

The true *Coelogyne mossiae*

ANDRÉ SCHUITEMAN and MALCOLM PERRY unravel a series of mistaken identities to reveal the true characters of this Indian *Coelogyne* species, and several species with which it has been confused

COEOLOGYNE MOSSIAE, a fine species from the mountains of southern India, has been a source of endless confusion ever since its first description by Rolfe in 1894. It is safe to say that in almost every article, book and Flora in which this species is treated it has been misrepresented in one way or another. Here, we will attempt to untangle the various mistakes and misunderstandings that have caused this confusion.

Rolfe described *Coelogyne mossiae* on the basis of a specimen sent to the Royal Botanic Gardens, Kew, in June 1890, by John S Moss. The specimen had been collected in the Nilgiri Hills, a mountainous region of Tamil Nadu. The type specimen in the RBG Kew herbarium is just a single inflorescence. The same plant was still alive on 13 March 1894, when it was awarded a First Class Certificate from the Orchid Committee of the Royal Horticultural Society, and later that year it was illustrated in the *Gardeners' Chronicle* (Anon. 1894). Rolfe compared his new species with *C. glandulosa* Lindl., from which it differed principally in having two entire and smooth, rather than three glandular-dentate keels on the lip. But the identity of *Coelogyne glandulosa* is a riddle in itself.

The origins of *C. glandulosa*

In 1852, Robert Wight, director of the Botanical Garden in Madras, India, published the fifth volume of his magnum opus, *Icones Plantarum Indiae Orientalis* or Figures of Indian Plants. Plate 1638 depicts an orchid identified as *Coelogyne nervosa* A. Rich., a species described from the Nilgiris by Achille Richard in 1841. The next

Coelogyne mossiae
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plate, 1639, shows a species Wight believed to be new, which he named *C. corrugata* Wight. It came from the Nilgiris and the Palni Hills. *Coelogyne corrugata* is now, correctly, considered a synonym of *C. nervosa*. This species is easily recognised by the curious dimpled, wrinkled, corrugated surface of the pseudobulbs, even in well-watered living specimens, and by the three to five straight, glandular-dentate keels on the lip – in other words, the keels are edged with fine, rounded and somewhat swollen teeth.

Lindley, in 1854, was the first to

point out that what Wight believed to be *C. nervosa* (which we will call *C. "nervosa"* Wight) was different from the real *C. nervosa* as described by Richard. Lindley considered it to be a new species, which he named *C. glandulosa*, referring to Wight's herbarium material and publication. But the description of *C. glandulosa* contains one detail that is conspicuously lacking in either Wight's description or his illustration, which was prepared by an Indian artist. According to Lindley the lip has 'three crested lines, and these are bordered by short teeth resembling glands; the lateral crests are deeper than the middle one.' No such crests were described by Wight or drawn by his artist. Could they have over-looked such a conspicuous detail, which they do mention and illustrate for *C. corrugata*?

Examining the specimens

In Lindley's herbarium at RBG Kew the only material labelled as *Coelogyne glandulosa* is a single flower together with a sketch of the lip of this flower (p34). This flower has, just as Lindley described, three rather irregular keels with fine rounded teeth, roughly as depicted in the sketch. In fact, this lip is indistinguishable from that of *C. nervosa* A. Rich., which can have three or five such keels.

In the general orchid herbarium at



Kelly van Nieuwen

Coelogyne mossiae

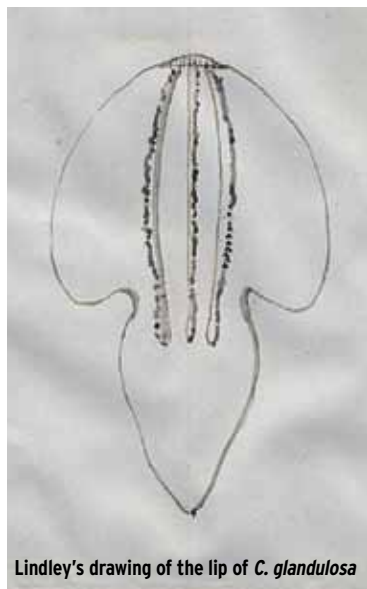
RBG Kew is the actual specimen that was used to prepare Wight's plate 1638 (*C. "nervosa"* Wight). This specimen consists of a complete flowering plant, but sadly the flowers have all been half-eaten, and, being glued to the sheet, are very difficult to analyze. The specimen was presented to RBG Kew in 1871, six years after Lindley's death in 1865, and he may never have seen it. We have examined the least damaged flower of this specimen, and although it consists of little more than shreds of sepals and petals, enough of the lip was intact to be able to establish that there are only two keels, and that these are largely entire, but are crenate, possibly even slightly glandular-dentate towards and over the mid-lobe. In any case, this lip does not correspond with Lindley's description. The large pseudobulbs of this specimen are not corrugated as in *C. nervosa*, but smooth and longitudinally grooved.

In addition to the type specimen of *C. corrugata*, the flower of *C. glandulosa*, and the specimen of *C. "nervosa"* Wight, there is another Wight collection at RBG Kew. This specimen is not part of the Lindley herbarium. It has the corrugated pseudobulbs and flower characteristics of *C. nervosa* A. Rich. It is not a duplicate collection of *C. corrugata*, because the collecting locality is given as Pycarrah, which Wight lists as one of the two localities for *C. "nervosa"* Wight (the other being 'the Avalanche'), but not as a locality for *C. corrugata*. The flowers of this collection are indistinguishable from *C. glandulosa* in the Lindley herbarium. It is almost certainly the plant from which the flower that Lindley described was taken; it is therefore likely to be an isotype specimen of *C. glandulosa*.

The likely source of confusion

We believe that what probably happened is this: Lindley pointed out to Wight that his *C. "nervosa"* Wight,

illustrated in plate 1638, was not *C. nervosa* A. Rich. but an undescribed species. Thereupon Wight sent Lindley a dried flower, but not from the specimen that he had illustrated in plate 1638 (possibly because the flowers were already damaged at that time), but from another one, probably the one from Pycarrah. Lindley then made a description based on plate 1638 as well as the dried flower. So



he described a mixture of two species, because the flower evidently belongs to the real *C. nervosa*, while the plate is almost certainly referable to the species later described as *C. mossiae*.

In hindsight

In such cases, we have to fix the identity of a species by referring to a type specimen. Because the only specimen in Lindley's herbarium is the single flower that shows the three glandular keels mentioned in the description, that specimen is the logical choice to select as the type of *C. glandulosa*. This implies that *C. glandulosa* is simply a synonym of *C. nervosa*, no matter which species was represented in plate 1638.

It should be noted that Rolfe would have disagreed with this conclusion. He made an annotation on both sheets of *C. glandulosa* (the flower in Lindley's herbarium and the Wight collection from Pycarrah) to the effect that they are not really *C. glandulosa*. His annotation reads, '*C. nervosa* A. Rich. but not *C. nervosa* Wight, on which *C. glandulosa* was primarily based. It is therefore not *C. glandulosa* Lindl. [RA Rolfe].' But Rolfe ignores the fact that Lindley, unwittingly, did use a flower of *C. nervosa* A. Rich. in his description of *C. glandulosa*. So, Rolfe's objection is not valid.

Coelogyne "nervosa" Wight

As for the plant illustrated in plate 1638 (*C. "nervosa"* Wight), this is in most respects much closer to *C. mossiae* than to *C. nervosa* A. Rich.. Three characters in particular point to *C. mossiae* rather than *C. nervosa*. First, there are only two well-developed keels, which are smooth in the basal part. Second, the pseudobulbs are very large and not intensely wrinkled as in herbarium specimens of *C. nervosa* A. Rich., but largely smooth and longitudinally grooved. Third, the larger number of flowers (seven). This plant appears to differ from *C. mossiae* as we understand it in that the keels are partly crenate rather than smooth all over. It is also worth noting that it differs from all other specimens of *C. mossiae* that we have seen in the presence of a sterile tubular bract below the lowest flower. Such a sterile bract is also illustrated for *C. mossiae* by Abraham & Vatsala (1981), therefore this may be a character that varies somewhat in this species. Perhaps this plant is not a 'pure' specimen of *Coelogyne mossiae*, but one that shows signs of introgression (the effects of past hybridization) with *Coelogyne nervosa*.

KEW NEGATIVE
No. 16463

DATE JUL 1976

ROYAL BOTANIC GARDENS KEW

K000078671

The type sheet of *Coelogyne mossiae* before the removal of the Glasnevin specimen on the left hand side (see text). The actual type specimen is in the top right corner. The illustration, by Fyson, is another later addition.

Coelogyne
Det. John A. Macfarl.

71. *Coelogyne* Mossia. *Raff.* pseudobulbis ovoides biphyllis, foliis lanceolatis, nervis pediculis undulatis, seapibus interstibus erectis, 2-4-nervis, bracteis cordatis oblongis-lanceolatis nervis striatis. *Seapibus* spicatis, seapulis elliptico-oblongis subovatis mucronatis, petalis cordatis auriculatis, lobulis trilobis lobis linearibus ovatis apice triangularibus obtusis internodiis ellipticis subobtusis disco lineatis nervis medio vix incrassatis cuneis laevibus, columnae clavatae arenae alatae.

HAB.—Sikkim Mys.

Pseudobulbi 1½-1½ poll. longi. Folia 6-7 poll. longa. Seapae 6 poll. longae. Bractea ½-1½ poll. longa. Sepala et petala 1 pc. longi. Labellum 10 lin. longum. Columna 7 lin. longa.

A handsome species sent to Kew for determination by John S. Macfarl. Winterhill, Bishopscote, Wiltshire, Wiltshire, in June 1900, with information that he had received it with other orchids from a friend, the Netherbury Hills. It is allied to *C. parviflora*, A. Blum., and *glauca*, Lindl., but among other characters is really distinguished by its perfectly entire leaves, of which the lateral pair alone are developed. The seapae are produced from the young growths, which afterwards produce the leaves and pseudobulb. The flowers are white with a light yellow cream-shaped marking in front of the keel.

Rev. Bulletin 1894, p. 156.

Coelogyne Mossia Fyson. 1. 1. 29
ORCHIDACEAE. 11. 67247.

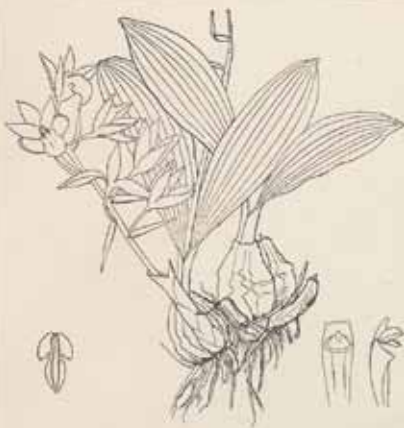


PLATE 11. COELOGYNE MOSSIAE Fyson

Coelogyne mossiae
ROYAL BOTANIC GARDENS,
GLASNEVIN.

HERB. HORT. BOT. REG. KEW.

Coelogyne Mossiae.



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Kalyan Varma



Above: *Coelogyne nervosa* growing in the wild, in the Biligiriranga Hills
Right: The starry flowers of *Coelogyne nervosa*
Below: The pseudobulbs of *Coelogyne nervosa* remain wrinkled even when well-watered



Kalyan Varma



Malcolm Perry

Historical confusion

Quite naturally, most writers of local Floras and books on Indian orchids came to believe that there were three different species, *Coelogyne nervosa*, *C. glandulosa* and *C. mossiae*, when there were only two, and struggled to differentiate between them. We will consider the differences between *C. mossiae* and *C. nervosa* in more detail later, but first there is further confusion surrounding *C. mossiae*.

We do not know exactly when, but probably between the First and Second World Wars, RBG Kew received two detached inflorescences and a leaf from the Royal Botanic Gardens (now National Botanic Gardens) at Glasnevin, identified (with a question mark) as *C. mossiae*. Somebody then mounted one of the inflorescences as well as the leaf onto the left hand side of the sheet with the type specimen of *C. mossiae* on it. Regrettably, they failed to notice that the leaf did not at all agree with Rolfe's description, or with the illustration in the *Gardeners' Chronicle*. *Coelogyne mossiae* should have relatively short, broad leaves, but this new leaf from Glasnevin was very long and narrow (34 x 1.7cm). The flowers too were quite different.

Years later, a photograph of the type sheet of *C. mossiae*, which now included the Glasnevin specimen, came to the attention of S Das and SK Jain, botanists working with the Botanical Survey of India. They immediately noticed that there were two different species mounted on the same sheet. Unfortunately, as already noted by Christenson (2008), they did not realize that the narrow-leaved Glasnevin specimen did not belong to the type material, and they decided that Rolfe, when he described *C. mossiae*, must have mixed up two species. Even more unfortunate was their next step. Somehow they came to believe that the narrow-leaved species was the real *C. mossiae*, and that accordingly



Hybrid *Coelogyne Unchained Melody* (pale form pictured) is often mislabelled as *C. mossiae* or *C. glandulosa*.

Rolfe's description, which mentioned broad leaves, was partly wrong. So in 1978 they published an 'emended' description of *C. mossiae* in *The Orchid Review*. Suddenly *C. mossiae* possessed long, narrow leaves. Rolfe's broad-leaved plant, they declared, should be called *C. glandulosa* var. *sathyanaarayanae* S.Das & S.K.Jain. They later formally described this variety (Das & Jain 1976, publ. 1979), and also proposed *C. glandulosa* var. *bournei* S.Das & S.K.Jain. Remarkably, according to their interpretation, all the varieties of *C. glandulosa* should possess smooth, not glandular-dentate keels, differing from each other only in the number of keels. This was not quite unprecedented, as Fyson (1932) had already treated certain specimens with smooth keels as *C. glandulosa*.

Total confusion reigns

As a result, for those who had to base their research on the literature it became almost impossible to tell what *C. mossiae* and *C. glandulosa* really were. In recent years, as far as we were able

to establish, no living plants of *C. mossiae* could be found in collections outside South India, with the exception of a recently discovered plant in Sweden. Therefore it was hard to form an opinion, or even to notice that there was something amiss. In his book on the genus *Coelogyne*, Clayton (2002) followed Das & Jain, as did Seidenfaden (1999) in Matthew's *Flora of the Palni Hills*.

The confusion did not stop here, because as Christenson (2008) pointed out, plants of the artificial hybrid *C. Unchained Melody* (*C. cristata* x *C. flaccida*) are now often labelled *C. mossiae* or *C. glandulosa* (sometimes misspelled 'granulosa'). This hybrid has much larger, floppier flowers than *C. mossiae*, about 7cm across, with three deeply fringed keels on the lip. It is a completely different entity.

What of the Glasnevin material?

When we examined the material sent by Glasnevin, we were in for a big surprise. It was *C. birtella*, a species endemic to Borneo. So, not only was

SPECIES REFERENCES AND DESCRIPTIONS OF *Coelogyne nervosa* A. Rich. AND *C. mossiae* Rolfe

***Coelogyne nervosa* A. Rich.**

Ann. Sci. Nat., Bot., sér. 2, 15: 16 (1841). Type: *Perrottet s.n.*, Neddoubetta Nilgiris, India. Holotype P, photo seen; probable isotype K-LINDL! (specimen received from Achille Richard).

Synonyms: *Coelogyne corrugata* Wight, Icon. Pl. Ind. Orient. 5, t. 1639 (1852). Type: *Wight s.n.*. Holotype K!; isotype K-LINDL!.

Coelogyne glandulosa Lindl., Fol. Orchid.

5: 6 (1854), (p.p., only the part referring to floral characters), syn. nov. Type:

Wight s.n. (lectotype K-LINDL, here

chosen; probable isotype K!).

Pleione corrugata (Wight) Kuntze, Revis.

Gen. Pl. 2: 680 (1891). *Pleione glandulosa*

(A. Rich.) Kuntze, Revis. Gen. Pl. 2: 680

(1891). *Pleione nervosa* (A. Rich.) Kuntze,

Revis. Gen. Pl. 2: 680 (1891).

Description

Rhizome stout, creeping, 0.7cm thick, with hairy roots 0.3–0.4cm thick. **Pseudobulbs** yellowish-green, up to 0.5cm apart, obliquely ovoid to ovoid, 3–4cm tall, 1.5–2.5cm wide at the base, strongly corrugated, 2-leaved. **Cataphylls** not persistent.

Leaves dark green, elliptic, shortly petiolate, blade 8–13 × 1.8–3.5cm, only slightly plicate, fairly thin to coriaceous, densely many-veined, but underneath 7 or 9 veins more prominent; apex acute to acuminate; petiole 1–2.5cm long. **Inflorescence** erect, often arching at the top, usually arising from the developing shoot when the leaves are already largely developed, initially 6–10cm long, later due to the elongating peduncle 10–16cm long, sometimes with a tubular sterile bract under the rachis; rachis c.2.5cm long, 3–6 (usually 4)-flowered. **Floral bracts** 1.8–3cm long, oblong, subacute, soon caducous.

Flowers rather widely opening, 4–6cm wide, fragrant, pure white, lip with yellow keels and with orange or brown veins on the side-lobes; column creamy white with orange-brown wings. **Dorsal sepal** narrowly ovate-oblong, 2–3.2 × 0.6–1.1cm, acute to subacute. **Lateral sepals** ovate-oblong, 2.1–3.5 × 0.6–1.1cm, acute to subacute. **Petals** as broad as the lateral sepals or slightly broader, elliptic, 2.2–3.3 × 0.7–1.2cm, obtuse to acute. **Lip** 3-lobed, 1.7–2.9cm long, across the lateral lobes when flattened 1.2–1.7cm wide, with three narrow, glandular-denticulate keels

extending from the base of the lip to the basal part of the mid-lobe, often with two additional shorter keels below the mid-lobe; lateral lobes short but distinct, the forward projecting part c.0.2cm long, obtuse; mid-lobe triangular, 1.2 × 0.7cm. **Column** lightly curved, c.1.5cm. **Pedicel** c.1cm, ovary glabrous, 6-ribbed, c.0.7cm. **Fruit** ellipsoid, 6-ribbed, 3.5 × c.2cm.

Distribution India (Karnataka, Kerala, Tamil Nadu), endemic.

Flowering June–September in the wild, during and after the monsoon.

Habitat and cultivation Berkeley (1894) described the habitat of *Coelogyne nervosa* (as *C. corrugata*) in the Nilgiris as follows, 'On the huge granite boulders which stand up in great masses in the middle of the Walla-Ghaut river is found, growing in great profusion, *Coelogyne corrugata*, a plant we do not often see in English collections, but which is well worth growing. As this orchid is found where there is a tremendous rainfall, and considerable amount of heat, it is not advisable to grow it in too cool a house. It does very well in the intermediate house in England.' However, it also grows on trees and can occur high up in the mountains.

***Coelogyne mossiae* Rolfe**

Bull. Misc. Inform. Kew: 156 (1894).

Type: *Moss cult. s.n.*, 1890, Nilgiri Hills, India. Holotype K!.

Synonyms: *Coelogyne nervosa* auct. non A. Rich.: Wight, Icon. Pl. Ind. Orient. 5: t. 1638 (1852), syn. nov. Specimen: *Wight s.n.* (K!). (As explained, this plant may show signs of introgression with *C. nervosa* A. Rich.)

Coelogyne glandulosa var. *bournei* S Das & SK Jain, Bull. Bot. Surv. India 18: 244, fig. a–c, (1976, publ. 1979), syn. nov. Type: *Bourne 2941*. Holotype MH; isotypes K!, herb. Madras, Pres. College).

Coelogyne glandulosa var. *sathyaranayanae* S. Das & S.K. Jain, Bull. Bot. Surv. India 18: 242, fig. e, (1976, publ. 1979), syn. nov. Type: *Saldamba 5211* (holotype BLAT; photo at K!).

Description

Rhizome stout, creeping, 1–1.2cm thick, with hairy roots 0.25–0.4cm thick. **Pseudobulbs** yellowish-green, 0–2.5cm apart, obliquely ovoid, 4–10cm tall, 2.5–3cm wide at the base, smooth, longitudinally grooved, 2-leaved. **Cataphylls** not persistent. **Leaves** dark green, elliptic-oblong to very narrowly

elliptic, shortly petiolate, blade 11–29 × 3–4cm, slightly plicate, fairly thin to coriaceous, densely many-veined, but underneath 7 or 9 veins more prominent; apex acute to acuminate; petiole 0.7–2cm. **Inflorescence** erect, often arching at the top, arising from the developing shoot when the tips of the leaves are not yet, or just visible, initially 12–21cm long, later due to the elongating peduncle 16–32cm long, sometimes with a tubular sterile bract below the rachis; rachis 5–9cm long, 4–9-flowered. **Floral bracts** 2–4.5cm long, oblong, subacute, long persistent but eventually caducous. **Flowers** rather widely opening, c.4cm wide, fragrant, pure white, lip with an orange or deep yellow transverse band in front of the keels and with an orange patch on either side at the base; column creamy white, orange-brown in front below the stigma. **Dorsal sepal** ovate-oblong, 2.8 × 1.2–1.4cm, obtuse. **Lateral sepals** ovate-oblong, 2.9 × 1–1.2cm, obtuse. **Petals** broader than the lateral sepals, elliptic, 2.5–2.6 × 1.2–1.5cm, obtuse. **Lip** 3-lobed, 1.8cm long, across the lateral lobes when flattened 1.3cm wide, with two narrow, entire, glabrous keels extending from the base of the lip to the basal part of the mid-lobe, sometimes with a shorter third keel in between, or with two additional, very short lateral keels just below the mid-lobe; lateral lobes short but distinct, the forward projecting part c.0.2cm long, broadly rounded; mid-lobe ovate, 1.1 × 0.8cm. **Column** lightly curved, c.1.6cm. **Pedicel** 1.5–2cm, ovary glabrous, 6-ribbed, 0.7–1cm. **Fruit** ellipsoid, 6-ribbed, 3.5–4 × c.2cm.

Distribution: India (Kerala, Tamil Nadu), endemic.

Flowering March–May in the wild, before the onset of the monsoon. Recently observed as early as late January (effect of global warming?), rarely also in August.

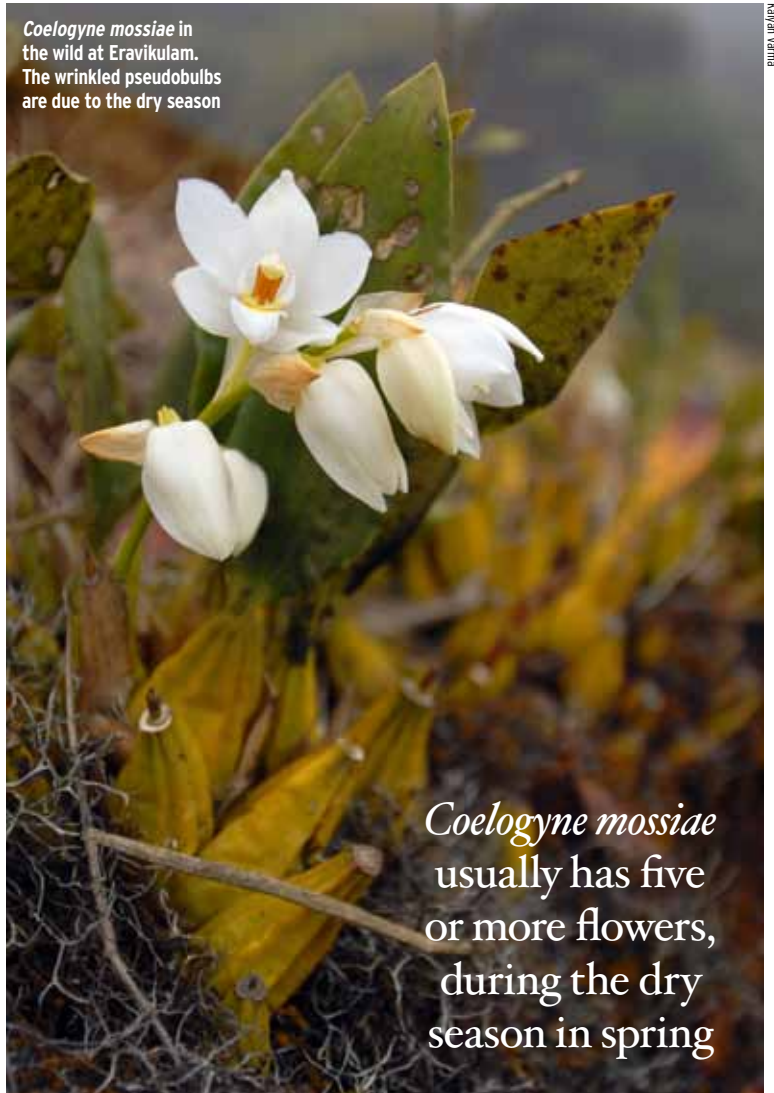
Habitat Berkeley (1894), referring to *C. mossiae* as *C. glandulosa*, described its habitat in the Nilgiris, 'About 3,000ft higher [than *C. corrugata*] in the same range on the granite precipices is found *C. glandulosa*. This is also a nice orchid, but very difficult to collect, as it grows on the steepest rocks, clinging in great masses. The plants are always kept wet at the roots by the water running down the face of the rocks. This plant is found where there is frost in winter, but considerable heat in the summer.'

this specimen not the actual type of *C. mossiae*, it was not even an Indian orchid. *Coelogyne birtella* is a locally common species in Borneo, and was described in 1931, so it was probably still an undescribed species when someone misidentified the Glasnevin plant as *C. mossiae*. It goes without saying that this misleading specimen has now been removed from the type sheet of *C. mossiae*, as it should never have been there in the first place.

So, what is *Coelogyne mossiae*?

The material at RBG Kew that we have identified as *C. mossiae* (much of it had been labelled *C. glandulosa*), shows a continuous variation from rather short- and relatively broad-leaved specimens to long- and relatively narrow-leaved specimens, as seen in the description (left). Presumably, plants growing fully exposed on bare rock may be more compact. They do not differ in other respects, and the variation appears as a continuum. The leaves are, however, never as narrow as in *C. birtella*, nor do they have such long petioles. Das & Jain in their 'emended' description of *C. mossiae* did not include the leaf measurement of the Glasnevin *C. birtella*, but instead cite a collection *Shetty 31780* (MH), which we have not seen, and which should have leaves 30–34 x 2.5–3.5cm. This is slightly narrower and longer than any specimen we have examined. Usually, *C. mossiae* has two keels, which are always smooth at least in the basal part, but occasionally there is a much shorter third keel, or there can be two very short additional lateral keels. These variations all occur within the same population, or at least in all the plants collected for RBG Kew near Kodaikanal by Lady Bourne between 1896 and 1899. There can be little doubt that this is just part of the normal variability of this species. Such variation in the number of keels is also seen in other *Coelogyne* species,

Coelogyne mossiae in the wild at Eravikulam. The wrinkled pseudobulbs are due to the dry season



Coelogyne mossiae usually has five or more flowers, during the dry season in spring

such as *C. nervosa*, which may have three equally long keels or five keels, three long and two short.

A flowering plant illustrated as *C. mossiae* in Matthew (1996, fig. 705a) belongs to a totally different species, possibly *C. stricta* (D. Don) Schltr., in section *Elatae*. It may represent the first record of that species from south India, if it was really collected there.

Summary of differences

C. mossiae Rolfe differs from *C. nervosa* A. Rich. in the following characters:

1. Keels two, sometimes with a much shorter third keel or with two very short additional lateral keels, the middle keel, if present, not reaching the base of the mid-lobe; keels smooth and glabrous, at least in the basal part (*C. nervosa*: keels three or five, all reaching the base of the mid-lobe, with fine irregular teeth along their entire length).
2. Pseudobulbs not corrugated, or somewhat corrugated in the basal part only (pseudobulbs strongly corrugated all over).



Plants collected on cliffs near Bangitappal for the Orchidarium at Avalanche. On the left is *C. mossiae*, notice the smooth pseudobulbs, the larger plant on the right maybe a different species

3. Pseudobulbs 4–10cm (up to 4cm).
4. Leaves (including the petiole) 12–31cm long (9–15.5cm long).
3. Inflorescence usually has five or more flowers (usually has three or four flowers).
4. Leaves of the flowering shoot hardly developed at flowering time (leaves of the flowering shoot usually already largely developed at flowering time).
5. Petals clearly broader than the lateral sepals (petals only slightly broader than or as broad as the lateral sepals).
6. Sepals and petals obtuse (sepals and petals usually acute).
7. Lip without coloured veins on the lateral lobes (lip with orange or brown veins on the lateral lobes).
8. Mid-lobe of the lip ovate (mid-lobe triangular to ovate).
9. Winter/spring flowering, during the dry season (late-summer flowering, during the rainy season).
10. Occurring above 2,000m

(occurring from 1,000m upwards, but exact and reliable information on the altitudinal limits is hard to find).

Indeterminate plants

Now that we have established the true identities of *C. mossiae* and *C. glandulosa* by going back to the type specimens, one may think that all the problems are solved. But nature is not so straightforward. There are still plants in the wild and in cultivation that are hard to place, plants that show characters of both *C. mossiae* and *C. nervosa*, and possibly even some characters that occur in neither. One such plant may be the one pictured on the right in the photograph above. The two specimens were collected for the Orchidarium at Avalanche in Tamil Nadu from cliffs near Bangitappal. This plant is more robust than *C. nervosa*, with much larger, longitudinally grooved pseudobulbs, but with flowers more

like *C. nervosa* in shape than like *C. mossiae*. But the plant flowered several months before the monsoon, not during or after, as *C. nervosa* does, and the inflorescence carries more than the usual three to four flowers of *C. nervosa*. Unfortunately, the resolution of the image is not sufficient to determine the number or nature of the keels on the lip. The plant that was illustrated by Abraham & Vatsala (1981) under the name of *C. glandulosa* seems to belong here. It has three dentate keels like *C. nervosa*, and much narrower petals than *C. mossiae*, but the habit is that of a large, long-leaved *C. mossiae*. No information is given about its provenance. It should be noted that the range of variability of *C. mossiae* encompasses both types of plant shown in the photograph.

However, such indeterminate plants are extremely rare, according to local conservationists. We can not

really tell what their status is. Do they represent a separate, as yet unnamed species? Are they natural hybrids? Are they a form of *C. nervosa*? At present we do not have enough information to decide. Only field work and genetic testing may one day tell us more.

Could they be *C. glandulosa*?

How do we know that Lindley's *C. glandulosa* was not one of those indeterminate plants? After all, it is only definitely known from a single flower, and this might have been from one of those plants that we can not place. So, how can we be sure that these indeterminate plants are not *C. glandulosa*? First, all the plants collected by Wight that possess three glandular-dentate keels have the typical habit of *C. nervosa*; there is no deviating plant among them. Second, Wight gave May–June as the flowering time for his *C. “nervosa”* Wight. We recall that what Wight included under this name came from two localities, Pycarrah and Avalanche, and that these collections in our opinion represent two species, *C. nervosa* and *C. mossiae*. We know that *C. nervosa* came from Pycarrah, so it seems reasonable to assume that Wight's *C. mossiae* came from Avalanche. The flowering period of *C. nervosa* is June–September, while that of *C. mossiae* is March–May. This is consistent with our interpretation. However, the indeterminate plants flower at the same time as *C. mossiae*, so they could not have been collected in June. But then all the material of *C. “nervosa”* Wight would have been collected in May, unless Wight had managed to include not two but three entities under *C. “nervosa”* – *C. mossiae*, *C. nervosa* and the indeterminate plant – and there is no evidence for that.

Systematic position

It seems unnatural to us to place *Coelogyne mossiae* and *C. nervosa* in

different sections (*Lentiginosae* and *Coelogyne* respectively), as proposed by several authors, based on the single character of smooth versus dentate keels. We would consider both to belong to section *Coelogyne*.

The future of both species

While *Coelogyne nervosa* is reasonably widespread in cultivation, it seems that at present *Coelogyne mossiae* has disappeared almost entirely from collections in Europe, probably because it is more difficult to grow. This is a great pity, since it is a beautiful species, with well-presented, full, white flowers, often produced on a fairly compact plant. As it grows on rocks and low trees at around 2,000m and higher, it would need plenty of light, low night temperatures, excellent drainage, a strict and cool resting period, and ample water during the growing season. It is still cultivated, and is being propagated, in India (Sebastinraj *et al.* 2006), and perhaps one day seed-grown plants can be obtained from there.

As Matthew (in Seidenfaden 1999) reports, it is now a rare species in the wild, having been decimated by over-collecting (possibly for medicine rather than horticulture). Habitat destruction is presumably another important factor in the decline of *C. mossiae*, since much of the original vegetation of the Nilgiri and Palni mountains has been destroyed and converted to agricultural use since the early 19th century. Invasive introduced tree species that are not good orchid hosts are also a major problem, and global warming could be a serious cause for concern. ■

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ANDRÉ SCHUITEMAN is senior researcher in *Orchidaceae* at the Royal Botanic Gardens, Kew; among his main research interests are the orchids of Southeast Asia and New Guinea

MALCOLM PERRY has been an orchid grower for 40 years and now specialises in *Coelogyne*, *Bulbophyllum* and *Dendrobium*

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