



## Nomenclatural notes on *Goepertia* (Marantaceae)

MARIANA NAOMI SAKA\* & JULIO ANTONIO LOMBARDI

Departamento de Botânica, Instituto de Biociências de Rio Claro, UNESP - Universidade Estadual Paulista, 13506-900, Rio Claro, São Paulo, Brazil; e-mail: [marianasaka.bio@gmail.com](mailto:marianasaka.bio@gmail.com)

\*author for correspondence

A recent molecular based phylogeny (Borchsenius *et al.* 2012) redefined the genus *Goepertia* Nees (1831: 337) to include all the subgenera of *Calathea* Meyer (1818: 6) proposed by Schumann (1902) with the exception of *C.* subgenus *Calathea* Körnicke (1862: 112). As a result, several species of *Calathea* recently described were transferred to *Goepertia* (Braga 2014). Similarly, a taxonomic revision of the Brazilian species, currently carried out by the first author, led to the conclusion that *Calathea polytricha* Baker (1894: 497) should be combined in *Goepertia*. This species features the synapomorphies of *Goepertia*, such as simple inflorescences and corolla lobes straight to spreading, and belongs to Schumann's subgenus *Pseudophrynium* Körnicke (1862: 113). During the taxonomic revision, other names have been considered synonyms and are typified here.

### *Goepertia bella* (W.Bull) Borchsenius & Suárez (2012: 629)

Basionym:—*Maranta bella* Bull (1875a: 7) ≡ *Calathea bella* (W.Bull) Regel (1879: 297) ≡ *Phyllodes bella* (W.Bull) Kuntze (1891: 696). Type (neotype, designated here):—BRAZIL. ES, Marilândia, Liberdade, propr.: Deoclécio Lorencini, Alt.: 150–350m/s.m., 37°21'7"S, 58°30'51"W, 28 September 2006, *L.F.S. Magnano et al. 1468* (MBML 32733!).

= *Calathea cardiophylla* Schumann (1902: 108). Type (lectotype, designated here):—BRAZIL. Environs of Rio [de] Janeiro, 1882, *A.F.M. Glaziou 14326* (K barcode K000586826! [digital image], isotype F-F0BN009813! [digital image]; image of the lectotype is available at <http://www.kew.org/herbcatimg/248852.jpg>).

Additional specimen examined:—BRAZIL. Rio (de Janeiro), *A.F.M. Glaziou 17815* (syntype K! [digital image]).

= *Calathea musaica* W.Bull *ex* Bailey (1914: 624). Type (neotype, designated here):—BRAZIL. ES, Santa Teresa, Vale do Canaã, 8 November 1985, *W.A. Hoffmann 289* (MBML 4064!, isoneotypes ESA 62630!, RB 602863).

**Notes:**—*Maranta bella* was described by William Bull in his Plant Catalogue (1875a: 7). However, neither he, nor Regel (1879: 297), Kuntze (1891: 696) or Borchsenius & Suárez (2012: 629), in their following combinations, have appointed any type material to this species. Thus, *Goepertia bella* is here neotypified (Art. 9.7 of ICN, McNeill *et al.* 2012) with a collection from Brazil (as stated in William Bull's original description) which presents the same features he highlighted in the *diagnosis*, such as leaves “obliquely ovate, acute, narrowing considerably towards the point, cordate at the base, and so unequal-sided that one side is nearly twice the breadth of the other”.

The synonyms *Calathea cardiophylla* and *Calathea musaica* were also lectotypified and neotypified, respectively.

### *Goepertia concinna* (W.Bull) Borchsenius & Suárez (2012: 630)

Basionym:—*Maranta concinna* Bull (1874: 78) ≡ *Calathea concinna* (W.Bull) Schumann (1902: 119). Type (neotype, designated here):—Regel (1877: t. 893).

= *Maranta leopardina* Bull (1875b: 523) ≡ *Calathea leopardina* (W.Bull) Regel (1877: 35) ≡ *Phyllodes leopardina* (W.Bull) Kuntze (1891: 696). Type (lectotype, designated here):—Bull (1876: 46).

**Notes:**—Given that there is no type specimen or illustration associated with Bull's description of *Maranta concinna* (1874: 78), the illustration of Regel's publication of *Calathea leopardina* (1877: t.893) is here designated a neotype (Art. 9.7 of ICN, McNeill *et al.* 2012). This choice was based on the fact that in this publication, Regel considered

*C. concinna* a variety of *C. leopardina*, differing only by the shape of the leaves: elliptic (var. *concinna*) vs. elliptic-lanceolate (var. *leopardina*).

On the other hand, the lectotype designated for the name *C. leopardina* is an illustration published in Bull's Plant Catalogue (1876: 46) (Art. 9.12 of ICN, McNeill *et al.* 2012) one year after the species publication.

***Goepertia erecta*** (Andersson & Kennedy) Borchsenius & Suárez (2012: 630)

Basionym:—*Calathea erecta* Andersson & Kennedy (1996: 448). Type:—FRENCH GUIANA: along side to Cacao, near turn-off from Route N2, 8 March 1983, L. Andersson 1106 (holotype S-S-R-849! [digital image], isotypes GB! [digital image], CAY; image of the holotype is available at <http://andor.nrm.se/kryptos/fbo/kryptobase/large/S-R-000001/S-R-849.jpg>).

Additional specimen examined:—BRAZIL. Amazonas: Manaus-Caracari Road, km 62, Reserva INPA, 5 February 1974, G.T. Prance 20225 (paratype INPA!).

= *Calathea hopkinsii* Forzza (2007: 535) ≡ *Goepertia hopkinsii* (Forzza) Borchsenius & Suárez (2012: 631). *syn.nov.* Type:—BRAZIL. Amazonas: Manaus, Rodovia Manaus-Itacoatiara, km 26, Reserva florestal Ducke, 22 December 1995, M.A.S. Costa 586 (holotype INPA 189789!, isotype SPF!; image of the isotype is available at <http://fsi.cria.org.br/fsicache/fsi3?type=image&source=herbaria/SPF/SPF00122320.tif&profile=jpeg&width=1055&quality=96>).

**Notes:**—*Calathea erecta* was described by Andersson & Kennedy (1996: 448) based on specimens from French Guiana and Brazilian Amazon, with one of the paratypes collected on the “Reserva Florestal Ducke” (Prance 20225). In the publication of Marantaceae Meyer (1818: 6) for “Flora da Reserva Ducke”, Forzza (2007: 535) described *Calathea hopkinsii* based on specimens collected in the reserve. The diagnostic characters of this species (petiole and pulvinus glabrous, leaf blade oblanceolate, synflorescence originating directly from the rhizome, cataphylls enclosing the peduncle, and bracts ovate, chartaceous and glabrous) are all present in *Calathea erecta*. Examination of the paratype cited by Andersson & Kennedy and the specimen type of *Calathea hopkinsii* did not reveal any other differences between the taxa and we conclude that *C. hopkinsii* and combinations of that name should be considered synonyms of *Goepertia erecta*.

***Goepertia flavescens*** (Lindl.) Borchsenius & Suárez (2012: 630)

Basionym: *Calathea flavescens* Lindley (1825: 932). Type (lectotype, designated here):—Lindley (1825: t. 932).

= *Phrynium grandiflorum* Roscoe (1825: t. 33) ≡ *Calathea grandiflora* (Roscoe) Schumann (1902: 99). *syn.nov.* Type (lectotype, designated here):—Roscoe (1825: t. 33).

**Notes:**—Lindley (1825: 932) described *Calathea flavescens* based on cultivated material from Rio de Janeiro and discovered by John Forbes. The description of the species was based on the following characteristics: leaf blade plicate, coriaceous bracts with the apex acute, each with one open flower; yellow spreading flowers, with both outer and callose staminode petaloid, obcordate, both equal in size.

Roscoe (1825: t. 33), apparently unawareness about the publication of *Calathea flavescens*, described *Phrynium grandiflorum* based on a cultivated material from Rio de Janeiro and also discovered by John Forbes. Besides the probability that these two species were probably described based on the same material, Roscoe's description indicates the same characteristics related to *C. flavescens*.

A few years later, Schumann (1902) combined *Phrynium grandiflorum* into *Calathea*, considering, for unknown reasons, *C. flavescens* as a *nomen nudum* and therefore a synonym of *C. grandiflora*.

Both names were validly published (Art.38.1 of ICN, McNeill *et al.* 2012) and are lectotypified here. Nevertheless, the name *C. flavescens* has priority over *C. grandiflora* (Art. 11.4 of ICN, McNeill *et al.* 2012) because it was published a few months earlier (in October, according Stafleu & Cowan 1979) than *C. grandiflora* (in December, according Cullen 1973). *Goepertia flavescens* is therefore considered the correct name for this taxon, and consequently the names *Phrynium grandiflorum* and the combination *Calathea grandiflora* should be considered synonyms.

***Goepertia polytricha*** (Baker) Saka, *comb.nov.*

Basionym:—*Calathea polytricha* Baker (1894: 467). Type (lectotype, designated here):—ENGLAND. Kew Gardens, Recd. From Trinidad Botanical Garden in 1984 as “Maranta sp. St. Annis, Trinidad”, 24 September 1894, *collector unknown s.n.* (K barcode K000586790! [digital image], image of the lectotype is available at <http://www.kew.org/herbcatimg/248816.jpg>).

Additional specimen examined:—TRINIDAD. Banks of Caroni river, December 1868, H. Prestoe 3 (syntype K! [digital image]).

***Goepertia widgrenii*** (Körn.) Borchsenius & Suárez (2012: 635)

Basionym:—*Calathea widgrenii* Körnicke (1862: 117) ≡ *Phyllodes widgrenii* (Körn.) Kuntze (1891: 697). Type:—BRAZIL. *J.F. Widgren* 969 (holotype S 06-19613! [digital image]; image available at <http://andor.nrm.se/kryptos/fbo/kryptobase/large/S06-019001/S06-19613.jpg>).

= *Calathea gracilis* Petersen (1889: 328). Type (lectotype, designated here):—BRAZIL. Rio de Janeiro, *A.F.M. Glaziou* 8973 (K barcode K000586813! [digital image]; image of the lectotype is available at <http://www.kew.org/herbcatimg/248839.jpg>).

Additional specimen examined:—BRAZIL. Rio de Janeiro, *A.F.M. Glaziou* 8977 (syntype K! [digital image]).

= *Calathea taeniosa* Jorissene (1876: 83) ≡ *Phyllodes taeniosa* (Joriss.) Kuntze (1891: 697) ≡ *Goepertia taeniosa* (Joriss.) Borchsenius & Suárez (2012: 634). *syn.nov.* Type (lectotype, designated here):—Jorissene (1876: t. 5).

= *Calathea hirta* Ravenna (2004: 46) ≡ *Goepertia hirta* (Ravenna) Borchsenius & Suárez (2012: 631). *syn.nov.* Type:—BRAZIL. Minas Gerais: Estação Biológica de Caratinga, 20 November 1984, *P.M. Andrade & M.A. Lopes* 512 (holotype BHC 7578!).

**Notes:**—*Goepertia widgrenii* is recognized by the hirsute peduncle, bracts externally hirsute to glabrescent and internally glabrous; one bracteole per cymule, with the same size of the sepals; corolla tube, petals and sepals glabrous; large outer and cucullate staminodes, both obcordate and white with a yellow spot in the middle.

Jorissene (1876: 83) described *Calathea taeniosa* based on cultivated material of Jacob-Makoy, who nurtured various specimens of Marantaceae from Brazil. Field collections and examination of herbarium material conducted by the first author has revealed a wide coloration range of the leaves blade of this species: entirely green; white-banded green on adaxial side and purple on abaxial (as the description of *C. taeniosa*); or entirely green on adaxial side with the abaxial side purple. Given this variation, *Calathea taeniosa* and its combinations should be considered synonyms of *Goepertia widgrenii*.

Ravenna's description (2004: 46) of *Calathea hirta* reported the same diagnostic characters as those given by Körnicke for *C. widgrenii*. The analysis of the type specimen of *Calathea hirta* confirms the identity of the two species. In conclusion, *Calathea hirta* and combinations should be therefore considered synonyms of *Goepertia widgrenii*.

## Acknowledgements

We acknowledge the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) for the fellowship grant n°148985/2012-2 provided to MNS and for the research grant 307997/2013-8 provide to JAL; the Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP) for the fellowship grant n° 2012/22713-6. We are grateful to Mia Ehn, curator of S, for sending the holotype image of *Calathea widgrenii*, the editor and the reviewer for the valuable suggestions.

## References

- Andersson, L. & Kennedy, H. (1996) Four new species of *Calathea* (Marantaceae) from French Guiana. *Nordic Journal of Botany* 6: 447–455.  
<http://dx.doi.org/10.1111/j.1756-1051.1986.tb00900.x>
- Bailey, L.H. (1914) *Calathea*. *The Standard Cyclopaedia of Horticulture* 2: 619–624.
- Baker, J.G. (1894) *Calathea polytricha* Baker *n.sp.* *Gardener's Chronicle* 16 (ser. 3): 467.
- Borchsenius, F., Suárez, L.S.S., Prince, L. (2012) Molecular Phylogeny and Redefined Generic Limits of *Calathea* (Marantaceae). *Systematic Botany* 37: 620–635.  
<http://dx.doi.org/10.1600/036364412X648571>
- Braga, J.M.A. (2014) New combinations in the genus *Goepertia* (Marantaceae). *Phytotaxa* 167 (1): 143–144.  
<http://dx.doi.org/10.11646/phytotaxa.167.1.13>
- Bull, W. (1874) *Maranta concinna*. *Gardener's Chronicle* 1: 78.
- Bull, W. (1875a) *Maranta bella*. *A Retail List of New, Beautiful and Rare Plants, offered by William Bull* 110: 7.

- Bull, W. (1875b) *Maranta leopardina*. *Gardener's Chronicle* 3: 523.
- Bull, W. (1876) *Maranta leopardina*. *A Retail List of New, Beautiful and Rare Plants, offered by William Bull* 121: 46.
- Cullen, J. (1973) William Roscoe's Monandrian Plants of the Order Scitamineae. *Notes from the Royal Botanic Garden Edinburgh* 32: 417–421.
- Forzza, R.C. (2007) Flora da Reserva Ducke, Amazonas, Brasil: Marantaceae. *Rodriguésia* 58: 533–543.
- Jorissene, G. (1876) Notice sur le *Calathea taeniosa* G.Joriss. ou Calathéa a Bandelettes. *La Belgique Horticole* 26: 83–85, t.5.
- Körnigke, F.A. (1862) Monographiae Marantearum Prodomus. *Bulletin de la Société Impériale des Naturalistes de Moscou* 35: 1–147.
- Kuntze, C.E.O. (1891) *Revisio Generum Plantarum*, vol. 2. A. Felix, Leipzig, pp. 377–1011.
- Lindley, J. (1825) *Calathea flavescens*. *Botanical Register* 11: t. 932.
- McNeill, J., Barrie, F.R., Buck, W.R., Demoulin, V., Greuter, W., Hawksworth, D.L., Herendeen, P.S., Knapp, S., Marhold, K., Prado, J., Prud'homme van Reine, W.F., Smith, G.F., Wiersema, J.H. & Turland, N.J. (2012) International Code of Nomenclature for algae, fungi and plants (Melbourne Code) adopted by the Eighteenth International Botanical Congress Melbourne, Australia, July 2011. [*Regnum Vegetabile* 154]. Gantner, Ruggell, 240 pp.
- Meyer, G.F.W. (1818) *Primitiae Florae Essequeboensis adjunctis descriptionibus centum circiter stirpium novarum, observationibusque criticis*. Dieterich, Göttingen, 316 pp.  
<http://dx.doi.org/10.5962/bhl.title.49397>
- Nees von Esenbeck, C.G.D. (1831) Über die Gattungen *Maranta* und *Thalia*. *Linnaea* 6: 303–431.
- Petersen, O.G. (1890) Marantaceae. *Videnskabelige Meddelelser fra den Naturhistoriske Forening i Kjøbenhavn for Aaret 1889* (ser. 5): 328–336.
- Ravenna, P. (2004) A new Brazilian species of *Calathea* (Marantaceae). *Onira* 9: 46–47.
- Regel, E. (1877) *Calathea leopardina*. *Gartenflora* 26: 35–36, t. 893.
- Regel, E. (1879) 3. Uebersicht der Arten der Gattungen *Maranta* und *Calathea*. *Gartenflora* 28: 293–302.
- Roscoe, W. (1825) *Phrynium grandiflorum*. *Monandrian Plants of the Order Scitamineae* 5/6: t. 33.
- Schumann, K.M. (1902) Marantaceae. In: Engler, A. (Ed.) *Das Pflanzenreich* IV. Verlag von Wilhelm Engelmann, Leipzig, pp. 1–184.
- Stafleu, F.A. & Cowan, R.S. (1979) *Taxonomic literature. A selective guide to botanical publications and collections with dates, commentaries and types*, ed. 2, vol. 2. [*Regnum Vegetabile* 98]. Bohn, Scheltema & Holkema, Utrecht, 991 pp.