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Original Papers

The genus *Dryadella* (Orchidaceae, Pleurothallidinae) in Brazil

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Abstract

The present work is a taxonomic revision of the *Dryadella* species of Brazil. *Dryadella* comprises 61 species, distributed in humid or seasonally humid forests, from Mexico to southern Brazil, most in the Atlantic Rainforest and the Andean forests. We provide morphological descriptions, taxonomic discussions, illustrations, an identification key, new synonyms, new occurrences and distribution maps for all taxa. Fourteen species are recognised for Brazil, of these *D. zebrina* recorded also for Bolivia and Peru, *D. aviceps* in Paraguay, *D. lilliputiana* in Bolivia, *D. gnoma* in Ecuador, Peru, Colombia, Panama, and Costa Rica and recorded for the first time in Brazil. The others are endemic to the country and, with the exception of *D. gnoma*, which occurs in the Amazon and *D. ana-paulae*, which occurs in the Cerrado, the other species are restricted to the Atlantic Rainforest. We propose the synonymisation of *D. osmariniana* and *D. cardosoi* in *D. gnoma*, *D. espirito-santensis*, *D. gomes-ferreirae* and *D. litoralis* in *D. aviceps*, *D. vasquezii* in *D. ana-paulae* and *D. xaveriana* in *D. toscanoi.* Nine lectotypes are designed.

Key words: endemism, monocots, nomenclature, South America, taxonomy.

Resumo

O presente trabalho é uma revisão taxonômica das espécies *Dryadella* do Brasil. *Dryadella* compreende 61 espécies, distribuídas em florestas úmidas ou sazonalmente úmidas, do México ao sul do Brasil, a maioria na Floresta Atlântica e nas florestas andinas. Fornecemos descrições morfológicas, discussões taxonômicas, ilustrações, chave de identificação, novos sinônimos, novas ocorrências e mapas de distribuição de todos os táxons. Quatorze espécies são reconhecidas para o Brasil, destas *D. zebrina* é registrada também para Bolívia e Peru, *D. aviceps* no Paraguai, *D. lilliputiana* na Bolívia, *D. gnoma* Equador, Peru, Colômbia, Panamá e Costa Rica e registrada pela primeira vez para o Brasil. As demais são endêmicas do país e com exceção *D. gnoma*, que ocorre na Amazônia e *D. ana-paulae*, que ocorre no Cerrado, as demais espécies são restritas à Mata Atlântica. Nós propomos a sinonimização de *D. osmariniana*, *D. cardosoi* em *D. gnoma*, *D. espirito-santensis*, *D. gomes-ferreirae e D. litoralis* em *D. aviceps*, *D. vasquezii* em *D. ana-paulae* e *D. xaveriana* em *D. toscanoi*. Nove lectótipos são designados.

Palavras-chave: endemismo, monocotiledôneas, nomenclatura, América do Sul, taxonomia.

Introduction

Dryadella (Orchidaceae, Epidendroideae) is an exclusively neotropical genus distributed in humid or seasonally humid forests, from Mexico to southern Brazil, most in the Atlantic Rainforest and the Andean forests (Imig *et al.* 2020a; Luer 2005; POWO 2022; Pridgeon 2005). *Dryadella*, along with *Andinia* Luer (2000: 5), *Muscarella* Luer (2006: 94), *Platystele* Schlechter (1910: 565), *Scaphosepalum* Pfitzer (1889: 136), *Specklinia* Lindley (1830: 1) and *Teagueia* Luer (1991: 140) forms the Affinity *Specklinia* (Karremans

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2016; Karremans *et al.* 2016) of the subtribe Pleurothallidinae.

Dryadella was established by Carl A. Luer (1978a: 207), based on some dismembered species of the genus *Masdevallia* Ruiz & Pav., distinguished by having a thickened callus close to the base of the lateral sepals, multi-angled petals, and a long unguiculate lip with a blade provided with two basal, usually retrorse lobes. The first species were described in the genus *Pleurothallis* Brown (1813: 211) as *Pleurothallis auriculigera* Reichenbach f. (1871: 1579) and *P. aviceps* Reichenbach f. (1871: 1579), both from samples coming from Brazil. Luer (1978a) recognises these species as a new genus and establishes *Dryadella* Luer, with 37 species accepted so far and based in *Dryadella elata* (Luer 1978c: 199) Luer (1978b: 2008), species type of the genus.

New taxa were described, and some new synonyms were proposed, and currently, *Dryadella* consists of 61 accepted names (Campacci & Silva 2015; Campacci 2022; Castro *et al.* 2004; Imig *et al*. 2020a; Imig *et al*. 2021; Luer 2002, 2005; POWO 2022).

Although *Dryadella* species are easily distinguishable from other Pleurothallidinae, there is a remarkable morphological similarity between the species, making infra-generic delimitation difficult (Luer 1978a; Pridgeon 2005). Luer (2005) presents the identification key of the genus in three informal sections or groups, gathering the species with linear leaves, "the needle-like leaves", the species with a diminutive habit, "the tiny mites", and the other species, "all the rest". Recently Imig *et al.* (2020b) studied the leaf morpho-anatomy of several species from different sections and biomes and concluded that the variation found does not discriminate between species of different habitats or corroborate with section delimitation.

In Brazil, the first broad study of Orchidaceae that included *Dryadella* species was Flora Brasiliensis (Cogniaux 1906) with the description of *Masdevallia edwalli* Cogniaux (1906: 553) and *M. lilliputiana* Cogniaux (1906: 555) and recognize *M. paulensi*s Barbosa Rodrigues (1901: 51), *M. sessilis* Barbosa Rodrigues (1898: 18). Later, Pabst & Dungs (1977) recognised nine species for Brazil: *M. edwallii*, *M. lilliputiana*, *M. espirito-santensis* Pabst (1973: 329), *M. kaustskyi* Pabst (1973: 330), *M. obrieniana*, *M. simula*, *M. paranaensis* Schlechter (1918: 268), *M. gomes-ferreirae* Pabst (1975: 51) and *M. zebrina* Porsch (1905:154). Luer (1978a), when transferring the species that today compose *Dryadella*, made the synonyms of *M. obrieniana*, *M. gomes-ferreirae*, *M. paulensi*s, *M. sessilis* in *Dryadella aviceps* Reichenbach f. (1871: 1579) Reichenbach (1878: 93) *and M. paranaensis* in *D. lilliputiana.*

Over the years, new species were described (*e.g.*, Luer 1978b), and Luer (2005), in his revisions of the genus, recognised fifteen species for the country and proposed new synonyms. The same species are cited in BFG (2015, 2018), including *D. litoralis* Campacci (2007: 154), described later. Until now, 18 species were recognised for Brazil: *Dryadella ana-paulae* V.P.Castro (2004: 1989), *D. auriculigera* (Rchb.f.) Luer (1978a: 208), *D. aviceps* (Rchb.f.) Luer (1978a: 208), *D. cardosoi* Campacci & J.B.F.Silva (2015: 414), *D. crenulata* (Pabst) Luer (1978a: 371), *D. edwallii* (Cogn) Luer (1978a: 208), *D. espirito-santensis* (Pabst) Luer (1978a: 208), *D. gomes-ferreirae* (Pabst) Luer (1978a: 208), *D. kautskyi* (Pabst) Luer (1978a: 208), *D. krenakiana* Campacci (2015: 418), *D. lilliputiana* (Cogn.) Luer (1978a: 208), *D. litoralis* Campacci (2007: 154), *D. osmariniana* (Braga: 1978a: 333) Garay & Dunsterville (1979: 172), *D. susanae* (Pabst 1976: 68) Luer (1978a: 371), *D. toscanoi* Luer (2005: 37), *D. vitorinoi* Luer & Toscano (2002: 181), *D. wuerstlei* Luer (2005: 39) and *D. zebrina* (Porsch) Luer (1978a: 209). Of these, 15 are considered endemic to the country and, except for *D. osmariniana* and *D. cardosoi* found in Amazon and *D. ana-paulae* restricted to the Cerrado, the other species are restricted to the Atlantic Rainforest (Imig *et al*. 2020a).

As observed in the field, specimens of *Dryadella* form very small populations and generally restricted to a few phorophytes, making it difficult to find them. Furthermore, unlike most micro-orchids, *Dryadella* is rarely cultivated in private or public collections, probably because they are very similar, having the flowers immersed between the leaves (not very showy) and are hard to grow. According to previous reports in the Red Book of Brazilian Flora (Martinelli & Moraes 2013), three species were evaluated as being endangered: *Dryadella auriculigera* and *D. susanae* were treated as Critically Endangered (CR) and *D. lilliputiana* as Vulnerable (VU). At the state level in Brazil, some Red Lists cited *Dryadella* species. *Dryadella lilliputiana* was treated as VU, and *D. auriculigera* as Extinct in Nature (EX) in São Paulo (SEMA 2016). For the Espírito Santo state, *D. aviceps* was treated as VU and *D. espirito-santensis*, *D. kautskyi* and *D. susanae* as CR (Fraga *et al.* 2019).

The present work is a taxonomic review of the *Dryadella* species of Brazil, updating the works of *Flora brasiliensis* (Cogniaux 1906), Orchidaceae Brasiliensis (Pabst & Dungs 1977), Luer (2005) and Flora do Brasil 2020 (Imig *et al*. 2020a). We provide morphological descriptions, taxonomic revision and discussions, illustrations, an identification key, new synonyms, new occurrences and distribution maps for all taxa.

Material and Methods

Specimens from 31 national and international herbaria were examined (BR, CEN, CTBA, COL, ESA, FLAS, FLOR, FURB, HB, HRCB, HUEFS, HUEM, HNUP, HUEM, IAN, ICN, JAUM, JOI, K, MBM, MBML, MG, MO, NY, QCA, RB, SEL, UEC, US, UPCB, VIES (acronyms following Thiers, continuously updated). Additionally, the specimens collected in field expeditions from 2018 to 2021 were herborised according to Fidalgo & Bononi (1989) and deposited at UPCB and MBM.

The specimens were identified by consulting the protologues and nomenclatural types and by comparisons with descriptions in specialised studies that comprehensively cover the genus (Pabst & Dungs 1975, 1977; Luer 1978a, 2005). The morphological terminology follows Stearn (2004), and the descriptions follow Luer (1978b, 2002, 2005). Heterotypic synonyms are listed in chronological order. The figures and illustrations were edited using CorelDRAW X8 (<https://www.coreldraw.com>). All examined specimens are listed under the taxonomic treatment for each species. When the specimen label did not present information, the locality record was geo-referenced using coordinates obtained from Google Earth (<http://earth.google.com/>). When geographic information was too vague on the labels for coordinate determination, the specimens were not included in maps. The distribution maps were created by plotting the collection localities using DIVA-GIS 7.5 (Hijmans *et al.* 2012).

Results and Discussion

A total of 290 specimens from the states of SC, RS, PR, MG, RJ, SP, ES, MG, BA, MS, PA, and AM were analysed. We recognise the occurrence of fourteen species (Figs. 1-16), of which nine are endemic to Brazil. *Dryadella zebrina* is also recorded for Bolivia and Peru, *D. aviceps* for Paraguay, *D. lilliputiana* for Bolívia, *D. gnoma* (Luer 1976: 110) Luer (1978a: 208) for Ecuador, Peru, Colombia, Panama and Costa Rica and registered here for the first time to Brazil and *D. ana-paulae* distribution to Bolivia in regions of seasonally dry forests. Except for *D. gnoma*, which occurs in the Amazon and *D. ana-paulae*, which occurs in the Cerrado, the other species are restricted to the Atlantic Rainforest. The mountain region of the Espírito Santo state is an important location of the diversity of the genus. We propose the synonymisation of *D. osmariniana* and *D. cardosoi* in *D. gnoma*, *D. espirito-santensis* and *D. gomes-ferreirae* in *D. aviceps*, *D. vasquezii* Luer in *D. ana-paulae*, *D. ataleiensis* and *D. sapucaiensis* Campacci & S.L.X. Tobias in *D. auriculigera*, *D. xaveriana* in *D. toscanoi*. Additionally, we present new distribution records for *D. ana-paulae*, *D. gnoma*, *D. vitorinoi*, *D. aviceps* and *D. wuerstlei*. Nine lectotype are designed: *D. cardosoi*, *D. crenulata*. *D. gomes-ferreirae*, *D. paranaensis*, *D. sapucaiensis*, *D.vasquezii*, *D. xaveriana Masdevallia paulensis* and *M. sessilis.*

Taxonomic treatment

Dryadella Luer, Selbyana 2: 207 (1978a).
Type: *Dryadella elata* Luer (1978c: 199) Luer Selbyana 2(2,3): 208. 1978a. ≡ *Masdevallia elata* Luer, Phytologia 39(4): 199-200, 1978b.
= *Masdevallia* Sect. *Saltatrices* Reichenbach, Linnaea 41: 10 (1877) [1876], Woolward, Monogr. *Masdevallia*, 1898, *non* Rchb.f. 1877.
= *Masdevallia* Subgen. *Trigonanthe* Schlechter, Repert. Spec. Nov. Regni Veg. Beih. 35: 48 (1925) *nom. nudum*.
= *Masdevallia* sect. *Rhombopetalae* Kraenzlin, 1. c. 34: 188 (1925).
= *Trigonanthe* (Schltr.) Brieger, Die Orchideen 448 (1975) *nom. ilegit.*

Herbs perennial, very small to medium-sized for the subtribe, epiphytic, rarely lithophytic, cespitose rarely short-repent or pending. Roots slender or thick, produced at the base of the rhizome. Rhizome short to inconspicuous. Ramicaul unifoliate, erect to suberect, partially or entirely enclosed by 2–3 small, imbricating paleaceous sheaths, with an annulus from below the apex (the abscission layer). Leaf light-green to dark-green, sometimes suffused or spotted with purple, coriaceous or thickly coriaceous, erect or sub-erect, flat, terete or sub-terete; with or without a distinct petiole, blade erect or suberect, margin entire. Inflorescence one-flowered or congest raceme with 2–4 successive

flowers, born by a short peduncle, bearing 2(–3) imbricate pale bracts, pedicels slender, longer or shorter than the floral bract. Flowers resupinate, sepals sometimes translucent, alvescent, green, yellow, orange, concolor or spotted with purple or red, more or less membranaceous; dorsal sepals erect or inflexed, linear-lanceolate to ovate, symmetrical, 3-veined, sometimes carinate, apex obtuse to acute, ending abruptly or attenuated in a short or long tail, slender, thick or clavate at the apex; short connate at the base with lateral sepals, forming a sepaline cup, margin entire or minutely toothed; lateral sepals erect or deflexed, lanceolate to ovate, asymmetrical, usually with transverse callus above the base, 3-veined, ending abruptly or attenuated in a short or long tail, slender, thick or clavate at the apex, margin entire, rare minutely toothed; petals translucent, albescent, green, yellow, orange, concolor or spotted with purple or red, asymmetrical, multi-angle, mostly confined within the sepaline cup, membranaceous or fleshy, 1–2 veined; lip green, yellow, orange, concolor or spotted with purple or red, unguiculate; blade suborbicular or oblong, usually deflexed near the middle, base usually bi-lobed, margin entire, crenate or toothed; column albescent, green, yellow or orange, usually red spotted, curved, winged on the distal half; anther yellow to albescent, apiculate; pollinarium with a pair of pollinia with granular viscidium. Fruit light-green, sometimes suffused or spotted with purple, smooth, usually tri-alate.

In Brazil, *Dryadella* species are endemic to the Atlantic Rainforest, except by *D. ana-paulae* from the Cerrado and *D. gnoma* from the Amazon (Fig. 16b-c). The southeast region presents a high degree of endemism, especially in the mountain regions of the state of Espírito Santo. On the other hand, *D. liliputiana* and *D. zebrina* are more abundant in the southern region of the country, with more records for the Santa Catarina and Paraná states.

In nature, *Dryadella* does not form large populations; generally, only 5–10 individuals are distributed in one or two phorophytes, and therefore they are difficult to find, reflecting the low number of collections in herbaria. We found rare large populations such as *D. lilliputiana* (*D.C. Imig 634*) densely covering a single phorophyte of *Campomanesia* sp. (Myrtaceae) and a population of *D. zebrina* (*D.C. Imig 644*) with more than 30 individuals as lithophytic. *Dryadella lilliputiana* was also found as an epiphyte in *Araucaria angustifolia* (Bertol.) Kuntze.

Studies of floral biology, preference for phorophytes and mycorrhizal associations were not found in the literature, and it is necessary to understand and conserve these orchids.

Identification key for the *Dryadella* species in Brazil

1. Reptant or pendent habit.
   2. Pendent habit, leaf blade narrow-obovate, 25–38 × 2–3.2 mm ..... 8. *Dryadella krenakiana*
   2'. Reptant habit.
      3. Leaves sessile, 4–5.7 × 2.5–3 mm ..... 10. *Dryadella susanae*
      3'. Leaves shortly petiolate, 13–19.5 × 2.1–3.3 mm ..... 4. *Dryadella catharinensis*
1'. Cespitose habit.
   4. Terete or semi-terete leaves.
      5. Terete leaves.
         6. Blade 10–32 × 1.8–2.1 mm, dark-green, presence of alvescent in basal portion; flowers predominantly white..... 9. *Dryadella lilliputiana*
         6'. Blade 30–35 × 2.3–2.8 mm; light-green, absent of alvescent in basal portion; flowers predominantly yellow to dark-yellow ..... 2. *Dryadella auriculigera*
      5'. Semi-terete leaves.
         7. Sepal's tail with less than 2 mm.
            8. Blade 15–30 × 2.5–4.3 mm long, elliptical to oblanceolate; dorsal sepal 4.3–5.5 × 2.5–3 mm, short caudate, tail with clavate apex ..... 1. *Dryadella ana-paulae*
            8'. Blade 4–6(–7.5) × 1.5–1.8 mm long, linear; dorsal sepal 5.3–6.5 × 1.8–2.2 mm, short caudate, tail with acute to acuminate apex ..... 7. *Dryadella kautskyi*
         7'. Sepal's tail with more than 2 mm.
            9. Blade 15–25(–30) × 2.5–3.3 mm; sessile; dorsal sepal 5–6.3 × 4.0– 4.5 mm, pale-green, tail 6–11 mm, lip with minutely toothed margin .... 13. *Dryadella wuerstlei*

9'. Blade 30–43 × 2.5–3.5 mm; petiolate; dorsal sepal 8–13 × 4.3–5.7 mm, yellow-greenish, tail 5–6.3 mm, lip with entire margin..... 11. *Dryadella toscanoi*

4'. Flat leaves.

10. Lateral sepals with remnant or absence of transverse callus, lip with blade oblong as shovel-shaped, no reflexed.....6. *Dryadella gnoma*

10'. Lateral sepals with presence of transverse callus, lip with blade oblong or ovate, reflexed.

11. Flowers no full opening, sepals erect.

12. Petals with superior margin entire, linear..... 12. *Dryadella vitorinoi*

11'. Flowers full opening, sepals patent.

12'. Petals with superior margin lobed.

13. Sepal's tail with less than 2 mm.....3. *Dryadella aviceps*

13'. Sepal's tail with more than 2 mm.

14. Leaf blade 40–85 (130) × 3.5–7 mm; petiole 2.5–3 mm long; lip 1.8–2.1 × 0.8–1.2 mm, margin entire .....14. *Dryadella zebrina*

14'. Leaf blade 40–57.3 × 4.5–6 mm; petiole 3–4.5 mm long; lip 1.5–2.3 × 1.3–1.8 mm, margin visibly toothed to ciliated.....5. *Dryadella crenulata*

1. *Dryadella ana-paulae* V.P.Castro, B.P.Faria & A.D.Santana, Richardiana 4(4): 198, 2004. Holotype: BRAZIL. DISTRITO FEDERAL: Córrego Taboquinha, *A.D. Santana 3* (UB13430!). = *Dryadella vasquezii* Luer. Monographs in Systematic Botany from the Missouri Botanical Garden 103: 37, pl. 44. (2005). Holotype: SANTA CRUZ, *C. Luer 3626* (SEL, lost). Lectotype (here designated): Carl Luer original's drawing pl. 44, published in Monographs in Systematic Botany from the Missouri Botanical Garden 103: 54, pl. 44. (2005). *syn nov.* Figs. 1a-h; 15a

Epiphyte herb, densely cespitose, small, 15–35 mm tall. Roots thick, 2–4 at each rhizome node, 0.5–0.8 mm diameter. Rhizome 2–2.5 mm between the internodes. Ramicaul 2–3 mm long, erect, covered by two paleaceous, triangular sheaths, abruptly mucronate, 2–3.2 × 1.5–1.8 mm. Leaf green to light-green on both sides, thickly coriaceous, elliptical to oblanceolate, semi-terete, 15–30 × 2.5–4.3 mm; petiole 0.8–1.3 mm long; blade erect, attenuate at the base, retuse and mucronate. Inflorescence a successive, 1–2-flowered, congest raceme; bearing 2(–3) pale basal bracts, lanceolate, mucronate, 0.8–1.3 × 0.7–1.2 mm; peduncle 2–4 mm long; pedicel plus ovary light-green, slightly tri-alate, entire to minutely toothed, 1–1.5 mm long. Flower small to medium; dorsal sepal pale-yellow to greenish-yellow, diffused dark-purple spotted, elliptic to ovalate, inflexed, 3-veined, carinate and entire, 4.3–5.5 × 2.5–3 mm, base connate 0.5 mm with lateral sepals forming a short sepaline cup, acute, short caudate, tail 1.5–2 mm with clavate apex, entire; lateral sepals pale-yellow to greenish-yellow, densely dark-purple spotted, ovate, 3-veined, asymmetrical, 4.5–5.5 × 1.5–1.8 mm, base connate, a transverse callus inconspicuous, acute, short caudate, tail 1.5–2 mm with clavate apex, entire; petals yellow, densely purple-spotted, oblong, 1-veined, vein parallel, asymmetrical, 1.3–1.4 × 1.2–1.3 mm, base truncate, obtuse, superior margin with discreet acute lobe; inferior margin excavated, acute to obtuse lobe, entire; lip yellow, unguiculate; claw 0.5–0.7 mm, bilobed at base, caniculate; blade oblong to obovate, 1.5 × 0.9–1 mm, base with two lateral, acute, divaricated lobes, 0.2 mm; a pair of lamellar callus toothed at the base; apex reflexed, obtuse, minutely toothed; column yellow, 1–1.3 mm long, curved, winged on the distal half, bi-toothed at winged base; apex acute and minutely serrated Fruit light-green, oblong, 8–8.5 × 4.2 mm.

Material examined: GOIÁS: Anápolis, 15.XI.2000, fl., *G. Miranda 39* (CEN). Goianápolis, 26.X.2021, fr., *D.C. Imig & D. Rodrigues 666* (UPCB). DISTRITO FEDERAL, Fazenda Sucupira - EMBRAPA, 23.XI.1999, fl., *J.A.N. Batista & K. Proite 1093* (CEN); 14.XI.1999, fl., *J.A.N. Batista & K. Proite 956* (CEN); 18.I.2013, fl., *R.P. Oliveira 78* (CEN).

Additional material examined: BOLÍVIA. SANTA CRUZ: Buena Vista, 20.VII.1991, fl., *C. Luer 15233* (MO); *R. Vásquez 1127*, (Herb. Vasqu., MO, C. Luer illustr. 16392); *R. Vasquez 965* (MO, C. Luer illustr. 15422); 5.XII.1978, fr., *C. Luer 3617* (SEL).

Dryadella ana-paulae is not endemic to Brazil, it also occurs in seasonally dry regions of northern Santa Cruz, Bolivia (Fig. 17b).

In nature, *D. ana-paulae* is rarely found, in Brazil, it is restricted to *Cerrado* gallery forests. The flowering period occurs from October to December.

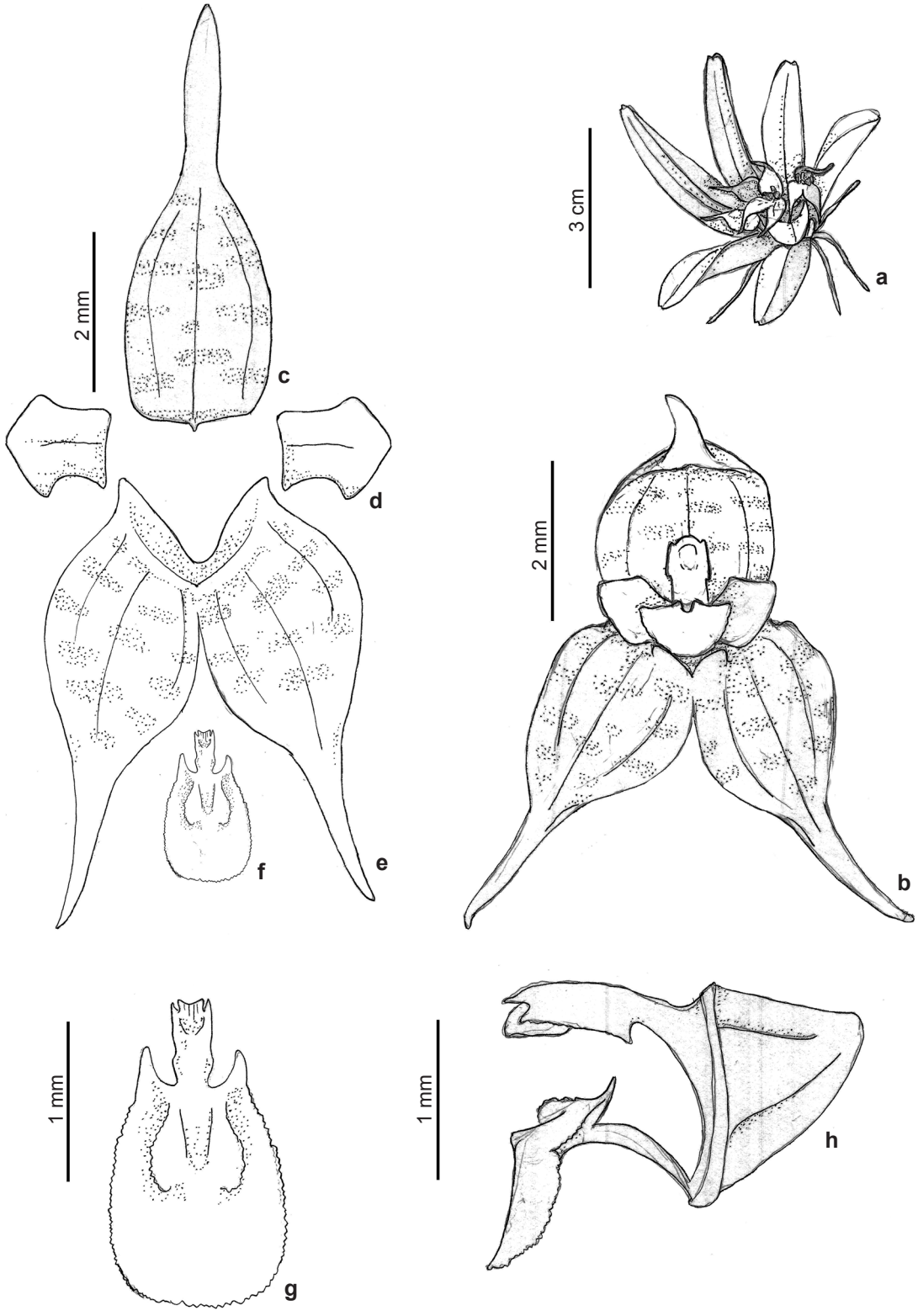

Figure 1 – a-h. *Dryadella ana-paulae* – a. habit; b. front view of the flower; c. dorsal sepal; d. petal; e. lateral sepal; f-g. lip; h. column, lip and ovary. (a-h. *D.C. Imig D. Rodrigues 666*).

Dryadella ana-paulae is one of the smallest plants of the genus and is similar to *D. lilliputiana*. They differ in light-green to green leaves on both sides, without purple punctuations (*vs*. dark-green leaves with diffuse purple punctuations and a whitish portion at the base of the blade and petiole). Flowers are pale-yellow to greenish-yellow with purple punctuations and lip with indented margin (*vs.* white flowers with purple punctuations and lip with entire margin) (Fig. 15a,l).

Luer (2005) describes a new species, *D. vasquezii*, as endemic to the seasonally dry regions of northern Santa Cruz in Bolivia and compares it with *D. ana-paulae*, differentiating them only by minor differences in the lip shape. The type material of *D. vasquezii* was cultivated by *R. Vasquez*, collected in 1978, *C. Luer 3626* (SEL), but the Holotype is lost, and it is the same region cited by Luer (2005) in the distribution of *D. ana-paulae* for Bolivia, in seasonally dry forests around Santa Cruz (*C. Luer 3617*, SEL 048273) and Buena Vista (*C. Luer 15233*, MO100539123, *Vásquez 1127*, MO 00538867). In the protologue of *D. ana-paulae*, Castro Neto *et al.* (2004) considered the distribution of the species restricted to the Brazilian *Cerrado*. *Dryadella ana-paulae* was described based on the specimen Castro *et al.* s.n, collected from the Federal District, Brazil. Luer (2005) erroneously cites an isotype (MO100538865) not indicated in the protologue. Additionally, a paratype is mentioned but deposited in a private herbarium of one of the authors, therefore inaccessible. The type was illustrated by Luer (2005, illustration 20620).

When analysing the materials considered by Luer as extra-brazilian *D. ana-paulae* (*C. Luer 3617*, SEL048273) as well as illustrations and descriptions of both species, and living material of *D. ana-paulae* (*D.C. Imig & D.Rodrigues 666*) we disagree with Castro *et al.* (2004), as there are no morphological differences between material from *D. ana-paulae* cited for Bolivia and the specimens from Brazil, and the same happens when compared to *D. vasquezii*. Among the common features among these species, we can highlight the dorsal sepal with a clavate apex tail and the typical transverse callus at the base of the dorsal sepals reduced to just a slight thickening. The flowering period also overlaps. We, therefore, consider *D. vasquezii* as a synonym of *D. ana-paulae* for the reasons mentioned above. Possibly the populations are interconnected by the gallery forests of the seasonally dry forests of Bolivia with those of the Brazilian *Cerrado*, reinforcing the hypothesis of a connection between the Andes and the *Cerrado*, through the riparian forests being an important route for several other plant groups (Oliveira-Filho & Ratter 1995; Costa 2003).

2. *Dryadella auriculigera* (Rchb.f.) Luer, Selbyana 2: 208, 1978a. ≡ *Plerothallis auriculigera* Rchb.f, Gard. Chron. 1579 (1871). ≡ *Masdevallia auriculigera* (Rchb.f) Rchb.f, Otia Bot. Hamburguesia 2: 93 (1878). Holotype: BRAZIL. Without locality, *W. Bowmann 1636* (W50984!).
= *Dryadella ataleiensis* Campacci, Coletânea de Orquídeas Brasileiras 9: 332 (2011). Holotype: BRAZIL. MINAS GERAIS: Ataléia, *M.A. Campacci & R. Vasconcellos Leitão MAC-1963* (ESA114455!) *syn. nov.*
= *Dryadella sapucaiensis* Campacci & S.L.X. Tobias, Coletânea de Orquídeas Brasileiras 16: 662 (2020). Holotype: BRAZIL. SÃO PAULO: São Bento do Sapucaí, 950 m, *S.L.X. Tobias* (ESA, lost). Lectotype (here designated): M.A. Campacci's original drawing appeared in Novas espécies e híbridos naturais 16: 664 (2020). *syn. nov.*

Figs. 2a-h; 15b

Epiphyte herb, cespitose, small, 3–4.5 mm tall. Roots thick, 2–4 at each rhizome node, 0.5–0.8 mm diameter. Rhizome 2–3 mm between the internodes. Ramicaul 1–2.5 mm long, erect, covered by two paleaceous, lanceolate sheaths, abruptly mucronate, 3.9–5 × 2.4–3.8 mm. Leaf light green with dark-purple spotted on both sides, thickly coriaceous, linear, terete, 30–35 × 2.3–2.8 mm; petiole 1.3–1.8 mm long; blade erect, long attenuate at the base, truncated and minutely tri-toothed. Inflorescence a successive 1–3 flowered, congest raceme; bearing two pale, lanceolate, mucronate, basal bracts, 1.8–2.4 × 1.3–1.7 mm; peduncle 0.4–0.5 mm long; pedicel plus ovary light green to albescent with diffuse purple dots, slightly tri-alate, toothed, 1.3–2 mm long. Flower medium; dorsal sepal dark yellow to orange, diffused dotted dark-purple spotted, oval to oval lanceolate, inflexed, 3-veined, slightly carinate and entire, 5–5.5 × 2.5–3 mm, base connate 0.6 mm with lateral sepals forming a short sepaline cup, acute, short caudate, tail 1–1.5 mm with acuminate apex, entire; lateral sepals dark yellow to orange, diffused dotted dark-purple spotted, ovate, 3-veined, asymmetrical, 5–5.5 × 1.7–2.2 mm, base connate, a transverse callus 1 mm, orange, acute, short caudate, tail 0.8–1 mm with acuminate apex, entire; petals translucent orange, diffused purple spotted, oblong, 2-veined, basal veins curved,

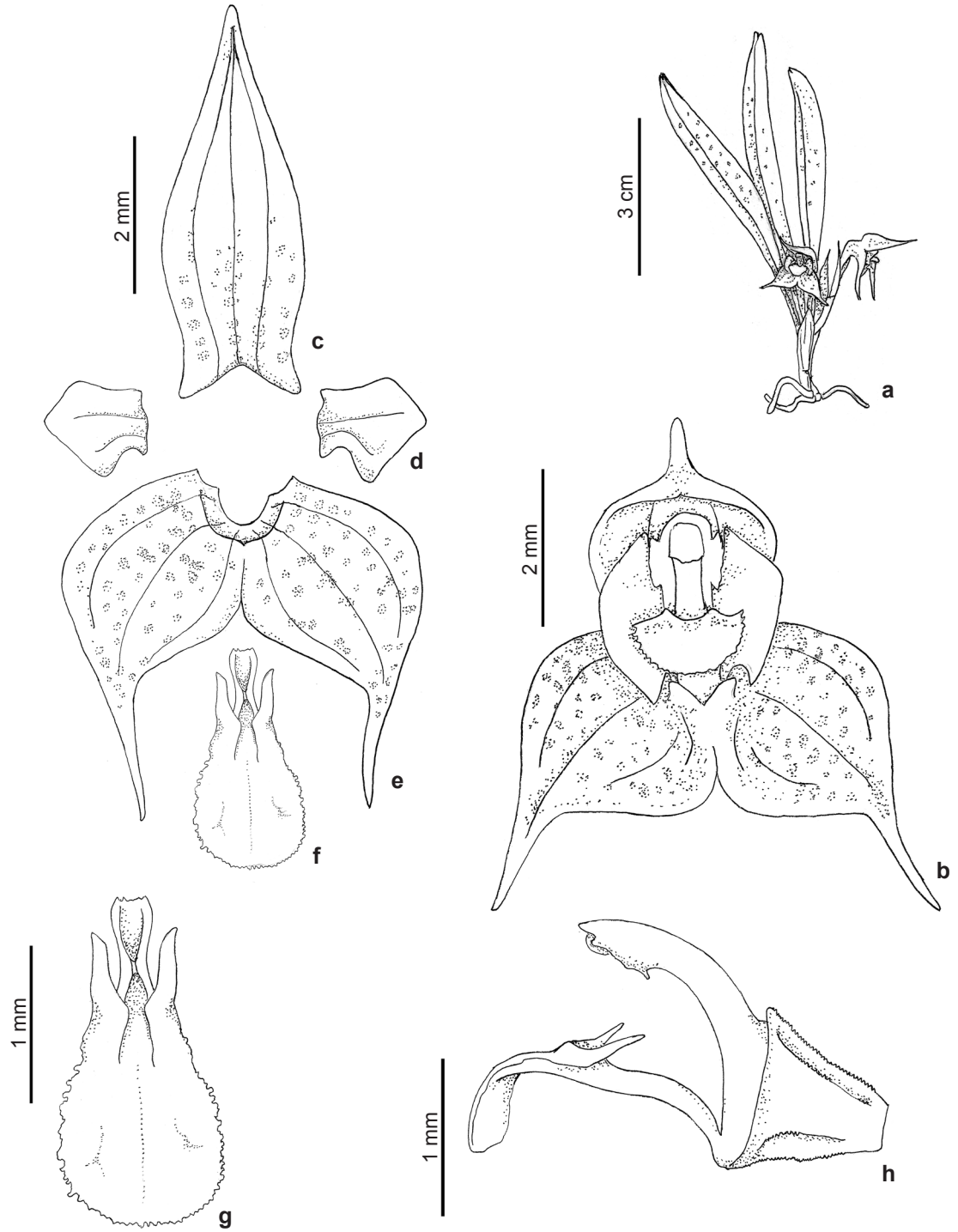

Figure 2 – a-h. *Dryadella auriculigera* – a. habit; b. front view of the flower; c. dorsal sepal; d. petal; e. lateral sepal; f-g. lip; h. column, lip and ovary. (a-h. *D.C. Imig & M. Bolson 471*).

asymmetrical, 1–1.5 × 1.8–2 mm, base truncate, wide acute, superior margin with discreet obtuse lobe; inferior margin deep excavated, obtuse lobe, entire; lip dark yellow to dark orange, densely dark-purple spotted, unguiculate; claw 0.6–0.7 mm, bilobed at base, caniculate; blade oblong, 1.9–2.1 × 0.8–1 mm, base with two lateral, acute, retrorse lobes, 0.4 mm; a pair of lamellar callus at the base, apex reflexed, widely rounded, visibly toothed (erose); column dark yellow to orange, 1.5–1.8 mm long, curved, winged on the distal half, an acute angle on the lower edge; apex apiculate, anther red. Fruit light-green with light-purple spots, oblong, 5–7.5 × 3.5 mm.

Material examined: ESPÍRITO SANTO: Domingos Martins, III.1991, fl., *A.L.V. Toscano de Brito 828* (MO). Venda Nova do Imigrante, 14.I.2017, fl., *D.C. Imig & M. Bolson 471* (UPCB); 7.VI.2012, fl., *A.L.V. Toscano de Brito 3091* (UPCB). MINAS GERAIS: Ataléia, XII.2009, fl. and fr., *M.A. Campacci & R.V. Leitão MAC-1963* (ESA - Holotype *D. ataleiensis*). Medina, Pedra de Atenas, 7.IV.2017, fl., *D.C. Imig 479* (UPCB). Without locality, *W. Bowmann 1636* (W).

Dryadella auriculigera was described from a specimen collected from Brazil without a precise location. Our study confirms this species as endemic to Brazil and the Atlantic Rainforest, is found in vegetation with rock outcrops in the state of Espírito Santo and new records for Minas Gerais and São Paulo (Fig. 17b). In nature, *D. auriculigera* is rarely found, and the same happens in private or public living collections, despite being a beautiful species due to the colour of its tiny flowers, different from other Brazilian *Dryadella*. The flowering period occurs from December to June.

In a RedList of São Paulo state (SEMA 2016), *D. auriculigera* was considered Extinct in Nature (EX).

Dryadella auriculigera is easily identifiable in relation to the other Brazilian species due to the colour and shape of the flowers and the leaves. It has an affinity with *D. kautskyi* and *D. lilliputiana*. Vegetatively it forms small and slightly loose clumps; leaves are linear and terete, light-green with vinaceous nuances and dark-purple dots (*vs. D. lilliputiana* presents well-congested clumps and leaves linear and terete, slightly furrowed on the adaxial side, light-green, and an albescent portion evident at the base, and *D. kautskyi* presents linear leaves, semiterete grooved on the adaxial face, light-green in colour, with absent or inconspicuous punctuations). The flowers of *D. auriculigera* are orange with diffuse purple punctuations and three well-marked veins; sepals are short caudate with attenuate apex; the lip is dark-orange with a visibly denticulated margin (*vs. D. lilliputiana* presents albescent flowers without marked veins, with dark-purple punctuations; sepals long caudate with clavate apex; lip with an entire margin and *D. kautskyi* has light-yellow flowers, with inconspicuous or absent light-purple punctuations, without marked veins; short caudate sepals with acute apex; lip with the same colour as the sepals, with minutely denticulated margin) (Fig. 15b,j,l).

Dryadella auriculigera was initially described in the genus *Pleurothallis* by Reichenbach (1871). The species was based on material originating in Brazil, collected in 1866 by Bowmann and cultivated in the Saunders Garden by Mr Green, who initially believed it to be *Pleurothallis aviceps*. However, the plant flowered a year later, and Reichenbach realised this species would be new. In the protologue, the author does not compare the species with any other. Reichenbach (1878) transferred the species to *Masdevallia auriculigera*, and later, Luer (1978a) moved to *Dryadella*. In the review of the genus, Luer (2005) highlights the rarity of this species, which we corroborate in this work.

Dryadella ataleiensis, a synonym proposed here, was described by Campacci (2011) from a collection in the state of Minas Gerais, Ataléia in May 2009, by *M.A. Campacci & R. de Vasconcellos Leitão MAC- 1963* (ESA114455). In the protologue, the author compares the species with *D. lilliputiana* (Cong.) Luer (1978b) but differs from the latter only by the smaller size and colour of the flowers. After analysing the protologues and the nomenclatural types, we noticed that *D. ataleiensis* is a synonym of *D. auriculigera,* although, in the illustration and image of the protologue, the leaves do not present purple punctuations, as characteristic of *D. auriculigera*. The other distinctive features of the flowers include the intense yellow to orange colour with an even darker lip, evident punctuations and the veins dark and well-marked and denticulated margin.

Dryadella sapucaiensis was recently described by Campacci & Silva (2020), is known only by the type and, according to the authors, is located between the region of São Bento do Sapucaí and Campos de Jordão in São Paulo state. We did not have access to any material, and the type was not found at the ESA, as mentioned in the protologue. The authors compare vegetatively with *D. krenakiana* (Fig. 15k) for presenting

pseudo-monopodial pendant growth; however, this characteristic is not evident in the images and in the original plate of *D. sapucaiensis*, where the plant is cespitose. We highlight the affinity with *D. auriculigera* in vegetative and floral aspects. However, the lack of access to the material does not allow us to make precise comparisons between the species. When comparing the descriptions of the species *D. sapucaiensis* (*vs*. *D. auriculigera*), we note the overlapping of measurements in almost all parts, for example, ramicaul 2.5 mm (*vs.* 1–2.5 mm), purple-spotted green leaves, linear-lanceolate, grooved 23 × 0.2 mm, (*vs.* light-green with dark-purple spotted, linear, terete, 30–35 × 2.3–2.8 mm). The tri-alate ovary with denticulated wings, as seen in Campacci & Silva (2020, page 664) (*vs.* ovary slightly tri-alate, toothed), dorsal sepal oval 4 × 3mm (*vs*. dorsal sepal oval to oval-lanceolate 5–5.5 × 2.5–3 mm), rhomboid dolabriform petals, 1.2 × 1 mm (*vs*. petals oblong, 1–1.5 × 1.8–2 mm), lip 2 × 0.7 mm, with margin slightly denticulate (although described as entire and drawn denticulate) (*vs.* lip 1.9–2.1 × 0.8–1 with denticulate margin (erosis)). The column was also described without conformity with the illustration as greenish with purple spots, and approx. 2 mm winged on the distal half, crenated at winged (Campacci *et al.* 2020, page 664), but in fig. 05 (Campacci & Silva 2020, pp. 664-665), it is noted that the wings of the column end at an acute angle (*vs.* column dark yellow to orange, 1.5–1.8 mm long, winged on the distal half, crenated, an acute angle on the lower edge). In addition, some terminology and measurements traditionally used for the genus have been neglected or are inaccurate, such as the size of the sepal tail described as "short tail apex, with somewhat trapezoidal transverse callus at the base of the abaxial face", as well the shape, that does not show the characters in detail in the lip and column, and in the photos whose colours seem to have been edited. Although the flowers of *D. auriculigera* are usually yellow-orange, this can vary according to the sunlight incidence. Plants in cultivation tend to have lighter flowers, between yellow and greenish-yellow, and the same happens in the colour of the leaves. It tends to be less spotted with purple, showing green in cultivation. Therefore, in the absence of material for consultation, especially the type and contradictions in the protologue, we consider this species a new synonym. Future investigations will allow us to make more precise decisions regarding this taxon.

3. *Dryadella aviceps* (Rchb.f.) Luer, Selbyana 2: 208, 1978b. ≡ *Pleurothallis aviceps* Rchb.f. Bradea 1579 (1871). ≡ *Masdevallia aviceps* (Rchb.f.) Rchb.f., Otia Bot. Hamburgensia 2:93 (1878). Type: BRAZIL. Without locality, *Bowmann 1633* (Holotype: W, Reichenbach: herbarium orchid. 50983 drawing 1833 [digital image!]).

= *Masdevallia obrieniana* Rolfe, Gard. Chron. 8: 524 (1890). ≡ *Masdevallia simula* var. *obrieniana* (Rolfe) Kraenzl. Repert. Spec. Nov. Regni Veg. Beih. 34: 192 (1925). Holotype: Without locality, flowered in cultivation in 1890 from the collection of *R.I. Measures* (K77697!).

= *Masdevallia sessilis* Barb.Rodr., Plantas novas cultivadas no Jardim Botânico do Rio de Janeiro 6: 17, t.3, fig.b. (1898). Holotype: BRAZIL, RIO DE JANEIRO: Itaguay, João Barbosa Rodrigues Junior (lost). Lectotype (here designated): Barbosa Rodrigues' original drawing, which appeared in his work "Pl. Jard. Rio de Janeiro 6: 17 (1898)".

= *Masdevallia paulensis* Barb.Rodr. Contributions du Jardin Botanique de Rio de Janeiro 2: 51, t.6, fig. a1-6 (1901). (Holotype: BRAZIL, *M.G. Edwall* (lost). Lectotype (here designated): Barbosa Rodrigues' original drawing, which appeared in his work "Contributions du Jardin Botanique de Rio de Janeiro" 2: 51, t.6, fig. a1-6 (1901).

= *Masdevallia bradei* Schltr. *ex* Hoehne (1936: 32). Boletim do Museu Nacional de Rio de Janeiro. Botânica 12(2): 32 (1936). Holotype: BRAZIL, SÃO PAULO: Iguape, *A.C. Brade* (Isotype HB 8058!).

= *Dryadella silvana* F. Barros, Rev. Bras. Bot. 18(1): 35 (1995). Holotype: BRAZIL. BAHIA: Sul do estado, *E.F. da Silva* (SP267767!).

= *Dryadella espirito-santensis* (Pabst) Luer, Selbyana 2: 208 (1978a). ≡ *Masdevallia espirito-santensis* Pabst. Bradea, Boletim do Herbarium Bradeanum 1(31): 329. 1973. Holotype: BRAZIL. ESPÍRITO SANTO: Redentor, near Pedra Azul. Alt. 1200 m, *R. Kautsky* 381b (HB58522!) *syn. nov.*

= *Dryadella gomes-ferreirae* (Pabst) Luer, Selbyana 2: 208 (1978a). ≡ *Masdevallia gomesii-ferreirae* Pabst, Additamenta ad orchideologiam brasiliense 2: 10, t. 49, fig. f (1975). Holotype: BRAZIL. PERNAMBUCO: without locality, collected by Severino Parasita, cultivated by *Burle Gomes-Ferreira 294* (HB, lost). Lectotype (here designated): Pabst's original drawing, which appeared in Bradea 2(10): 51, t.1, fig. f. (1975) *syn. nov*.

= *Dryadella litoralis* Campacci, Coletânea de Orquídeas Brasileiras 5: 154 (2007). Holotype: BRAZIL. SÃO PAULO: Bertioga, 10-50m, cultivated by *S.P. dos Santos, SPS-035* (SP402125 [digital image!]) *syn. nov.* Figs. 3a-h; 15c-e

Epiphyte herb, densely cespitose, medium to lager, 4.5–6.3 mm tall. Roots slender, 24–6 at each rhizome node, 0.6–0.9 mm diameter. Rhizome 4–6 mm between the internodes. Ramicaul 3–3.7 mm long, erect, covered by 2(–3) paleaceous, oblong to lanceolate sheaths, acute and mucronate, entire, 1.8–2.5 × 2–2.4 mm. Leaf dark green on both sides, sometimes with vinaceous nuances, coriaceous, lanceolate to oblanceolate, flat, 45–55 × 5.5–6.3 mm; petiole 1.3–2.5 mm long; blade erect, attenuate at the base, minutely tri-toothed. Inflorescence a successive single-flowered, congest raceme; bearing 2(–3) pale basal bracts, elliptical, acute and mucronate, 1.8–2.9 × 0.8–1 mm; peduncle 3–4.5(–6) mm long; pedicel plus ovary light green to albescent, slightly tri-alate, entire to minutely toothed, 1–1.5 mm long. Flower small to medium; dorsal sepal yellow to light-yellow with diffused light-purple spotted or albescent and densely dark-purple spotted, ovate, slightly inflexed, slightly 3-veined, carinate and entire, 3.5–5(–6.5) × 2.1–2.5 mm, base connate 0.4 mm with lateral sepals forming a short sepaline cup, acute to narrow acute, short caudate, tail 0.8–1 mm with narrow acute apex, margin discreetly toothed at the base; lateral sepals yellow to light yellow with diffused light purple spotted or densely dark-purple spotted, elliptical, slightly 3-veined, asymmetrical, 4–5(–6.5) × 2–2.5 mm, base connate, a transverse callus 1.3 mm purple, acute, short caudate, tail 1–1.3 mm with thick apex, entire; petals yellow, densely dark-purple spotted, oblong, 2-veined, veins parallel, asymmetrical, 1.5–1.8 × 1.2–1.5 mm, base truncate, obtuse, superior margin with acute to obtuse lobe; inferior margin excavated, acute to obtuse lobe, discreetly projected backwards, entire; lip purple, unguiculate; claw 1–2 mm, bilobed at base, caniculate; blade oblong, 0.6–1.8 × 1.2–1.4 mm, base with 2 acute, retrorses lobes, 0.3 mm; a pair of lamellar callus toothed at the base; apex reflexed, wide obtuse, entire or minutely toothed; column dark-yellow, 0.9–1.2 mm, curved, winged on the distal half, dentate at winged base; apex acute and minutely serrated, anther yellow, apiculate. Fruit light-green, oblong, 10 – 12 × 4.5 mm.

Material examined: Cultivated in Orquidário Colibri, 2.XII.2015, fl., *D.C. Imig 397* (UPCB). BAHIA: sul do estado, 15.III.1982, fl., *E.F. da Silva* (SP - Holotype *D. silvana*). Guaratinga, Córrego Jacutinga, 23.IV.2009, fl., *A.P. Fontana et al. 5912* (MBML). Prado, 16.V.2018, fl., *D.C. Imig 616* (UPCB). Vitória da Conquista, fl., *A.L.V. Toscano de Brito 1844* (UPCB); Faz. Oriente, 3.III.2013, fl., *C.O. Azevedo 605* (HUESB). ESPÍRITO SANTO: Redentor, near to Pedra Azul, 25.IX.1972, fl., *R. Kautsky 381* (HB - Holotype *D. espirito-santensis*). Conceição da Barra, P.E. de Porto Ferreira, 9.VIII.2000, fl., *C.N. Fraga 691* (MBML); Aracruz celulose, 12.VIII.1993, fl., *O.J. Pereira et al. 4832* (VIES). Guarapari, Setiba, 8.VIII.1992, fl., *L.V. Rosa 264* (VIES). Linhares, Restinga de Povoação, 8.VII.2000, fl., *C.N. Fraga 683* (MBML); 16.I.2018, fl., *D.C. Imig 525* (UPCB). Venda Nova do Imigrante, Cultivated in Orquidário Caliman, 7.VII.2012, fl., *A.L.V. Toscano de Brito 3094* (UPCB); 7.VI.2012, fl., *A.L.V. Toscano de Brito 3095* (UPCB); 27.I.2018, fl., *D.C. Imig 476* (UPCB); cultivated by Fábio Tesch, 19.II.2021, fr., *D.C. Imig 664* (UPCB). Vila Velha, Barra do Jacu, 12.XI.1998, fr., *C.S. Silva 12* (VIES). MATO GROSSO DO SUL: Jateí, 30.VI.2004, fl., *V. Tomazini 348* (HUEM,HNUP). PARANÁ: Icaraíma, Porto Camargo, Rio Paraná, 22.I.1967, fl., *G. Hatschbach 15821* (MBM). Guaíra: Sete Quedas, 24.I.1967, fl., *G. Hatschbach 1590* (MBM); 24.I.1967, fl., *G. Hatschbach 15902* (NY,V,US,K); 30.IV.1967, fl., *H.D. Bicalho* (SP); 24.III.1977, fl., *G. Hatschbach 39818* (MBM); Rio Piquiry, 9.IV.1961, fl., *G. Hatschbach 7894* (MBM). São Pedro do Paraná, 29.V.2001, fr., *V. Tomazini 58* (HUEM, HNUP). RIO DE JANEIRO: Paty do Alferes, 18.XI.2015, fl., *C.A. Royer 70* (UPCB). Petrópolis, 27.I.1997, fl., *A.L.V. Toscano de Brito & C. Luer 18297* (MO); *A.L.V. Toscano de Brito & C. Luer 18298* (MO). SÃO PAULO: Bertioga, 19.VII.2002, fl., *S.P. Santos SPS-35* (SP - Holotype *D. litoralis)*. Botucatu, Córrego Indaiá, Faz. São Roque, 5.I.1973, fl., *A. Amaral Jr. 1368* (SP). Campos de Jordão, 25.I.2017, fl., *D.C. Imig 475* (UPCB); Fazenda da Guarda, 26.VII.1967, fl., *J. Mattos & N. Mattos 14999* (SP). Caraguatatuba, 14.V.1938, fl., *M. Kuhlmann & A. Gehrt (*SP39467); 18.VII.2016, fl., *D.C. Imig 354* (UPCB). Guarujá, 30.IV.1931, fl., *A. Gehrt* (SP27878); 17.I.1997, fl., *C. Luer 18172* (MO). Iguape, II.1917, fl., *A.C. Brade* (HB - Isotype *M. bradei*). Itú, Reserva Florestal Washington Luiz, 7.III.1934, fl., *A. Gehrt 31587* (SP, NY). Itirapina, Morro Pelado, I.1901, fl., *G. Edwall 6015* (SP); Jundiaí, 2.II.2018, fl., *D.C. Imig 598* (UPCB); 14.III.2018, fl., *D.C. Imig 607* (UPCB); Malota, 21.I.2000, fl., *E.R. Pasarin 694* (UEC); Serra do Japi, Eloy Chaves, 22.XI.1989, fl., *E.R. Pasarin 97/89* (UEC); Eloy Chaves, 22.XI.1997, fl., *E.R. Pasarin 736* (UEC); Porto Ferreira, 14.I.2014, fl., *G.M. Macusso 356* (HRCB); near Rio Mogi-Guaçu, fl., *R.M.G. Konopczyk* (HRCB); P.E. de Porto Ferreira, 13.XI.2014, fl., *G.M. Macusso & Monteiro 392* (HRCB); near Rio Mogi-Guaçu, 17.III.2011, fl., *J.A. Lombardi & R. Oliveira 8096* (HRCB). Teodoro Sampaio, R.E. do Morro do Diabo, 27.I.1986, fl., *P. Martuscelli 214* (SP); 27.I.1986, fl., *P. Martuscelli 213* (SP); 27.I.1986, fl., *P. Martuscelli 212* (SP); 6.I.1986, fl., *P. Martuscelli 201* (SP); 17.III.1989, fl., *P. Martuscelli*

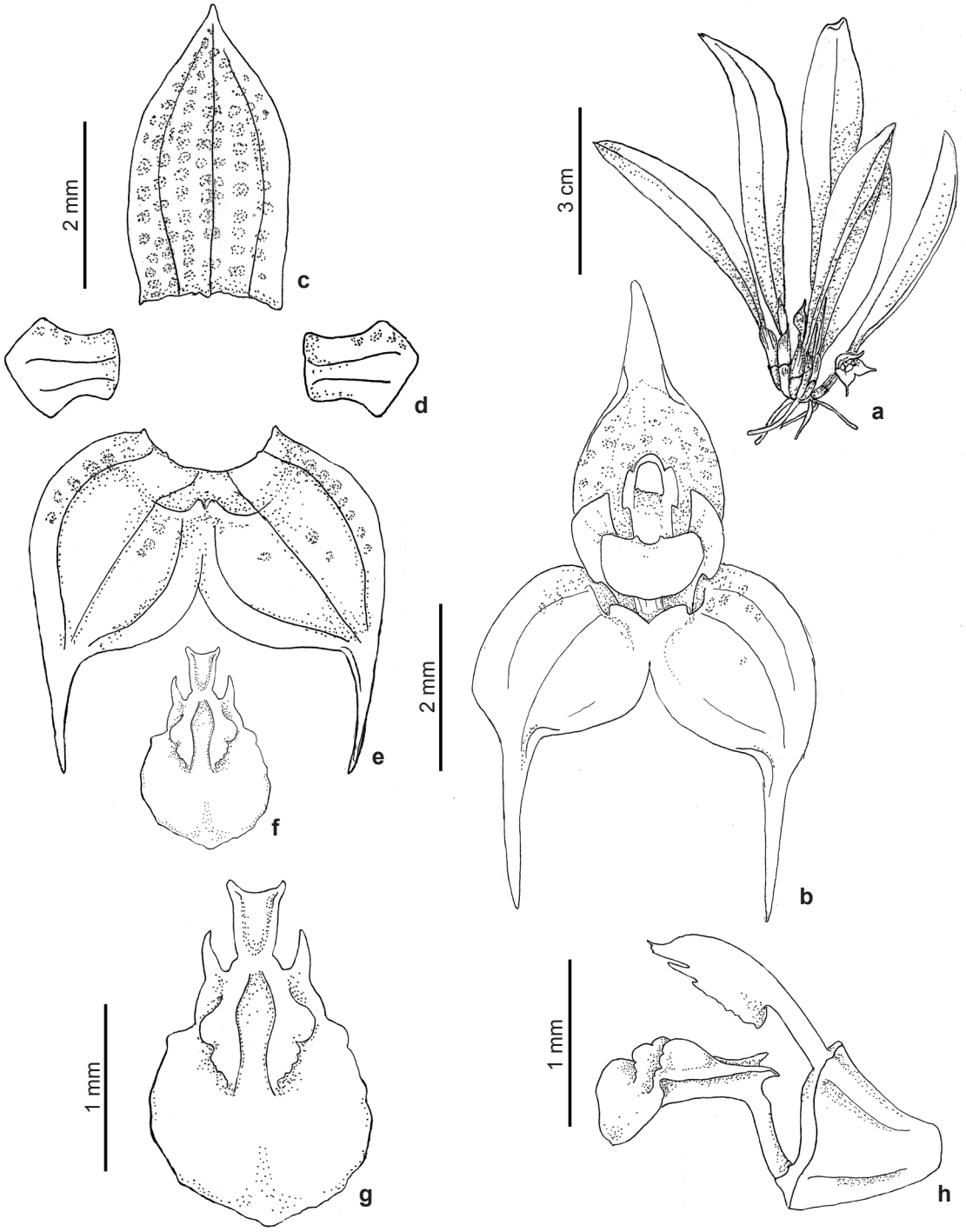

Figure 3 – a-h. *Dryadella aviceps* – a. habit; b. front view of the flower; c. dorsal sepal; d. petal; e. lateral sepal; f-g. lip; h. column, lip and ovary. (a-h. *D.C. Imig 397*).

(SP). São Sebastião, Praia da Baleia, 16.I.1997, fl., *C. Luer 18145* (MO). Silveiras, Serra da Bocaina, 26.II.1951, fl., (K940347). São Manuel, 16.I.2018, fl., *D.C. Imig 598* (UPCB); 31.V.2016, fl., *D.C. Imig 448* (UPCB). Pavuna, near to Botucatu, 29.IX.1972, fl., *A. Amaral Jr 1141* (SP); Faz. Sta Margarida, 27.XII.2013, fl., *P. Macusso & F.C. Gallerani 334* (HRCB). São Sebastião, Praia da Baleia, 6.III.1995, fl., *E.L.M. Catharino 2067* (SP). Sorocaba, 11.I.2022, fl., *M. Klingelfuss 340* (UPCB). Ubatuba, fl., *F.C.P. Garcia* (HRCB10410); fl., *J.E.L.S. Ribeiro* (HRCB 8818).

Additional material examined: PARAGUAY. Paraguarí, *C. Luer 12259* (MO); fl., *Luer 10471* (MO).

Dryadella aviceps is not endemic to Brazil, it also occurs in Paraguay. In Brazil, it is a species with a wide distribution, different from most *Dryadella*. The distribution limits to the northeast are Pernambuco, also occurs in the Bahia, Espírito Santo, Rio de Janeiro and São Paulo states, and to the south of the Paraná state. It is mentioned here for the first time for Mato Grosso do Sul state (Fig. 17b). The extreme west distribution is in Foz do Iguaçu, on the border with Paraguay and extends to the Ybycuí National Park and Paraguarí. It occurs in small and sparse populations in dry and open forests and arboreal Restinga. Despite its wide distribution, it is not easily found in nature and is rarely found in living collections.

Sampaio (2016) cites this species to São Thomé das Letras-MG, but when analysing the photo, it seemed to be *D. vitorinoi*. During our studies, we did not find material in the field to confirm the identity of this specimen. Mancinelli & Esemann-Quadros (2016) cite an occurrence for Santa Catarina, however, this is *D. catharinensis* (Imig *et al.* 2021). The flowering occurs in all year.

Dryadella aviceps is similar to *D. vitorinoi*, but differs vegetatively by lanceolate to oblanceolate leaves, erect and dark-green and generally vinaceous (*vs.* leaves lanceolate, suberect light-green on both sides, sometimes with vinaceous nuances when exposed to high sun intensity). *Dryadella aviceps* has sepals dark-yellow with sparse or dense dark-purple punctuations, the dorsal sepals are slightly inflexed and fully open flowers (*vs.* dorsal sepals light-yellow, absence or diffused and inconspicuous light-purple spotted, dorsal sepals inflexed and barely open flowers). Petals oblong, dark-yellow with sparse or dense dark-purple punctuations, two parallel veins, 1.5–1.8 × 1.2–1.5 mm, superior margin with acute to obtuse lobe (*vs.* petals yellow, oblong, 2-veined, the basal vein is curved, 5.2–5.8 × 3.4–3.6 mm, superior margin without lobe) (Figs. 3c-e; 16d).

Dryadellla aviceps was initially described as *Pleurothallis* by Reichenbach (1871). The type material is originally from Brazil, taken in 1866 by *Bowmann 1633* and cultivated in the Saunders garden by Mr Green. The following year, when the plant flowered, Reichenbach realised that this species was unpublished and described it with the epithet specific "aviceps" due to the similarity of the flower bud to a bird's head. The same author transfers the species to the genus *Masdevallia* (Reichenbach 1878). Rolfe (1890) published *Masdevallia obrieniana*, whose provenance of the specimen is unknown, in honour of Mr James O'Brien, an English writer, who drew and coloured the species' plate. Barbosa Rodrigues (1898) described *Masdevallia sessilis* from material found by his son in Itaguaby, Rio de Janeiro state. The specific epithet refers to the short peduncle (sessile), uncommon in *Masdevallia*. Also, Barbosa Rodrigues describes the yellow sepals stained with dark crimson and draws attention to this, saying that it could resemble a *Pleurothallis*, but the short floral tube (lateral sepals joined) would include it in *Masdevallia*. Barbosa Rodrigues (1901) described *Masdevallia paulensis* Barb.Rodr., whose epithet is related to São Paulo, the state of origin of the material (Salto Grande, Rio Paranapanema). *Masdevallia sessilis* and *M. paulensis* were synonymised in *M. obrieniana* by Pabst (1976), justifying that the only detail that differs them from *M. sessilis* is that they do not have concolor yellow sepals without spots of carmine and *M. paulensis* also differs because they do not present the yellow lateral sepals, but they are punctuated with purple, therefore, insufficient details to keep them autonomous from *M. obrieniana*. Kraenzlin (1925) synonymises *M. obrieniana* to *M. simula* var. *obrieniana* (Rolfe) Kraenzl. Luer (1978a) makes the new combination for *Dryadella aviceps* (Rchb. f.) Luer. Barros (1995) describes *D. silvana* with material from the south of Bahia, cultivated by E.F. da Silva. The author compares it to *D. obrieniana*, which has yellow flowers with violet punctuations, non-tailed sepals, and lip short unguiculated and obovate. In contrast, in *D. silvana* the flowers are yellowish-brown with vinaceous punctuations and a long unguiculated and 'oblate' lip. *Masdevallia espirito-santensis* was described by Pabst (1973), whose epithet is related to the state of Espírito Santo, the state where the type was found, later transferred to *Dryadella* by Luer (1978a). Pabst (1973) compares to *M.*

obrieniana, now synonymous of *D. aviceps*, but differentiates *M. espirito-santensis* by the purple and not yellow flowers, and greater vegetative size, in addition to the different lip, but without the indication of the differences. Analysing the descriptions, illustrations, and holotypes, we found it is all synonyms of *D. aviceps*. There is a variation in the flowers' colour and distribution. In places with a greater sun incidence and heat, the flowers tend to have darker sepals and petals due to the increase of purple punctuations. Luer (2005) highlights that this species is only known by the type and believed to be lost and based its description on the drawing of Pabst in the original description.

Dryadella gomes-ferreirae was published by Pabst (1975), whose epithet is in honour of Augusto Burle Gomes-Ferreira, who received the type specimen from Severino Parasita and whose collection location is unknown. In the protologue, Pabst (1975) points out an affinity with *M. espirito-santensis* and *M. obrieniana* for having short caudate sepals but differs in the tiny red flowers, the size of the flowers and the general morphology. Analysing the descriptions and illustrations of the protologue, we believe that it is a synonym of *D. aviceps.* As mentioned above, there is a variation in the colour of the flowers throughout the distribution. Luer (2005) highlights that *Dryadella gomes-ferreirae* is only known by the type, that is lost. The same author emphasises the need for further investigation, given the little knowledge about the species. Considering the lack of type, Luer (2005) based the description and drawn on a material acquired in Munich Botanical Garden and cultivated in Tarporley, England, by S. Manning (MO), but this material was not found either.

Dryadella litoralis was described by Campacci (2007), whose specific epithet refers to the place where the plant was found, litoral (coastal) of São Paulo state. In the protologue, the author describes the affinity with *D. obrieniana.* At that time, it had already been synonymised with *D. aviceps*. To justify this new species, Campacci declares that *D. litoralis* differs in the morphology and colours of the flowers, which presents whitish petals and sepals with purple macules and caudate sepals, a longer lip with sub-pandurate central lobe, and a long canaliculate unguiculus. *Dryadella obrieniana* has yellow petals and sepals with violet macules, short caudate sepals, lip with an obovate central lobe, and a short unguiculus. In the description of *D. litoralis*, the author describes yellow or whitish flowers, abundantly stained with purple, which contradicts the justification. He justifies that the habitat is different, as it is on the north coast of São Paulo, while *M. obrieniana* occurs on the plateau and has a larger dispersion area.

Analysing the holotype, descriptions, illustrations, and exsiccatae from various locations, we believe it is a synonym of *D. aviceps*. In addition to the holotype of *D. litoralis*, we compared the live material, both from specimens from São Paulo state, Caraguatatuba (*D.C.Imig 354*), Iguape (*D.C. Imig 452*), Campos de Jordão (*D.C. Imig 475*), Jundiaí (*D.C. Imig 598*), Espírito Santo state, Venda Nova do Imigrante (*D.C. Imig 476*), Linhares (*D.C. Imig 525*), and Bahia state, Prado (*D.C. Imig 616*) and Vitória da Conquista (*C.O. Azevedo 605*), and we observed that there is a significant variation in the colours of the sepals and petals. Throughout the wide distribution area of this species, we noticed that specimens from the south of its distribution present lighter-yellow flowers with sparse purple punctuations and large and wide leaves, rarely vinaceous. In the warmer regions, like Bahia, the flowers are darker, as the purple punctuations are more juxtaposed, and the leaves are smaller, narrower, and entirely vinaceous (Fig. 15c-e).

4. *Dryadella catharinensis* Imig, Mancinelli & E.C.Smidt, Phytotaxa, 508(2): 206 (2021). Holotype: BRAZIL. SANTA CATARINA: Joinville, Morro do Tromba, *W.S. Mancinelli 1007* (JOI!). Figs. 4a-g; 15f

Epiphytic herb, caespitose, small, 16–23 mm tall. Roots thick, 2–3 at each rhizome node, 0.5–0.7 mm diameter. Rhizome 1–1.5 mm between the internodes. Ramicaul 1.5–2 mm long, suberect, covered by two paleaceous, triangular sheaths, obtuse and mucronate, entire, 0.8–1.2 × 0.6–0.8 mm. Leaf dark green on the adaxial side and vinaceous on the abaxial side, thickly coriaceous, narrowly elliptic, flat, 13–19.5 × 2.1–3.3 mm; petiole 1–1.5 mm long; blade suberect, cuneate at the base, retuse to truncate. Inflorescence a successive, single-flowered, congested raceme; bearing two pale basal bracts, triangular, mucronate, 1.51.8 × 1–1.3 mm; peduncle 5.5–8.5 mm long; pedicel plus ovary light-green with purple dots, slightly tri-alate, entire, 0.8–1.3 mm long. Flower small to medium; dorsal sepal pale yellow, densely dark-purple spotted, ovate, inflexed, 3-veined, carinate and

entire, 4.5–5.5 × 2–2.5 mm, base connate 0.5 mm with the lateral sepals forming a short sepaline cup, obtuse, inconspicuous caudate, entire; lateral sepals light pale yellow, sparse light-purple spots at base, ovate, 3-veined, asymmetrical, 3.3–3.7 × 1.8–2.3 mm, base connate, a transversal callus 1mm, orange, subacute, short caudate, tail 1–1,5 mm, slightly toothed; petals dark-yellow, diffused

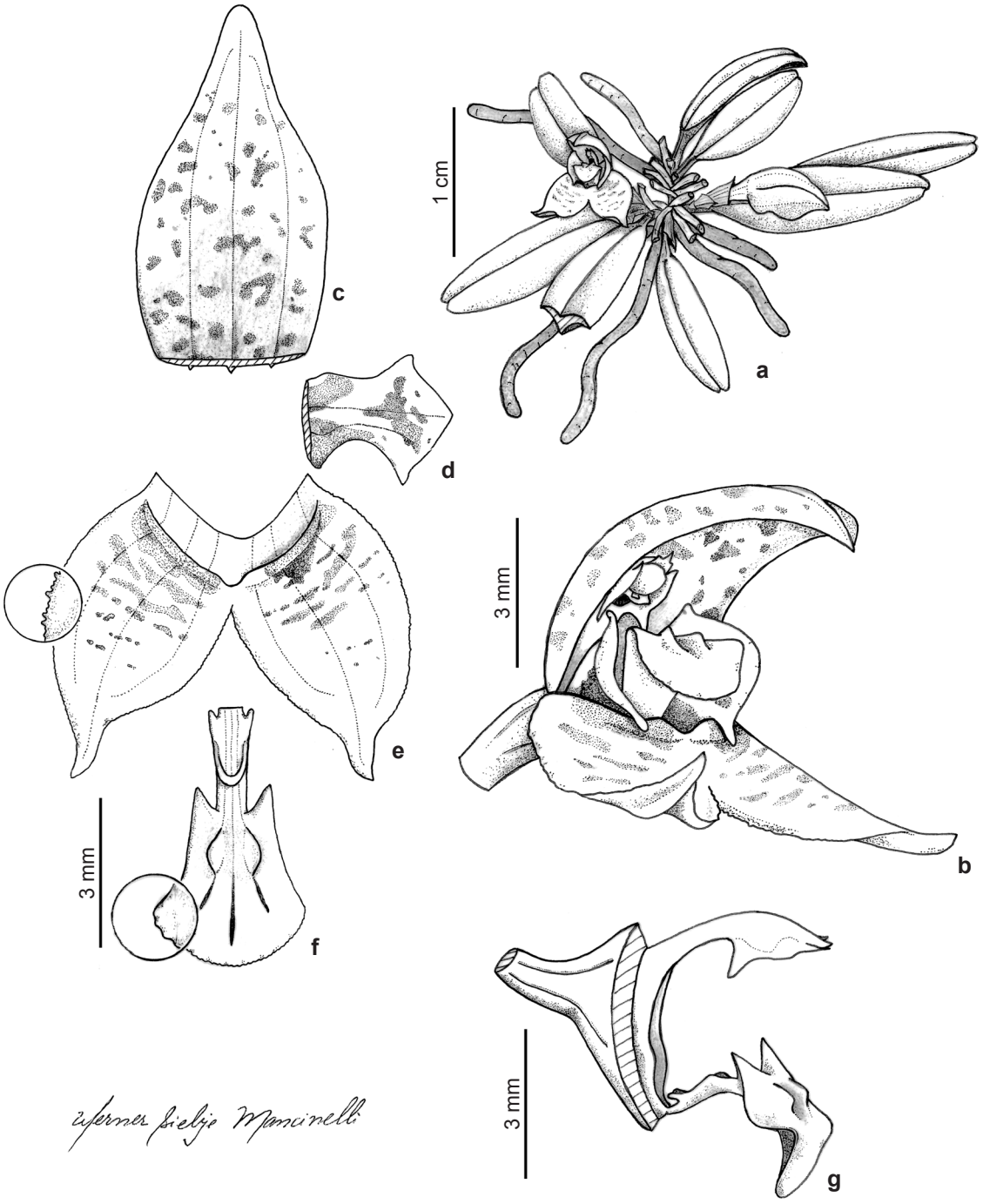

Figure 4 – a-g. *Dryadella catharinensis* – a. habit; b. side view of the flower; c. dorsal sepal; d. petal; e. lateral sepal; f. lip; g. column, lip and ovary. (a-g. *D.C. Imig 656*).

red-spotted, rhomboid, 2-veined, basal vein is curved, asymmetrical, 1.0–1.4 × 1.3–1.5 mm, base truncate, obtuse, superior margin erect, lobe acute lobe, slightly projected forward; inferior margin excavated, lobe acute, entire; lip dark yellow to orange, not spotted, unguiculate; claw 0.7–0.8 mm, bilobed at base, caniculate, a ring callus in the median portion; blade cuneate, 1.8–2.1 × 1.5–1.6 mm, base with two lateral, acute retrorse lobes, 0.3 mm; a pair of lamellar callus at the base, apex reflexed, obtuse, toothed; column dark-yellow, red in the ventral margin, 1.5–1.7 mm long, curved, winged on the distal half, acute-toothed at winged base; apex minutely toothed, anther red, apiculate. Fruit not seen.

Material examined: SANTA CATARINA: Corupá, Bairro Izabel, 1.IX.2020, fl., *D.C. Imig 656* (UPCB). Joinville, Morro do Tromba, 3.IX.2009, fl., *W.S. Mancinelli 1007* (JOI); Serra Dona Francisca, next to Estrada Piraí, 29.VIII.2020, fl., *W.M. Mancinelli & D.C. Imig 1591* (MBM).

Dryadella catharinensis is endemic to the Atlantic Rainforest and, until now, known only from the type localities in the state of Santa Catarina (Fig. 17b). It was found in Joinville and Corupá, north-northeast of the Santa Catarina state, in the Dense Ombrophilous Submontane Rainforest. In Joinville, it occurs in the Morro da Tromba (holotype locality) and Morro Pelado, within the Serra Dona Francisca Environmental Protection Area (APA), with an extension of 401.77 km^2. Few individuals were found at both sites, growing at 2–3 m from the ground, next to bifurcations of the central stem of the phorophyte. The flowering period occurs from August to October.

The tiny *Dryadella catharinensis* is similar to *D. susanae* and may be distinguished vegetatively in the large size of the plant 16–23 mm (*vs.* 10–13.5 mm), and in the large, 13–19.5 × 2.1–3.3 mm (*vs.* 3–5 × 1.5–3 mm), narrowly elliptical, suberect and petiolate leaves (*vs.* leaves broadly elliptical, prostrate and sessile). In the flowers, *D. catharinensis* could be distinguished by the yellow (*vs.* dark red in *D. susanae*) flower, the dorsal sepal 4.5–5.2 mm long (*vs.* 3.8–4.0 mm), ovate, obtuse and thin (*vs.* triangular-ovate, acute, thickened), the lateral sepals with the margin slightly toothed (*vs.* entire margin), the 1.0–1.4 mm long petals (*vs.* petals 1.5 mm) and the larger lip blade 1.8–2.1 × 1.5–1.6 mm (*vs.* lip blade 1.5 × 1.4 mm), cuneate, with margins toothed, and a ring callus in the median portion of the claw (*vs.* obovate, margins entire, without callosities in the claw) (Figs. 15f; 16a).

5. *Dryadella crenulata* (Pabst) Luer, Selbyana 2: 371, 1978a. ≡ *Masdevallia crenulata* Pabst, Bradea 2: 66 (1976). Holotype: BRAZIL. ESPÍRITO SANTO: Domingos Martins, *R. Kautsky* (HB68940, lost). Lectotype (here designated): Pabst's original drawing, which appeared in Bradea 2(12): 66, fig. b. (1976). Figs. 5a-g; 15g-h

Epiphytic herb, cespitose, large, 50–65 mm tall. Roots slender, 2–3 at each rhizome node, 0.3–0.4 mm diameter. Rhizome 1.5–2 mm between the internodes. Ramicaul 8–9.5 mm long, erect, covered by 2(–3) paleaceous, oblanceolate sheaths, acute and mucronate, entire, 8–9.2 × 3–3.7 mm. Leaf green to dark-green on both sides, coriaceous, oblanceolate, flat, 40–57.3 × 4.5–6 mm; petiole 3–4.5 mm long; blade erect, attenuate at the base, obtuse and minutely mucronate. Inflorescence successive single-flowered, congest raceme; bearing 2(–3) pale basal bracts, narrow elliptical, acute and mucronate, 1.8–3.2 × 1–1.4 mm; peduncle 10–17 mm long; pedicel plus ovary light-green, slightly tri-alate, entire, 2.3–2.5 mm long. Flower medium to large; dorsal sepal translucent albescent to light-yellow, densely dark-purple spotted, ovate, totally inflexed, 3-veined, carinate and entire, 5.5–8 × 3–3.7 mm, base connate 1 mm with lateral sepals forming a short sepaline cup, acute, long caudate, tail 6–7(–9) mm with clavate apex, entire; lateral sepals translucent yellow, diffused dark-purple spotted, ovate, 3-veined, asymmetrical, totally deflexed, 4.8–6.5 × 2.1–2.8 mm, base connate, a evident transverse callus 1.5 mm, purple, acute, long caudate, tail 5–6 (–7.5) mm with clavate apex, entire; petals translucent yellow, diffused purple-spotted, rhomboid, 2-veined, basal vein bifurcated, asymmetrical, 2–2.3 × 1.9–2.1 mm base truncate, wide obtuse, superior margin with discreet obtuse lobe slightly projected forward; inferior margin excavated, wide obtuse lobe, entire; lip purple, unguiculate; claw 0.5–0.7 mm, bilobed at base, caniculate; blade ovate, 1.5–2.3 × 1.3–1.8 mm, base with two lateral acute, retroses lobes, 0.3 mm, a pair of lamellar callus at the base, apex reflexed, wide obtuse, visibly toothed to ciliated; column yellow, 0.9–1.2 mm, curved, winged on the distal half, toothed at winged margins; apex apiculated, anther yellow, apiculate. Fruit not seen.

Material examined: BAHIA: Boa nova, 3.III.2019, fl., *A.L.V. Toscano de Brito 3837* (UPCB); 25.VI.2019, fl., *A.L.V. Toscano de Brito 3884* (UPCB). Poções, Serra do arrepio, área de florestas estacional semidecidual, 25.VI.2021, fl., *D.C. Imig & D. Rodrigues 667* (UPCB). ESPÍRITO SANTO: 7.X.1975, fl., *C. Luer 6469* (SEL).

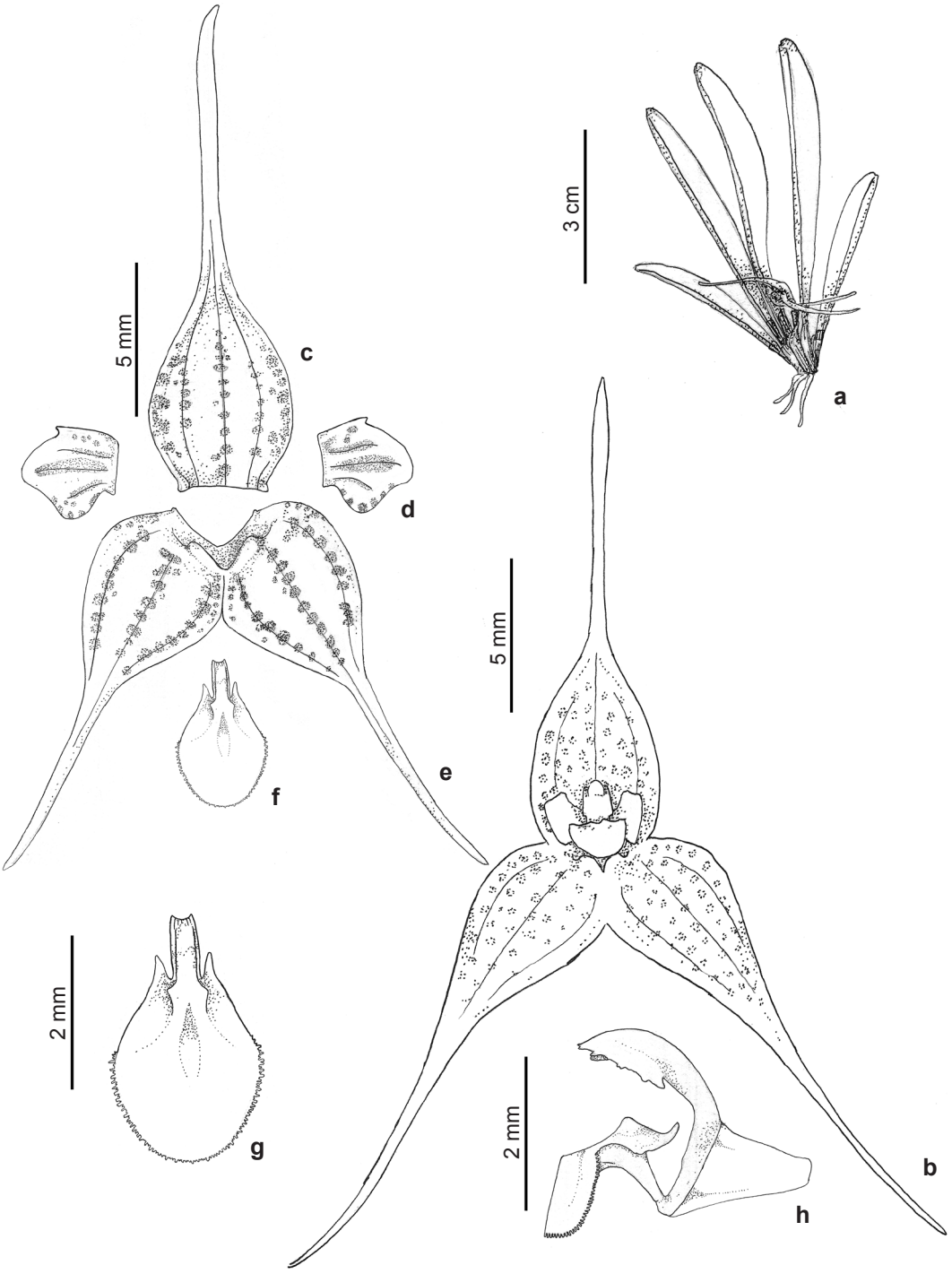

Figure 5 – a-h. *Dryadella crenulata* – a. habit; b. front view of the flower; c. dorsal sepal; d. petal; e. lateral sepal; f. lip; g. column, lip and ovary. (a-h. *D.C. Imig & D. Rodrigues 667*).

Dryadella crenulata is endemic to the Brazilian Atlantic Rainforest, and until now, it was only recorded for the state of Espírito Santo. We registered here for the first time in the Bahia state. The location of the type is degraded; in our expeditions in Domingos Martins and its surroundings, we could not find it. The orchidologists and collectors of the region were visited to find the species in the living collections without success. *Dryadella crenulata* was found in seasonal semideciduous forests, forms small and sparse populations and is quite rare in nature (Fig. 17c). The flowering period occurs from March to October.

Dryadella crenulata differs from other species of the genus in Brazil, especially for the dorsal sepal projected forward (totally inflexed), long caudate and clavate; lateral sepals facing backwards (totally reflex), lip purple and visibly denticulated to ciliate with dark purple margins, and column with denticulated margins (Fig. 15g-h). *Dryadella crenulata* was initially described in *Masdevallia* by Pabst (1976) and included in the *Masdevallia* section *Rhombipetala* (Bas: *Masdevallia crenulata*), whose type was collected by *R. Kautsky in 1975* (HB68940), but this material was not found in the collection. Later, Luer (1978a) transferred *M. crenulata* to *Dryadella.*

6. *Dryadella gnoma* (Luer) Luer, Selbyana 2: 208, 1978a. ≡ *Pleurothallis gnoma* Luer, Selbyana 3(1): 110, fig. 158 (1976). Holotype: EQUADOR. NAPO: *C. Luer, G. Luer & S. Wilhelm 698* (MO652922!).
= *Dryadella misasii* Luer & R. Escobar, Orquideologia 13(2): 141, t. 14 (1979). Holotype: COLÔMBIA. CHOCO: Bahia Solano, *R. Escobar 14544* (JAUM050!); 29.IX.1977, *C. Luer 1809* (MO, SEL).
= *Dryadella osmariniana* (Braga) Garay & Dunsterville Orchid. Venez. III. Field Guide, 172: 47 (1979). *syn. nov.* ≡ *Masdevallia osmariniana* Braga in Acta Amazonica 7: 333 (1977). Holotype: BRAZIL. MANAUS: estrada Manaus-Itacoatiara, IV.1976, fl., *O.P. Monteiro & J. Ramos 675*, (INPA56525!); Paratype: BRAZIL. MANAUS: VI.1972, *O.P. Monteiro & J. Lima 53* (INPA35875!).
= *Dryadella cardosoi* Campacci & J.B.F Silva. Coletânea de Orquídeas Brasileiras 11: 414 (2015). Type: BRAZIL. PARÁ: Trairão, *A. Cardoso 720* (Holotype MG, lost). Lectotype (here designated): original drawing which appeared in Coletânea de Orquídeas Brasileiras 11: 416, fig. 1 (2015). *syn. nov.* Figs. 6a-h; 15i

Epiphyte herb, cespitose, medium, 45–70 mm tall. Roots fleshy, 2–3(–4) at each rhizome node, 0.6–1,2 mm diameter. Rhizome 4–5 mm between the internodes. Ramicaul 3.3–6 mm long, erect, covered by 2(–3) paleaceous, oblanceolate sheaths, acute minutely mucronate, 2.5–4.5 × 1.3–2.7 mm. Leaf dark-green and sometimes with purple portions, coriaceous, oblanceolate to narrow-obovate, flat, 32–65 × 3–4.5 mm; petiole 1–1.5(–2.5) mm long; blade erect, attenuate at the base, attenuate and minutely tri-denticulate. Inflorescence a successive, 2–3 flowered, congest raceme; bearing 2(–3) pale basal bracts, oval lanceolate, acute, 2.8–5.2 × 1.2–1.8 mm; peduncle 2.5–5 mm long; pedicel plus ovary light-green to albescent, slightly tri-dentate, entire, 2–2,5 mm long. Flower medium; dorsal sepal light-yellow to greenish-yellow, occasionally dark-yellow, no spotted, ovalate, inflexed, 3-veined, carinate and entire to slightly erose, 5.5–7.5 × 2.3–2.5 mm, base connate 1–1.5 mm with lateral sepals forming a short sepaline cup, attenuate, short caudate, tail 1 mm with acute apex, entire; lateral sepals light-yellow to greenish-yellow to occasionally dark-yellow, no spotted, ovate, 3-veined, asymmetrical, (4.2–)5.5 × 2.3–2.6 mm, base connate, absence or rudimentary- transverse callus, wide acute, -short caudate, tail 0.6–0.8 mm with attenuate apex, entire; petals yellow, light purple-spotted, oblong, 2-veined, veins parallel, asymmetrical, 2.1–2.4 × 1.7–2.1 mm, base truncate, apex wide obtuse, superior margin with well-marked acute lobe; inferior margin excavated, obtuse lobe, entire; lip dark-purple with white margins, unguiculate; claw 0.3–0.7 mm, bilobed at base, caniculate; blade oblong as shovel-shaped, 2.2–2.8 × 1–1.5 mm, absent or discreetly obtuse lobes; lamellar callus absent, discreetly channelled, apex no reflexed, truncate to wide obtuse, entire; column light yellow, 1.7–2 mm long, curved, winged on the distal half, crenated at winged margins ending in a sharp tooth; apex toothed, anther light yellow, apiculate; pollinarium, not seen. Fruit not seen.

Material examined: AMAZONAS: Manaus, estrada Manaus-Itacoatiara, IV.1976, fl., *O.P. Monteiro & J. Ramos 675* (INPA - Holotype *D. osmariniana*); VI.1972, fl., *O.P. Monteiro & J. Lima 53* (INPA - Paratype, HB - Isoparatype *D. osmariniana*). Presidente Figueiredo, 25.V.2020, fl., *A.H. Krahl 1477* (INPA). AM-1, Rio Preto da Eva, 17.III.1977, fl., *O.P. Monteiro 1345* (INPA).

Additional material examined: COLOMBIA. CHOCO: Bahia Solano, Alto de Nabugá, 9.I.1975, fl., *R. Escobar 1451* (JAUM, SEL - Holotype *D. misasii*). CHOCO: Serrania del Baudó, VI.1988, fl., *G.M. Urreta 70*

(COL). EQUADOR. NAPO: piscinas de Laguna Azul, Rio Jatunyacu, Comunidade de Alkus, 29.XI.2010, fl., *L. Endara 1610* (QCA, FLAS); Cantón Tena: Rio Jatunyacu, 18.XII.2009, fl., *L. Endara 1553* (QCA, FLAS); 27.XI.2010, *L. Endara et al. 1601* (QCA, FLAS).

Dryadella gnoma is a species with a relatively broad distribution and is related to the low forests of the Andes, between 500 and 900 m altitude, from Costa Rica to Colombia and Peru (Luer 2005). Here we report the first record for the Brazilian Amazon,

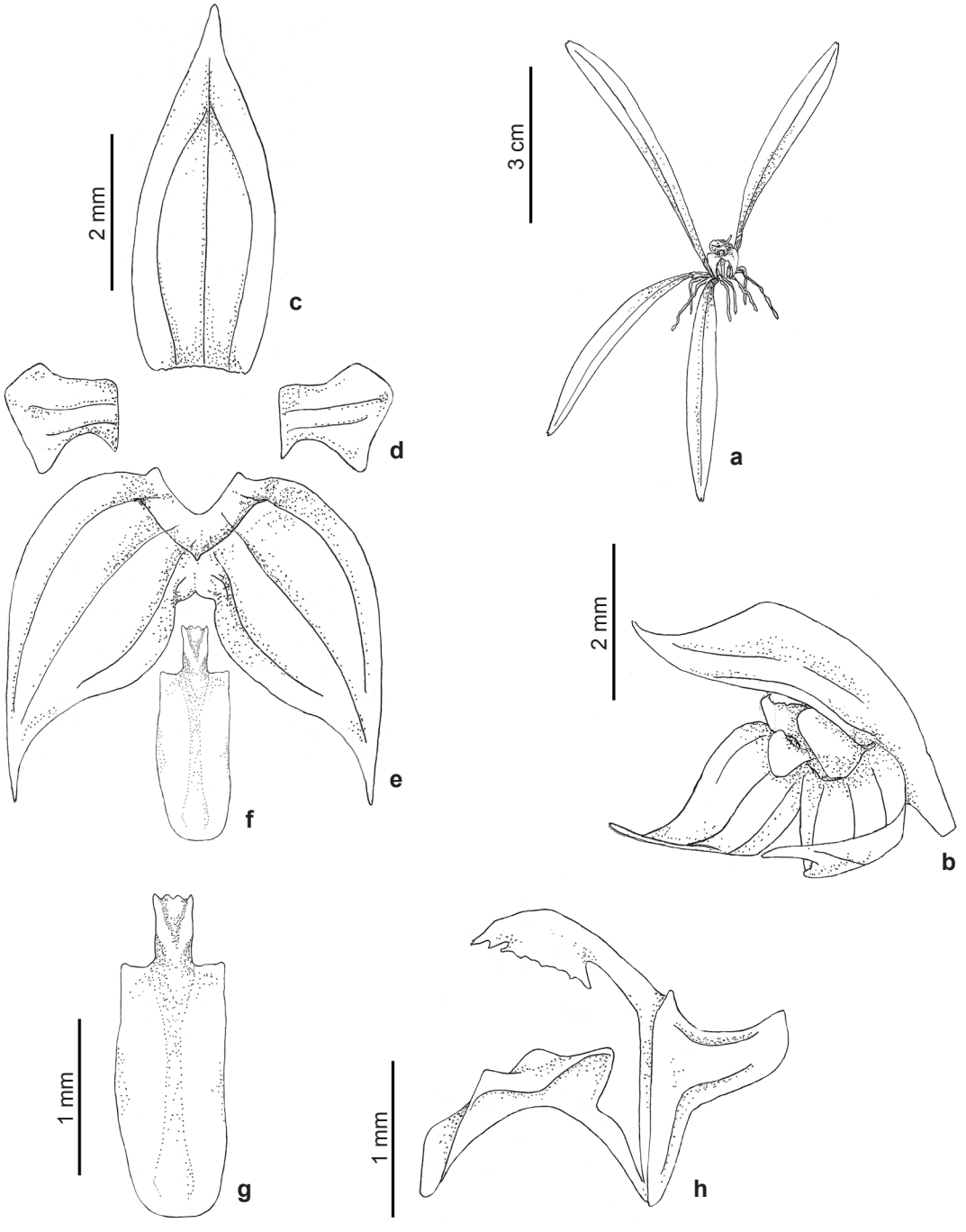

Figure 6 – a-h. *Dryadella gnoma* – a. habit; b. side view of the flower; c. dorsal sepal; d. petal; e. lateral sepal; f-g. lip; h. column, lip and ovary. (a-h. *A.H. Krahl 1477*).

in the state of Pará. The flowering period occurs from March to June. (Fig. 17c).

Dryadella gnoma was described as *Pleurothallis gnoma* Luer (Luer 1976), based on material from Ecuador. Later, Luer (1978a) transferred it to *Dryadella*. Subsequently, Luer & R. Escobar (1979) describe *Dryadella misasii*, from Colombia, Department of Choco. This species is also synonymised in *D. gnoma* by Luer (2005), who justifies that the petals present variable angles, but the morphology of the shovel-shaped lip (different from all other species of the genus), in the deflexed and absence of transversal callus at the base of the lateral sepals (characteristic of *Dryadella*) and the lack of total opening of the flowers are characteristics that justify the synonymisation. *Dryadella osmariniana* was initially described in *Masdevallia* by Braga (1978c) and inserted in the *M.* section *Rhombipetalae*; it is compared to *D. obrieniana*, differing from it by linear-lanceolate leaves and lip with denticulated margins. Dunsterville & Garay (1979) did a new combination in *Dryadella*. Recently *Dryadella cardosoi* Campacci & J.B.F. Silva was described by Campacci (2015), based on material collected in Brazil, Pará, Trairão, *A. Cardoso 720* (MG, lost). The authors do not comment on similarities with other species in the protologue.

The characteristic of oblong (shovel-shaped) and non-deflected lip, in addition to the typical colouration of *D. gnoma* used to characterise *D. cardosoi*, which are greenish-yellow sepals and petals, with a purple lip, without basal lobes and absence of transverse callus at the base of the lateral sepals. The colour of the flowers is variable along the geographic distribution; they occasionally present dark-yellow sepals, petals without purple punctuations and a dark-yellow lip. Analysing the type, descriptions, and illustrations, in addition to materials of *D. gnoma* in the herbaria QCA, FLAS and COL, we propose synonymisation here, thus prevailing the oldest species *D. gnoma*, including *D. osmariniana* and *D. cardosoi* as synonyms, especially considering the shape of the flowers that do not open completely.

Luer (2005) suggested the synonymisation of *D. osmariniana* in *D. guatemalensis*, but *D. osmarinana* (now *D. gnoma*) has lanceolate to narrow-obovate leaves, 3.2–65 × 3–4.5 mm (*vs.* 100 mm). The flowers have greenish-yellow sepals and absence of purple punctuations, absence of transverse callus at the base of the lateral sepals and oblong (spade-shaped) lip, non-reflex, dark-purple (*vs*. yellow sepals and densely punctuated with dark-purple, presence of transverse callus at the base of the lateral sepals and reflex lip, obovate to orbicular, yellow to greenish-yellow and densely marked with dark purple).

Campacci *et al.* (2022) cite the occurrence of *D. aurea* for the Amazonia, based on material collected in Rio Preto do Eva by *Costa, V.S 27*, whose material would be deposited at the ESA and was not located. Given the impossibility of confirming the identity of this material, but considering the proximity to the typical locality of *D. osmariana* and the similarity seen in the images used by the authors, we believe that this record is about *D. gnoma*.

7. *Dryadella kautskyi* (Pabst) Luer, Selbyana 2: 208, 1978a. ≡ *Masdevallia kautskyi* Pabst, Bradea 1: 33 (1973). Holotype: BRAZIL. ESPÍRITO SANTO: Domingo Martins, Caxixe Frio, *R. Kautsky 381-A* (HB59136!). Figs. 7a-h; 15j

Epiphyte herb, densely cespitose-ascending, medium, 40–5.5 mm tall. Roots slender, 3–4(–5) at each rhizome node, 0.3–0.5 mm diameter. Rhizome 1–2 mm between the internodes. Ramicaul 4.5–5 mm long, erect, covered by two paleaceous, oblong to lanceolate tubular sheaths, acute and mucronate, 8.3–1.3 × 2.4–2.9 mm. Leaf light-green, sometimes suffused with purple, thickly coriaceous; linear, semiterete, grooved on the adaxial face, 4–6(–7.5) × 1.5–1.8 mm; petiole 2–3 mm long; blade erect, attenuate at the base, retuse and mucronate. Inflorescence a successive, single-flowered, bearing 3(–4) pale basal bracts, narrow elliptical, attenuate and mucronate, 1.3–1.9 × 0.6–0.8 mm; peduncle 7–10 mm long; pedicel plus ovary light green to albescent, slightly tri-alate, entire, 1.6–2.5 mm long. Flower medium; dorsal sepal yellow to greenish-yellow, sparse light-purple spotted, ovate, inflexed, 3-veined, carinate and minutely crenate, 5.3–6.5 × 1.8–2.2 mm, base connate 0.5 mm with lateral sepals forming a short sepaline cup, acute, short caudate, tail 1–1.5 mm with acute to acuminate apex, minutely crenated; lateral sepals yellow to greenish-yellow, sparse and not evident light-purple spotted, ovate, 3-veined, asymmetrical, 5–5.5 × 2–2.3 mm, base connate, a minutely transverse callus 0.5 mm, purple, acute, short caudate, tail 1–1.3 mm with acuminate and deflex apex, minutely crenated; petals yellow to dark-yellow, sparse and not evident light-

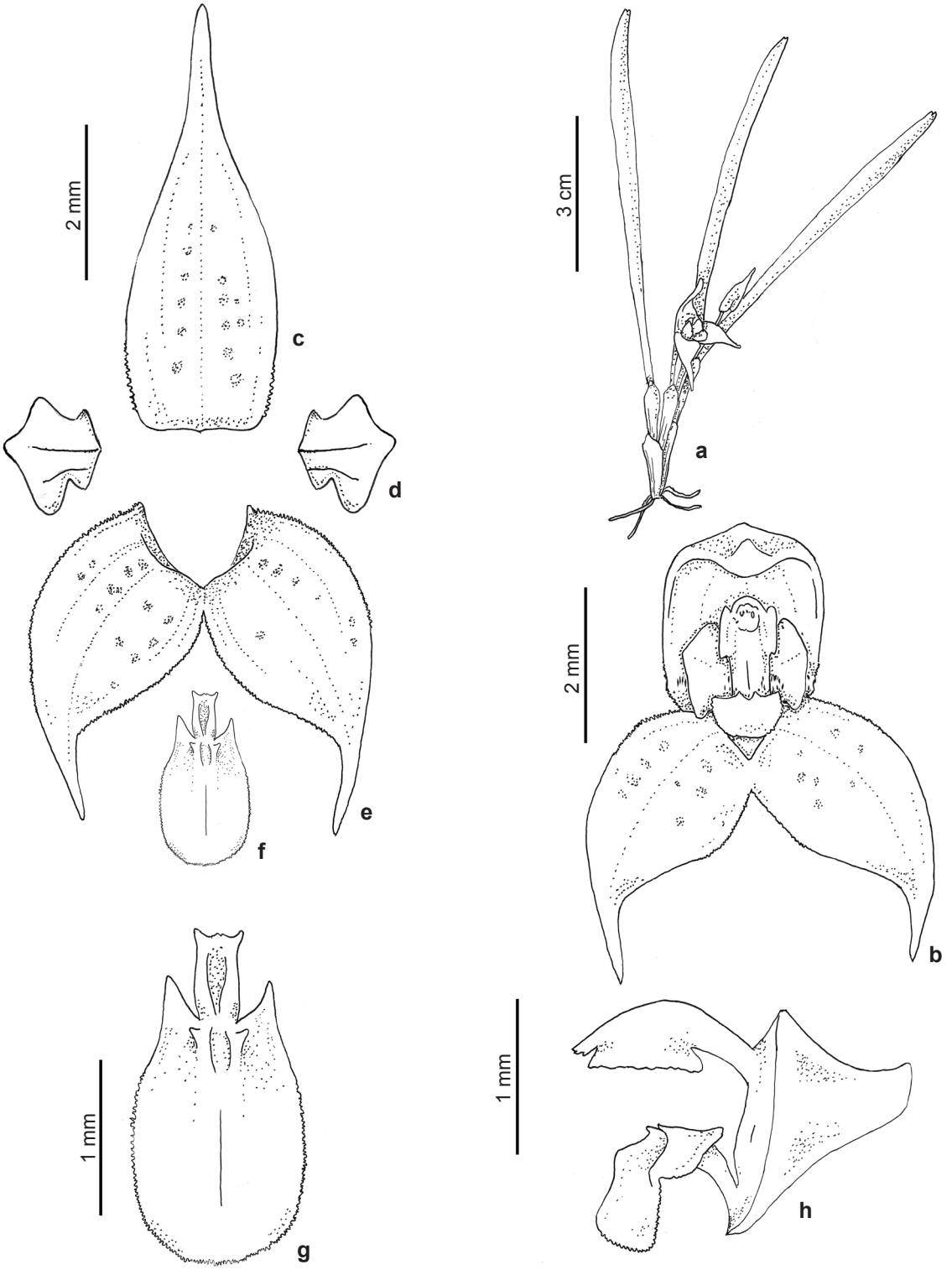

Figure 7 – a-h. *Dryadella kautskyi* – a. habit; b. side view of the flower; c. dorsal sepal; d. petal; e. lateral sepal; f-g. lip; h. column, lip and ovary. (a-h. *A.L.V. Toscano de Brito 3476*).

purple spotted, oblong, 2-veined, basal veins is curved, asymmetrical, 1.3–1.5 × 1.5–1.8 mm, base truncate, obtuse, superior margin with acute to obtuse lobe; inferior margin excavated, wide obtuse lobe, entire to minutely crenated; lip yellow, not evident light-purple spotted on th base, unguiculate; claw 0.5–0.8 mm, bilobed at base, caniculate; blade oblong to obovate, 1.8–2 × 1.1–1.4 mm, base with 2 acute, divaricated lobes, 0.5 mm; a pair of minutely lamellar callus at the base, apex reflex, widely obtuse, minutely crenated; column yellow, 1.2–1.5 mm, curved, winged on the distal half, crenated at winged base ending on a slightly protruding back tooth; apex acute and minutely serrated, anther light yellow, apiculate; pollinarium not seen. Fruit not seen.

Material examined: ESPÍRITO SANTO: Cultivated in Petrópolis from ES, 30.XI.1989, fl., *C. Luer 14501* (MO). Venda Nova do Imigrante, 21.XI.2015, fl., *A.L.V. Toscano de Brito 3476* (UPCB); 25.XI.1989, fl., *C. Luer 14478* (MO). Santa Teresa, fl., *Orquidário Calimann 8831* (MBML). Goiabeiras/Tijuco Preto, 26.X.1981, fl., *R. Kautsky 703* (SP).

Dryadella kautskyi is endemic to the Atlantic Rainforest and seems to be restricted to the mountainous region of Espirito Santo state (Fig. 17c), where it is rare. The type locality is degraded, and during field expedition visits to orchidologists and collectors in the area, no individuals of the species were found. According to information from the herbarium labels, the flowering period occurs from October to November.

Dryadella kautskyi is easily recognised among the other Brazilian species due to its light-green linear and semi-terete leaves. Solitary single-flower inflorescence arranged on a short peduncle measuring 7–10 mm, with barely apparent flowers, pale-yellow to greenish-yellow in colour and absent or inconspicuous light-purple punctuations (Fig. 15j).

8. *Dryadella krenaquiana* Campacci, Coletânea de Orquídeas Brasileiras 11: 418, 2015. Holotype: BRAZIL. MINAS GERAIS: Conselheiro Pena, Padre Ângelo, Riacho João Pinto, 1,300 m Alt. *R. Vasconcelos Leitão et al. 178* (ESA134850!). Figs. 8a-h; 15k

Epiphyte or lithophytic herb, pending, small to medium, 35–48 mm tall. Roots thick, 4–5(–6) at each rhizome node, 0.3–0.4 mm diameter. Rhizome 87–11 mm between the internodes. Ramicaul 2–2.3 mm long, pending, covered by 2(–3) paleaceous, oblanceolate sheaths, acute and minutely mucronate, 1–2.1 × 0.7–1.4 mm. Leaf light green on both sides or older leaves may have purplish nuances, coriaceous, narrow-obovate, flat, 25–38 × 2–3.2 mm; petiole 1–1.3 mm long; blade suberect, attenuate at the base, obtuse and mucronate. Inflorescence uni-flowered; bearing 2(–3) pale basal bracts, narrow elliptical, acute and minutely mucronate, 1–1.5 × 0.5–0.8 mm; peduncle 0.5–0.8 mm long; pedicel plus ovary light green to albescent, slightly tri-alate, entire, 1.2–1.4 mm long. Flower small; dorsal sepal yellow with purple punctuations over the veins, elliptic, inflexed, 3-veined, carinate and entire, 3.5–4.5 × 2.0–2.8 mm, base connate 0.4 mm with lateral sepals forming a short sepaline cup, acute, short caudate, tail 0.5–0.7 mm with acute apex, entire; lateral sepals yellow with purple punctuations over the veins, ovate, 3-veined, asymmetrical, 3.5–4.8 × 1.8–2.5 mm, base connate, a transverse callus 0.5 mm, purple, acute, short caudate, tail 0.3–0.6 mm with acute attenuate apex, entire; petals yellow with purple punctuations over the veins, semi-lunatus, 3-veined, basal veins is curved, asymmetrical, 1–1.2 × 1.1–1.4 mm, base truncate, wide obtuse, superior margin with discreet wide, acute lobe; inferior margin excavated with wide lobe, entire; lip yellow, unguiculate; claw 0.5–0.6 mm, bilobed at base, caniculate; blade obovate, 1.8–2.1 × 0.8–1.2 mm, base with two acute, retrorse lobes, 0.2 mm; a pair of minutely lamellar callus at the base, apex reflex, obtuse, entire to crenated; column 1–1.7 mm, curved, winged on the distal half, discreetly entire to crenate at winged base, apex acute and entire, anther not seen; pollinarium not seen. Fruit not seen.

Material examined: MINAS GERAIS: Conselheiro Pena, Riacho João Pinto, 1.X.2014, fl., *R. Vasconcelos Leitão et al. 178* (ESA); Serra do Padre Ângelo, montanha do Sossego, 10.I.2020, fl., *D.C. Imig & L. Medeiros 662* (UPCB).

Dryadella krenaquiana is restricted to the Minas Gerais state, and endemic to the Brazilian Atlantic Rainforest. The region of occurrence suffers frequent fires exposing populations to risk (Luciano Medeiros 2020, personal communication) (Fig. 17c). The flowering period occurs from October to January.

Dryadella krenaquiana is easily distinguishable from the other Brazilian species due to a cespitose but pendant habit. It has an affinity with *D. susanae*. It differs by vegetatively large 35–48 mm tall, light-green leaf 25–38 ×

2–3.2 mm, oblanceolate (*vs*. vegetatively 10–13.5 mm tall, dark-green leaves, 4–5.7 × 2.5–3 mm, elliptical). Also, the yellow flowers (the smallest flower among the species), with sepals and petals whose veins are evidenced by purple punctuations (*vs*. dark-red to purple flowers with sepals and petals whose veins are not stand out from the rest of the blade) (Figs. 15k; 16a).

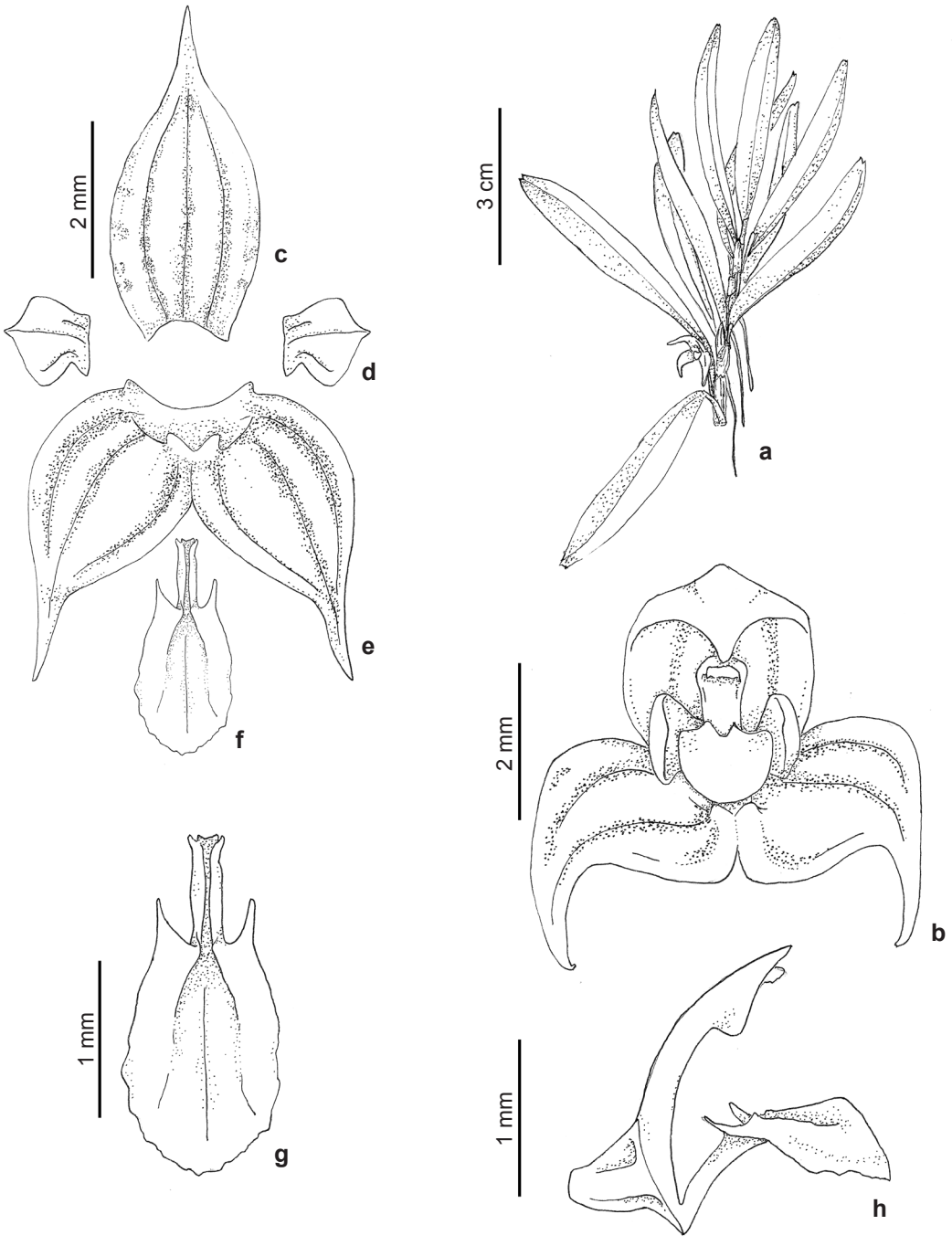

Figure 8 – a-h. *Dryadella krenakiana* – a. habit; b. front view of the flower; c. dorsal sepal; d. petal; e. lateral sepal; f-g. lip; h. column, lip and ovary. (a-h. *D.C. Imig & L. Medeiros 662*).

9. *Dryadella lilliputiana* (Cogniaux) Luer, Selbyana 2: 208, 1978a. ≡ *Masdevallia lilliputiana* Cogn., *Fl. bras*. 3(4): 555, 1906. Holotype: BRAZIL. SÃO PAULO: epífita em Campo de Bocaina, *G. Edwall* (BR657053!, Isotype SEL3263!).
= *Dryadella paranaensis* (Schltr.) Luer, Selbyana 2: 209 (1978a). ≡ *Masdevallia paranaensis* Schltr., Notizbl. Bot. Gart. Berlin-Dahlem 7(66): 268, t. 26, f. 102 (1918). Holotype: BRAZIL. PARANÁ: Villa Velha, *P. Dusén* (B *destroyed*). Lectotype (here designated): original drawing which appeared in Notizbl. Bot. Gart. Berlin-Dahlem 7(66): 268, t.26, fig.102, 1918.
= *Dryadella melloi* (Pabst) Luer, Selbyana 2: 209, 1978a. ≡ *Masdevallia melloi* Pabst, Bradea 2: 169, 1977. Holotype: BRAZIL. RIO DE JANEIRO: Paty Alferes, *A.F. Mello* MAS-10a (HB1797, *spirit*). Figs. 9a-h; 15l

Epiphyte herb, densely cespitose, small, 2.5–3.5 mm tall. Roots slender, 2–3 at each rhizome node, 0.5–0.8 mm diameter. Rhizome 1–1.3 mm between the internodes. Ramicaul 2–3.5 mm long, erect, covered by two paleaceous, oblanceolate sheaths, acute and minutely mucronate, entire, 3–4 × 1.3–1.7 mm. Leaf dark-green and albescent in basal portion, with diffuse purple-spotted, thickly coriaceous, linear to fusiform, terete, grooved on the adaxial face, 10–32 × 1.8–2.1 mm; petiole 1–1.3 mm long; blade erect, cuneate at the base, obtuse and minutely mucronate. Inflorescence a successive 1–3(–4) flowered, congest raceme; bearing two pale basal bracts, narrow-elliptical, imbricated, acute and mucronate, 1.8–3.2 × 1–1.4 mm; peduncle 3–4.5(–6) mm long; pedicel plus ovary light-green, slightly tri-alate, 2,3–3,2 mm long. Flower medium to large; dorsal sepal albescent with diffused dark-purple spotted, ovate, inflexed, 3-veined, carinate and entire, 7.3–13 × 2.5–3 mm, base truncate, connate 0.4 mm with lateral sepals forming a short sepaline cup, attenuate, long caudate, tail 1.5–2.5 mm with clavate apex, entire; lateral sepals albescent with diffused dark-purple spotted, ovate, 3-veined, asymmetrical, 8.5–10.5 × 2.5–4 mm, base connate, a transverse evident callus, 1.2 mm, purple, acute, long caudate, tail 1.5–2.5 mm with slightly clavate apex, entire; petals translucent, albescent with diffused dark-purple spotted, oblong to ovate, 3-veined, veins parallel, asymmetrical, 1.5–2 × 1.8–2.1 mm, base truncate, obtuse to acute, superior margin with obtuse lobe projected forward; inferior margin excavated, lobe obtuse, entire; lip yellow to greenish yellow with diffused light-purple spotted, unguiculate; claw 0.5–0.7 mm, slightly bilobed at base, caniculate; blade oblong to obovate, 1.2–1.8 × 1.5–1.8 mm, base with 2 acute, retrorse lobes, 0.3 mm; a pair of lamellar callus toothed at the base; apex reflexed, wide obtuse, entire or discreetly crenated; column albescent, 1.8–2.3 mm, curved, winged on the distal half, serratus at winged base; apex acute and minutely serrated, anther light yellow, apiculate; pollinarium, no seen. Fruit light green, oblong, 7.5– 8 mm.

Material examined: MINAS GERAIS: Santana do Riacho, Serra do Cipó, 1.XI.2017, fl., *D.C. Imig 495* (UPCB). PARANÁ: Campina Grande do Sul, 27.XII.1966, fl., *G. Hatschbach 15560* (MBM); Canguiri, 30.XII.1969, fl., *G. Hatschbach 23291* (MBM). Cascavel, 2.XII.2016, fl., *D.C. Imig 466* (UPCB). Contenda, 12.VII.2004, fl., *R. Kersten 941* (UPCB); 14.I.2005, fl., *R. Kersten & K. Kozera 996* (MBM). Curitiba, Bosque do Trabalhador, XI.2010, fl., *E.C. Smidt 1010* (UPCB). General Carneiro, 26.II.2007, fl., *A. Bonnet 1030118* (UPCB). Pinhão, 2.XII.2014, fl., *A.C. Costa* (UPCB91621). Piraí do Sul, Serra das Furnas, 4.XI.1999, fl., *A. Carneiro 799* (UPCB). Jaguariaíva, Rio do Sabiá, 28.XI.1968, fl., *G. Hatschbach 20459* (MBM). Lapa, 23.XII.1951, fl., *G. Hatschbach 214111* (UPCB). Piraquara, Reservatório do Carvalho, 19.X.2015, fl., *D.C. Imig 381* (UPCB); XII.2015, fl., *D.C. Imig 394* (UPCB); 2.XII.2016, fr., *D.C. Imig 467* (UPCB); 5.XII.2016, fl., *D.C. Imig 469* (UPCB). Tijucas do Sul, margem do Rio Negro, XI.2018, *T.F. Santos 268* (UPCB). RIO GRANDE DO SUL: Butiá, 2.XII.2015, fl., *D.C. Imig 396* (UPCB). São Francisco de Paula, 9.VII.1985, fl., *Y. Folz* (ICN061649). RIO DE JANEIRO: Itatiaia, 27.XII.2017, fl., *M. Bolson 559* (UPCB). Nova Friburgo, 30.XII.2017, fl., *M. Bolson 625* (UPCB). Paty Alferes, 20.VII.1975, fl., *A.F. Mello MAS-10a* (HB, spirit - Holotype *M. melloi*). SANTA CATARINA: Benedito Novo, Faz. do Zinco, 3.IV.2015, fl., *D.C. Imig 356* (UPCB). Joinville, 20.XII.2013, fl., *W. Mancinelli 1458* (JOI). Porto União, 22.II.2011, fl., *W. Mancinelli 1424* (JOI). Praia Grande, Morro Lateral ao Itaimbezinho, trilha dos porcos, 26.XI.2018, fl., *D.C. Imig 646* (UPCB). Pomerode, XII.2017, fl., *M. Klingelfuss 206* (UPCB). Santo Amaro da Imperatriz, 17.XI.2006, fl., *J.Z. Matos* (FLOR44243). SÃO PAULO: São José do Barreiro, 19.XI.2004, fl., *F. Barros* (SP401847). Campos da Bocaina, *G. Edwall* (BR657053, SEL3263)

Dryadella lilliputiana is not endemic to Brazil. There is a record for Bolivia, whose material was collected in 1980 by *C. Luer et al.* 5065 (MO 3499264, SEL). The species was registered for SC, RS, PR, SP and RJ in Brazil. For Minas Gerais, it was recorded for the first time in São Thomé das Letras by Sampaio *et al.* (2016). Now we have added other localities for the state (Fig. 17d). Restricted to the Atlantic Rainforest, it occurs

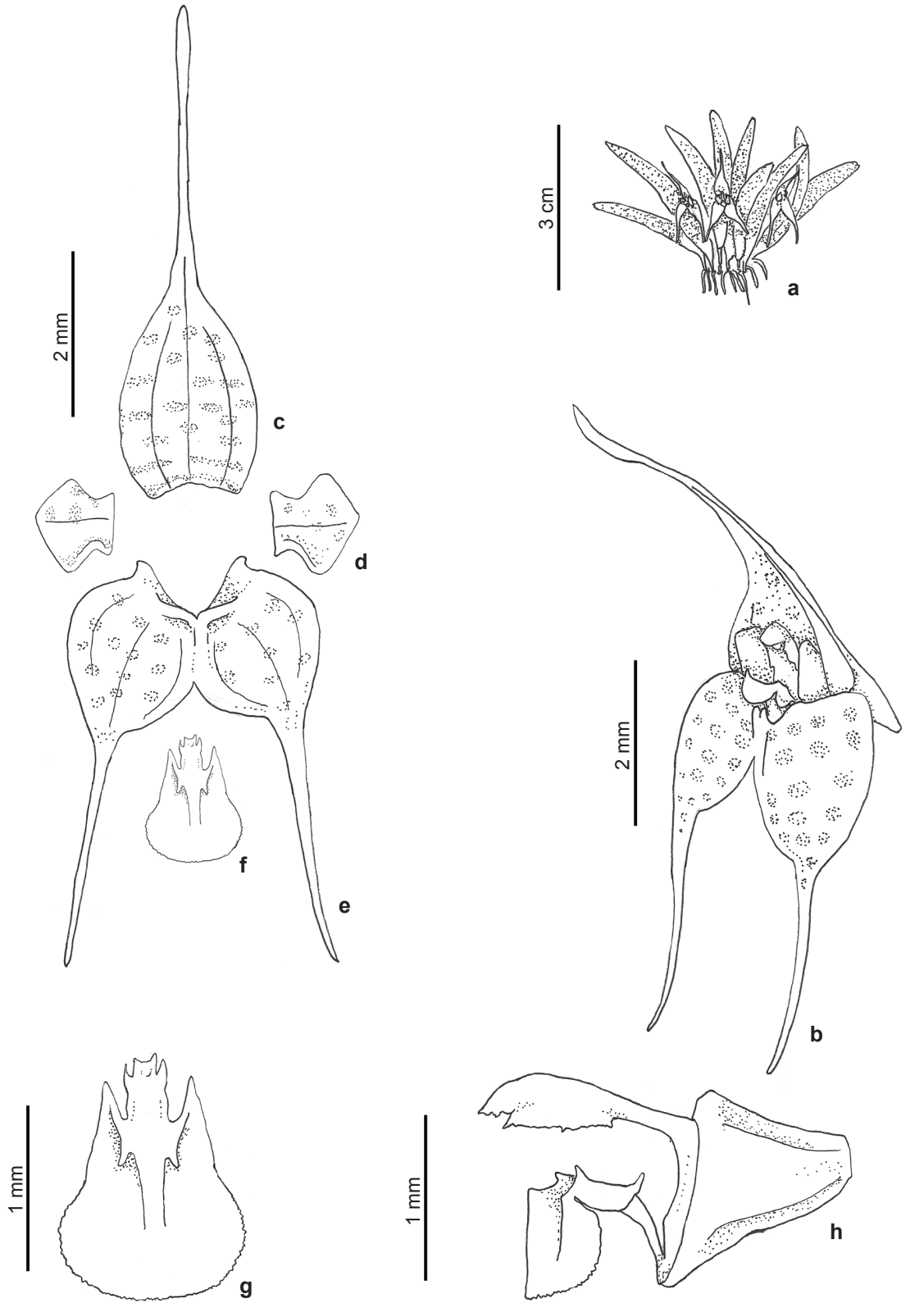

Figure 9 – a-h. *Dryadella lilliputiana* – a. habit; b. side view of the flower; c. dorsal sepal; d. petal; e. lateral sepal; f-g. lip; h. column, lip and ovary. (a-h. *D.C. Imig 634*).

in humid and open places (forest edges) of the Mixed and Dense Ombrophilous Forest, gallery forests and riparian forest. In southern Brazil, it is commonly found as an epiphyte of *Araucaria angustifolia* (Bertol.) Kuntze, a phorophyte not common to the other species of the genus. This species can be found in Capões and urban parks, especially those of Mixed Ombrophilous Forests. Unlike most species, *D. lilliputiana* can form larger populations but is generally restricted to a few phorophytes. During our expeditions to São Bento do Sul-SC, we found a phorophyte about 10 m in height, entirely covered by the species, being almost the exclusive epiphyte. This species is also frequent in live collections. The flowering period occurs from October to December.

Dryadella lilliputiana is similar to *D. ana-paulae*, but differs by the white flowers with purple dots, lip with entire or slightly crenate margins, densely cespitose habit and leaves with diffuse purple dots with albescent base (*vs. D. ana-paulae* presents yellow flowers with purple punctuations, lip with denticulate margins, caespitose habit, the leaves are entirely green, and its distribution is restricted to the *Cerrado*) (Fig. 15a,l).

Dryadella lilliputiana was initially described in *Masdevallia* by Cogniaux (1906), based on a collection by G. Edwall, from São Paulo, Campos da Bocaina. Luer (2005), designates the illustration of the original publication as a lectotype (SEL3263). Schlechter (1918) described *Masdevallia paranaensis* from material collected in Paraná by Herrn P. Dusén. Pabst (1977) described *Masdevallia melloi*, including it in the section Rhombipetala, based on material collected in Rio de Janeiro, Mata de Paty Alferes, by *Arthur Ferreira de Mello* (Holotype HB1797). It is compared with *M. lilliputiana* due to the shape of the leaves and the size and morphology of the flowers. Luer (1978b) sinonymise *M. paranaensis* and *M. melloi* into *D. lilliputiana*.

10. *Dryadella susanae* (Pabst) Luer, Selbyana 2: 371, 1978a. ≡ *Masdevallia susanae* (Pabst), Bradea 2: 68 (1976). Holotype: BRAZIL. ESPÍRITO SANTO: Conceição do Castelo, Ribeirão do Meio, km 123 of BR-262, *R. Kautsky 459*, cultivated by *S. Ferreira de Mello MAS-7-A* (HB).

Figs. 10a-h;16a

Epiphyte herb, shortly repent, small, 10–13.5 mm tall. Roots slender, 2–3(–5) at each rhizome node, 0.2–0.3 mm diameter. Rhizome 0.8–2 mm between the internodes. Ramicaul 0.8–1 mm long, repent, covered by two paleaceous, triangular sheaths, obtuse and minutely mucronate, 5–6 × 1.5–2 mm. Leaf light-green with purplish margins on the adaxial side and purplish on the abaxial face, thickly coriaceous, elliptical, semi-flat, slightly grooved on the adaxial face, 4–5.7 × 2.5–3 mm; sessile; blade prostrate, base shortly attenuate at the base, apex retuse and mucronate. Inflorescence a successive single flowered, bearing two pale basal bracts, narrow elliptical, acute and minutely mucronate, 0.8–1.3 × 0.5–0.7 mm; peduncle 0.4–0.8 mm long; pedicel plus ovary light-green, slightly tri-alate, minutely toothed, 1.6–2 mm long. Flower small, dorsal sepal dark red to purple, no spotted, oblong, inflexed, inconspicuous 2-veined, carinate and entire, 2.5–3.5 × 1.8–2.2 mm, base connate 0.3 mm with lateral sepals forming a short sepaline cup, attenuate, inconspicuous caudate, entire; lateral sepals dark-red to vinaceous, no spotted, ovate, inconspicuous 3-veined, asymmetrical, 2.5–3 × 1.8–2 mm, base connate, a transverse callus 0.6 mm, purple, acute, short-caudate, tail 2 mm with attenuate apex, entire; petals dark-red to vinaceous , no spotted, 2-veined, veins parallel, asymmetrical, 1.3–1.5 × 1.2–1.5 mm, base truncate, wide acute to obtuse, superior margin with discreet acute lobe, slightly backwards, inferior margin excavated, acute lobe, slightly facing forward, entire; lip vinaceous no spotted, unguiculate; claw 0.5–0.7 mm, bilobed at base, caniculate; blade obovate, base with 2 acute, divaricated lobes, 0.3 mm; a pair of minutely lamellar callus at the base, apex reflex, entire; column 1–1.2 mm, curved, winged on the distal half, entire at winged margin ending a tooth turned back; apex acute and minutely serrated; anther apiculate. Fruit not seen.

Material examined: ESPÍRITO SANTO: Conceição do Castelo, Ribeirão do Meio, km 123 da BR-262, I.1975, fl., *R. Kautsky 459*, cultivated by *Susana Ferreira de Mello MAS-7-A* (HB66463). Domingos Martins em cultivo no orquidário Caliman, 1.I.2017, fl., *D.C. Imig & M. Bolson 491* (UPCB). Marechal Floriano, Biriricas, 2011, fl., *E.B. da Silva 11240* (MBML). Nova Almeida, km 64 of highway BR-262, 31.I.1983, fl., *A.L.V. Toscano de Brito 401* (MO, *spirit*).

Dryadella susanae is restricted to Espírito Santo and is endemic to the Atlantic Rainforest, with few records in herbarium and living collections (Fig. 17d). For this work, the only fresh material found was in cultivation at the Caliman nursery (D.C. Imig and M. Bolson 491) from Domingos Martins-ES. It occurs in humid places in the interior of the semi-deciduous forest. The type locality was visited, but it is degraded, and we do not find them

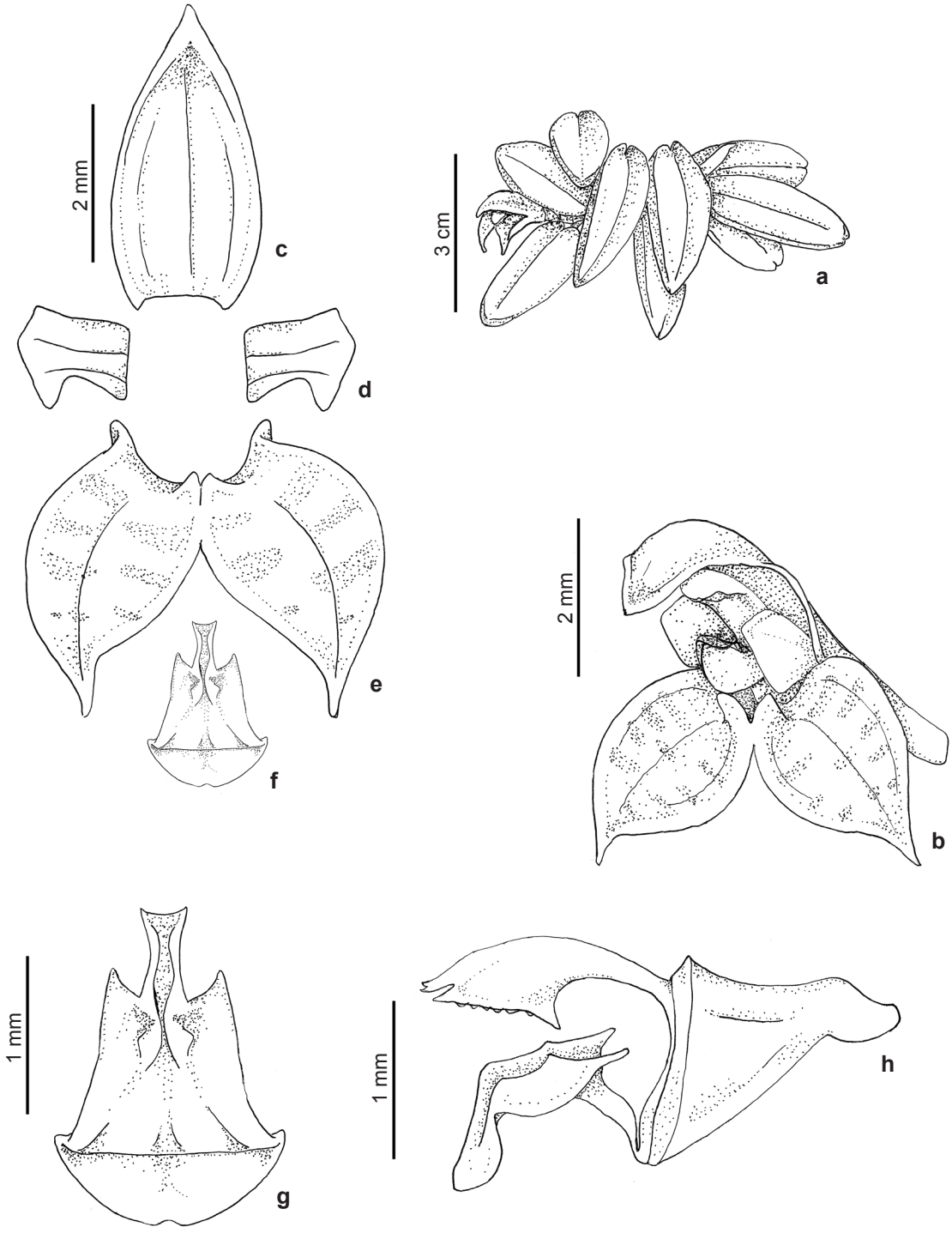

Figure 10 – a-h. *Dryadella susanae* – a. habit; b. side view of the flower; c. dorsal sepal; d. petal; e. lateral sepal; f-g. lip; h. column, lip and ovary. (a-h. *D.C. Imig & M. Bolson 491*).

in the municipalities of Conceição do Castelo and its surroundings. We did not find any data on the reproductive biology of the species. The material in cultivation started flowering in January and March.

Dryadella susanae is the smallest of all species in the genus and is similar to *D. catharinensis*. It differs by shortly repent cespitose habit with 10–13.5 mm tall (*vs.* 16–23 mm tall), and by the smaller leaves 3–5 × 1.5–3 mm, broadly elliptical, prostrate and sessile (*vs.* leaves 13–19.5 × 2.1–3.3 mm narrowly elliptical, suberect and petiolate). *Dryadella susanae* has dark-red flower (*vs.* yellow in *D. catharinensis*), the dorsal sepal 3.8–4.0 mm long (*vs.* 4.5–5.2 mm), triangular-ovate, acute, thickened ovate, obtuse and thin (*vs.* ovate, obtuse and thin), the lateral sepals with the margin entire (*vs.* slightly toothed), the 1.5 mm long petals (*vs.* petals 1.0–1.4 mm) and the smaller lip blade 1.5 × 1.4 mm (*vs.* lip blade 1.8–2.1 × 1.5–1.6 mm), obovate, margins entire, without callosities in the claw (*vs.* cuneate, with toothed margins and a ring callus in the median portion of the claw) (Figs. 15f; 16a).

Dryadella susanae was initially described in *Masdevallia* by Pabst (1976) and inserted in the section *Rhombipetala*. Roberto Kautsky collected the type in January of 1975 from material in cultivation by Susana Ferreira de Mello (MAS-7A), which was named after the species. The origin of this plant was from the municipality of Conceição do Castelo-ES and was deposited at HB (66463).

11. *Dryadella toscanoi* Luer, Icones Pleurothallidinarum XXVII: 37, 2005. Holotype: BRAZIL. MINAS GERAIS: South of Minas Gerais, Serra da Mantiqueira, near the border with São Paulo and Rio de Janeiro, 1,200 m, (*spirit 277*), *A.L.V. Toscano de Brito 144* (MO100539296!, *spirit*).

= *Dryadella xaveriana* Campacci & C.R.M. Silva, Coletânea de Orquídeas brasileiras: novas espécies e híbridos naturais, vol. 16, 2020. Holotype: BRAZIL. SÃO PAULO: Pilar do Sul, *B. Xavier s.n.* (ESA, lost). Lectotype (here designated): M.A. Campacci's original drawing, which appeared in Novas espécies e híbridos naturais, vol. 16, page 668, *syn. nov*. Figs. 11a-h; 16b,c

Epiphyte herb, cespitose, medium, 30–45 mm tall. Roots slender 3–4 at each rhizome node, 0.3–0.4 mm diameter. Rhizome 1.5–2 mm between the internodes. Ramicaul 10–13.2 mm long, erect, covered by (2–)3 paleaceous, lanceolate sheaths, acute and minutely mucronate, 5–8.5 × 2.8–3.4 mm. Leaf green to dark-green on both sides, sometimes suffused with purple, narrow-elliptical to narrow-obovate, slightly semi-terete, 30–43 × 2.5–3.5 mm; petiole 2–2.5 mm long; blade erect, base attenuate at the base, retuse and mucronate. Inflorescence a successive 1–2 flowered, congest raceme; two pale basal bracts, oblong, acute and minutely mucronate, 1–2.2 × 0.8–1.0 mm; peduncle 0.4–0.5 mm long; pedicel plus ovary light-green, slightly tri-alate, minutely toothed, 1.5–2 mm long. Flower medium to large; dorsal sepal translucent, light yellow to yellow-greenish, diffused dark-purple spotted, ovalate, inflexed, 3-veined, carinate and entire, 7.3–13.5 × 4.3–5.7 mm, base connate 0.5 mm with lateral sepals forming a short a short sepaline cup, acute, long caudate, tail 4.5–6.2 mm with slender apex, minutely crenated; lateral sepals translucent, light-yellow to yellow-greenish, diffused dark-purple spotted, ovate, 3-veined, asymmetrical, 7.5–13 × 4–4.3 mm, base connate, a transverse callus 1 mm, yellow, acute attenuate, long caudate, tail 4.5–5 mm with slender apex, a transverse callus 1 mm, minutely crenated; petals translucent, translucent, light yellow to yellow greenish, diffused dark-purple spotted, oblong, 2-veined, basal veins is curved, asymmetrical, 3.5–4 × 3.7–4 mm, base truncate, acute, superior margin with evident little acute lobe; inferior margin deep excavated, with evident wide acute lobe, entire; lip dark-yellow densely dark-purple spotted, unguiculate; claw 1–1.7 mm, bilobed at base, caniculate; blade oblong to obovate, 3.2–3.5 × 2.8–3 mm, base with long acute lobe, retrorse, 1.2 mm; a pair of lamellar callus toothed at the base, apex reflex, wide obtuse, entire; column light-yellow, 1.8–2.7 mm long, curved, winged on the distal half, minutely crenated at winged base; apex acute acuminate, anther not seen; pollinarium, not seen. Fruit not seen.

Material examined: MINAS GERAIS: south of Minas Gerais, Serra da Mantiqueira, near the border with São Paulo and Rio de Janeiro, 1,200 m, 25.XII.1981, fl., *A.L.V. Toscano de Brito 144* (MO); 8.VII.2019, fl., *M. Klingelfuss 272* (UPCB). SÃO PAULO: Campos de Jordão, VI.2018, fl., *S.L.X. Tobias 26* (UPCB); 19.X.2016, fl., *D.C. Imig 461* (UPCB). 11.XI.2016, fl., *D.C. Imig 464* (UPCB); 7.XI.2020, fl., *M. Klingelfuss 270* (UPCB); 13.VIII.2018, fl., *M. Klingelfuss 228* (UPCB). Sorocaba, 7.XI.2020, fl., *M. Klingelfuss 301* (UPCB). Pilar do Sul, 6.X.2020, fl., *D.C. Imig 661* (UPCB).

Dryadella toscanoi is endemic to Brazil, described for Minas Gerais, and so far known only from the type material. We record this occurrence

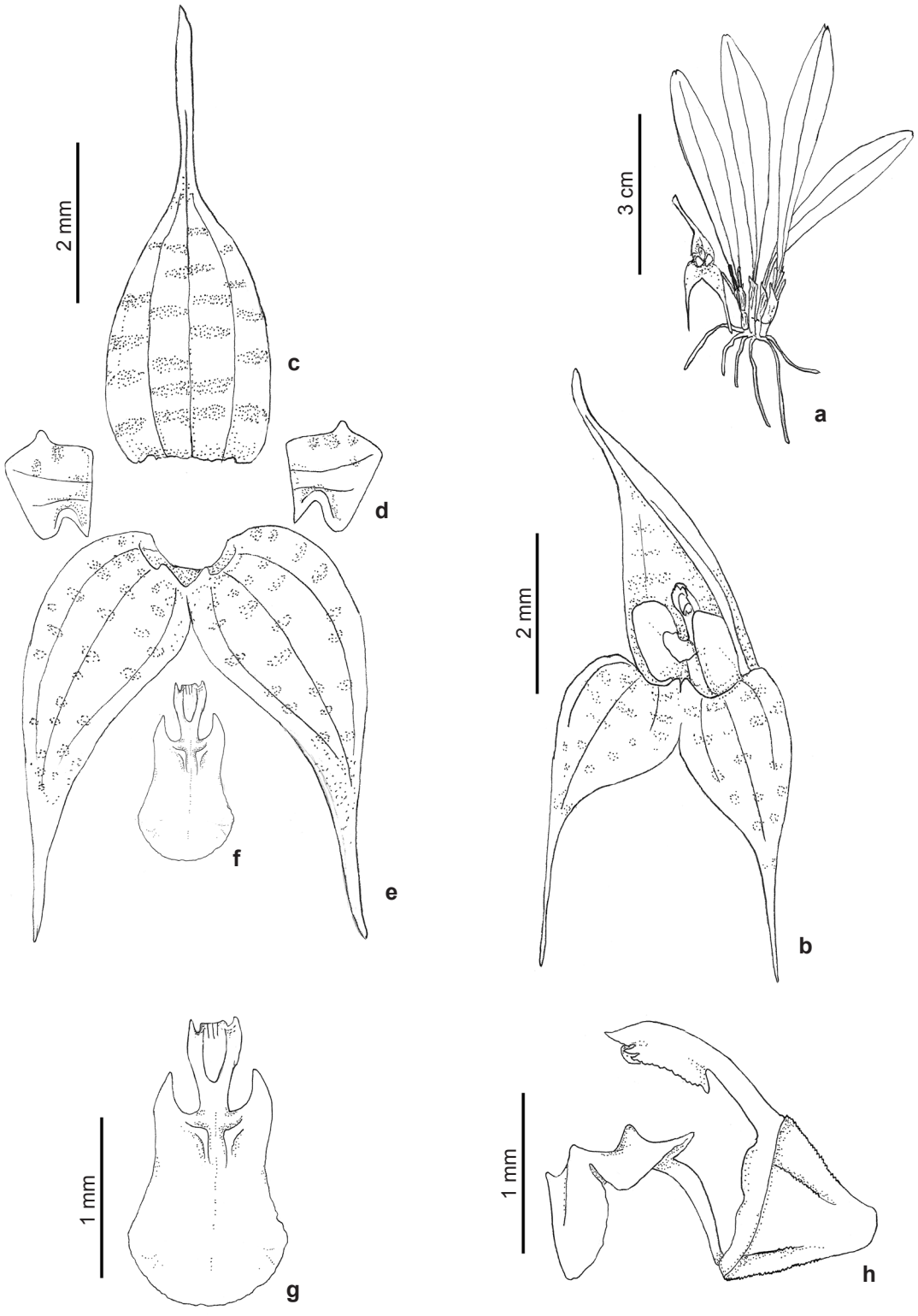

Figure 11 – a-h. *Dryadella toscanoi* – a. habit; b. side view of the flower; c. dorsal sepal; d. petal; e. lateral sepal; f-g. lip; h. column, lip and ovary. (a-h. *D.C. Imig 661*).

here for the first time for São Paulo (Fig. 17d). It is restricted to the Atlantic Rainforest and occurs in transition areas between rainforest and mixed rainforest, in humid places, close to rivers or streams and does not form large populations. The flowering period occurs from June to December.

Dryadella toscanoi is similar to *D. wuerstlei*, but differs in larger vegetative size 30–45 mm (*vs*. 20–35 mm), leaf 30–43 × 2.5–3.5 mm, narrow-elliptical to narrow-obovate, slightly semi-terete, petiole 2–2.5 mm [*vs.* leaf 15–25(–30) × 2.5–3.3 mm, narrow-elliptical, semi-terete and sulcate, sessile]; dorsal sepal 8–13 × 4.3–5.7 mm, translucent, light-yellow to yellow-greenish, diffused dark-purple spotted, ovate, slightly carinate, smooth carinate and tail 5–6.3 mm (*vs.* dorsal sepal 5.0–6.3 × 4.0– 4.5 mm, pale-green, diffused light-purple spotted, oval to elliptical, evidently carinate, toothed carina and tail 6–11 mm). Lip dark-yellow, densely dark-purple spotted with blade 3.2–3.5 × 3–3.5 mm, margin entire (*vs.* lip light-yellow, thickly purple-spotted, unguiculate with blade 4.0–4.7 × 1.8–2.1 mm and margins toothed) (Figs. 11a-h; 16b,c,e,f).

Recently *Dryadella xaveriana* Campacci & C.R.M. Silva was described based on material collected in Brazil, São Paulo, Pilar do Sul by *Benedito Xavier s.n.* in November 2019 (ESA). In the protologue, the authors compare with *D. zebrina*, especially in the colour and size of the flowers, and emphasise that *D. xaveriana* has shorter and fleshier leaves and floral segments with a different structure. The type was not found at ESA, but we received a fragment of the type individual for cultivation. When analysing the descriptions, illustrations, and the *D. xaveriana* sample, we noticed the overlapping of characters, both in the leaves and in the floral characters of the *D. toscanoi*, as seen in the drawing by Campacci & Silva (2020). *Dryadella xaveriana* presents sepals with tail 5.0–6.0 mm with slender apex (*vs*. tail 4.5–6.2 mm with slender apex) and the shape of the petals oblong, 3.5–4.1 × 3.6–4.2 mm, with 2-veined, basal veins is curved (*vs.* oblong, 3–4 × 3.7–4 mm, 2-veined, basal veins is curved), superior margin with evident little acute lobe; inferior margin deep excavated, with evident wide acute lobe, entire (superior margin with evident little acute lobe; inferior margin deep excavated, with evident wide acute lobe, entire). The lip blade oblong with 3.5–3.6 × 2.6–2.9 mm, base with long acute lobe, retrorse (*vs*. blade oblong to obovate, 3.2–3.5 × 2.8–3 mm, base with long acute lobe, retrorse).

We recognise here *D. xaveriana* as a new synonym of *D. toscanoi*, and we emphasise that *D. toscanoi* presents a variation in leaf thickness, especially in cultivation. In addition, the leaves can vary between light-green to dark-green with purple punctuations when exposed to the sun. The colour of the flowers can vary from light-yellow to greenish-yellow and translucent, diffused or densely dark-purple spotted.

12. *Dryadella vitorinoi* Luer & Toscano, Selbyana 23(2): 181, 2002. Holotype: BRAZIL. Without locality, cultivated by V. Castro, *A.L.V. Toscano de Brito s.n*. (HUEFS187213!), (C. Luer illustr. 15540). Figs. 12a-h; 16d

Epiphyte herb, cespitose, large, 65–80.5 mm tall. Roots fleshy, 2–3 at each rhizome node, 0.7–1.2 mm diameter. Rhizome 2–2.5 mm between the internodes. Ramicaul 2–4.2 mm long, erect to suberect, covered by 2(–3), paleaceous, oblong sheaths, acute and abruptly mucronate, 3.0–3.3 × 1.6–1.9 mm. Leaf light-green on both sides, sometimes with vinaceous nuances when exposed to high sun intensity, coriaceous, lanceolate, flat, 40–70 × 3–8.2 mm; petiole 1.5–2.5 mm long; blade erect, attenuate at the base, apex retuse and minutely mucronate. Inflorescence a successive 1–2 flowered, congest raceme; bearing two pale basal bracts, narrow-elliptical, obtuse and minutely mucronate, 1.5–1.8 × 0.4–0.5 mm; peduncle 1.0–1.7 mm long; pedicel plus ovary light-green, evident tri-alate, minutely toothed, 1.6–2.5 mm long. Flower large; dorsal sepal light-yellow, diffused and dark-purple spotted, oval-lanceolate, inflexed, 3-veined, slightly carinate and entire, 8–9.5 × 3.2–3.5 mm, base connate 1–1.2 mm with lateral sepals forming a short sepaline cup, acute, inconspicuous tail, tail 1 mm with attenuate apex, entire; lateral sepals light-yellow, diffused and inconspicuous light-purple spotted, ovate, inflexed, 3-veined, asymmetrical, 7.5–8.5 × 3.9–4.2 mm; base connate, a evident transverse callus 1–1.2 mm, purple, attenuate, short caudate, tail 1.5–2.5 mm with attenuate apex, entire; petals yellow, densely dark-purple spotted, oblong, 2-veined, the base vein is curved, asymmetrical, 5.2–5.8 × 3.4–3.6 mm, base truncate, attenuate, superior margin without lobe; inferior margin excavated, obtuse lobe, entire; lip yellow bordered with light purple spotted, unguiculate; claw 0.8–1 mm, bilobed at base, caniculate; blade oblong, 2.5–3 × 1.5–1.7 mm, base without or inconspicuous lobes; a pair of inconspicuous lamellar callus at the base, apex

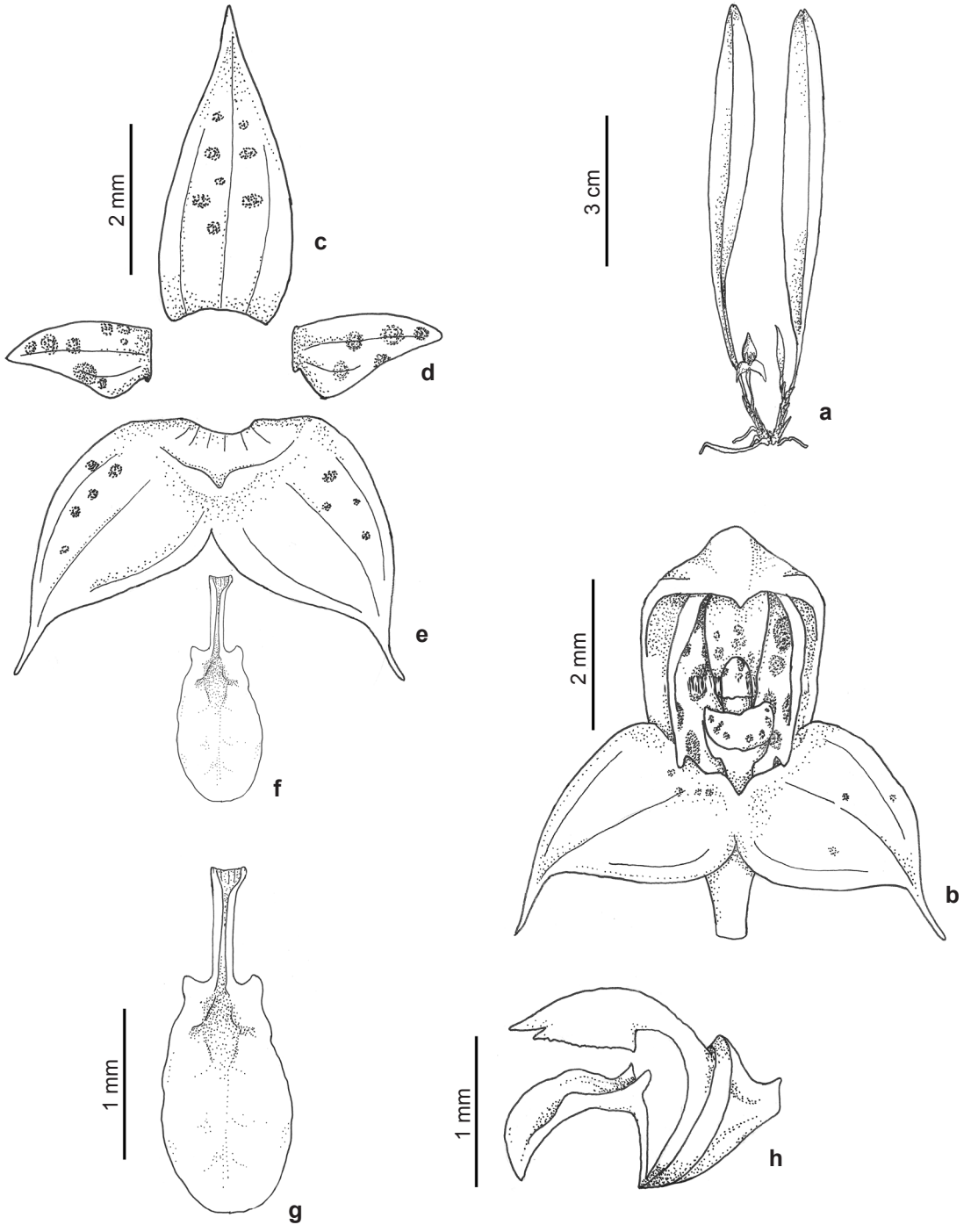

Figure 12 – a-h. *Dryadella vitorinoi* – a. habit; b. side view of the flower; c. dorsal sepal; d. petal; e. lateral sepal; f. lip; g. column, lip and ovary. (a-h. *D.C. Imig 506*).

slightly reflex, wide obtuse, entire; column yellow, 1.5–1.8 mm long, curved, winged on the distal half, crenated at winged base; apex acute and serrated, anther yellow, apiculate; pollinarium, no seen. Fruit light green, oblong, minutely tri-alate, 5–8 × 4–6 mm.

Material examined: BAHIA: *Castro V.*, from *G. Carnevali 1991*, *A.L.V. Toscano de Brito* (HUEFS187213). Poções, Serra do Arrepio, 3.III.2001, fl., *A.L.V. Toscano de Brito 3885* (UPCB); fl., *A.L.V. Toscano de Brito 3839* (UPCB). Vitória da Conquista, fl., *A.L.V. Toscano de Brito 1846* (UPCB). ESPÍRITO SANTO: Domingos Martins, São Bento de Urânia, 7.VII.2019, fl., *A.L.V. Toscano de Brito & W. Collier 3900* (UPCB). MINAS GERAIS: Boa Esperança, 11.XII.2017, fl., *D.C. Imig 506* (UPCB). Nova Era, 19.XII.2008, fl., *A.L.V. Toscano de Brito 2568* (UPCB).

Dryadella vitorinoi is endemic to Brazil; it was described without locality data and has only been recorded for Espírito Santo until now. We record the occurrence for the first time for the state of Bahia and Minas Gerais (Fig. 17d). We believe that *D. aviceps* cited by Sampaio (2016) for São Thomé das Letras-MG is *D. vitorinoi*, but during our studies and expeditions, we did not find material to confirm the identity of this specimen. *Dryadella vitorinoi* occurs in Seasonal Deciduous Forest (liana forests) and does not form large populations. It is found in illuminated sites on trunks and apex of tree branches, shrubs and even the most robust vines. The flowering period occurs from December to March.

Dryadella vitorinoi is similar to *D. aviceps* but differs vegetatively by the leaves lanceolate, sub-erect, light-green on both sides, sometimes with vinaceous colour when exposed to the high sun (*vs.* leaves lanceolate to oblanceolate, erect, dark-green and usually vinaceous on both sides). *D. vitorinoi* present flowers with sepals light-yellow, diffused and inconspicuous light-purple spotted, ovate to oval-lanceolate and inflexed, which gives the flowers no full opening (*vs.* sepals dark-yellow with dense dark-purple punctuations - rarely the lateral sepals have clear and few evident punctuations - dorsal sepal is erect or slightly inflexed and bearing full opening flowers; petals 2-veined, the base vein is curved, superior margin without lobe (*vs.* 2-veined, veins parallel, superior margin with acute to obtuse lobe). (Figs. 15c-e; 16d). *Dryadella vitorinoi* was described by Luer (2002), based on a specimen collected in 1991, *A.L.V. Toscano de Brito* (HUEFS187213), Luer's Illustration nr. 15540, fig. 01 of the original description. The paratype is indicated for Domingos Martins-ES, locality of Caxixe Frio, 3.III.1991, *A.L.V. Toscano de Brito 889* (MO100539280). Luer (2005) in the review of the genus, cites the type of *D. vitorinoi* from Brazil, without locality, collected in 1991, *C. Luer 15540* (Holotype: MO); however, the holotype is in HUEFS (187213) and the paratype (*A.L.V. Toscano de Brito 889*) in MO. In Flora do Brasil, Imig (2020) and specieslink (*specieslink.net/search*), this material is cited as holotype, not paratype, and needs to be corrected.

13. *Dryadella wuerstlei* Luer, Icones Pleurathallidinarum XXVII: 39, 2005. Holotype: BRAZIL. Without collecting data, purchased by B. Würstle from Ghillany, Flowered in cultivation at Spielber, Germany, *C. Luer 5269* (SEL!).

Figs. 13a-h; 16e,f

Epiphyte herb, densely cespitose, small, 20–35 mm tall. Roots slender 2–3(–4) at each rhizome node, 0.4–0.6 mm diameter. Rhizome 1–2 mm between the internodes. Ramicaul 4–6 mm long, erect to suberect, covered by 2(–3) paleaceous, oblanceolate sheaths, obtuse and mucronate, 1–1.2 × 0.5–1 mm. Leaf light-green on both sides, sometimes spotted with purple, thickly coriaceous, narrow-elliptical, semi-terete and sulcate, 15–25(–30) × 2.5–3.3 mm; sessile; blade sub-erect, attenuate at the base, apex retuse and mucronate. Inflorescence a successive 1-2 flowered, congest raceme; bearing 2(–3) pale basal bracts, narrow-elliptical, acute and mucronate, 1.8–3.2 × 1–1.4 mm; peduncle 7–15 mm long; pedicel plus ovary light green, tri-alate, minutely toothed, 3.3–4.5 mm long. Flower medium; dorsal sepal pale-green, diffused light-purple spotted, oval to elliptic, inflexed, 3-veined, asymmetrical, evidently carinate, toothed, 5.0–6.3 × 4.0–4.5 mm, base truncate, connate 0.8 mm with lateral sepals forming a short sepaline cup, attenuate, long caudate, tail 6–11 mm with slender apex, entire to discreetly toothed; lateral sepals pale-green, diffused dark-purple spotted, ovate, 3-veined, asymmetrical, 4.5–5.3 × 3.5–3.8 mm, base connate, a transverse callus 1 mm, pale-green, attenuate, long caudate, tail 6–10 mm with thick apex, entire to discreetly toothed; petals translucent light-yellow, thickly purple-spotted, oval to oblong, 2-veined, veins parallel, asymmetrical, 2.3–3.0 × 2.3–2.7 mm, base truncate, acute apex, superior margin with wide obtuse lobe; inferior margin excavated, acute lobe, minutely toothed; lip light yellow, thickly purple-spotted, unguiculate; claw 0.6–0.8 mm, minutely bilobed at base, caniculate;

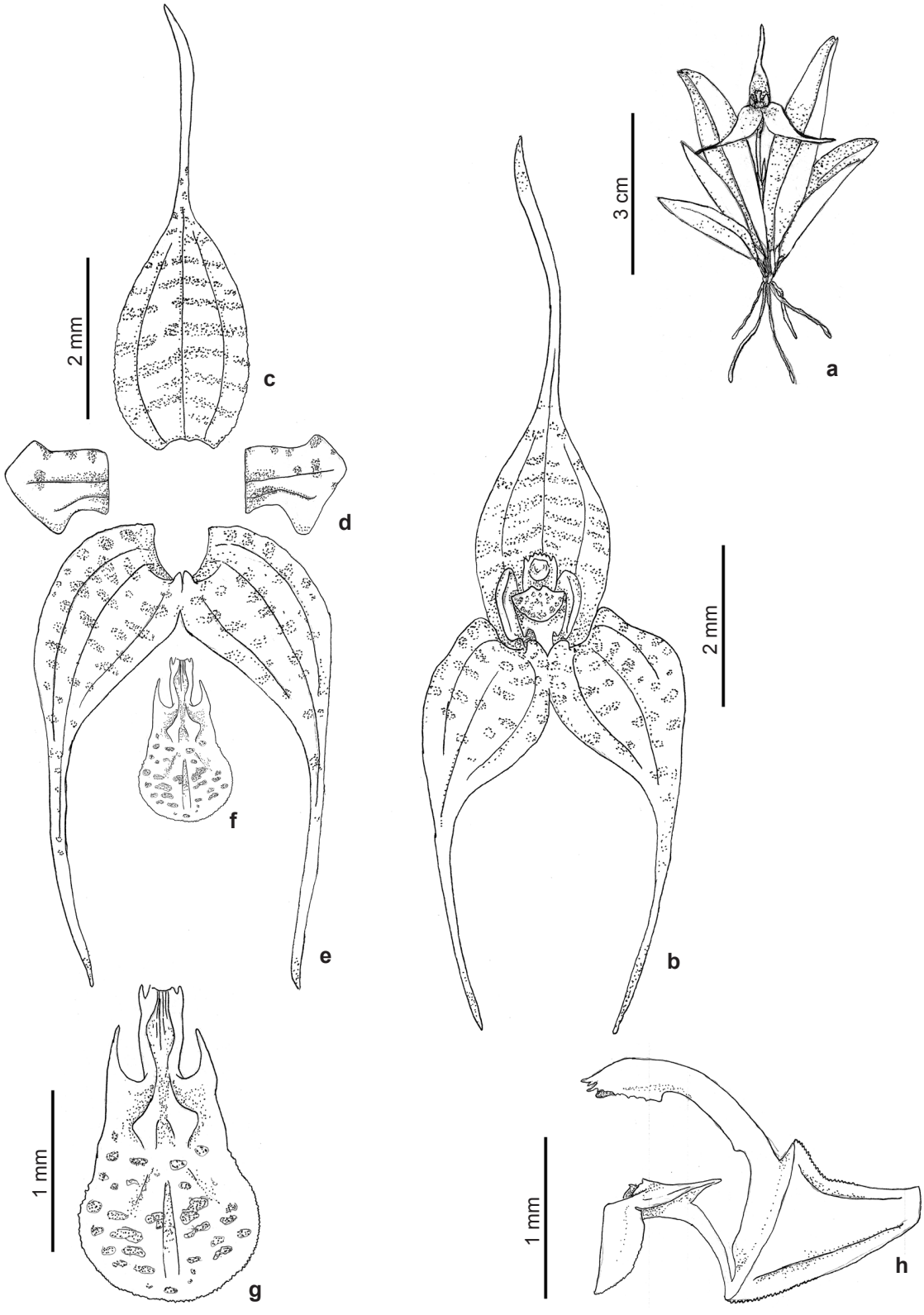

Figure 13 – a-h. *Dryadella wuerstlei* – a. habit; b. side view of the flower; c. dorsal sepal; d. petal; e. lateral sepal; f-g. lip; h. column, lip and ovary. (a-h. *D.C. Imig 462*).

blade oblong to obovate, 4.0–4.7 × 1.8–2.1 mm, base with 2 acute, retroses lobes, 0.3 mm; a pair of lamellar callus at the base, apex reflexed, obtuse, minutely toothed; column light-green, 1.2–1.5 mm, curved, winged on the distal half, serreate at winged base; apex acute and minutely serrated, anther light-green, apiculate; pollinarium, no seen. Fruit light-green with light-purple spots, oblong, 5–7.5 × 3.5 mm.

Material examined: Flowered in cultivation at Spielber, Australia, 23.V.1980, fl., *C. Luer 5269* (SEL). RIO GRANDE DO SUL: Capão do Leão, 9 XI.1986, fl., *J.A. Jarenkow 496* (FLOR). Iraí, 7.X.2016, fl., *D.C. Imig 462* (UPCB); Pelotas, distrito de Rincão da Cruz, Morro Quilongongo, 17.II.2008, fl., *T. Perleberg 233* (ECT). São Francisco de Paula, 20.X.2009, fl., *A.L.V. Toscano de Brito 2646* (UPCB); 17.XII.2008, fl., *A.L.V. Toscano de Brito 2563* (UPCB). SANTA CATARINA: Calmon, Pinhelão, 8.III.2019, fl., *A. Kassner-Filho et al. 5277* (FURB); Rio do Sul, 3.X.2015, fl., *D.C. Imig et al. 408* (UPCB); 23.XI. 2016, fl., *D.C. Imig 465* (UPCB); Vitor Meireles, Pratinha, 18.I.2012, fl., *E. Caglioni et al. 132* (FURB).

The geographic distribution of *D. wuerstlei* was unknown until now, the type material comes from cultivation, and there was no specified provenance. From our collections, we found it to be endemic to the Brazilian Atlantic Rainforest, recorded here for the states of Santa Catarina and Rio Grande do Sul. *Dryadella wuerstlei* is found in less dense and slightly humid forests (away from rivers) and forms small populations with 1–3 individuals. During our expeditions, we did not find it in living collections. The flowering period occurs from April to November (Fig. 17e).

Dryadella wuerstlei was described by Luer (2005) and appeared on plate 1096 in Orchidaceae Brasilienses by Pasbt & Dungs (1975) as *D. edwalli.*

Dryadella wuerstlei has an affinity with *D. zebrina* and *D. toscanoi*. Differing from *D. zebrina* in that it is vegetatively dense cespitose, leaves 15–25(–30) × 2.5–3.3 mm, narrow-elliptical, semi-terete and sulcate, sessile and sub-erect (*vs.* cespitose, leaves 40–65(–9) × 3.5–7 mm, elliptical to narrow-elliptical and flat, petiolate and erect). The flowers are proportionally large in relation to the habit and stand out from the leaves, pale-green in colour and sepals with attenuated apex, long caudate, whose tail exceeds the size of the blade (*vs.* flowers that are medium in relation to the vegetative and generally located at the base, not protruding leaves, yellow to dark-yellow, sepals with an acute apex, abruptly long caudate, slender tail that does not exceed the size of the blade). Dorsal sepal keeled with denticulated keels (*vs.* less keeled and entire keels). The lip is light-green, with congested purple punctuations, obovate, margins minutely denticulate; blade 4.0–4.7 × 1.8–2.1 mm, claw 0.6–0.8 mm (*vs.* lip yellow densely dark-purple spotted, oblong to obovate, entire margins; blade 3–3.5 × 2.8–3.3 mm, claw 1.8–2.3 mm). It differs from *D. toscanoi* in vegetative size 20–35 mm (*vs.* 30–45 mm), leaf 15–25(–30) × 2.5–3.3 mm, narrow-elliptical, semi-terete and sulcate, sessile (*vs.* leaf 30–43 × 2.5–3.5 mm, narrow-elliptical to narrow-obovate, slightly semi-terete, petiolate, petiole with 2–2.5 mm); dorsal sepal 5.0–6.3 × 4.0–4.5 mm, pale green, diffused light-purple spotted, oval to elliptical, evidently carinate, toothed carina and tail 6–11 mm (*vs.* dorsal sepal 8–13 × 4.3–5.7 mm, translucent, light-yellow to yellow-greenish, diffused dark-purple spotted, ovate, slightly carinate, smooth carinate and tail 4.5–6.2 mm); lip light-yellow, thickly purple-spotted, unguiculate with blade 4.0–4.7 × 1.8–2.1 mm and margins toothed (*vs.* lip dark-yellow densely dark-purple spotted with blade 3.2–3.5 × 3–3.5 mm, margin entire (Fig. 16e-l).

14. *Dryadella zebrina* (Porsch) Luer, Sebyana 2: 209, 1978a. ≡ *Masdevallia zebrina* Porsch, Oesterr. Bot. Z. 55: 154 (1905). Holotype: BRAZIL. State unknown: Raiz da Serra, X.1901, *R. Wettestein & V.F. Schiffner s.n.* (B *destroyed*). Neotype: designated by Luer, 2005: Rio de Janeiro, cultivated by orquidário Binot, 30.XI.1989, *C. Luer 14500* (MO100539208!).

= *Masdevallia carinata* Cogn., Bull. Soc. Roy. Belgique 43: 305 (1905). Holotype: BRAZIL. *Brasilia austro-orientali*, *C. Glaziou* (BR997389!).

= *Dryadella edwallii* (Cogn.) Luer, Selbyana 2: 208 (1978a). ≡ *Masdevallia edwalli* Cogn., *Fl. bras.* 3(4): 553 (1906). Holotype: BRAZIL. SÃO PAULO, Campos da Bocaína, *Comm. Geogr. & Geol. 2302* (BR0000006570200!, isotype K000077694!). Figs. 14a-h; 16g-l

Epiphyte herb, densely cespitose, lager, 40–85(–130) mm tall. Roots thick, 3–4 at each rhizome node, 0.7–1 mm diameter. Rhizome 1–1.5(–2) mm between the internodes. Ramicaul 7–12 mm long, erect, covered by two paleaceous, lanceolate sheaths, abruptly acute and mucronate, entire, 3–5 × 0.7–1.2 mm. Leaf dark green on both sides, sometimes spotted with purple, coriaceous, elliptical to narrow- elliptical, flat, 40–65(–9) × 3.5–7 mm; petiole 2.5–3 mm long; blade erect,

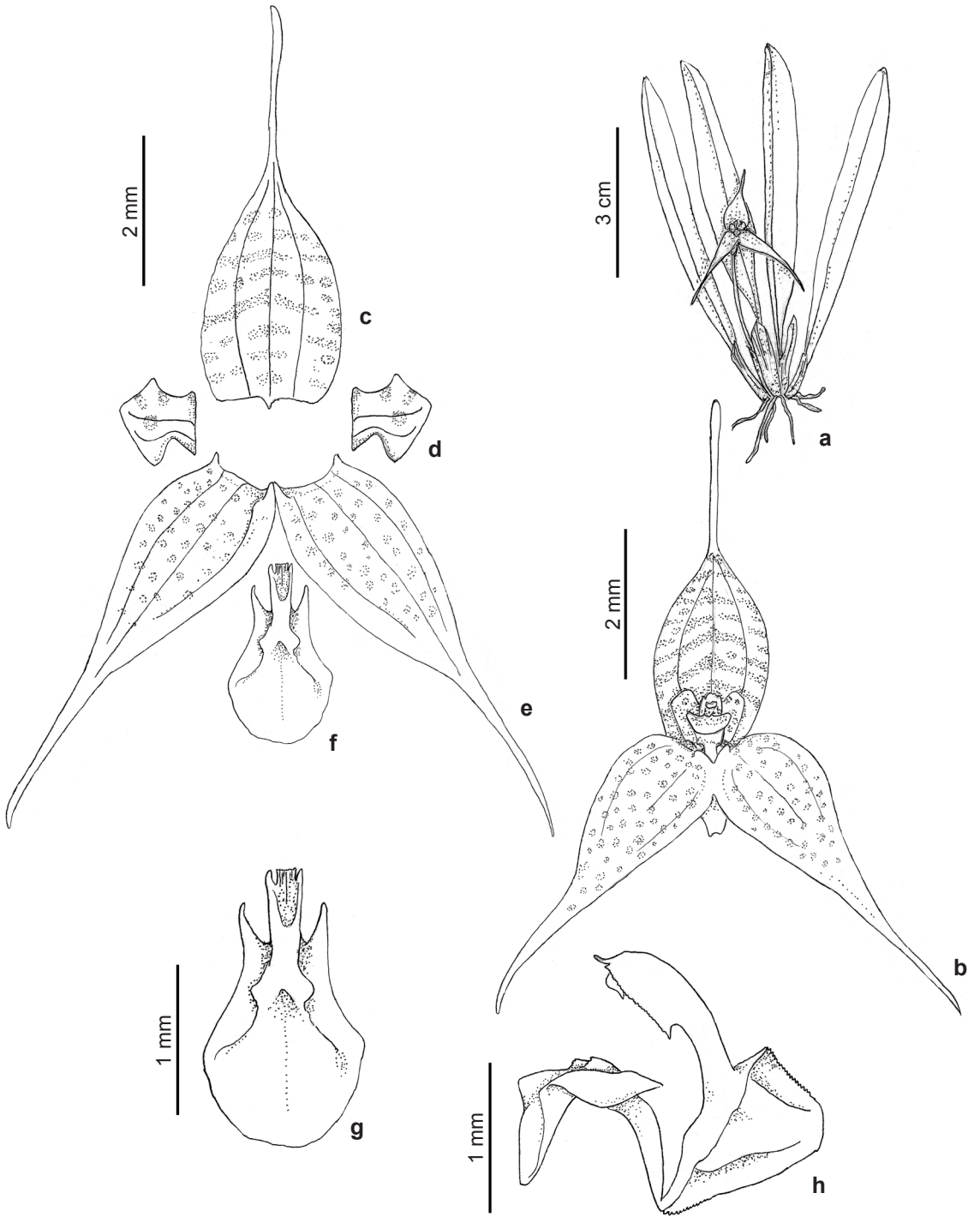

Figure 14 – a-h. *Dryadella zebrina* – a. habit; b. side view of the flower; c. dorsal sepal; d. petal; e. lateral sepal; f-g. lip; h. column, lip and ovary. (a-h. *D.C. Imig 457*).

retuse and mucronate. Inflorescence a successive, 1–3 flowered, congested raceme; bearing two pale basal bracts, narrow-elliptical, acute and mucronate, 8–12 × 0.8–1.3mm; peduncle 45–80 (100–120 mm) long; pedicel plus ovary green, sometimes suffused with purple, slightly tri-alate, erose, 4–6.5 mm long. Flower larg; dorsal sepal yellow to dark-yellow, diffused or densely dark-purple spotted, the spots mor or less in transverse bars, ovate, inflexed, 3-veined, carinate, entire, 5.5–8.5(–9.5) × 5–5.5 mm, base connate 1.5–2.3 mm with lateral sepals forming a short sepaline cup, acute, long caudate, tail 5–7.3 mm with usually clavate apex, greenish-yellow or densely covered with purple dots, entire; lateral sepals yellow to light-yellow, diffused or densely dark-purple spotted, ovate, 3-veined, asymmetrical, sometimes deflexed, 4.8–6.5 × 4–5.3 mm, base connate, a transversal callus 0.8–1.2 mm purple, long caudate, tail (4–)5–6.7 mm with slender or minutely clavate apex, entire; petals translucent-yellow, densely purple-spotted, oblong, 2-veined, veins parallel, asymmetrical, 3.5–3.8 × 2.9–3.5 mm base truncate, wide obtuse, superior margin with obtuse lobe; inferior margin excavated, wide obtuse lobe, entire; lip yellow densely dark-purple spotted, unguiculate; claw 1.8–2.3 mm, bilobed at base, caniculate; blade oblong to obovate, 3–3.8 × 2.8–3.3 mm, base with 2 acute, divaricated lobes, 0.3 mm; a pair of lamellar callus obtuse, minutely erose, apex reflex, wide obtuse, entire; column yellow 2.5–3.8 mm long, curved, winged on the distal half, toothed at winged base ending in a acute lobe designed backwards; apex acute and minutely serrated, anther yellow, apiculate; pollinarium, no seen. Fruit light green, oblong, 10–12 × 4.2–5 mm.

Material examined: *C. Glaziou* (BR997389 - Holotype *M. carinata*). BAHIA: Camacã, 2.IX.2016, fl., *D.C. Imig 453* (UPCB); 18.IX.2016, fl., *D.C. Imig 455* (UPCB); 19.IX.2016, fl., *D.C. Imig 457* (UPCB). MINAS GERAIS: Camanducaia, distrito de Monte Verde, trilha da Pedra Redonda 28.VII.2017, fl., *D.C. Imig 484* (UPCB); 29.VII.2017, fl., *D.C. Imig 482* (UPCB). Santana do Riacho, Serra do Cipó, 18.X.2018, fl., *D.C. Imig 485* (UPCB). ESPÍRITO SANTO: Venda Nova do Imigrante, em cultivo no Orquidário Caliman, 21.XI.2015, fl., *A.L.V. Toscano de Brito 3478* (UPCB). PARANÁ: Guaratuba, Serra do Araçatuba, Morro dos perdidos, 20.XI.1998, *E.P. Santos et al. 641* (UPCB); 1.XII.1998, *G. Hatschbach et al. 2639* (MBM); 27.XI.1998, fl., *E.P. Santos et al. 661* (UPCB). Quatro Barras, Morro Sete, 17.XI.1994, fl., *O. Ribas et al. 723* (MBM); Serra da Graciosa, 13.IV.2016, fl., *D.C. Imig 406* (UPCB); 2.XII.2015, *D.C. Imig 405* (UPCB); 22.XII.2016, fl., *D.C. Imig 468* (UPCB); 28.XI.2014, fl., *A.L.V. Toscano de Brito et al. 3311* (UPCB); 28.XI.2014, fl., *A.L.V. Toscano de Brito 3453* (UPCB): 2.XII.2015, fl., *A.L.V. Toscano de Brito 3312* (UPCB). Morretes, 19.X.2015, *D.C. Imig 378* (UPCB); Cabeceiras do Arraial, 11.XI.1965, *G. Hatschbach 13116* (V, US); trilha da Estação Engenheiro, 19.X.2015, *D.C. Imig 379* (UPCB); P.E. Marumbi, 11.X.1998, fl., *Giongo et al. 64* (UPCB); Morro Facãozinho, 8.XI.1998, fl., *C. Giongo 75* (UPCB); Mãe Catira, 11.XI.2016, fl., *D.C. Imig 463* (UPCB); 12.XII.1985, fl., *R. Kummrow 2677* (MBM); XI.2010, fl., *E.C. Smidt 1011* (UPCB). Piraquara, Queimada, Morro Albino Souza, 27.XII.1947, fl., *G. Hatschbach 819* (SP); Caiguava, 19.XI.1909, fl., *K. Dusén 8987* (NY, V); Mananciais da Serra, XII.2005, fl., *M. Reginato 636* (UPCB); X.2004, fl., *M. Reginato 95* (UPCB); Morro do Canal, 30.X.2009, fl., *R. Kersten 1387* (HUCP); P.E. Marumbi, 9.XI.2015, fl., *D.C. Imig 389* (UPCB); trilha do Olimpo, 9.XI.2015, fl., *D.C. Imig 384* (UPCB); trilha do Vigia, 3.XI.2017, fl., *T.F. Santos 298* (UPCB); 6.XI.2017, fl., *T.F. Santos 327* (UPCB); 27.XI.2003 fl., *J. Silva et al. 3916* (MBM); Morro do Bruninho, 2.X.2017, fl., *D.C. Imig 488* (UPCB); 10.XI. 2015, fl., *D.C. Imig 393* (UPCB); reservatório do Carvalho, 15.X.2015, fl., *D.C. Imig 374* (UPCB); 15.X.2015, fl., *D.C. Imig 376* (UPCB); Serra do Emboque; 3.XII.1970, fl., *G. Hatschbach 25749* (MBM, K). São José dos Pinhais, Borda da Campo, 4.XII.2019, fl., *D.C. Imig, T. Imig & F. Imig 654* (UPCB; CTBA); Morros Perdidos, 17.XI.2009, fl., *R. Kersten 5* (HUCP); Nhandara Guaricana, 1.XI.2017, *D.C. Imig et al. 493* (UPCB; CTBA); Nhandara Guaricana, 15.X.2015, fl., *D.C. Imig 377* (UPCB); Rio Pequeno, 5.XI.1969, fl., *G. Hatschbach 22850* (MBM). Tijucas do Sul, 15.IX.2015, fl., *D.C. Imig 375* (UPCB); Represa Vossoroca, km 160, 9.XI.2017, fl., *M. klingelfuss 157* (UPCB); 10.XI.2017, fl., *M. klingelfuss 159* (UPCB); *M. klingelfuss 160* (UPCB); *M. klingelfuss 161* (UPCB); Serra de Papanduva, 15.XII.1997, fl., *O. Ribas et al. 2121* (MBM). Telêmaco Borba, Monte Alegre, fl., 16.XI.1915, *P. Dusén 13334* (K). RIO GRANDE DO SUL: Canoas, 6.XI.2017, fl., *D.C. Imig 483* (UPCB). Porto Alegre, Morro da Glória, 5.XI.1932 (SP50515). Torres, 7.IX.2020, fl., *D.C. Imig 657* (UPCB); RIO DE JANEIRO: Angra dos Reis, arredores do P.N. Serra da Bocaina, 2.IX.2016, fl., *D.C. Imig 454* (UPCB). Alto Macaé, 5.XI.1888, fl., *A. Glaziou 17802* (K; BR; P). Near Petrópolis, 30.XI.1989, fl., *C. Luer 14500* (MO). SANTA CATARINA: Angelina, 28.X.2009, fl., *A. Cadorin et al. 316* (FURB). Antônio Carlos, 9.XI.2009, fl., *A. Cadorin et al. 482* (FURB). Benedito Novo, trilha da Cruz de Pedra, 13.IX.2018, fl., *L.A. Funez 7742* (FURB); Bom Retiro, 17.X.1973, fl., *A. Bresolin 877* (FLOR); Campo Alegre, Rio dos Bugres, 26.X.2019, fl., *P. Schwirkowski & C.R. Hantschel 3555* (FURB; FPS); Serra do Quiriri, 27.XII.2004, fl., *O. Ribas et al. 6580* (MBM); Rio Manso, 2.II.2010, fl., *T. Cadorin et al. 118*2

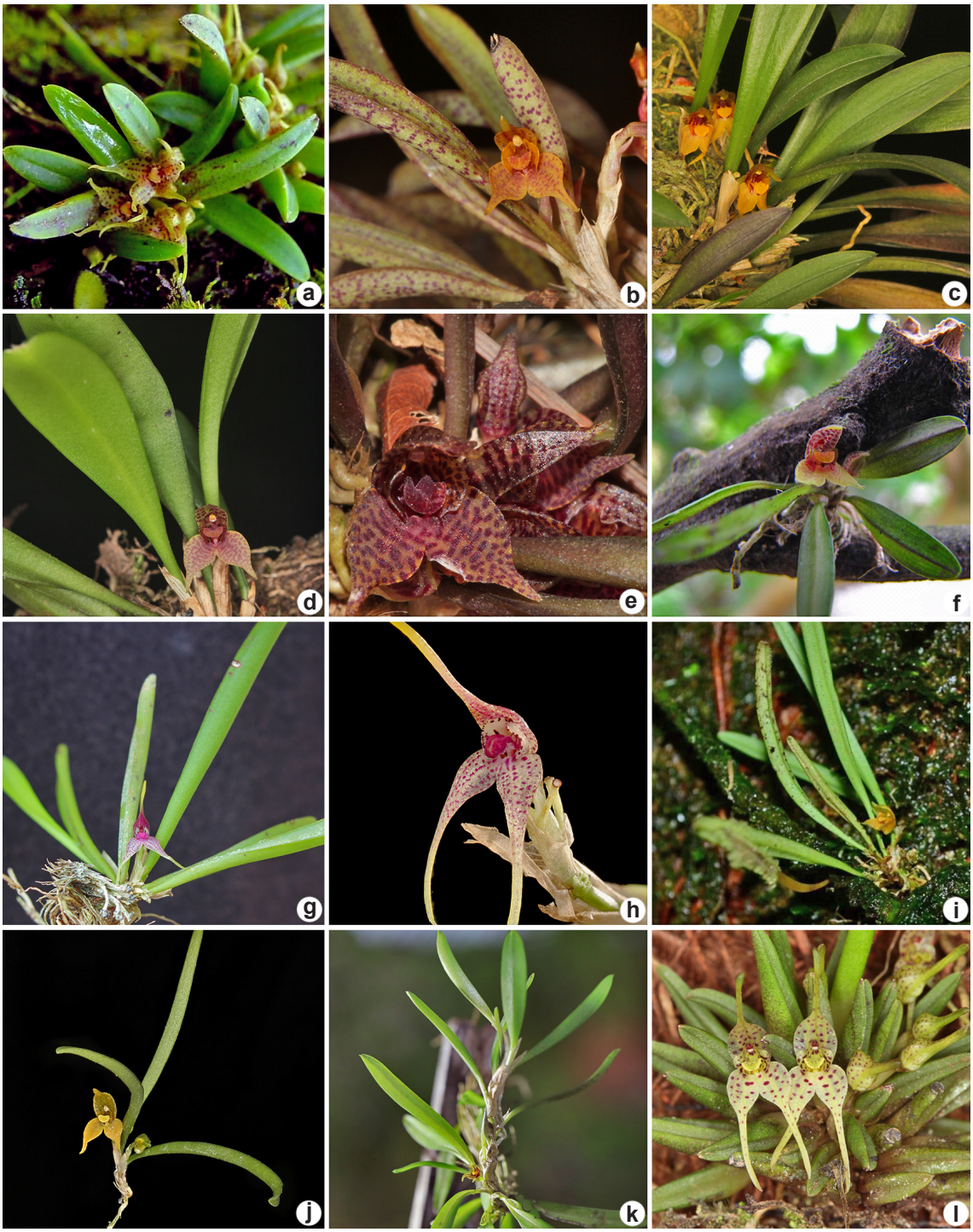

Figure 15 – a-l. *Dryadella* species recognised for Brazil – a. *Dryadella ana-paulae*; b. *Dryadella auriculigera*; c-e. *Dryadella aviceps*; f. *Dryadella catharinensis*; g-h. *Dryadella crenulata*; i. *Dryadella gnoma*; j. *Dryadella kautskyi*; k. *Dryadella krenakiana*; l. *Dryadella lilliputiana*. Photographs: a. Daniel Oliveira; e. Cecília O. de Azevedo. f. Werner Mancinelli; b-d, l. Eric de Camargo Smidt; g-j. A.L.V. Toscano de Brito; k. Luciano Medeiros; i. Ana H. Krahl; l. Daniela C. Imig.

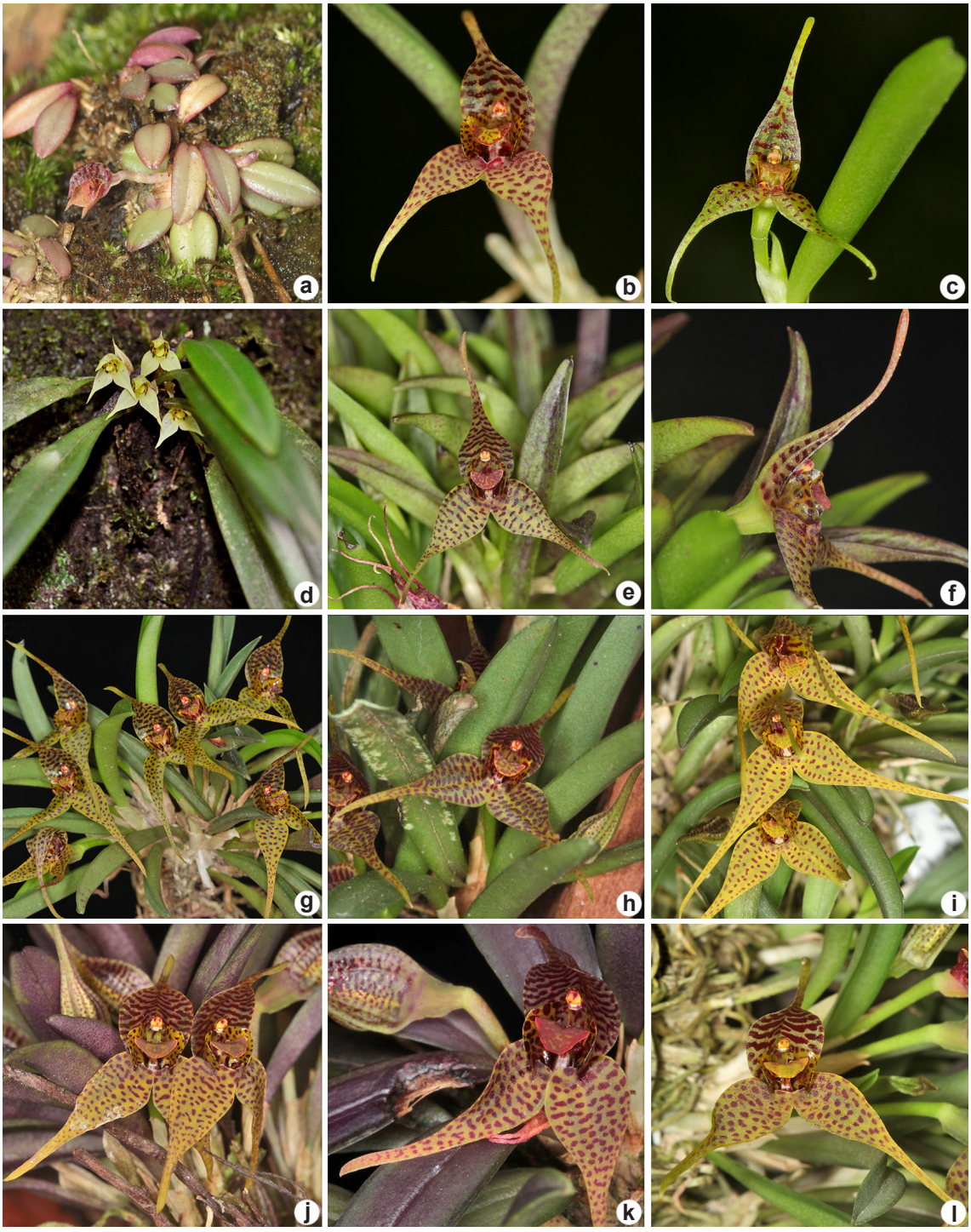

Figure 16 – a-l. *Dryadella* species recognised for Brazil – a. *Dryadella susanae*; b-c. *D. toscanoi*; d. *Dryadella vitorinoi*; e-f. *Dryadella wuerstlei*; g-l. variações em *Dryadella zebrina*. Photographs: a-c, e-i. Eric de Camargo Smidt; d. Jesulino Namba.

(FURB); Corupá, 7.IX.2020, fl., *D.C. Imig 659* (UPCB); Palmeiras II, 24.VIII.2010, fl., *A. Korte & A. Kniess 4197* (FURB). Doutor Pedrinho, 25.V.2010, fl., *T. Cadorin et al. 2423* (FURB). Florianópolis, Residencial dos Araças, 4.I.2010, *R. Siqueira 210* (FLOR); 28.IX.1967, fl., *R.M. Klein & A. Bresolin 7587* (FLOR); Morro do Ribeirão, 24.X.1967, fl., *R.M. Klein & A. Bresolin 7609* (FLOR). Garuva, Serra do Quiriri, 24.XI.2010, fl., *A. Korte 5101* (FURB). Governador Celso Ramos, 11.VIII.1971, *R.M. Klein 9649* (FLOR); Vargem do Macário, 20.III.1972, *A. Bresolin 527* (FLOR). Ilhota, Morro do Baú, 16.IX.2016, fl., *Gaglioni & Junckes 501* (UPCB). Imaruí, Morro D'una, 18.X.1973, fl., *A. Bresolin 900* (FLOR). Joinville, Cubatão, 6.VII.2010, fl., *T. Cadorin et al. 2879* (FURB); Serra Dona Francisca, 6.VI.2010, fl., *T. Cadorin et al. 1975* (FURB); 10.XII.2009, fl., *T. Cadorin et al. 870* (FURB); Serra do Piraí, 18.X.2010, fl., *A. Korte & A. Kniess 4090* (FURB); Serra Queimada, 3.IX.2010, fl., *W. Mancinelli & A. Mancinelli 1301* (JOI); Morro do Tromba, 20.III.2006, fl., *W. Mancinelli 557* (JOI). Lages, Encruzilhada, 30.X.1962, fl., *R.M. R. Reitz & R.M Klein 13924* (MBM, US). Monte Castelo, Serra da Garganta, 17.IX.2010, fl., *A. Korte & A. Kniess 4381* (FURB). Nova Trento, 9.IX.2017, fl., *A. Kassner-Filho et al. 1031* (FURB); Monte Barão, RPPN Prima Luna, 16.VI.2006, *T. Cadorin et al. 573* (FURB). Palhoça, Morro Cambirela, 20.VIII.1971, *A. Bresolin 349* (FLOR); 20.VIII.1971, fl., *A. Bresolin 342* (FLOR). Praia Grande, morro em frente ao Canyon Itaimbezinho, trilha dos porcos, 24.XII.2018, fl., *D.C. Imig & G.A. Mantovani 637* (UPCB); 26.XII.2018, fl., *D.C. Imig 644* (UPCB); Serra do Faxinal, 13.V.2010, fl., *J.L. Schmitt et al. 2216* (FURB). São Bento do Sul, 8.X.2018, fl., *D.C. Imig 632* (UPCB); fl., *D.C. Imig 630* (UPCB); fl., *D.C. Imig 629* (UPCB). Ponte Alta, Morro do Funil, 6.X.2009, fl., *J.L. Schmitt et al. 160* (FURB). Rancho Queimado, BR-282, 10.X.1993, fl., *F.F. Neves 82* (FLOR). Rio dos Cedros, 27.VII.2017, fl., *A. Kassner-Filho et al. 604* (FURB). Rodeio, Eremitério Frei Egídio, 24.IX.2016, *L.A. Funez et al. 5552* (FURB). São Martinho, 26.I.2010, fl., *J.L. Schmitt et al. 995* (FURB). Vargem do Cedro, P.E. da Serra do Tabuleiro, 15.VI.2010, fl., *Verdi et al. 5023* (FURB). São José, Serra da Boa Vista, 14.X.1962, fl., *R. Reitz & R.M. Klein 10217* (FLOR, US); 24.X.1957, fl., *R. Reitz & R.M. Klein 5397* (US). Santo Amaro da Imperatriz, 13.X.2006, *J.Z. Matos 24* (FLOR). Taió, Passo Manso, 9.X.2009, fl., *T. Cadorin et al. 201* (FURB); Gramado, 15.IX.2010, fl., *A. Korte & A. Kniess 4347* (FURB). Treviso, Brasília, 24.XI.2009, *J.L. Schmitt et al. 594* (FURB). Vidal Ramos, Águas Frias, 21.X.2009, *A. Korte & A. Kniess 686* (FURB). SÃO PAULO: Bananal, 10.IX.2020, fl., *M. Klingelfuss 309* (UPCB). Capão Bonito, 15.IX.2020, fl., *D.C. Imig 658* (UPCB). São José do Barreiro, Campos da Bocaina, 26.III.1894, fl., *A. Loefgren & G. Edwall 2302* (BR - Holotype *D. edwallii*). Serra do Mar Monte Alegro, fl., XI.1914, *P. Dusén 15842* (MO).

Dryadella zebrina have a wide geographic distribution, especially when compared to other species of the genus. In Brazil, it is endemic to the Atlantic Rainforest. It occurs in the states of the South (SC, RS and PR), Southeast (ES, SP, RJ and MG) and Bahia in the Northeast. Also, it occurs in La Paz, Bolivia, and Amazonas in Peru (Luer 2005) (Fig. 17e).

Dryadella zebrina is found in dense and humid forests (near rivers) and mountaintops, unlike other species, it can form dense populations (up to 15–20 individuals). The flowering period occurs from April to November.

Dryadella zebrina is among the largest species in Brazil and have the widest distribution. It is commonly found in herbaria and living collections. The flowers are proportionately large in relation to the other species of the genus and stand out from the leaves due to the larger peduncle size, which can reach 45–80 (120) mm (*e.g.*, *G. Hatschbach 13116* and *O. Ribas et al. 6580*). We highlight the high vegetative variability of this species, even within the same or close populations. The size is 40–85(–130) mm tall, with leaves ranging from dark-green to fully purplish on both sides (*e.g.*, *T.F. Santos et al. 641* and *T.F. Santos et al. 661*) collected in the same location (Fig. 16g-l).

This wide variation is also present in the colour and characteristics of the flowers. Within the same or close populations, they may vary from light-yellow to dark-yellow with diffuse or very congested dark-purple punctuations. The punctuations may be transversely distributed in a "zebra" shape, particularly on the dorsal sepal. The clavate tail apex of the dorsal sepal may be greenish or covered by purple punctuations. The floral structures are sometimes so densely punctuated with purple that sometimes they cover almost the entire lamina (see Fig. 16g-l).

Dryadella zebrina is probably related to *D. wuerstlei* but vegetatively larger, 40–80(–130) mm tall and with petiolate leaves with flat blades (*vs.* 20–35 mm tall with sessile, semi-terete and sulcate leaves). Flowers have yellow to dark-yellow sepals, diffused or densely dark-purple spotted. The spots are more or less in transverse bars on dorsal sepals, tapering to a 5–7.3 mm tail with usually clavate apex, smaller in relation to the blade, discreetly carinated with entire keels and margins (*vs.* pale-green sepals, diffused light-purple spotted, ending abruptly in a slender tail, 6–11 mm, exceeding blade size, evidently carinated and toothed, margin entire to discreetly toothed). Lip oblong to obovate

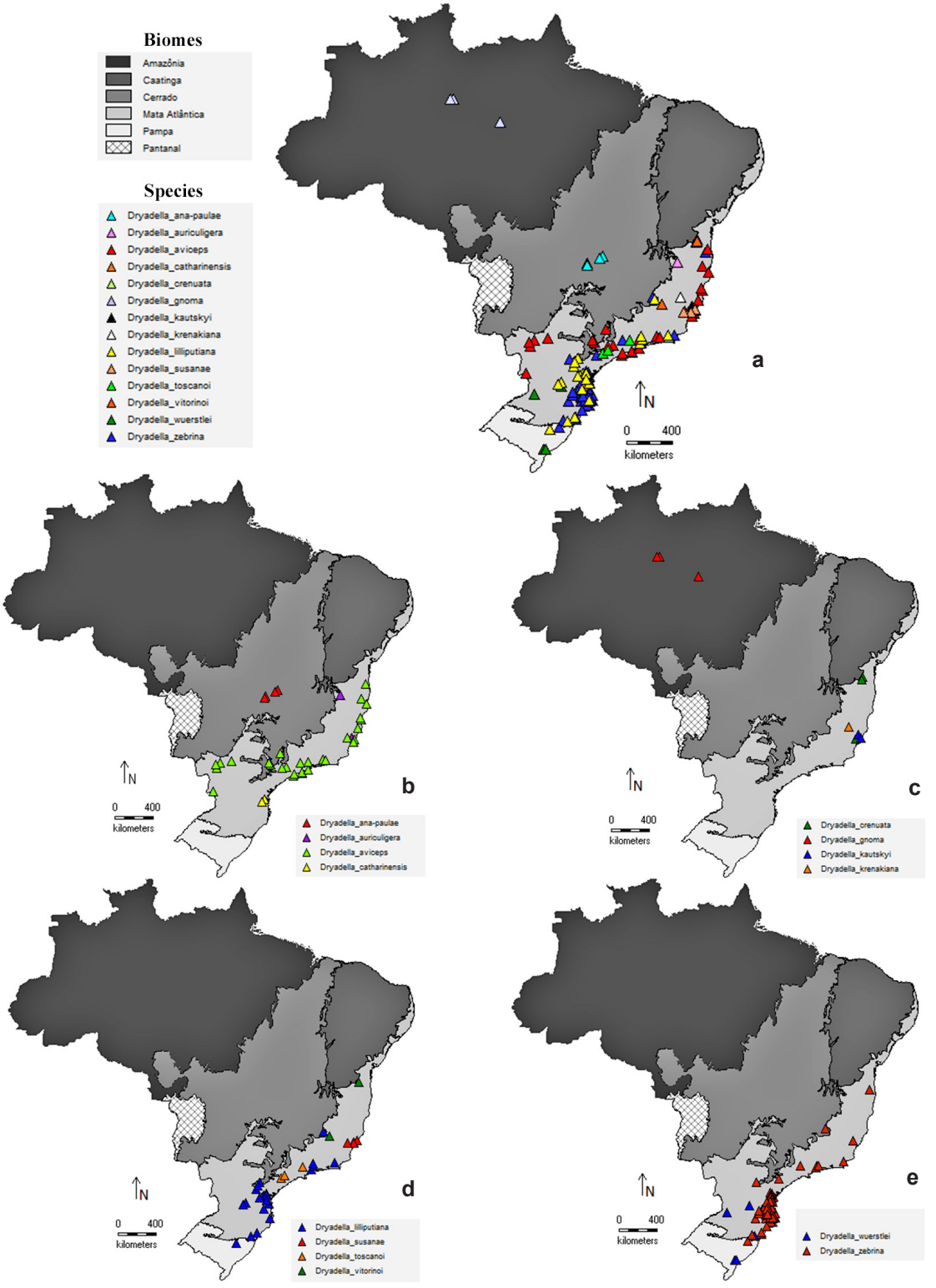

Figure 17 – a-e. Distribution map of *Dryadella* in Brazil – a. general distribution of the genus in different Biomes; b. *Dryadella ana-paulae*, *Dryadella auriculigera*, *Dryadella aviceps*, *Dryadella catharinensis*; c. *Dryadella crenulata*, *Dryadella gnoma*, *Dryadella kautskyi*, *Dryadella krenakiana*; d. *Dryadella lilliputiana*, *Dryadella susanae*, *Dryadella toscanoi*, *Dryadella vitorinoi*; e. *Dryadella wuerstlei*, *Dryadella zebrina*.

with the same colour of the sepals and petals and entire margins (*vs.* lip obovate, green in colour and congested dark purple punctuations highlighting the structure between the petals and margins, which are minutely denticulated) (Fig. 15g-l).

Dryadella zebrina was described by Porsch (1905) in *Masdevallia* from a material of origin cited only as Raiz da Serra and possibly referred to as the neighbourhood and district of the Municipality of Magé in the state of Rio de Janeiro. It was collected in August 1901 by *Wettstein & Schiffner s.n.* and deposited in herbarium B, possibly destroyed. Later neotyped by Luer (2005), with material from Rio de Janeiro, near Petrópolis, collected by *C. Luer 14500* (MO).

Masdevallia carinata, was published in Bulletin de la Société Royale de Botanique de Belgique (1907), from material from Brazil, Brasilia austro-orientali, without locality, collected by *C. Glaziou s.n*., deposited at (BR997389) and synonymised by Luer, in 1978a.

Dryadella edwallii (as *Masdevallia edwallii* Cogn.) was described by Cogniaux (1906) in *Flora brasiliensis*, whose type material is from Campos da Bocaína, São Paulo, by Comm. Geography & Geol. 2302 (BR657020). In its original description, the measurements of the floral parts were not presented, and the shapes overlap the description of *D. zebrina* (Cogniaux 1906; Luer 2005). A more detailed description was presented in the revision of the genus (Luer 2005), which highlights the great similarity with *D. zebrina*, differentiating them only by the lip size, 3 × 3 mm, while in *D. zebrina* this structure would have 2 × 2 mm. Due to this taxonomic difficulty, these taxa were studied from a morphometric point of view, whose results led to the synonymisation of *D. edwalli* in *D. zebrina* (Imig *et al.* 2022).

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Data availability statement

In accordance with Open Science communication practices, the authors inform that all data are available within the manuscript.

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