions at the side and over the anther cap (Fig. 4.2).

Acriopsis indica Wight

Widely distributed from Myanmar, Thailand and Indochina to Malaysia, Borneo, Java, Sulawesi and Mindanao, *Acriopsis indica* grows in primary evergreen and deciduous forests and on plantation trees at 200 - 1700 m. Pseudobulb is ovoid, 1 - 3 cm tall bearing 2 - 4 linear-elliptic leaves at the apex. Inflorescence is branching, up to 50 cm, laxly many flowered. Flowers are dull yellowish green, 1 - 1.2 cm across. Lip is white, entire and bears two round keels (Fig. 4.3) (O'Byrne 2011).

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Fig. 4.1 *Acriopsis liliifolia.* (© Teoh Eng Soon 2020. All Rights Reserved)

Acriopsis inopinata Phoon & P.O'Byrne

Acriopsis inopinata is a newly discovered species from central Peninsular Malaysia found growing at 1500 m. Pseudobulbs are 12 - 25 mm tall, yellow or purplish red, bearing 3 - 4 linear-lanceolate leaves. Inflorescence is 25 cm long with 5 - 6 side branches, laxly many flowered (Fig. 4.4). Dorsal sepal, fused lateral sepals and petals are brownish green, spreading, sepal and synsepalum concave. Lip is three-lobed and white with two high oblong keels (O'Byrne 2011) (Fig. 4.5).

Fig. 4.2 *Acriopsis densiflora* var. *borneensis.* (© Teoh Eng Soon 2020. All Rights Reserved)

Acriopsis liliifolia (J.Koenig) Ormerod (Syn. *Acriopsis javanica* Reinw. ex Blume)

Acriopsis liliifolia is a small, common, lowland, epiphytic orchid widely distributed from Sikkim, through Southeast Asia to the northern tip of Queensland and the Solomon Islands (Seidenfaden and Wood 1992). Whereas the Asian and Australian species were regarded as conspecific and named *Acriopsis javanica*, the Asian species is now renamed *Acriopsis liliifolia*, and the Australian species is called *Acriopsis emarginata.*

Pseudobulbs are ovoid to conical, 2.5 - 5 × 2 - 2.5 cm in diameter, crowded. Leaves

Fig. 4.3 *Acriopsis indica.* (© Teoh Eng Soon 2020. All Rights Reserved)

are linear, 16 - 20 × 1.2 - 1.4 cm. Inflorescence is 30 - 60 cm long, branching, laxly many flowered. Flowers are small, pink, resembling insects in flight with outstretched wings. Perianth consists of two very narrow petals which spread horizontally, an erect dorsal sepal and two narrow lateral sepals that are fused along their length and arranged vertically, thereby resembling the body of an insect. Lip is white, anterior to the petals and sepals (Fig. 4.6). Plants flower throughout the year with a peak season from March to May.

Acriopsis liliifolia is reported growing close to the ground as an epiphyte in freshwater swamp forest, mangrove forest, lowland evergreen rainforest, beach vegetation (especially *Casuarina equisetifolia*) and occasionally on roadside trees like the tembusu (*Fagraea fragrans*) in Singapore (Lok et al. 2009) or tamarind (*Tamarindus indica*) as in Dalat, Vietnam (Fig. 4.7). Such tree species seldom carry epiphytes. Ants sometimes build gardens around its pseudobulbs. It is thought that the presence of lipids in the seed coats of the orchid causes these ants to assist in their dispersal. Such plants are called myrmecochores (Benzing and Clements 1991). *Acriopsis liliifolia* is not endangered, but the Australian *Acriopsis emarginata* is listed as vulnerable.

The Malay and Indonesian names for *Acriopsis liliifolia* are *sakat ubat kepialu* and *sakat obat kepialoe*; actually the terms are similar, only the

Fig. 4.4 *Acriopsis inopinata* inflorescence. (© Teoh Eng Soon 2020. All Rights Reserved)

pronunciation is different. It translates as 'medicinal epiphyte for severe fever or headache'. Decoction of the leaves and roots was employed as an antipyretic and to treat 'violent headache' in Malaya, Indonesia and India (Ridley 1907; Burkill 1935; van den Brink 1937; Duggal 1972). Other medicinal usages have also been reported in these countries (Teoh 2016).

Fig. 4.5 *Acriopsis inopinata.* (© Teoh Eng Soon 2020. All Rights Reserved)

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Fig. 4.6 *Acriopsis liliifolia.* (© Teoh Eng Soon 2020. All Rights Reserved)

Fig. 4.7 *Acriopsis* growing on a roadside tree in Da Lat, Vietnam, at around 1500 m. (© Teoh Eng Soon 2020. All Rights Reserved)

Adenoncos Bl.

5

Adenoncos is a genus with 15 species of small vandaceous herbs distributed from Vietnam and Thailand to Malaysia and Indonesia. Stems are usually unbranched, up to 15 cm long with fleshy, often terete and grooved leaves. Inflorescence is short, flowers tiny, few and greenish. *Adenoncos* is only cultivated by die-hard collectors of botanicals.

The name is derived from Greek and possibly refers to the mealy, white callus on the lip: Greek *aden* (gland) and *onkos* (mass) (Schultes and Pease 1963).

Adenoncos parviflora Ridl.

A small herb with fleshy, terete, grooved, recurved leaves, 15 cm long, is found in lowland and low montane forests in Myanmar at 300 - 1300 m, Thailand, Sumatra, Peninsular Malaysia and Borneo. Inflorescence is very short and bears 1 - 2 yellowish-green waxy flowers. Lip is concave, three-lobed, side lobes small and triangular, midlobe long with a central mealy white callus in the centre (Comber 2001; Holttum 1964; Nanakorn and Watthana 2008) (Fig. 5.1).

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Fig. 5.1 *Adenoncos parviflora* Lindl. (© Teoh Eng Soon 2020. All Rights Reserved)

Aerides Lour.

6

Aerides, the beautiful foxtail orchid, is a popular genus with many species and hybrids in cultivation. When the Portuguese Jesuit Joao de Loureiro saw the orchid growing bare-root in hanging baskets in Indochina in the eighteenth century, he named it *Aerides* (Greek, resembling air) in his *Flora Cochinchinensis* (1790), alluding that 'they possess the power of living almost entirely upon the matters which they absorb from the atmosphere' (Schultes and Pease 1963). Indeed, *Aerides* will survive without much care if grown in this manner, but they need regular fertilizing to really thrive and flower, as all plants do. The plant is monopodial and stem erect or pendulous, freely branching, sheathed by the bases of distichous, oblong, coriaceous leaves. Flowering is seasonal, with numerous inflorescences carrying many, often fragrant, pink-coloured flowers that open simultaneously. Sepals and petals are free and widely spread. Lip is trilobed with a spur characteristic of the genus. The 29 species in the genus are distributed from eastern Himalaya to Yunnan and Southeast Asia. They are epiphytic, occurring in deciduous or semi-deciduous, evergreen, lowland to low montane forests, except for one species (*Aerides krabiensis*) which is saxicolous on limestone (Fig. 6.1).

Aerides crassifolia Par. Ex Burb.

Distributed from Assam to Indochina, *Aerides crassifolia* is a small- to medium-sized, cool- to warm-growing species found in deciduous and semi-deciduous, evergreen forests from sea level to 1300 m. Inflorescence is arching to pendulous, 30 cm long, bearing up to 50 fragrant, close-set, pink flowers with large, trilobed, purple lips that are serrated being their lower margins. By far the larger part of the flower, the lips drag the flowers down so that the latter appear to be nodding. Flowers are 3 cm across (Fig. 6.2). Flowering season is April to May (Vaddhanaphuti 2005).

Aerides flabellata Rolfe ex Downie

Aerides flabellata is a small- to medium-sized species distributed from Myanmar to south and southeast Yunnan, northern Thailand and Laos occurring in bright evergreen broad-leaved forests and forest margins at 600 – 1700 m (Chen and Wood 2009). Stems are 10 - 30 cm tall and leaves strap-shaped, leathery, 16 × 1.5 - 2 cm, praemorse. Inflorescence is 5 - 25 cm; bearing

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