**ABSTRACT**

_Pseudolaelia_ is a genus endemic to eastern Brazil. The species are often epiphytes on Velloziaceae or are saxicolous, predominantly on granitic and gneissic outcrops (inselbergs) in the Atlantic Forest and, less often, in the campos rupestres (dry, rocky grasslands) of the cerrado (savanna) and caatinga (shrublands). The genus is characterized by homoblastic pseudobulbs, long rhizomes, long and usually slender inflorescences, racemes or panicles, bearing pink, yellow or whitish flowers, labellum often 3-lobed, with simple, fimbriate or erose margin, semi-cylindrical or claviform column, cuniculus present. Twelve species are recognized; seven binomials are placed in synonymy. Of those seven, three are considered illegitimate because, contrary to the International Code of Botanical Nomenclature guidelines, there are no corresponding type specimens deposited in a recognized herbarium, and those three were therefore lectotypified. We present descriptions of, illustrations of and a dichotomous key to _Pseudolaelia_ species, as well as addressing their taxonomy, ecology, conservation and geographic distribution.

**Key words**: Eastern Brazil, campo rupestre, conservation, inselberg, taxonomy

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**Introduction**

_Pseudolaelia_ Porto & Brade is a member of the subfamily Epidendroideae, tribe Epidendreae, subtribe Laeliinae, and was defined as a monophyletic genus by van den Berg et al. (2000, 2009a). The genus is endemic to eastern Brazil, and its species are predominantly epiphytes on Velloziaceae, or are saxicolous, on quartzite outcrops in the rocky grasslands of the caatinga (shrublands) and of the cerrado (savanna), or on granitic and gneissic outcrops (inselbergs) of the Atlantic Forest, occurring from sea level to elevations of nearly 1500 m (Menini Neto 2011).

The _Pseudolaelia_ genus was established by Porto & Brade (1935), when they described _P. corcovadensis_ (originating from the state of Rio de Janeiro, supposedly from the Morro do Corcovado—the hill upon which the “concrete Christ”, or “Christ the Redeemer”, statue stands—in the city of Rio de Janeiro) and transferred Schomburgkia vellozicola Hoehne, described a year earlier by Hoehne (1934), based on a plant from the state of Espírito Santo cultivated in the São Paulo State Orchid House, to the new genus, within which it is now known as _P. vellozicola_ (Hoehne) Porto & Brade.

Ruschi (1946) established the genus _Renata_, describing the species _R. canaanensis_ Ruschi, and publishing, in the same decade, _P. dutrae_ Ruschi (Ruschi 1949), both from the mountains of the state of Espírito Santo. Pabst (1967) described _P. geraensis_, based on material from the municipality of Teófilo Otoni, in the state of Minas Gerais. The same author published _P. irwiniana_ (from the Planalto de Diamantina), _P. cipoensis_ (from the Serra do Cipó) (Pabst 1973) and _P. citrina_ (from the eastern part of the state of Minas Gerais) (Pabst 1976). Alves (1992) described _P. lyman-smithii_ R.J.V. Alves, which was later synonymized with Epidendrum campestre Lindbl. by Barros (2002). Barros (1994) transferred _Renata canaanensis_ to _Pseudolaelia_, a position that was later supported by molecular analyses (van den Berg et al. 2000; 2009a).

In the last decade, 11 taxa were described: 10 species and one natural hybrid. Of those 11, three are considered illegitimate because there are no corresponding type specimens deposited in a recognized herbarium: _P. calimaniorum_ V.P. Castro & Chiron; _P. oliveirana_ V.P. Castro & Marçal; and _P. regentii_ V.P. Castro & Marçal.

Frey (2003; 2005a; 2005b; 2005c) described four taxa from the state of Espírito Santo: _P. brejetubensis_ and...
Pseudolaelia

Material and methods

Among the following herbaria (acronyms follow Holmgren et al. 1990), there were some that we visited (*), some from which we borrowed material (#) and some whose pictures or records we analyzed via the Internet (@): the Herbarium of which we borrowed material (#) and some whose pictures...

Results and discussion

Pseudolaelia

Dichotomous key to the species of Pseudolaelia

1. Plant with cylindrical foliate stem projection at the apex of the pseudobulb, bearing 11–19 leaves arranged from the apex of the pseudobulb throughout the projection ................................................................. 4. *P. canaanensis*

1. Plant without cylindrical foliate stem projection at the apex of the pseudobulb, leaves 2–7, arranged from the middle to the apex of the pseudobulb.

2. Labellum entire or 2-lobed.

3. Sepals and petals cream-colored, labellum white or white with dark-red stripes, margin fimbriate, disk with several longitudinal lamellae pilose, divergent from the base up to the apex, flowers odoriferous .......... 1. *P. aromatica*

3. Sepals and petals yellow, labellum white with vinaceous margin and ribs, margin erose, disk with two lamellae longitudinal divergent, evolving to prominent verrucose ribs near the middle of the labellum, flowers odorless ................................................................................................................................................................. 2. *P. ataleiensis*

2. Labellum 3- or 4-lobed.

4. Plants up to 8 cm in height, excluding the inflorescence ......................................................... 6. *P. citrina*

4. Plants over 15 cm in height, excluding the inflorescence.

5. Labellum with isthmus wider than long.

6. Labellum with longitudinal lamellae originating from two basal calli, parallel, forming a median groove, arranged up to near the apex of the median lobe.

7. Plants with rhizome more than 3.3 cm long, pseudobulbs more than 4.9 cm long, inflorescence more than 60 cm long .................................................................................................................. 9. *P. geraensis*

7. Plants with rhizome no more than 2.6 cm long, pseudobulbs no more than 3.5 cm long, inflorescence no more than 45 cm long .................................................................................................................. 5. *P. cipoensis*

6. Labellum with longitudinal lamellae arranged from the base up to near the apex of the median lobe.

8. Pseudobulbs with 3-5 lanceolate leaves, inflorescence more than 45 cm in height ........................................ 7. *P. corcovadensis*

8. Pseudobulbs with no more than 3 linear-lanceolate leaves, inflorescence no more than 30 cm in height .................................................................................................................. 10. *P. irwindiana*

5. Labellum with isthmus longer than wide.

9. Flowers yellow with median lobe of the labellum vinaceous, lateral lobes of the labellum no more than 2 mm long ................................................................................................................................. 11. *P. pitengoensis*

9. Flowers white or pink, lateral lobes of the labellum more than 5 mm long.

10. Margin of the median lobe of the labellum markedly undulate, cuniculus protuberant, externally green ................................................................................................................................. 3. *P. brejetubensis*

10. Margin of the median lobe of the labellum plain, cuniculus not protuberant, externally with coloration similar to the floral parts.

11. Labellum with the apex of the median lobe frequently rounded, rarely emarginate or apiculate, margin entire, longitudinal lamellae usually glabrous, conspicuous along the entire length of the labellum ................................................................. 12. *P. velozicola*

11. Labellum with the apex of the median lobe deeply emarginate, rarely obtuse, margin erose or fimbriate, longitudinal lamellae pubescent, with apex verrucose, standing out near the base of the median lobe .................................................. 8. *P. dutrae*


Fig. 4-12.

Herb 20–35 cm in height. Rhizome 1–6 cm long, dark to brownish green, cataphylls ovate, ca. 8 × 5 mm, apex acute. Pseudobulb fusiform, 7–12 cm long, yellow-green, 5 internodes, cataphylls lanceolate, ca. 2–3 × 2 cm, apex acute. Leaves 3–6, erect, arranged from the middle to the apex of the pseudobulb, lanceolate, 10–25 × 2–2.5 cm, light green, coriaceous, margin serrulate, apex acute. Panicle ca. 70 cm long, ca. 110 flowers; peduncle ca. 35 cm long. Flowers odoriferous, pedicel and ovary ca. 2.5 cm long; dorsal sepal oblong-lanceolate, ca. 1.4 × 0.3 cm, cream-colored, concave, margin slightly convolute, apex acute; lateral sepals oblong-lanceolate, ca. 1.3 × 0.45 cm, cream-colored, asymmetrical, concave, margin slightly convolute, apex acute; petals spatulate, ca. 1.4 × 0.25 cm, cream-colored, asymmetrical, apex acute; labellum entire, ca. 1 × 0.8 cm, white or white with dark-red stripes, apical half reniform, margin fimbriate, apex emarginate, disk of the labellum fleshy, with several lamellae longitudinal, pilose, divergent from the base up to near the apex; cuniculus externally inconspicuous; column ca. 5.5 mm long, base greenish, apex white; anther reddish black;
Taxonomic revision of *Pseudolaelia* Porto & Brade (Laeliinae, Orchidaceae)

*Pseudolaelia aromatica* is similar to *P. ataleiensis*, but can be differentiated from this and other species by the cream-colored flowers, labellum entire, completely white or white with dark-red stripes, with margin fimbriate and inflorescence in wide panicle, with well-developed secondary branches, in addition to the odor exuded by the flowers, a characteristic that inspired the name and is not observed in any other species of the genus.


Figures 1-3. Geographic distribution of the species of *Pseudolaelia*.
an unprotected area, in a region where granite extraction is one of the main economic activities, and the species should therefore be categorized as critically endangered (B2ab(iii)) (IUCN 2001).

_Pseudolaelia ataleiensis_ bears flowers with similar coloration and slightly similar morphology to those of _P. canaanensis_ and _P. pitengoensis_. However, it can be differentiated from _P. canaanensis_ by the smaller size and absence of foliate apical projection in the pseudobulb and from _P. pitengoensis_ by the larger size and longer inflorescence with a larger number of flowers, in addition to the labellum entire (versus 3-lobed with poorly developed lateral lobes).


_Type_: Brazil, Espírito Santo, Brejetuba, Monte Feio, 25/VI/2001, Frey & Perim 30 (Holotype: R!; Isotype: MBML!).


_Type_: Brazil, Espírito Santo, Brejetuba, Monte Feio, M.Frey & L.C.F. Perim 231, 1/V/2002 (Holotype: MBML!), _syn nov._ Fig. 22-30.

_Herb._ ca. 15 cm in height. Rhizome 1.5-2 cm long, green, cataphylls ovate, ca. 5 × 3 mm, apex acute. Pseudobulb fusiform, ca. 3.5 cm long, yellowish green to vinaceous, 3-5 internodes, cataphylls lanceolate, ca. 1 × 0.6 mm, apex acute. Leaves 2-5, curved, arranged from the middle to the apex of the pseudobulb, linear, 10-12 × 1.2-1.5 cm, discolorous, adaxially purplish green, abaxially purple, coriaceous, margin serrulate, apex acute. Panicle 35-40 cm long, 12-15 flowers; peduncle 22-25 cm long. Flowers odorless, pedicel and ovary ca. 1.9 cm long; dorsal sepal oblong-obovate, 1.1-1.4 × 0.3-0.4 cm, white to pink with lines dark pink, slightly concave, apex acute; lateral sepals oblong-obovate, 1.1-1.4 × 0.3-0.4 cm, white to pink with lines dark pink, slightly concave, apex acute; petals linear-oblanceolate, ca. 1.1 × 0.3 cm, asymmetrical, light yellow, apex acute; lateral sepals oblanceolate, 1.1-1.4 × 0.1 cm, asymmetrical, light yellow, apex acute; petals longitudinally striped in pink, lateral lobes of the labellum large, with obtuse apex, and medium lobe with margin markedly undulate, in addition to the cuniculus environment. Although the flowers of _P. x perimii_ are slightly bigger, the color and floral morphology are practically identical. Furthermore, the presence of the externally distinct green nectary (an important diagnostic characteristic of _P. brejetubensis_), although less developed, confirms that the specimens of _P. x perimii_ should be considered within the natural morphological variation in _P. brejetubensis_. _Pseudolaelia brejetubensis_ and the supposed hybrid were not seen in the field, but the observation of populations of other species and of herbarium material demonstrates that the morphological characters used by Frey (2005) correspond to interpopulation and intrapopulation polymorphism in _Pseudolaelia_; therefore, _P. x perimii_ is synonymized with _P. brejetubensis._


_Fig._ 31-43.

_Herb._ 20-50 cm in height. Rhizome 5-13 cm long, light green, cataphylls ovate to tubular, 0.4-1 × 0.4-0.7 cm, apex acute. Pseudobulb fusiform, 6-36 cm long, yellowish green, 5-8 nodes, apex with stem projection foliate cylindrical, 8.5-15.3 cm long, partially intumesced with cataphylls ovate to lanceolate, 1.7-4.1 × ca. 1.5 cm, apex obtuse to acute. Leaves 11-19, patent, arranged from the apex of the pseudobulb, throughout the stem projection, linear to lanceolate, 1.5-19.5 × 0.7-3.1 cm, light green, chartaceous, margin finely serrulate to entire, apex acute. Panicle 37-70 cm long, branches of the inflorescence 6-15.5 cm long, ca. 90 flowers; peduncle 34-50 cm long. Flowers odorless, pedicel and ovary 1.1-1.6 cm long; dorsal sepal oblong-obovate, ca. 1 × 0.3 cm, light yellow, margin convolute near the apex, with a thickened region, slightly verrucose, brown, apex acute; lateral sepals oblong-obovate, ca. 1.1 × 0.3 cm, asymmetrical, light yellow,
Taxonomic revision of *Pseudolaelia* Porto & Brade (Laeliinae, Orchidaceae)

margin convolute near the apex, with a thickened region, slightly verrucose, brown, apex acute; petals spatulate, ca. 1.1 × 0.3 cm, light yellow, asymmetrical, margin slightly undulate near the acute apex; labellum entire, ca. 7 × 5 mm, margin erose, apex rounded or emarginate; disk of the labellum fleshy, with lamellae longitudinal, divergent, irregular, light yellow to gold yellow, sometimes with the apex maculate in red, from the base up to near the apex of the labellum; cuniculus externally inconspicuous; column ca. 5-7 mm long, yellowish green; anther reddish black; pollinia ca. 1 mm, caudicle ca. 1 mm long. Fruits globose, ca. 1 cm long, dark green.


**Etymology**: reference to the Vale do Canaã, state of Espírito Santo, type locality of the species.

**Geographic distribution and habitat**: the species occurs on the inselbergs of the mountainous region, in the north-western and northern parts of the state of Espírito Santo and eastern part of the state of Minas Gerais (Figure 1), at 550-1300 m above sea level. It forms large populations with many saxicolous individuals among mosses and lichens.

**Conservation status**: classified as vulnerable in the state of Espírito Santo (Kollmann et al. 2007) and in Brazil as a whole (Biodiversitas 2005); listed as data deficient on the Brazilian Ministry of the Environment list of endangered species (MMA, 2008), as well as on the list of the rare plants of Brazil (van den Berg et al. 2009b). The inclusion of this species on the aforementioned lists is due to the fact that it was long considered endemic to the Vale do Canaã, municipality of Santa Teresa, state of Espírito Santo. However, several surveys carried out in the last ten years have increased the knowledge of its geographic distribution, which is now known to include the eastern part of the state of Minas Gerais. Therefore, this species should be globally categorized as least concern (IUCN 2001).

**Pseudolaelia canaanensis** was described in the genus *Renata* by Ruschi (1946), and was later transferred to *Pseudolaelia* by Barros (1994). Although its floral morphology is similar to that of *P. aromatica* and *P. atateiensis*, it can be easily differentiated from the other species of *Pseudolaelia* by the more robust appearance, greater number of leaves (11-19), the stem projection at the apex of the pseudobulb, with leaves distributed throughout, and by the inflorescence in wide panicule, usually with more than 80 small flowers, light yellow to gold yellow, the labellum spotted with red in some specimens.


Fig. 44-54.

Fig. 55-71.

Herb 5-8 cm in height. Rhizome 0.6-2.9 cm long, green to vinaceous, cataphylls ovate, lanceolate to tubular, ca. 3 × 5 mm, apex rounded. Pseudobulb subpyriform to pyriform, 1.2-4.3 cm long, green to vinaceous, 2-4 nodes, cataphylls ovate or lanceolate, 0.9-1.7 × 0.6-0.8 cm, apex acute. Leaves 3-5, patent to curved, arranged from the middle to the apex of the pseudobulb, linear, 2-13.5 × 0.2-0.8 cm, dark green to vinaceous, coriaceous, margin entire, apex acute. Panicle ca. 14-44.5 cm long, 6-34 flowers; peduncle ca. 7.5-24.5 cm long. Flowers odorless, pedicel and ovary 1.1-2.9 cm long; dorsal sepal elliptic to oblanceolate, ca. 0.9-1.1 × 0.2-0.3 cm, greenish yellow or internally yellow, externally greenish yellow, green or green with vinaceous cast, apex acute; lateral sepals 0.2-0.3 cm, greenish yellow or internally yellow, externally green to vinaceous, margin entire, apex acute. Flowers odorless, pedicel and ovary 1.1-2.9 cm long; dorsal sepal elliptic to oblanceolate, ca. 0.9-1.1 × 0.2-0.3 cm, greenish yellow or internally yellow, externally greenish yellow, green or green with vinaceous cast, apex acute; lateral sepals 0.2-0.3 cm, greenish yellow or internally yellow, externally green to vinaceous, margin entire, apex acute. Pedicel and ovary 1.1-2.9 cm long; dorsal sepal elliptic to oblanceolate, ca. 0.9-1.1 × 0.2-0.3 cm, greenish yellow or internally yellow, externally greenish yellow, green or green with vinaceous cast, apex acute; lateral sepals 0.2-0.3 cm, greenish yellow or internally yellow, externally green to vinaceous, margin entire, apex acute.

Pseudolaelia maquijiensis is the smallest species of the genus, reaching a height of less than 10 cm, excluding the inflorescence. It also possesses the smallest flowers of the genus, with coloration predominantly yellow, sometimes greenish, and might have sepals with vinaceous cast and, in some populations, labellum with pink cast. Frey (2005), when describing Pseudolaelia maquijiensis, used as distinctive characters the dimensions of vegetative organs (such as the rhizome and pseudobulbs) and reproductive organs (such as the inflorescence, sepals, petals and labellum), stating that P. maquijiensis would be larger than P. citrina in various aspects. However, surveys conducted at the type localities of both species clearly indicate that there might have been overlap of these dimensions and the characteristics pointed out by Frey (2005) are part of the natural variation in different populations of a same species. Similarly, the distinction of P. pavapolitana by Frey (2005) was supported by the smaller size and by the coloration of the labellum in comparison with P. citrina. The analyses of both types and the similar floral morphology indicate conspecificity. Therefore, P. maquijiensis and P. pavapolitana are synonymized with P. citrina.


Herb 15-25 cm in height. Rhizome 1.9-2.7 cm long, green, cataphylls ovate, ca. 2 × 0.7 cm, apex acute. Pseudobulb fusiform, 2.7-5 cm long, green, 4 internodes, cataphylls lanceolate, ca. 2.5 × 1 cm, apex acute. Leaves 3-5, erect to slightly curved, arranged from the middle to the apex of the pseudobulb, lanceolate, 7.7-22 × 0.6-1.1 cm, light...
Taxonomic revision of *Pseudolaelia* Porto & Brade (Laeliinae, Orchidaceae)

to dark green, coriaceous, apex acute. Raceme or panicle 45–60.5 cm long, 7–12 flowers; peduncle 40–52.5 cm long. Flowers odorless, pedicel and ovary ca. 1.5 cm long; dorsal sepal elliptic, 1.1–2.2 × 0.5–0.8 cm, pink, apex obtuse; lateral sepals elliptic, 1.2 × 0.5–0.9 cm, pink, asymmetrically, concave, apex acute; petals elliptic, 1.1–2.1 × 0.6–0.9 cm, pink, slightly asymmetrically, apex rounded; labellum 3-lobed, 0.8–1.5 × 0.8–1.5 cm, lateral lobes ligulate, 1.4–4.8 × 1.7–3.6 mm, pink, apex rounded, median lobe suborbicular, 0.6–1.1 × 0.9–1.4 cm, pink with lines dark pink, apex rounded, disk of the labellum fleshy, with 3–9 lamellae yellow from the base up to near the middle of the median lobe; cuniculus externally inconspicuous; column 7–8 mm long, pink with apex whitish; anther green; pollinia ca. 1 mm, caudicle ca. 1 mm long. Ripe fruits light green, globose, ca. 2 cm long.


Etymology: reference to the Morro do Corcovado, municipality of Rio de Janeiro, supposed type locality of the species. Geographic distribution and habitat: this species occurs in the mountainous region and northern part of the state of Rio de Janeiro, supposed type locality of the species.

Conservation status: classified as endangered for in state of Minas Gerais (Biodiversitas 2007). Of the four records for that state, one of the populations in the municipality of Juiz de Fora has already been practically destroyed because it is located in an active quarry. The species should be globally categorized as endangered (B1ab(iii)B2a), according to the IUCN criteria (IUCN 2001).

Pseudolaelia corcovadensis is most similar to P. cipoensis, P. geraensis and P. irwiniana, due to the wide sepals and petals, and can be differentiated by the larger flowers, the presence of 5–9 well-developed yellow lamellae in the disk of the labellum, and the markedly undulate margin of the labellum. It has a distinctive geographic distribution, on granitic inselbergs in the southeastern part of the state of Minas Gerais and in the state of Rio de Janeiro, whereas the other species occur in the central and northeastern parts of Minas Gerais, P. cipoensis and P. irwiniana occurring exclusively in rocky grasslands.


Fig. 84-98.

Herb 20–30 cm in height. Rhizome 0.5–8 cm long, green to brownish vinaceous, cataphylls ovate, ca. 1.5 × 1 cm, apex acute. Pseudobulb fusiform to subpyriform, 3–10.5 cm long, green to brownish, 4–5 internodes, cataphylls ovate to lanceolate, 1.6–4 × 1–1.5 cm, apex acute. Leaves 3–7, erect to slightly curved, arranged from the middle to the apex of the pseudobulb, lanceolate, 7.4–33.4 × 0.7–2.2 cm, dark green to vinaceous cast, coriaceous, serrulate margin, apex acute. Raceme or panicle with short branches, 34.5–80 cm long, 20–110 flowers; peduncle 19–60.5 cm long. Flowers odorless, pedicel and ovary 1.1–2.6 cm long; dorsal sepal oblong-lanceolate, 1.1–2.8 × 0.2–0.5 cm, white to dark pink, slightly asymmetrical, slightly concave, apex acute; lateral sepals oblong-lanceolate, 1.1–2.7 × 0.3–0.6 cm, white to dark pink, asymmetrical, concave, apex acute; petals spatulate to oblong-lanceolate, 1.2–2.9 × 0.2–0.6 cm, white to dark pink, slightly asymmetrical to asymmetrical, apex acute to rounded; labellum 3-lobed, 10–17 × 1.1–1.3 cm, lateral lobes linear to oblong, 1.5–9.2 × 0.5–2 mm, white to dark pink, apex acute to rounded, median lobe reniform to suborbicular, 0.3–0.9 × 0.5–1.1 cm, white to dark pink, striped with pink to dark pink, margin erose or fimbriate, apex deeply emarginate, rarely obtuse, disk of the labellum fleshy, pilose, with two lamellae from the base, forming several longitudinal lamellae with apex verrucose, which stand out near the base of the median lobe, white to yellow; cuniculus externally inconspicuous; column ca. 6–7 mm long, white, green to pink green, sometimes with apex purplish; anther purple; pollinia ca. 1 mm, caudicle ca. 1 mm long. Ripe fruits globose, 1.4–2 cm long, green.


Minas Gerais: Aimorés, inselberg contiguous to the Pedra Lorena, near the Usina de Aimorés, fl., Menini Neto et al. 762 (CESJ, RB).

Etymology: homage to Eurico Gaspar Dutra, president of Brazil at the time the species was described.

Geographic distribution and habitat: the species forms large populations in granitic outcrops predominantly in the state of Espirito Santo, as well as the state of Minas Gerais (Figure 2), at a wide range of elevations, from 140 m to 1300 m above sea level. Epiphyte on Velloziaceae, rarely saxicolous. Conservation status: because of its wide distribution and great number of known populations, usually with numerous individuals, this species should be categorized as least concern (IUCN 2001).
*Pseudolaelia dutrae* displays strong floral polymorphism and greater similarity with *P. velozicola*. It can be differentiated from the latter by the usually larger size, inflorescence frequently in panicle with secondary branches shorter and fairly compact (vs. frequently in raceme), flowers with sepals and petals usually narrower and median lobe of the labellum with margin markedly erose or fimbriate, apex deeply emarginate, longitudinal lamellae with verrucose apex, which stand out near the base of the median lobe (vs. labellum with margin entire, apex frequently rounded and longitudinal lamellae that stand out throughout all its extension). Chirol & Castro Neto (2004) described *P. freyi* based in material originated from Monte Feio, in the municipality of Brejotuba (state of Espírito Santo), and differentiated it from *P. dutrae* by the smaller size, shorter inflorescence, in raceme (or with few branches), shorter rhizome, callosity divided in crest at half of the length (vs. at the apex), labellum with yellow isthmus (vs. white) and lateral lobes of the labellum shorter than wide. A population analysis in Brejotuba at the peak of flowering demonstrated that these characteristics are variable. The number of branches of the inflorescence also varies within the population in Brejotuba and in other populations. The other populations of *P. dutrae* also display strong floral intrapopulation and interpopulation polymorphism, as shown by Menini Neto (2011) in a study of the flower morphometry. Similarly, the study of genetic diversity did not indicate that *P. dutrae* and *P. freyi* are distinct species (Menini Neto 2011). Therefore, we here synonymize *P. freyi* with *P. dutrae*.


Herb 25-35 cm in height. Rhizome 3.3-18.5 cm long, green to yellowish green, cataphylls tubular, 0.9-1.9 × ca. 0.9 cm, apex acute. Pseudobulb fusiform, 4.9-9.3 cm long, light to yellowish green, 4 internodes, cataphylls lanceolate, ca. 4 × 1.5 cm, apex acute. Leaves 4-7, erect, arranged from the middle to the apex of the pseudobulb, elliptic to lanceolate, 9.8-23.6 × 0.87-3.4 cm, green to yellowish green, coriaceous, margin serrulate, apex acute to asymmetrical. Raceme 61-166 cm long, 10-25 flowers; peduncle 60-149 cm long. Flowers odorless, pedicel and ovary 1.5-2.6 cm long, pink; dorsal sepal ob lanceolate, 1.4-2 × 0.5-0.7 cm, white to pink, slightly asymmetrical, apex acute; lateral sepals ob lanceolate, 1.4-2 × 0.6-0.8 cm, white to pink, asymmetrical, concave, apex acute; petals spatulate, 1.2-2 × 0.5-0.8 cm, white to pink, asymmetrical, apex acute; labellum 3-lobed, 0.9-1.4 × 0.8-1.3 cm, lateral lobes triangular, 0.5-4 × 0.4-2.3 mm, white to pink, apex acute, median lobe reniform, ca. 0.5 × 1 cm, white to pink with dark pink lines, apex emarginate, disk of the labellum fleshy, with 2 parallel basal calli diverging into several poorly developed lamellae up to near the median lobe; cuniculus externally inconspicuous; column 5-6 mm long, pink with green cast; anther green; pollinia ca. 1 mm, caudicle ca. 1 mm long. Ripe fruits globose, ca. 1.8 cm long, green.


Etymology: reference to the state of Minas Gerais, where the species was first observed.

Geographic distribution and habitat: distributed from the south of the state of Bahia up to the border with the state of Espírito Santo, extending to the northeastern and central parts of the state of Minas Gerais State (Figure 2). Saxicolous, on the granitic inselbergs in the state of Bahia and northeastern part of the state of Minas Gerais, or epiphyte on *Vellozia plicata*, on outcrops in the central-east region of the state of Minas Gerais and mountainous region of the state of Espírito Santo at elevations ranging from 300 m to 1400 m above sea level.

Conservation status: although this species is widely distributed, according to the IUCN (2001) criteria, it should be categorized as vulnerable (B1ab (iii) B2a), mainly because of the fragmented distribution and the fact that there are records for only a small number of localities.

*Pseudolaelia geraensis* is most similar to *P. corcovadensis, P. cipoensis* and *P. irwiniana*, sharing flowers with large sepals and petals, being differentiated from those species by the larger pseudobulbs, larger leaves in larger numbers, inflorescence frequently exceeding one meter in length, labellum with two basal calli, with projections forming a central longitudinal groove, which extends over the median lobe as poorly developed divergent lamellae. This last characteristic is also present in *P. cipoensis*, but the flowers are smaller and the lateral lobes are more developed and narrower than in *P. geraensis*. The plants of the northeastern part of the state of Minas Gerais, in the region of the type locality, are more robust and display longer inflorescences (exceeding 1 m in length) and smaller flowers, forming large clumps in association with Bromeliaceae, Cactaceae, lichens and mosses, whereas the plants that occur more to the south of the state and in the state of Espírito Santo are less robust, usually with shorter inflorescences and flowers that are less developed.


Herb ca. 15 cm in height. Rhizome 1.5-2 cm long, vinaceous, cataphylls ovate, ca. 6 × 4 mm, apex acute. Pseudobulb fusiform, ca. 3-4 cm long, vinaceous, 4 internodes, cataphylls
lanceolate, ca. 8 × 5 mm, apex acute. Leaves 2-3, erect, arranged from the middle to the apex of the pseudobulb, linear-lanceolate, 10-13 × ca. 1 cm, dark green to vinaceous, coriaceous, margin serrulate, apex acute. Raceme ca. 20-30 cm long, 8-13 flowers; peduncle 18-27.5 cm long. Flowers odorless, pedicel and ovary ca. 1 cm long; dorsal sepal elliptic, 1.1-1.6 × 0.3-0.5 cm, pink, apex acute; lateral sepals lanceolate, 1.1-1.6 × 0.3-0.5 cm, pink, asymmetrical, concave, apex acute; petals spatulate, 1-1.6 × 0.3-0.6 cm, pink, asymmetrical, apex acute; labellum 3-lobed, 0.7-1 × 0.8-1 cm, lateral lobes triangular to ligulate, 1-3 × 0.8-1.5 mm, pink, apex rounded, median lobe suborbicular to reniform, 0.6-0.8 × 0.8-1 cm, pink with dark pink lines, apex rounded to emarginate, apiculate, disk of the labellum fleshy, with 5-7 lamellae longitudinal yellow changing to dark pink, from the base up to near the apex of the median lobe; cuniculus externally inconspicuous; column 3-4 mm long, green pink with apex whitish; anther green; pollinia ca. 1 mm, caudicle ca. 0.5 mm long. Fruits spherical, 1.5-1.8 cm long, green. Material selected: BRAZIL. Minas Gerais: Diamantina, Curralinho, fl. cult. em X.2006, fl. Menini Neto et al. 622 (CESJ). Etymology: homage to the botanist Howard Samuel Irwin, who collected the type specimen.

Geographic distribution and habitat: occurs only in the rocky grasslands of the Planalto de Diamantina, state of Minas Gerais (Figure 2), at elevations ranging from 1000 m to 1300 m above sea level. Frequently epiphytic on species similar to Vellozia hirsuta Goeth. & Henrard, this species is hard to distinguish from its phorophytes because of the similar foliar morphology, with markedly creeping growth. Conservation status: this species should be categorized as endangered (B1ab(iii)B2ab(iii)) according to the IUCN criteria (IUCN 2001), mainly because of the environmental degradation of the area, which is largely exploited for diamond mining, as well as because there is only one known population, located in a conservation unit.

Pseudolaelia irwiniana is most similar to P. cipoensis, but can be differentiated for being the smallest of the species of Pseudolaelia with epiphytic life form, with pseudobulbs no more than 4 cm long, vinaceous, with 2-3 leaves (vs. 4 leaves in P. cipoensis), erect and narrower and inflorescence with flowers grouped near the apex (vs. flowers with more regularly arranged in P. cipoensis). A population recorded in Capivari (district of the municipality of Serro) displays floral morphology intermediate between P. irwiniana and P. vellozicola, although it is possible to identify the latter by its vegetative characteristics. However, there is a possibility for hybridization, because these species are sympatric in the Planalto de Diamantina.


Taxonomic revision of *Pseudolaelia* Porto & Brade (Laeliinae, Orchidaceae)


Pseudolaelia regentii V.P.Castro & Marçal, Richardiana 8(1): 7. 2007. Type: Brazil, Bahia, Rio de Contas, Paramirim, s.d., Marçal s.n. (Holotype: SP. Not deposited). Lectotype: Figure 2 of original work, here designated. Syn nov.
Pseudolaelia oliveirana V.P.Castro & Chiron, Richardiana 9(1): 22. 2009. Type: Brazil, Espírito Santo, Pancas, s.d., Pinto s.n. (Holotype: SP. Not deposited). Lectotype: Figure 1 of original work, here designated. Syn nov.

Fig. 137-154.

Herb 15-25 cm in height. Rhizome ca. 2.7-7.7 cm long, yellowish green to vinaceous, cataphylls ovate, ca. 1.9 × 1 cm, apex acute. Pseudobulb fusiform, 2.3-7.8 cm long, yellowish green to vinaceous, 4-5 internodes, cataphylls lanceolate, 2.3-8 × 1-1.5 cm, apex acute. Leaves 4-6, erect to slightly curved, arranged from the middle to the apex of the pseudobulb, lanceolate to linear-lanceolate, 6.4-27 × 0.4-1.1 cm, dark green, coriaceous, margin serrulate, apex acute. Raceme or, less frequently, panicle, 24-75.5 cm long, 10-30 flowers; peduncle ca. 21.5-69 cm long. Flowers odorless, pedicel and ovary 0.8-2.2 cm long; dorsal sepal elliptic to ob lanceolate, 1.25-5 × 0.2-0.6 cm, white, pink to dark pink, symmetrical to slightly asymmetrical, apex acute; lateral sepals narrow-elliptic to ob lanceolate, 1-2.5 × 0.2-0.7 cm, white, pink to dark pink, asymmetrical, slightly concave, apex acute to acuminate; petals elliptic, falciform, oblanceolate or spatulate, 1.1-2.7 × 0.2-0.4 cm, white, pink to dark pink, symmetrical to asymmetrical, apex acute to rounded; labellum 3-lobed, 0.9-1.8 × 0.4-1.4 cm, lateral lobes triangular, falciform, lanceolate, elliptic, ligulate or linear, 2-6.5 × 0.5-2 mm, white to pink, apex acute, long-acuminate or rounded, median lobe suborbicular or large-ovate, 7-8 × 6-9 mm, pink with lines dark pink, margin entire, apex rounded, sometimes emarginate or apiculate, disk of the labellum fleshy, with 3-7 lamellae longitudinal, yellow from the base up to near the middle of the median lobe; cuneilus externally inconspicuous; column 5-6 mm long, green with pink cast to pink; anther green to pink; pollinia ca. 1 mm, caudicle ca. 1 mm long. Fruits subshperical, ca. 1 cm long, green.


Etymology: allusion to the epiphytism on species of Velloziaceae.

Geographic distribution and habitat: this is the species with the widest geographic distribution within the genus, occurring from sea level to approximately 1500 m above sea level. It occurs from the southeastern and southwestern parts of the state of Bahia to the states of Minas Gerais and Espírito Santo, also occurring in the northern part of the state of Rio de Janeiro (Figure 3). The species can also be found in the rocky grasslands of Bahia and Minas Gerais, on the inselbergs in the east-southeastern part of Minas Gerais and northern part of the state of Rio de Janeiro. In addition, it occurs in the restingas (coastal woodlands) of Espírito Santo, although it is more common on inselbergs in that state, among the coastal outcrops and in the mountainous region. Epiphyte on Velloziaceae, or more rarely saxicolous, this species frequently forms large populations.

Conservation status: because of the wide geographic distribution, area of occupancy and populations usually comprised of a large number of individuals, the species should be categorized as least concern, according to the criteria of IUCN (2001).

Pseudolaelia vellozicola has an extremely variable floral morphology, and is the Pseudolaelia species with the widest geographic distribution and the greatest degree of genetic polymorphism (Menini Neto 2011). Pseudolaelia vellozicola is similar to P. dutrae but can be differentiated by the inflorescence in raceme (vs. frequently in panicle in P. dutrae), labellum with margin entire and apex of the median lobe usually rounded (vs. margin fimbriate or markedly erose and apex deeply emarginate) and longitudinal lamellae from the base up to near the apex of the median lobe (vs. lamellae that stand out near the base of the median lobe, verrucose). The descriptions of P. regentii (Castro Neto & Marçal 2007) for the state of Bahia, as well as those of P. calimaniorum and P. oliveirana (Castro Neto & Chiron 2008) for the state of Espírito Santo, are mainly based on floral characteristics that are widely variable, even from an intrapopulational perspective, such as length and width of the sepals and petals, length and form of the isthmus and apex of the labellum. There were no type specimens deposited in the SP herbarium for any of the three binomials, as reported in the protologue. Those binomials are here typified, and the illustrations of the original works of each were chosen as lectotypes. The analyses of linear and geometric morphometry of the flowers and of the genetic diversity (Menini Neto 2011) support the acceptance of the species P. vellozicola with wide distribution and pronounced polymorphism. The variation observed can be explained by the fact that the populations occur on inselbergs that act like relatively isolated islands in the Atlantic forest and on outcrops in rocky grasslands, without an accentuated genetic exchange and with the possibility of morphologic differentiation through isolation. Hence, we here synonymize P. regentii, P. calimaniorum and P. oliveirana with P. vellozicola.
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Taxonomic revision of *Pseudolaelia* Porto & Brade (Laeliinae, Orchidaceae)

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