

KARMA, A NEW GENUS IN THE PLEUROTHALLIDINAE (ORCHIDACEAE)

ADAM P. KARREMANS^{1,2}

Abstract. The new generic name *Karma* (Orchidaceae: Pleurothallidinae) is proposed to substitute the concept of *Tubella* (Luer) Archila [2009], which is illegitimate on account of the prior homonym *Tubella* Archila [2006], a genus in the Gentianaceae. The latter was proposed together with the illegitimate genus *Xenia* Archila in the Asclepiadaceae, and the invalid *Pseudolepanthes* Archila in the Orchidaceae. All three names were “hidden” at the end of an unrelated paper in *Revista Guatemalensis* volume 2 number 2 and had been forgotten or ignored until now. Taxonomic proposals published in this inconsistent, self-published, cryptic journal are good candidates for suppression, especially given the existence of alternative contents and pre-dated covers, among other issues.

Keywords: *Karma*, new genus, priority, *Revista Guatemalensis*, *Trichosalpinx*, *Tubella*

Phylogenetic studies in the *Lepanthes* affinity (sensu Karremans, 2016) evidenced that *Trichosalpinx*, as defined by Luer (1997) and Pridgeon (2005), is polyphyletic (Bogarín et al., 2019). Several groups of taxa were shown to represent isolated lineages, prompting the recognition of several new generic concepts required to adequately explain the phylogenetic relationships in this group (Bogarín et al., 2018). *Trichosalpinx* subgen. *Tubella* Luer was found to be composed of unrelated taxa, neither of which belong to *Trichosalpinx* in the strict sense (Bogarín et al., 2019). The type species, *Trichosalpinx acremona* (Luer) Luer as well as most other members of the genus were shown to form a clade more closely related to *Anathallis* Barb. Rodr. (Karremans, 2014; Pérez-Escobar et al., 2017; Bogarín et al., 2019), from which they are easily distinguished morphologically (Fernández, 2013, 2016; Bogarín et al., 2018). *Tubella* (Luer) Archila, which had been previously elevated to generic rank, therefore became the accepted name for this group of species.

The taxonomic history of *Tubella* (Orchidaceae), as of many other taxa published in *Revista Guatemalensis*, has been rather unfortunate (Govaerts et al., 2022). The name was originally published as *Tubella* Archila (2000 [2009]: 46). However, *Trichosalpinx* subgen. *Tubella* Luer was explicitly stated as the basionym, and therefore the correct authority for the generic name is *Tubella* (Luer) Archila. The genus was published once again in Archila (2014 [2015]: 47), this time without citing a basionym. The reasoning for the second, superfluous, proposal was allegedly to avoid “misinterpretations in prior publications,” presumably to secure having complied with all the necessary requirements for effective and valid publication. The former *Revista Guatemalensis* volume 3, number 1, like many early issues of this journal, was later shown to bear a pre-dated cover (Govaerts et al., 2022). Rather than being printed and distributed in June of the year 2000, as the cover suggests, it was effectively published in February 2009 when first received physically at a botanical institution. *Revista Guatemalensis* volume 17, number 1, on the other hand

was effectively published in 2015. Bearing the corrected publication dates, the first generic name applicable to this group of species is *Tubella* (Luer) Archila [2009], while *Tubella* Archila [2015] is an illegitimate posterior homonym.

Among the many questionable practices surrounding the publication of this obscure journal, producing volumes with conflicting publication dates, alternative covers and alternative contents is also commonplace (Govaerts et al., 2022). One such case occurs with the different issues of volume 2, allegedly published in the year 1999. The most common, physically available version of volume 2 includes both issues 1 and 2 (Fig. 1A). Nevertheless, there is also a much rarer version of volume 2 that includes only the second issue (i.e., number 2; Fig. 1B–C). Volume 2, numbers 1–2 has a cover date July 1999, while the second version, volume 2, number 2, has a cover date November 1999. The latter, of which we have received copies from the Gray Herbarium at the Harvard University Botany Libraries and from a private collection in Guatemala, is key to the taxonomic issue discussed here. One would expect the contents of *Revista Guatemalensis* 2(1–2) to be the sum of contents of volume 2 number 1 plus those of number 2, and, on the surface, this would appear to be true. Volume 2 number 1 has yet to surface, but the five articles contained in volume 2 number 2 are also contained in the combined volume 2 numbers 1–2. Unfortunately, the contents of those two issues of the journal are not exactly the same.

A single article in volume 2 deals with taxonomy. In volume 2 number 2 it appeared as “Monografía del género *Brassia* en Guatemala” on page 28, and in volume 2 numbers 1–2, as “Monografía del género *Brassia*/Orchidaceae en Guatemala” on page 49. Besides a slight difference in the title, page numbers and publication date, there is also an important modification in the contents. Hidden at the very end of the *Brassia* paper in volume issue 2 number 2 is a brief proposal of three new genera (Fig. 2) which does not appear in volume 2 numbers 1–2. Proposed therein are the names *Xenia* Archila (Asclepiadaceae), *Tubella* Archila (Gentianaceae) and *Pseudolepanthes* Archila (Orchidaceae).

I am very grateful to the staff at the Harvard University Botany Libraries, Missouri Botanical Garden, Royal Botanic Gardens Kew, Lankester Botanical Garden, and numerous private persons. The Vice Presidency of Research of the University of Costa Rica financed this study through research project 814-C3-021 – Flora costaricensis: sistemática molecular y taxonomía del clado *Trichosalpinx* (Orchidaceae: Pleurothallidinae) de Costa Rica.

¹ Lankester Botanical Garden (JBL), University of Costa Rica (UCR). PO Box 302-7050, Cartago, Costa Rica; adam.karremans@ucr.ac.cr

² Naturalis Biodiversity Center, Evolutionary Ecology Group, Sylviusweg 72, 2333 BE, Leiden, The Netherlands.

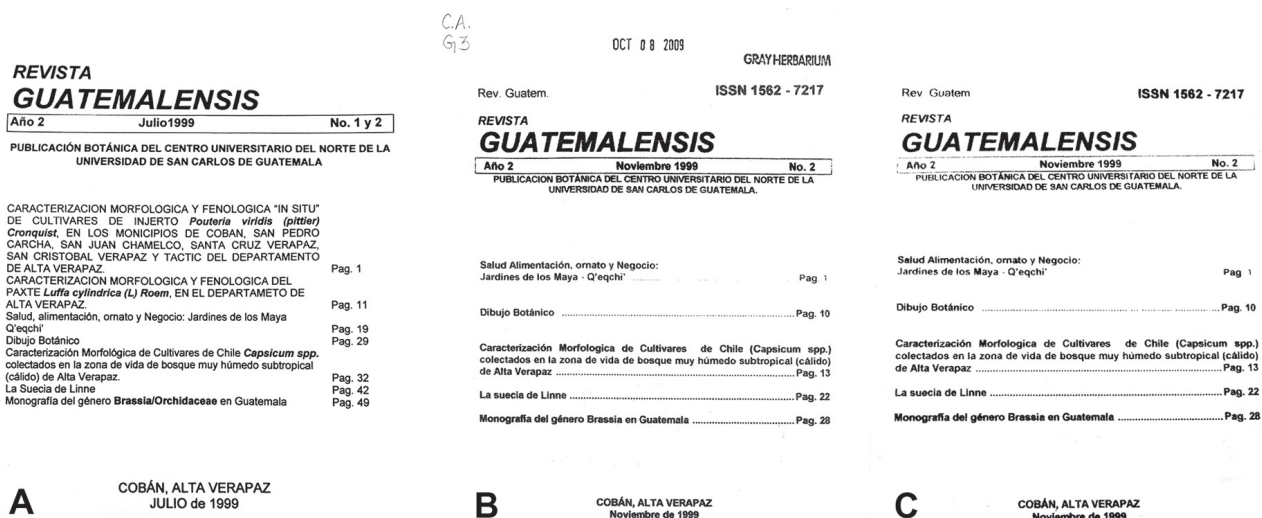


FIGURE 1. Alternative covers of *Revista Guatemalensis* volume 2. **A**, The common version, volume 2, No. 1–2, held at Lankester Botanical Garden; **B**, The rarer version, volume 2, No. 2, kept at the Gray Herbarium, Harvard University Library, physically received on the 8th of October 2009; **C**, Another cover of the rarer version, volume 2, number 2, kept in a private collection in Guatemala, physically received in 2006.

These names cannot be considered preliminary because the author clearly states that the requirements for valid publication are met. These three generic names have passed completely unnoticed, probably on account of the odd placement, in addition to the rarity of the issue volume 2 number 2, and the fact that Archila himself had forgotten or ignored them, speculatively for good reasons. *Xenia* Archila [2006] is illegitimate because it is a posterior homonym of *Xenia* Gerbaulet (Anacampserotaceae) [1992]. *Pseudolepanthes* Archila [2006] is invalid because no type species is explicitly designated, but *Tubella* Archila [2006] complies with all the requirements for valid publication in accordance with ICN Articles 38.5 and 40.6.

Regardless of the alternative covers and predated publication, the generic name *Tubella* is occupied since its publication in volume 2 number 2 of *Revista Guatemalensis* (effectively published in 2006) for a genus in the Gentianaceae and cannot be used in Orchidaceae at the same rank as proposed in volume 3, number 1 (effectively published in 2009) and volume 17, number 1 (effectively published in 2015). A new name is proposed here to substitute the illegitimate *Tubella* (Luer) Archila [2009]. However, the lack of peer-review and faithful editorial process, the inconsistency, paucity and unavailability of the publication, existence of alternative contents and pre-dated covers, republication of taxa, often using different types, and

a multitude of other ethical and technical violations make taxonomic proposals published in *Revista Guatemalensis* good candidates for overall suppression.

Karma Karremans, *gen. nov.*

Type species: *Pleurothallis arbuscula* Lindl., Edwards's Bot. Reg. 28: Misc. 72–73. 1842.

Habit slender, often with proliferating ramicauls, covered by lepanthiform sheaths, the inflorescence longer than the leaf, the ovary glabrous, the sepals membranaceous, glabrous, acuminate, concave, the petals much shorter, entire, elliptic, the lip simple, often three-lobed, the base unguiculate, lacking lobules, column elongate, apically winged, with a prominent column foot.

Synonyms: *Tubella* (Luer) Archila, *Revista Guatemal.* 3(1): 46. 2000 [2009], *nom. illeg. Pro parte*. Basionym: *Trichosalpinx* subgen. *Tubella* Luer, *Monogr. Syst. Bot.* 15:66. 1986. TYPE: *Pleurothallis acremona* Luer, *Selbyana* 5(2): 157. 1979.

Tubella Archila, *Revista Guatemal.* 17(1): 47. 2014 [2015], *nom. illeg. Pro parte*. TYPE: *Pleurothallis acremona* Luer, *Selbyana* 5(2): 157. 1979.

Non Tubella Archila, *Revista Guatemal.* 2(2): 37. 1999 [2006]. TYPE: *Tubella inospicua* Archila, *Revista Guatemal.* 2(2): 37. 2000 [2006].

NEW COMBINATIONS

Karma adnata (I. Jiménez) Karremans, *comb. nov.*

Basionym: *Trichosalpinx adnata* I. Jiménez *Lankesteriana* 15(3): 194. 2015.

Homotypic synonym: *Tubella adnata* (I. Jiménez) Mel. Fernández & Bogarín, *Phytotaxa* 340(2): 133. 2018.

Karma alabastra (Luer & R. Escobar) Karremans, *comb. nov.*

Basionym: *Pleurothallis alabastra* Luer & R. Escobar, *Orquideología* 16: 17. 1983.

Homotypic synonyms: *Trichosalpinx alabastra* (Luer & R. Escobar) Luer, *Phytologia* 54(5): 394. 1983. *Tubella alabastra* (Luer & R. Escobar) Archila, *Revista Guatemal.* 3(1): 49. 2000 [2009]. *Tubella alabastra* (Luer & R. Escobar) Archila, *Revista Guatemal.* 17(1): 48. 2014 [2015].

Karma amygdalodora (Kraenzl.) Karremans, *comb. nov.*

Basionym: *Pleurothallis amygdalodora* Kraenzl., *Bot. Jahrb. Syst.* 37: 521. 1906.

Rev. Guatem.

ISSN 1562 - 7217

Posee un callo basal bilamelado, cada lamela vista lateralmente, posee en la base un lobo prominente redondeado, que se proyecta hacia la parte posterior, en medio posee un lobo redondeado el cual es inconspicuo y por ultimo en el ápice presenta un lobo oblicuamente subcuadrado, redondeado; este callo mide 1 cm de largo y 0.25 cm de alto.

El ovario es pedicelado, lineal, mide 3.4 cm de largo y 0.35 cm de diámetro.

La columna mide 1.1 cm de largo y es oblonga, de color verde con pocas manchas corintias, antera apical, estigma ventral. Polinias 2 amarillas.

BIBLIOGRAFIA

- Stearn, William T. 1992. Botanical Latin. Timber Press, Inc. Fourth Edition, Portland, Oregon, USA. 546 P.
- Ames, O., and D.S. Correll. 1952. Orchids of Guatemala. Fieldiana: Bot. 26, Número 1, 194-205.
- Dressler, Robert. 1993. Phylogeny and Clasification of the Orchid Family. Dioscorides Press. Portland Oregon, USA. 314 P.
- Dressler, Robert, L. 1993. Field Guide to the Orchids of Costa Rica and Panamá. Cornell University Press. Ithaca, New York. 374P.
- Hamer, F. 1974. Las Orquídeas de el Salvador. Vol. 1, ministerio de Educación de el Salvador 374P.
- Hamer, F. 1981. Las Orquídeas de el Salvador. Vol. 3. The Marie Selby Botanical Gardens. Sarasota, Florida. 304 P.
- Williams, L.O. 1980. Orchids of Panamá. Flora of Panamá (Orchidaceae). Annals of the Missouri Botanical Garden, Volume 4. USA. 245 P.
- Font Quer P. 1979. Diccionario de Botánica. Editorial Labor S.A. Barcelona España.

Septima reimprección. España. 1244 P.

ADDITAMENTUM

A continuación se presenta un trabajo con todas las características requeridas por el Código Internacional de Nomenclatura Botánica (Código de Tokio), en el cual se incluyen 3 géneros de 3 distintas familias, y que serán trabajados posteriormente en revistas botánicas extranjeras.

XENIA Gen. Nov. (ASCLEPIADACEAE)

Xenia salvadorensis Archila Sp. Nov.
Tipo: Volcán San Vicente, El Salvador, colectada por F. Archila a 1400 MSNM. Herbario Cobanensis (SN) Noviembre 1999.

-36-

Rev. Guatem.

ISSN 1562 - 7217

Etimología: del griego Xenia "Extraña" en alusión a la apariencia extraña de la pubescencia interna y de la corona que parece ser una sola.

Herba scandens. 4 m. alta, sparse ramosa. Latex abundus.
Folia lanceolata et acuta viridis. Inflorescentia lateralis, pedunculata, multiflora, subglabra vel minute pubescens.
Flores secundi, patentes vel adscendentes, pallide brunneus.
Petalum subtriangularis acutus, interaneus puberulus.

TUBELLA Gen. Nov. (GENTIANACEAE)

Tubella inconspicua Archila sp. nov.
Tipo: Volcán San Vicente, El Salvador, colectada por F. Archila a 1800 MSNM. Herbario Cobanensis (SN) Noviembre 1999.
Etimología: Del latín "Tubella" un pequeño tubo por la forma peculiar de sus flores.

Herba saprophyticus, Habitat in Sylvis montium usque ad 1800 m Supra Mare, aphyllus, 10 - 15 cm longus, lactiflorus, vidi spontaneum, vidi in herbario.
Flos 5 - 10 tubuliformis
Petalum 0.5 cm longus.
Sepala leviter minore.

PSEUDOLEPANTHES Gen. Nov. (ORCHIDACEAE)

Pseudolepanthes tubata (Lodd.) Archila com. Nov.
Tipo: Colectado en Baja Verapaz, 1200 MSNM. F. Archila, 1985, Herbario Cobanensis(S.N.)
Basónimo: Stelis tubata Lodd., Bot. Cab. t. 1601, 1830
Etimología: De pseudo = falso y el nombre del género Lepanthes, por la apariencia de la planta principalmente por sus hojas carnosas con esta especie.
Sinónimo: Pleurothallis tubata (Lodd.) Steud., nomen. Bot. de. 2, 2:356, 1841.

Herba epiphytica cespitosa erecta, in arborum truncis ramulisque. Folia erectae, subcoriaceae, ellipticae, leviter tridentae.
Inflorescentiae 5 cm longa, racemosa, Sepala connata.
Labellum oblongum subtrilobatum,
Petala , oblongi dentatis - acuminati, 0.3 cm longi et 0.12 cm lati.
Columna albus, subalatus, 0.3 cm longus et 0.15 cm latus.

-37-

FIGURE 2. Pages 36 and 37 of Revista Guatemalensis 2, number 2 showing the proposal of three generic names under the title "Additamentum" at the end of the article "Monografía del género Brassia en Guatemala". Reproduced with the kind permission of the Gray Herbarium, Harvard University Library.

Homotypic synonyms: *Trichosalpinx amygdalodora* (Kraenzl.) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 64: 43. 1997. *Tubella amygdalora* (Kraenzl.) Archila, Revista Guatemal. 3(1): 49. 2000 [2009]. *Tubella amygdalora* (Kraenzl.) Archila, Revista Guatemal. 17(1): 48. 2014 [2015].

Karma arbuscula (Lindl.) Karremans, *comb. nov.*

Basionym: *Pleurothallis arbuscula* Lindl., Edwards's Bot. Reg. 28: Misc. 72. 1842.

Homotypic synonyms: *Humboldtia arbuscula* (Lindl.) Kuntze, Revis. Gen. Pl. 2: 667. 1891. *Trichosalpinx arbuscula* (Lindl.) Luer, Phytologia 54(5): 394. 1983. *Tubella arbuscula* (Lindl.) Archila, Revista Guatemal. 3(1): 49. 2000 [2009]. *Tubella arbuscula* (Lindl.) Archila, Revista Guatemal. 17(1): 49. 2014 [2015].

Karma atropurpurea (Luer & Hirtz) Karremans, *comb. nov.*

Basionym: *Trichosalpinx atropurpurea* Luer & Hirtz, Monogr. Syst. Bot. Missouri Bot. Gard. 64: 46. 1997.

Homotypic synonyms: *Tubella atropurpurea* (Luer & Hirtz) Archila, Revista Guatemal. 3(1): 50. 2000 [2009]. *Tubella atropurpurea* (Luer & Hirtz) Archila, Revista Guatemal. 17(1): 49. 2014 [2015].

Karma ballatrix (Luer & R. Escobar) Karremans, *comb. nov.*

Basionym: *Trichosalpinx ballatrix* Luer & R. Escobar, Orquideología 16(2): 178. 1984.

Homotypic synonyms: *Tubella ballatrix* (Luer & R. Escobar) Archila, Revista Guatemal. 17(1): 49. 2014 [2015]. *Tubella ballatrix* (Luer & R. Escobar) Archila, Revista Guatemal. 3(1): 50. 2000 [2009].

Karma barbelifera (Luer & R. Vásquez) Karremans, *comb. nov.*

Basionym: *Trichosalpinx barbelifera* Luer & R. Vásquez, Monogr. Syst. Bot. Missouri Bot. Gard. 64: 46. 1997.

Homotypic synonyms: *Tubella barbelifera* (Luer & R. Vásquez) Archila, Revista Guatemal. 3(1): 51. 2000 [2009]. *Tubella barbelifera* (Luer & R. Vásquez) Archila, Revista Guatemal. 17(1): 49. 2014 [2015].

Karma carinilabia (Luer) Karremans, *comb. nov.*

Basionym: *Pleurothallis carinilabia* Luer, Selbyana 3(3-4): 256. 1977.

Homotypic synonyms: *Pleurothallis broadwayi* var. *tricarinata* C. Schweinf., Bot. Mus. Leaf. 8(2): 42-43. 1940. *Trichosalpinx carinilabia* (Luer) Luer, Phytologia 54(5): 394. 1983. *Tubella carinilabia* (Luer) Archila, Revista Guatemal. 3(1): 51. 2000 [2009]. *Tubella carinilabia* (Luer) Archila, Revista Guatemal. 17(1): 50. 2014 [2015].

Karma carmeniae (Luer) Karremans, *comb. nov.*

Basionym: *Trichosalpinx carmeniae* Luer, Harvard Pap. Bot. 17(2): 366. 2012.

Homotypic synonym: *Tubella carmeniae* (Luer) Mel. Fernández & Bogarín, Phytotaxa 340(2): 133. 2018.

Karma carvii (Archila) Karremans, *comb. nov.*

Basionym: *Tubella carvii* Archila, Revista Guatemal. 3(1): 71. 2000 [2009].

Homotypic synonyms: *Trichosalpinx carvii* (Archila) J.M.H. Shaw, Orchid Rev. 122(1305): 18. 2014 [2015]. *Tubella tactiquensis* Archila, Revista Guatemal. 17(1): 62. 2014, *nom. illeg.* Definitively includes the type of *T. carvii* (see Karremans et al. 2021).

Karma cedralensis (Ames) Karremans, *comb. nov.*

Basionym: *Pleurothallis cedralensis* Ames, Sched. Orch. 4: 18. 1923.

Homotypic synonyms: *Trichosalpinx cedralensis* (Ames) Luer, Phytologia 54(5): 394. 1983. *Tubella cedralensis* (Ames) Archila, Revista Guatemal. 3(1): 52. 2000 [2009]. *Tubella cedralensis* (Ames) Archila, Revista Guatemal. 17(1): 50. 2014 [2015].

Karma chaetoglossa (Luer) Karremans, *comb. nov.*

Basionym: *Pleurothallis chaetoglossa* Luer, Selbyana 3: 262. 1977.

Homotypic synonyms: *Trichosalpinx chaetoglossa* (Luer) Luer, Phytologia 54(5): 394. 1983. *Tubella chaetoglossa* (Luer) Archila, Revista Guatemal. 3(1): 52. 2000 [2009]. *Tubella chaetoglossa* (Luer) Archila, Revista Guatemal. 17(1): 50. 2014 [2015].

Karma costata (Luer & R. Vásquez) Karremans, *comb. nov.*

Basionym: *Pleurothallis costata* Luer & R. Vásquez, Phytologia 46(6): 364. 1980.

Homotypic synonyms: *Trichosalpinx costata* (Luer & R. Vásquez) Luer, Phytologia 54(5): 395. 1983. *Tubella costata* (Luer & R. Vásquez) Archila, Revista Guatemal. 3(1): 53. 2000 [2009]. *Tubella costata* (Luer & R. Vásquez) Archila, Revista Guatemal. 17(1): 50. 2014 [2015].

Karma crucilabia (Ames & Correll) Karremans, *comb. nov.*

Basionym: *Pleurothallis crucilabia* Ames & Correll, Bot. Mus. Leaflet 10(4): 76. 1942.

Homotypic synonyms: *Trichosalpinx crucilabia* (Ames & Correll) Luer, Phytologia 54(5): 395. 1983. *Tubella crucilabia* (Ames & Correll) Archila, Revista Guatemal. 3(1): 53. 2000 [2009]. *Tubella crucilabia* (Ames & Correll) Archila, Revista Guatemal. 17(1): 50. 2014 [2015].

Karma cunorensis (Archila) Karremans, *comb. nov.*

Basionym: *Tubella cunorensis* Archila, Revista Guatemal. 3(1): 68. 2000 [2009].

Homotypic synonyms: *Trichosalpinx cunorensis* (Archila)

J.M.H. Shaw, Orchid Rev. 122(1305): 18. 2014 [2015]. *Tubella cobanensis* Archila, Revista Guatemal. 17(1): 60. 2014, *nom. illeg.* Definitively includes the type of *T. cunorensis* (see Karremans et al. 2021).

Karma dalstroemii (Luer) Karremans, *comb. nov.*

Basionym: *Trichosalpinx dalstroemii* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 64: 52–53. 1997.

Homotypic synonyms: *Tubella dalstroemii* (Luer) Archila, Revista Guatemal. 3(1): 53. 2000 [2009]. *Tubella dalstroemii* (Luer) Archila, Revista Guatemal. 17(1): 51. 2014 [2015].

Karma dirhamphis (Luer) Karremans, *comb. nov.*

Basionym: *Pleurothallis dirhamphis* Luer, Selbyana 3(3,4): 292. 1977.

Homotypic synonyms: *Trichosalpinx dirhamphis* (Luer) Luer, Phytologia 54(5): 395. 1983. *Tubella dirhamphis* (Luer) Archila, Revista Guatemal. 3(1): 53. 2000 [2009]. *Tubella dirhamphis* (Luer) Archila, Revista Guatemal. 17(1): 51. 2014 [2015].

Karma dressleri (Luer) Karremans, *comb. nov.*

Basionym: *Trichosalpinx dressleri* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 64: 54. 1997.

Homotypic synonyms: *Tubella dressleri* (Luer) Archila, Revista Guatemal. 3(1): 54. 2000 [2009]. *Tubella dressleri* (Luer) Archila, Revista Guatemal. 17(1): 51. 2014 [2015].

Karma drosoides (Luer) Karremans, *comb. nov.*

Basionym: *Trichosalpinx drosoides* Carnevali & I. Ramírez, Ernstia 42: 1. 1987.

Homotypic synonyms: *Tubella drosoides* (Carnevali & I. Ramírez) Archila, Revista Guatemal. 3(1): 54. 2000 [2009]. *Tubella drosoides* (Carnevali & I. Ramírez) Archila, Revista Guatemal. 17(1): 51. 2014 [2015].

Karma dunstervillei (Luer) Karremans, *comb. nov.*

Basionym: *Trichosalpinx dunstervillei* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 64: 55–56. 1997.

Homotypic synonyms: *Tubella dunstervillei* (Luer) Archila, Revista Guatemal. 3(1): 54. 2000 [2009]. *Tubella dunstervillei* (Luer) Archila, Revista Guatemal. 17(1): 51. 2014 [2015].

Karma dura (Lindl.) Karremans, *comb. nov.*

Basionym: *Pleurothallis dura* Lindl., Fol. Orchid. 9(Pleurothallis): 32. 1859.

Homotypic synonyms: *Humboldtia dura* (Lindl.) Kuntze, Revis. Gen. Pl. 2: 667. 1891. *Trichosalpinx dura* (Lindl.) Luer, Phytologia 54(5): 395. 1983. *Tubella dura* (Lindl.) Archila, Revista Guatemal. 3(1): 54. 2000 [2009]. *Tubella dura* (Lindl.) Archila, Revista Guatemal. 17(1): 51. 2014 [2015].

Karma escobarii (Luer) Karremans, *comb. nov.*

Basionym: *Trichosalpinx escobarii* Luer, Orquideología 18(2): 168–170. 1991.

Homotypic synonyms: *Trichosalpinx escobarii* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 64: 114–115. 1997, *nom. superfl.* *Tubella escobarii* (Luer) Archila, Revista Guatemal. 3(1): 55. 2000 [2009]. *Tubella escobarii* (Luer) Archila, Revista Guatemal. 17(1): 52. 2014 [2015].

Karma fasciculata (Luer & Hirtz) Karremans, *comb. nov.*

Basionym: *Trichosalpinx fasciculata* Luer & Hirtz, Monogr. Syst. Bot. Missouri Bot. Gard. 64: 58–59. 1997.

Homotypic synonyms: *Tubella fasciculata* (Luer & Hirtz) Archila, Revista Guatemal. 3(1): 55. 2000 [2009]. *Tubella fasciculata* (Luer & Hirtz) Archila, Revista Guatemal. 17(1): 52. 2014 [2015].

Karma fissa (Luer) Karremans, *comb. nov.*

Basionym: *Trichosalpinx fissa* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 64: 59. 1997.

Homotypic synonyms: *Tubella fissa* (Luer) Archila, Revista Guatemal. 3(1): 56. 2000 [2009]. *Tubella fissa* (Luer) Archila, Revista Guatemal. 17(1): 52. 2014 [2015].

Karma fruticosa (Luer) Karremans, *comb. nov.*

Basionym: *Trichosalpinx fruticosa* Luer, Lindleyana 11(2): 105. 1996.

Homotypic synonyms: *Trichosalpinx fruticosa* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 64: 59–60. 1997, *nom. superfl.* *Tubella fruticosa* (Luer) Archila, Revista Guatemal. 3(1): 56. 2000 [2009]. *Tubella fruticosa* (Luer) Archila, Revista Guatemal. 17(1): 52. 2014 [2015].

Karma gabi-villegasiae (I. Jiménez) Karremans, *comb. nov.*

Basionym: *Trichosalpinx gabi-villegasiae* I. Jiménez, Lankesteriana 15(3): 196. 2015.

Homotypic synonym: *Tubella gabi-villegasiae* (I. Jiménez) Mel. Fernández & Bogarín, Phytotaxa 340(2): 133. 2018.

Karma gentryi (Luer) Karremans, *comb. nov.*

Basionym: *Trichosalpinx gentryi* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 64: 60. 1997.

Homotypic synonyms: *Tubella gentryi* (Luer) Archila, Revista Guatemal. 3(1): 56. 2000 [2009]. *Tubella gentryi* (Luer) Archila, Revista Guatemal. 17(1): 52. 2014 [2015].

Karma giovi-mendietae (I. Jiménez) Karremans, *comb. nov.*

Basionym: *Trichosalpinx giovi-mendietae* I. Jiménez, Lankesteriana 15(3): 199. 2015.

Homotypic synonym: *Tubella giovi-mendietae* (I. Jiménez) Mel. Fernández & Bogarín, Phytotaxa 340(2): 133. 2018.

Karma hamiltonii (Luer) Karremans, *comb. nov.*

Basionym: *Trichosalpinx hamiltonii* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 64: 61. 1997.

Homotypic synonyms: *Stelis hamiltonii* (Luer) Pridgeon & M.W. Chase, Lindleyana 16(4): 263. 2001. *Specklinia hamiltonii* (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 95: 261. 2004. *Tubella hamiltonii* (Luer) Archila, Revista Guatemal. 3(1): 56. 2000 [2009]. *Tubella hamiltonii* (Luer) Archila, Revista Guatemal. 17(1): 52. 2014 [2015].

Karma hirtzii (Luer) Karremans, *comb. nov.*

Basionym: *Trichosalpinx hirtzii* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 64: 61. 1997.

Homotypic synonyms: *Tubella hirtzii* (Luer) Archila, Revista Guatemal. 3(1): 57. 2000 [2009]. *Tubella hirtzii* (Luer) Archila, Revista Guatemal. 17(1): 52. 2014 [2015].

Karma hypocrita (Garay & Dunst.) Karremans, *comb. nov.*

Basionym: *Pleurothallis hypocrita* Garay & Dunst., Venez. Orchid. Ill. 6: 344. 1976.

Homotypic synonyms: *Trichosalpinx hypocrita* (Garay & Dunst.) Luer, Phytologia 54(5): 395. 1983. *Tubella hypocrita* (Garay & Dunst.) Archila, Revista Guatemal. 3(1): 57. 2000 [2009]. *Tubella hypocrita* (Garay & Dunst.) Archila, Revista Guatemal. 17(1): 53. 2014 [2015].

Karma inaequisepala (C. Schweinf.) Karremans, *comb. nov.*

Basionym: *Pleurothallis inaequisepala* C. Schweinf., Bot. Mus. Leafl. 10: 180. 1942.

Homotypic synonyms: *Trichosalpinx inaequisepala* (C. Schweinf.) Luer, Phytologia 54(5): 394. 1983. *Tubella inaequisepala* (C. Schweinf.) Archila, Revista Guatemal. 3(1): 57. 2000 [2009]. *Tubella inaequisepala* (C. Schweinf.) Archila, Revista Guatemal. 17(1): 53. 2014 [2015].

Karma intricata (Lindl.) Karremans, *comb. nov.*

Basionym: *Pleurothallis intricata* Lindl., Orchid. Linden. 1. 1846.

Homotypic synonyms: *Humboldtia intricata* (Lindl.) Kuntze, Revis. Gen. Pl. 2: 667. 1891. *Trichosalpinx intricata* (Lindl.) Luer, Phytologia 54(5): 396. 1983. *Tubella intricata* (Luer) Archila, Revista Guatemal. 3(1): 57. 2000 [2009]. *Tubella intricata* (Luer) Archila, Revista Guatemal. 17(1): 53. 2014 [2015].

Karma jimburae (Luer & Hirtz) Karremans, *comb. nov.*

Basionym: *Trichosalpinx jimburae* Luer & Hirtz, Monogr. Syst. Bot. Missouri Bot. Gard. 64: 64. 1997.

Homotypic synonyms: *Tubella jimburae* (Luer & Hirtz) Archila, Revista Guatemal. 3(1): 58. 2000 [2009]. *Tubella jimburae* (Luer & Hirtz) Archila, Revista Guatemal. 17(1): 53. 2014 [2015].

Karma jostii (Luer & Hirtz) Karremans, *comb. nov.*

Basionym: *Trichosalpinx jostii* Luer & Dalström, Monogr. Syst. Bot. Missouri Bot. Gard. 105: 255. 2006.

Homotypic synonym: *Tubella jostii* (Luer & Dalström) Archila, Revista Guatemal. 17(1): 53. 2014 [2015].

Karma lamellata (Luer) Karremans, *comb. nov.*

Basionym: *Trichosalpinx lamellata* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 64: 64. 1997.

Homotypic synonyms: *Tubella lamellata* (Luer) Archila, Revista Guatemal. 3(1): 58. 2000 [2009]. *Tubella lamellata* (Luer) Archila, Revista Guatemal. 17(1): 53. 2014 [2015].

Karma lenticularis (Luer) Karremans, *comb. nov.*

Basionym: *Pleurothallis lenticularis* Luer, Selbyana 3(1/2): 132. 1976.

Homotypic synonyms: *Trichosalpinx lenticularis* (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 64: 65. 1997. *Tubella lenticularis* (Luer) Archila, Revista Guatemal. 3(1): 58. 2000 [2009]. *Tubella lenticularis* (Luer) Archila, Revista Guatemal. 17(1): 53. 2014 [2015].

Karma ligulata (Luer & Hirtz) Karremans, *comb. nov.*

Basionym: *Trichosalpinx ligulata* Luer & Hirtz, Monogr. Syst. Bot. Missouri Bot. Gard. 64: 65. 1997.

Homotypic synonyms: *Tubella ligulata* (Luer & Hirtz) Archila, Revista Guatemal. 3(1): 58. 2000 [2009]. *Tubella ligulata* (Luer & Hirtz) Archila, Revista Guatemal. 17(1): 53. 2014 [2015].

Karma lilliputalis (Luer & Hirtz) Karremans, *comb. nov.*

Basionym: *Lepanthopsis lilliputalis* Luer & Hirtz, Monogr. Syst. Bot. Missouri Bot. Gard. 52: 118. 1994.

Homotypic synonyms: *Trichosalpinx lilliputalis* (Luer & Hirtz) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 64: 115. 1997. *Tubella lilliputalis* (Luer & Hirtz) Archila, Revista Guatemal. 3(1): 58. 2000 [2009]. *Tubella lilliputalis* (Luer & Hirtz) Archila, Revista Guatemal. 17(1): 54. 2014 [2015].

Karma macphersonii (Luer) Karremans, *comb. nov.*

Basionym: *Trichosalpinx macphersonii* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 64: 66. 1997.

Homotypic synonyms: *Tubella macphersonii* (Luer) Archila, Revista Guatemal. 3(1): 59. 2000 [2009]. *Tubella macphersonii* (Luer) Archila, Revista Guatemal. 17(1): 54. 2014 [2015].

Karma membraniflora (C. Schweinf.) Karremans, *comb. nov.*

Basionym: *Pleurothallis membraniflora* C. Schweinf., Bot. Mus. Leaf. 5(6): 91–92. 1938.

Homotypic synonyms: *Trichosalpinx membraniflora* (C. Schweinf.) Luer, Phytologia 54(5): 396. 1983. *Tubella membraniflora* (C. Schweinf.) Archila, Revista Guatemal. 3(1): 59. 2000 [2009]. *Tubella membraniflora* (C. Schweinf.) Archila, Revista Guatemal. 17(1): 54. 2014 [2015].

Karma metamorpha (Luer & Hirtz) Karremans, *comb. nov.*

Basionym: *Trichosalpinx metamorpha* Luer & Hirtz, Monogr. Syst. Bot. Missouri Bot. Gard. 64: 67. 1997.

Homotypic synonyms: *Tubella metamorpha* (Luer & Hirtz) Archila, Revista Guatemal. 3(1): 59. 2000 [2009]. *Tubella metamorpha* (Luer & Hirtz) Archila, Revista Guatemal. 17(1): 54. 2014 [2015].

Karma montana (Barb. Rodr.) Karremans, *comb. nov.*

Basionym: *Lepanthes montana* Barb. Rodr., Gen. Sp. Orchid. 1: 22. 1877.

Homotypic synonyms: *Trichosalpinx montana* (Barb. Rodr.) Luer, Phytologia 54(5): 396. 1983. *Tubella montana* (Barb. Rodr.) Archila, Revista Guatemal. 3(1): 59. 2000 [2009]. *Tubella montana* (Barb. Rodr.) Archila, Revista Guatemal. 17(1): 54. 2014 [2015].

Karma multicuspidata (Rchb. f.) Karremans, *comb. nov.*

Basionym: *Pleurothallis multicuspidata* Rchb. f., Linnaea 41: 117. 1877.

Homotypic synonyms: *Trichosalpinx multicuspidata* (Rchb. f.) Luer, Phytologia 54(5): 396. 1983. *Tubella multicuspidata* (Rchb. f.) Archila, Revista Guatemal. 3(1): 60. 2000 [2009]. *Tubella multicuspidata* (Rchb. f.) Archila, Revista Guatemal. 17(1): 54. 2014 [2015].

Karma nana (Ames & C. Schweinf.) Karremans, *comb. nov.*

Basionym: *Pleurothallis nana* Ames & C. Schweinf., Sched. Orch. 8: 29–30. 1925.

Homotypic synonyms: *Trichosalpinx nana* (Ames & C. Schweinf.) Luer, Phytologia 54(5): 396. 1983. *Tubella nana* (Ames & C. Schweinf.) Archila, Revista Guatemal. 3(1): 60. 2000 [2009]. *Tubella nana* (Ames & C. Schweinf.) Archila, Revista Guatemal. 17(1): 55. 2014 [2015].

Karma notosibirica (T. Hashim.) Karremans, *comb. nov.*

Basionym: *Pleurothallis notosibirica* T. Hashim., Bull. Natl. Sci. Mus., Tokyo, B 4: 11. 1978.

Homotypic synonyms: *Trichosalpinx notosibirica* (T. Hashim.) Luer, Phytologia 54: 396. 1983. *Tubella notosibirica* (Hashim.) Archila, Revista Guatemal. 3(1): 61. 2000 [2009]. *Tubella notosibirica* (Hashim.) Archila, Revista Guatemal. 17(1): 55. 2014 [2015].

Karma nymphalis (Luer) Karremans, *comb. nov.*

Basionym: *Pleurothallis nymphalis* Luer, Phytologia 49: 212–213. 1982.

Homotypic synonyms: *Trichosalpinx nymphalis* (Luer) Luer, Phytologia 54(5): 396. 1983. *Tubella nymphalis* (Luer) Archila, Revista Guatemal. 3(1): 61. 2000 [2009]. *Tubella nymphalis* (Luer) Archila, Revista Guatemal. 17(1): 55. 2014 [2015].

Karma otarion (Luer) Karremans, *comb. nov.*

Basionym: *Pleurothallis otarion* Luer, Selbyana 7: 120–121. 1982.

Homotypic synonyms: *Trichosalpinx otarion* (Luer) Luer, Phytologia 54(5): 396. 1983. *Tubella otarion* (Luer) Archila, Revista Guatemal. 3(1): 61. 2000 [2009]. *Tubella otarion* (Luer) Archila, Revista Guatemal. 17(1): 55. 2014 [2015].

Karma parsonsii (Luer & Dod) Karremans, *comb. nov.*
Basionym: *Trichosalpinx parsonsii* Luer & Dod, Monogr. Syst. Bot. Missouri Bot. Gard. 64: 72. 1997.

Homotypic synonyms: *Tubella parsonsii* (Luer & Dod) Archila, Revista Guatemal. 3(1): 62. 2000 [2009]. *Tubella parsonsii* (Luer & Dod) Archila, Revista Guatemal. 17(1): 55. 2014 [2015].

Karma pumila (Luer) Karremans, *comb. nov.*

Basionym: *Pleurothallis pumila* Luer, Selbyana 1(3): 268. 1975.

Homotypic synonyms: *Trichosalpinx pumila* (Luer) Luer, Phytologia 54(5): 397. 1983. *Tubella pumila* (Ames) Archila, Revista Guatemal. 3(1): 62. 2000 [2009]. *Tubella pumila* (Ames) Archila, Revista Guatemal. 17(1): 55. 2014 [2015].

Karma pusilla (Kunth) Karremans, *comb. nov.*

Basionym: *Dendrobium pusillum* Kunth, Nov. Gen. Sp. 1: 357. 1816.

Homotypic synonyms: *Humboldtia pusilla* (Kunth) Kuntze, Revis. Gen. Pl. 2: 668. 1891. *Pleurothallis pusilla* (Kunth) Lindl., Edwards's Bot. Reg. 28: Misc. 82–83. 1842. *Specklinia pusilla* (Kunth) Lindl., Edwards's Bot. Reg. 21: sub. t. 1797. 1835. *Trichosalpinx pusilla* (Kunth) Luer, Phytologia 54(5): 397. 1983. *Tubella pusilla* (Kunth) Archila, Revista Guatemal. 3(1): 62. 2000 [2009]. *Tubella pusilla* (Kunth) Archila, Revista Guatemal. 17(1): 56. 2014 [2015].

Karma quitensis (Rchb. f.) Karremans, *comb. nov.*

Basionym: *Pleurothallis quitensis* Rchb. f., Bonplandia (Hannover) 3: 240. 1855.

Homotypic synonyms: *Humboldtia quitensis* (Rchb. f.) Kuntze, Revis. Gen. Pl. 2: 668. 1891. *Trichosalpinx quitensis* (Rchb. f.) Luer, Phytologia 54(5): 397. 1983. *Tubella quitensis* (Rchb. f.) Archila, Revista Guatemal. 3(1): 63. 2000 [2009]. *Tubella quitensis* (Rchb. f.) Archila, Revista Guatemal. 17(1): 56. 2014 [2015].

Karma reticulata (Thoele & C. Soto) Karremans, *comb. nov.*

Basionym: *Trichosalpinx reticulata* Thoele & C. Soto, Lankesteriana 15(1): 95. 2015.

Homotypic synonym: *Tubella reticulata* (Thoele & C. Soto) Mel. Fernández & Bogarín, Phytotaxa 340(2): 133. 2018.

Karma robledorum (Luer) Karremans, *comb. nov.*

Basionym: *Pleurothallis robledorum* Luer, Orquideología 14: 170. 1981.

Homotypic synonyms: *Trichosalpinx robledorum* (Luer) Luer, Phytologia 54(5): 397. 1983. *Tubella robledorum* (Luer) Archila, Revista Guatemal. 3(1): 63. 2000 [2009]. *Tubella robledorum* (Luer) Archila, Revista Guatemal. 17(1): 56. 2014 [2015].

Karma scabridula (Rolfe) Karremans, *comb. nov.*

Basionym: *Pleurothallis scabridula* Rolfe, Mem. Torrey Bot. Club 4: 260. 1895.

Homotypic synonyms: *Trichosalpinx scabridula* (Rolfe) Luer, Phytologia 54(5): 397. 1983. *Tubella scabridula* (Rolfe) Archila, Revista Guatemal. 3(1): 64. 2000 [2009]. *Tubella scabridula* (Rolfe) Archila, Revista Guatemal. 17(1): 56. 2014 [2015].

Karma sipapoensis (G.A. Romero & Luer) Karremans, *comb. nov.*

Basionym: *Trichosalpinx sipapoensis* G.A. Romero & Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 112: 111–112. 2007.

Homotypic synonym: *Tubella sipapoensis* (G.A. Romero & Luer) Archila, Revista Guatemal. 17(1): 56. 2014 [2015].

Karma solomonii (Luer) Karremans, *comb. nov.*

Basionym: *Trichosalpinx solomonii* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 64: 79. 1997.

Homotypic synonyms: *Tubella solomonii* (Luer) Archila, Revista Guatemal. 3(1): 64. 2000 [2009]. *Tubella solomonii* (Luer) Archila, Revista Guatemal. 17(1): 57. 2014 [2015].

Karma steyermarkii (Luer) Karremans, *comb. nov.*

Basionym: *Trichosalpinx steyermarkii* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 64: 79–80. 1997.

Homotypic synonyms: *Tubella steyermarkii* (Luer) Archila, Revista Guatemal. 3(1): 64. 2000 [2009]. *Tubella steyermarkii* (Luer) Archila, Revista Guatemal. 17(1): 57. 2014 [2015].

Karma strumifera (Luer) Karremans, *comb. nov.*

Basionym: *Trichosalpinx strumifera* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 64: 80. 1997.

Homotypic synonyms: *Tubella strumifera* (Luer) Archila, Revista Guatemal. 3(1): 65. 2000 [2009]. *Tubella strumifera* (Luer) Archila, Revista Guatemal. 17(1): 57. 2014 [2015].

Karma systemmata (Luer) Karremans, *comb. nov.*

Basionym: *Pleurothallis systemmata* Luer, Phytologia 49(3): 219. 1981.

Homotypic synonyms: *Trichosalpinx systemmata* (Luer) Luer, Phytologia 54(5): 397. 1983. *Tubella systemmata* (Luer) Archila, Revista Guatemal. 3(1): 65. 2000 [2009]. *Tubella systemmata* (Luer) Archila, Revista Guatemal. 17(1): 57. 2014 [2015].

Karma tantilla (Luer) Karremans, *comb. nov.*

Basionym: *Pleurothallis tantilla* Luer, Selbyana 5(2): 183–184. 1979.

Homotypic synonyms: *Trichosalpinx tantilla* (Luer) Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 64: 81. 1997. *Tubella tantilla* (Luer) Archila, Revista Guatemala. 3(1): 65. 2000 [2009]. *Tubella tantilla* (Luer) Archila, Revista Guatemala. 17(1): 57. 2014 [2015].

Karma teaguei (Luer) Karremans, *comb. nov.*

Basionym: *Trichosalpinx teaguei* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 64: 82. 1997.

Homotypic synonyms: *Tubella teaguei* (Luer) Archila, Revista Guatemala. 3(1): 65. 2000 [2009]. *Tubella teaguei* (Luer) Archila, Revista Guatemala. 17(1): 57. 2014 [2015].

Karma tenuiflora (Schltr.) Karremans, *comb. nov.*

Basionym: *Pleurothallis tenuiflora* Schltr., Repert. Spec. Nov. Regni Veg. 12: 488. 1913.

Homotypic synonyms: *Trichosalpinx tenuiflora* (Schltr.) Luer, Phytologia 54(5): 397. 1983. *Tubella tenuiflora* (Schltr.) Archila, Revista Guatemala. 3(1): 65. 2000 [2009]. *Tubella tenuiflora* (Schltr.) Archila, Revista Guatemala. 17(1): 57. 2014 [2015].

Karma tenuis (C. Schweinf.) Karremans, *comb. nov.*

Basionym: *Pleurothallis tenuis* C. Schweinf., Bot. Mus. Leaff. 10: 190–192. 1942.

Homotypic synonyms: *Trichosalpinx tenuis* (C. Schweinf.) Luer, Phytologia 54(5): 397. 1983. *Tubella tenuis* (C. Schweinf.) Archila, Revista Guatemala. 3(1): 66. 2000 [2009]. *Tubella tenuis* (C. Schweinf.) Archila, Revista Guatemala. 17(1): 57. 2014 [2015].

Karma teres (Luer) Karremans, *comb. nov.*

Basionym: *Trichosalpinx teres* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 64: 83. 1997.

Homotypic synonyms: *Tubella teres* (Luer) Archila, Revista Guatemala. 17(1): 58. 2014 [2015]. *Tubella teres* (Luer) Archila, Revista Guatemala. 3(1): 66. 2000 [2009].

Karma todziae (Luer) Karremans, *comb. nov.*

Basionym: *Trichosalpinx todziae* Luer, Lindleyana 11(2): 111. 1996.

Homotypic synonyms: *Tubella todziae* (Luer) Archila, Revista Guatemala. 3(1): 66. 2000 [2009]. *Tubella todziae* (Luer) Archila, Revista Guatemala. 17(1): 58. 2014 [2015].

Karma trilobata (Fawc. & Rendle) Karremans, *comb. nov.*

Basionym: *Pleurothallis trilobata* Fawc. & Rendle, J. Bot. 47: 4. 1909.

Homotypic synonyms: *Trichosalpinx trilobata* (Fawc. & Rendle) Luer, Phytologia 54(5): 398. 1983. *Tubella trilobata* (Fawc. & Rendle) Archila, Revista Guatemala. 3(1): 66. 2000 [2009]. *Tubella trilobata* (Fawc. & Rendle) Archila, Revista Guatemala. 17(1): 58. 2014 [2015].

Karma tropida (Luer) Karremans, *comb. nov.*

Basionym: *Pleurothallis tropida* Luer, Phytologia 49(3): 219–220. 1981.

Homotypic synonyms: *Trichosalpinx tropida* (Luer) Luer, Phytologia 54(5): 398. 1983. *Tubella tropida* (Luer) Archila, Revista Guatemala. 3(1): 67. 2000 [2009]. *Tubella tropida* (Luer) Archila, Revista Guatemala. 17(1): 58. 2014 [2015].

Karma vagans (Garay & Dunst.) Karremans, *comb. nov.*

Basionym: *Pleurothallis vagans* Garay & Dunst., Venez. Orchid. Ill. 6: 372. 1976.

Homotypic synonyms: *Trichosalpinx vagans* (Garay & Dunst.) Luer, Phytologia 54(5): 398. 1983. *Tubella vagans* (Garay & Dunsterville) Archila, Revista Guatemala. 3(1): 67. 2000 [2009]. *Tubella vagans* (Garay & Dunsterville) Archila, Revista Guatemala. 17(1): 58. 2014 [2015].

Karma webbiae (Luer & R. Escobar) Karremans, *comb. nov.*

Basionym: *Trichosalpinx webbiae* Luer & R. Escobar, Orquideología 16(2): 188. 1984.

Homotypic synonyms: *Tubella webbiae* (Luer & R. Escobar) Archila, Revista Guatemala. 3(1): 67. 2000 [2009]. *Tubella webbiae* (Luer & R. Escobar) Archila, Revista Guatemala. 17(1): 58. 2014 [2015].

Karma wernerii (Luer) Karremans, *comb. nov.*

Basionym: *Trichosalpinx wernerii* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 88: 114. 2002.

Homotypic synonym: *Tubella wernerii* (Luer) Mel. Fernández & Bogarín, Phytotaxa 340(2): 133. 2018.

Karma wilhelmii (Luer) Karremans, *comb. nov.*

Basionym: *Trichosalpinx wilhelmii* Luer, Monogr. Syst. Bot. Missouri Bot. Gard. 64: 86–87. 1997.

Homotypic synonyms: *Tubella wilhelmii* (Luer) Archila, Revista Guatemala. 3(1): 67. 2000 [2009]. *Tubella wilhelmii* (Luer) Archila, Revista Guatemala. 17(1): 58. 2014 [2015].

Karma yanganensis (Luer) Karremans, *comb. nov.*

Basionym: *Pleurothallis yanganensis* Luer, Phytologia 49(3): 221–222. 1981.

Homotypic synonyms: *Trichosalpinx yanganensis* (Luer) Luer, Phytologia 54(5): 398. 1983. *Tubella yanganensis* (Luer) Archila, Revista Guatemala. 3(1): 67. 2000 [2009]. *Tubella yanganensis* (Luer) Archila, Revista Guatemala. 17(1): 58. 2014 [2015].

LITERATURE CITED

- ARCHILA, F. 1999 [2006]. Monografía del género *Brassia* en Guatemala. *Revista Guatemal.* 2(2): 28–40.
- . 2000 [2009]. Estudio taxonómico-morfológico y delimitación de tres géneros de la subtribu *Pleurothallidinae* (Orchidaceae). *Revista Guatemal.* 3(1): 33–88.
- . 2014 [2015]. Notas, combinaciones [sic] y aclaraciones [sic] para la subtribu *Pleurothallidinae*. *Revista Guatemal.* 17(1): 47–81.
- BOGARÍN, D., A. P. KARREMANS and M. FERNÁNDEZ. 2018. Genus-level taxonomical changes in the *Lepanthes* affinity (Orchidaceae, *Pleurothallidinae*). *Phytotaxa* 340 (2): 128–136.
- BOGARÍN, D., O. A. PÉREZ-ESCOBAR, A. P. KARREMANS, M. FERNÁNDEZ, J. KRUIZINGA, F. PUPULIN, E. SMETS, and B. GRAVENDEEL. 2019. Phylogenetic comparative methods improve the selection of characters for generic delimitations in a hyperdiverse Neotropical orchid clade. *Sci. Rep.* 9, 15098 (2019) doi:10.1038/s41598-019-51360-0
- FERNÁNDEZ, M. 2013. *Tubella*—die etwas anderen *Trichosalpinx*. *Tubella*—Those other *Trichosalpinx*. *Die Orchidee* 64(4): 310–317.
- . 2016. Systematic treatment of *Trichosalpinx* (Orchidaceae: *Pleurothallidinae*) in Costa Rica, Master's thesis. Universidad de Costa Rica, San José, Costa Rica.
- KARREMANS, A. P. 2014. *Lankesteriana*, a new genus in the *Pleurothallidinae* (Orchidaceae). *Lankesteriana* 13: 319–332. <https://doi.org/10.15517/lank.v13i3.14368>
- . 2016. Genera *Pleurothallidinarum*: an updated phylogenetic overview of the *Pleurothallidinae*. *Lankesteriana* 16: 219–241. <https://doi.org/10.15517/lank.v16i2.26008>
- , G. ROJAS-ALVARADO, L. E. BEZERRA-SILVA, J. FLORES-ROJAS, J., J. M. MURILLO-MURILLO, M. ROMERO-CECILIANO and O. A. SEGURA-BERMÚDEZ. 2021. Nomenclatural notes in the *Pleurothallidinae* (Orchidaceae): miscellaneous part II. *Phytotaxa* 496(2): 134–146.
- LUER, C.A. 1997. *Icones Pleurothallidinarum XV. Systematics of Trichosalpinx*. *Monogr. Syst. Bot. Mo. Bot. Gard.* 64: 1–121.
- PÉREZ-ESCOBAR, O. A., G. CHOMICKI, F. L. CONDAMINE, A. P. KARREMANS, D. BOGARÍN, N. J. MATZKE, and A. ANTONELLI. 2017. Recent origin and rapid speciation of Neotropical orchids in the world's richest plant biodiversity hotspot. *New Phytol.* 215: 891–905. <https://doi.org/10.1111/nph.14629>
- PRIDGEON, A. M. 2005. *Trichosalpinx*. Pages 415–417 in A. M. PRIDGEON, P. J. CRIBB, M. W. CHASE, and F. N. RASMUSSEN, EDS., *Genera Orchidacearum*, 4, *Epidendroideae* (part one). Oxford University Press, Oxford.