

## NON-NATIVE VASCULAR PLANTS FROM CANARY ISLANDS (SPAIN): NOMENCLATORIAL AND TAXONOMICAL ADJUSTMENTS

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**Resumen.** Se propone correcciones taxonomicas y nomenclatoriales respecto a 88 taxones no nativos de la lista de plantas vasculares de las Islas Canarias (España).

Palabras clave: Islas Canarias, plantas vasculares, nomenclatura, taxonomía, correcciones.

**Summary.** *Non-native vascular plants from Canary Islands (Spain): nomenclatorial and taxonomical adjustments.* Corrections and other adjustments are proposed for 88 non-native taxa from the checklist of vascular plants from the Canary Islands (Spain).

Keywords: Canary Islands, vascular plants, nomenclature, taxonomy, corrections.

### INTRODUCTION

The vascular flora of the Canary Islands has been the subject of numerous publications in the past. ERIKSSON & al. (1974) were the first to provide a checklist for the whole of Macaronesia and subsequently chorological, taxonomical and nomenclatorial updates were regularly published (see for instance HANSEN & SUNDING, 1993). A similar checklist, but restricted to the Canary Islands, was recently published by ACEBES GINOVÉS & al. (2004, 2009). Nomenclature and taxonomy in the latter are most often up-to-date and in accordance with current insights, although families are not yet classified to APG III (2009) standards. However, in some cases adjustments or corrections are required, especially with regard to non-native species.

In the present paper corrections are proposed for 88 taxa. Most changes are induced by recent molecular phylogenetic studies. Others refer to nomenclatorial issues or to orthographic errors. Modifications are only suggested if they are corroborated by unequivocal studies and are usually in accordance with MABBERLEY (2008) and/or Euro+Med Plantbase (<http://www.emplantbase.org>). In some cases additional name changes could have been suggested (e.g. in *Bignoniaceae*, *Chenopodium*, *Hyacinthaceae*) but, pending further studies, names used by Acebes Ginovés & al. are still maintained.

## MATERIALS AND METHODS

The latest edition of the checklist of vascular plants of the Canary Islands (ACEBES GINOVÉS & al., 2009) was critically revised. All taxa except those that are quoted as surely native (“nativa seguro”) were taken into account. A concise motivation is provided for the names which require correction, followed by the old and new name. The correct names are given in bold type. Sequence of families is in accordance with ACEBES GINOVÉS & al., l.c.

## RESULTS

### **Aristolochiaceae**

The binomial *Aristolochia longa* is a “nomen rejiciendum” (NARDI, 1983). The plant naturalized in the Canary Islands (Gran Canaria, Tenerife) belongs with *A. paucinervis* (NARDI, 2009).

*Aristolochia longa* L. → **A. paucinervis** Pomel

### **Ranunculaceae**

The name *Consolida ambigua* was widely misapplied for quite a long time. The basionym, *Delphinium ambiguum* L. (with type from Mauritania), is allied to *D. peregrinum* L. and does not belong to *Consolida* S.F. Gray (GREUTER & RAUS, 1989).

*Consolida ambigua* (L.) P.W. Ball & Heywood → **C. ajacis** (L.) Schur

*Ranunculeae* represent a highly diverse and cosmopolitan tribe within *Ranunculaceae*. Recent molecular studies suggest a classification accepting several small genera (among which *Ficaria* Schaeff.) and a large genus *Ranunculus* L. s.str. (including *Batrachium* DC.). This classification best reflects the molecular phylogeny and morphological diversity of the tribe (EMADZADE & al., 2010).

*Ranunculus ficaria* L. → **Ficaria verna** Huds.

## Amaranthaceae

Since BRUMMITT (1984) *Amaranthus blitum* is the only correct name to apply for the species sometimes called *A. lividus*. See also COSTEA & al. (2001) for a recent summary of this nomenclatural problem.

*Amaranthus lividus* L. → **A. blitum** L.

## Chenopodiaceae

MOSYAKIN & CLEMANTS (2002, 2008) expanded, on morphological grounds, the circumscription of *Dysphania* R. Br. comprising all glandular taxa of *Chenopodium* L. subg. *Ambrosia* A.J. Scott. This changed generic concept was recently confirmed by molecular data (KADEREIT & al., 2010) and now has become widely accepted.

*Chenopodium ambrosioides* L. → **Dysphania ambrosioides** (L.) Mosyakin & Clemants

*Chenopodium multifidum* L. → **Dysphania multifida** (L.) Mosyakin & Clemants

Recent molecular phylogenetic studies within *Camphorosmeae* (KADEREIT & FREITAG, 2011) considerably changed generic circumscriptions within this tribe. The following name changes are required in the Canary Islands:

*Bassia hirsuta* (L.) Aschers. → **Spirobassia hirsuta** (L.) Freitag & G. Kadereit

*Kochia scoparia* (L.) Schrad. → **Bassia scoparia** (L.) A.J. Scott

## Polygonaceae

Recent phylogenetic molecular studies by GALASSO & al. (2009) and SANCHEZ & al. (2011) have confirmed the segregation of *Persicaria* (L.) Mill. from *Polygonum* L. The following name changes are required:

*Polygonum persicaria* L. → **Persicaria maculosa** S.F. Gray

*Polygonum salicifolium* Brouss. ex Willd. → **Persicaria salicifolia** (Brouss. ex Willd.) Assenov

## Crassulaceae

Recent morphological, molecular, embryological, anatomical, caryological and phytogeographical studies by CHERNETSKYY (2011) strongly suggest the amalgamation of the genera *Bryophyllum* Salisb., *Kalanchoe* (Adans.) Belli and *Kitchingia* Baker. The following name changes are required:

*Bryophyllum daigremontianum* (Raym.-Hamet & Perr.) A. Berger → ***Kalanchoe daigremontiana*** Raym.-Hamet & Perr.

*Bryophyllum delagoense* (Eckl. & Zeyh.) Schinz → ***Kalanchoe delagoensis*** Eckl. & Zeyh.

*Bryophyllum pinnatum* (Lam.) Oken → ***Kalanchoe pinnata*** (Lam.) Pers.

*Bryophyllum proliferum* Bowie ex Hook. → ***Kalanchoe prolifera*** (Bowie ex Hook.) Raym.-Hamet

*Crassula argentea* L. f. is a non-existing combination. Meant is probably *C. argentea* Thunb., a commonly cultivated ornamental and sometimes seen as an escape in the Canary Islands (pers. obs.). The correct name for the latter, however, is *C. ovata*.

*Crassula argentea* L. f. → ***C. ovata*** (Mill.) Druce

## Caesalpinaceae

*Caesalpinia* L. in its broadest sense has been shown to be polyphyletic in molecular studies and most species have now been assigned to reinstated segregate genera, including *Caesalpinia* s.str., *Erythrostemon* Klotzsch and *Tara* Molina. Approximately 15 Old World (mainly Asian) taxa of *Caesalpinia* have not yet been reassigned to segregate genera pending additional DNA data (BRUNEAU & al., 2008; GASSON & al., 2009). Among these is *C. sepiaria* that should be referred to under its currently accepted name, i.e. *C. decapetala*.

*Caesalpinia gilliesii* (Hook.) D. Dietr. → ***Erythrostemon gilliesii*** (Hook.) Link, Klotzsch & Otto

*Caesalpinia sepiaria* Roxb. → ***C. decapetala*** (Roth) Alston

*Caesalpinia spinosa* (Molina) Kuntze → ***Tara spinosa*** (Molina) Britton & Rose

## Fabaceae

Biosystematic studies by PECCENINI (2004) on the *Coronilla valentina* group suggest a lower taxonomic rank for *C. glauca*.

*Coronilla glauca* L. → **C. valentina** L. subsp. **glauca** (L.) Batt.

Previous findings that *Dorycnium* Mill. and *Tetragonolobus* Scop. cannot be separated from *Lotus* L. at the generic level (e.g. ALLAN & PORTER, 2000) are well supported by recent molecular phylogenetic studies (DEGTJAREVA & al., 2006).

*Tetragonolobus purpureus* Moench → **Lotus tetragonolobus** L.

SMALL (1987) already demonstrated that ca. 23 species that were traditionally placed in *Trigonella* L. in fact are more closely related to *Medicago* L. (the so-called “medicagoid” trigonellas). His point of view has become widely accepted and is also confirmed by molecular data (BENA, 2001). The following name change is required:

*Trigonella monspeliaca* L. → **Medicago monspeliaca** (L.) Trautv.

## Mimosaceae

For priority reasons the name *Acacia cyanophylla* should be replaced by *A. saligna*.

*Acacia cyanophylla* Lindl. → **A. saligna** (Labill.) H. L. Wendl.

## Onagraceae

*Chamerion* (Raf.) Raf. is best regarded as a separate genus (WAGNER et al., 2007). It is distinct in several features, including alternate leaves, subequal stamens, zygomorphy and lack of hypanthium. Molecular analysis provides strong support for *Chamerion* and *Epilobium* L. as monophyletic groups (BAUM et al., 1994).

*Epilobium angustifolium* L. → **Chamerion angustifolium** (L.) Schur

### Balsaminaceae

The correct name for “Oliver’s Touch-me-not” is *Impatiens sodenii*, not *I. oliveri*. Also, the latter specific epithet was misspelt (“oliveri”, not “olivieri”).

*Impatiens oliveri* C.H. Wright ex W. Watson → **I. sodenii** Engl. & Warb.

### Oxalidaceae

*Oxalis corymbosa* is not specifically distinct from *O. debilis* and is warranted at most varietal rank (LOURTEIG, 2000).

*Oxalis corymbosa* DC. → **O. debilis** Kunth

The correct name for the plant formerly named *Oxalis europaea* is *O. stricta* as discussed at length by several authors. See also NESOM (2009) for a recent summary.

*Oxalis europaea* Jord. → **O. stricta** L.

### Zygophyllaceae

Molecular phylogenetic studies by BEIER & al. (2003) advocated the segregation of *Zygophyllum* L.

*Zygophyllum waterlotii* Maire → **Tetraena gaetula** (Emb. & Maire) Beier & Thulin subsp. **waterlotii** (Maire) Beier & Thulin

### Euphorbiaceae

Phylogenetic research supports the inclusion of *Chamaesyce* Gray (and *Poinsettia* J. Graham) in a broadly circumscribed genus *Euphorbia* L. (ZIMMERMANN & al., 2010).

*Chamaesyce canescens* (L.) Prokh. → **Euphorbia chamaesyce** L.

*Chamaesyce humifusa* (Willd.) Prokh. → **Euphorbia humifusa** Willd.

*Chamaesyce hypericifolia* (L.) Mill. → **Euphorbia hypericifolia** L.

*Chamaesyce maculata* (L.) Small → **Euphorbia maculata** L.

*Chamaesyce nutans* (Lag.) Small → **Euphorbia nutans** Lag.

*Chamaesyce peplis* (L.) Prokh. → **Euphorbia peplis** L.

*Chamaesyce prostrata* (Aiton) Small → **Euphorbia prostrata** Aiton

*Chamaesyce scordifolia* (Jacq.) Croizat → **Euphorbia scordiifolia** Jacq.  
[spelling epithet corrected]

*Chamaesyce serpens* (Kunth) Small → **Euphorbia serpens** Kunth

*Euphorbia inaequilatera* Sond., also from subgenus *Chamaesyce* Raf., is correctly accommodated in *Euphorbia*.

The specific epithet of *Euphorbia platyphyllos* is misspelt:

*Euphorbia platyphylla* L. → **E. platyphyllos** L.

For priority reasons the correct name for *Euphorbia pubescens* is *E. hirsuta*.

*Euphorbia pubescens* Vahl → **E. hirsuta** L.

## Apiaceae

*Capnophyllum* Gaertn. in its traditional circumscription proved to be non-monophyletic (MAGEE & al., 2009). A non-native species found in the Canary Islands belongs to the related genus *Krubera* Hoffm.

*Capnophyllum peregrinum* (L.) Lange → **Krubera peregrina** (L.) Hoffm.

In accordance with molecular studies *Helosciadium* Koch is segregated from *Apium* L. (HARDWAY & al., 2004; RONSE & al., 2010).

*Apium nodiflorum* (L.) Lag. → **Helosciadium nodiflorum** (L.) W.D.J. Koch

*Apium repens* (Jacq.) Lag. → **Helosciadium repens** (Jacq.) W.D.J. Koch

The same molecular studies confirm the generic status of *Cyclospermum* Lag.

*Ciclospermum leptophyllum* (Pers.) Sprague → **Cyclospermum leptophyllum** [spelling of genus corrected]

Some name changes are required in *Torilis*, either as a result of changed taxonomic concepts or for priority reasons.

*Torilis arvensis* (Huds.) Link subsp. *purpurea* (Ten.) Hayek → **T. africana** Spreng.

*Torilis webbii* Jury → **T. pseudonodosa** Bianca

## Brassicaceae

Based on extensive molecular studies the limits of *Lepidium* L. (*Brassicaceae*) were expanded by AL-SHEHBAZ et al. (2002) to include, among others, *Coronopus* Zinn.

*Coronopus didymus* (L.) Sm. → **Lepidium didymum** L.

*Coronopus squamatus* (Forsk.) Asch. → **Lepidium coronopus** (L.) Al-Shehbaz

As demonstrated by APPEL & AL-SHEHBAZ (1998) the genera *Hutchinsia* R. Br., *Hymenolobus* Nutt. and *Pritzelago* Kuntze should be united with the earliest legitimate generic name *Hornungia* Reichenb. The morphological differences between these genera are trivial and rest primarily on habit, number of ovules per locule, relative length of the petals to sepals, and cotyledonary position. These characters are unreliable in generic delimitations and molecular studies (MUMMENHOFF & al., 2001) strongly support the union of these genera in one.

*Hymenolobus procumbens* (L.) Nutt. → **Hornungia procumbens** (L.) Hayek

Various molecular data support the idea that *Nasturtium* R. Br. is distinct from *Rorippa* Scop., in which it has most recently been included, and is more closely related to *Cardamine* L. (AL-SHEHBAZ & PRICE, 1998).

*Rorippa nasturtium-aquaticum* (L.) Hayek → **Nasturtium officinale** (L.) R. Br.

## Malvaceae

RAY (1995) already demonstrated that the separation of *Lavatera* L. and *Malva* L. was untenable. The relationships inferred from molecular data also strongly contrast with the traditional classification of species in these genera (ESCOBAR GARCÍA & al., 2009). Both genera are therefore merged by most present-day authors.



*Lavatera arborea* L. → **Malva arborea** (L.) Webb & Berthelot

*Lavatera cretica* L. → **Malva pseudolavatera** (Car.) Soldano & al.

*Lavatera mauritanica* Durieu → **Malva davaei** (Cout.) Valdés subsp. **mauritanica** (Durieu) Valdés

## Solanaceae

*Lycopersicon* Mill. was long warranted generic status (mainly based on anther morphology) but is, in fact, nested in *Solanum* L. according to several molecular phylogenetic studies (see PERALTA & al., 2008 and references therein).

*Lycopersicon esculentum* Mill. → **Solanum lycopersicum** L.

Several names in *Solanum* need to be updated:

*Solanum fastigiatum* Willd. is a synonym of *S. bonariense* L. (CHIARINI & al., 2007)

*Solanum jasminoides* Paxton is a synonym of *S. laxum* Spreng. (SHAW, 1999)

*Solanum luteum* Mill. is a synonym of *S. villosum* Mill. (EDMONDS, 1979)

*Solanum microcarpum* Vahl is a synonym of *S. pseudocapsicum* L. (*Solanaceae* Source at: <http://www.nhm.ac.uk/research-curation/research/projects/solanaceaesource/>; accessed December 2012)

HANSEN (1972) first reported about the occurrence of “*Solanum gracile* Otto” in the Canary Islands. This binomial is an unresolved name. However, HANSEN l.c. added as a synonym “*S. ottonis* Hyl.”. The latter is a synonym of *S. chenopodioides* Lam. (EDMONDS, 1979). In Euro+Med Plantbase both *Solanum gracile* Otto and *S. chenopodioides* Lam. are given for the Canary Islands. It is clear that only the latter has been reliably recorded.

*Solanum gracile* Otto → **S. chenopodioides** Lam.

## Boraginaceae

Phylogenetic studies advocated the transfer of *Eritrichium sventenii* to the related genus *Ogastemma* Brummitt (LÅNGSTRÖM & CHASE, 2002). The genus name was also misspelt (“*Eritrichium*”, not “*Eritrichum*”).

*Eritrichium sventenii* Sunding → **Ogastemma pusillum** (Bonnet & Barratte) Brummitt

## Lamiaceae

The correct name for *Ballota nigra* subsp. *uncinata* is *B. nigra* subsp. *ruderalis*.

*Ballota nigra* L. subsp. *uncinata* (Bég.) Patzak → ***B. nigra* subsp. *ruderalis*** (Sw.) Briq.

Recent molecular phylogenetic studies in *Micromeria* Benth. and related genera have shown that *Calamintha* Mill. is nested in *Clinopodium* L. (BRÄUCHLER & al., 2005). Moreover, subsp. *ascendens* is preferably combined with *Clinopodium menthifolium*.

*Calamintha sylvatica* Bromf. subsp. *ascendens* (Jord.) P.W. Ball → ***Clinopodium menthifolium*** (Host) Stace subsp. ***ascendens*** (Jord.) Govaerts

For nomenclatural reasons some name changes are required for species of the genus *Salvia* L.:

*Salvia africana* L. → ***S. africana-caerulea*** L.

*Salvia coccinea* Juss. ex Murray → ***S. coccinea*** Buc'hoz ex Etl. [correction author citation]

*Salvia triloba* L. f. → ***S. fruticosa*** Mill.

## Verbenaceae

*Phyla canescens* and *P. nodiflora* are very closely related and often hard to distinguish. A recent monographic work on the genus (O'LEARY & MÚLGURA, 2012) reduced the former to a mere variety of the latter:

*Phyla canescens* (Kunth) E.L. Greene → ***P. nodiflora*** (L.) E.L. Greene var. *minor* (Gillies & Hook.) N. O'Leary & Múlgura

## Asteraceae

*Cota* J. Gay ex Guss. is a segregate of *Anthemis* L. and accommodates annual or perennial species with rigid receptacular scales and indistinctly ribbed, more or less compressed achenes that are rhombic in transverse section. In addition to morphological features, *Cota* has furthermore particular cytological, phytochemical and molecular traits (LO PRESTI & al., 2010).

*Anthemis tinctoria* L. → **Cota tinctoria** (L.) J. Gay

The distinctiveness of *Gamochaeta* Wedd. as a genus was first emphasized by CABRERA (1961) and subsequently by other botanists who have treated it (e.g. NESOM, 1990; ANDERBERG, 1991; FREIRE & IHARLEGUI, 1997). *Gamochaeta* is distinguished by its combination of small heads in a spiciform capitulescence, concave post-fruiting receptacles, truncate collecting appendages of the disc floret style branches, small achenes with minute, mucilage-producing papilliform trichomes on the surfaces, and pappus bristles basally connate in a smooth ring and released as a single unit.

*Gnaphalium antillanum* Urb. → **Gamochaeta antillana** (Urb.) Anderb.

*Gnaphalium pensylvanicum* Willd. → **Gamochaeta pensylvanica** (Willd.) Cabrera

For reasons of priority *Leontodon saxatilis* has priority over *L. taraxacoides*. The corresponding subspecies name also need to be changed:

*Leontodon taraxacoides* (Vill.) Mérat subsp. *longirostris* Finch & P.D. Sell  
→ **L. saxatilis** Lam. subsp. **rothii** Maire

*Farfugium* Lindl. is now widely accepted as a genus of its own and this was recently confirmed by molecular data (NOMURA & al., 2010).

*Ligularia tussilaginea* (Burm. f.) Makino → **Farfugium japonicum** (L.) Kitam.

ANDERBERG (1991) considerably modified generic limits in the tribe *Gnaphalieae*. His taxonomic viewpoints were mostly corroborated by subsequent molecular phylogenetic studies. *Logfia*, for instance, was confirmed to be a genus separate from *Filago*. However, *Logfia arvensis* finally turned out to be a member of the latter genus (GALBANY-CASALS & al., 2010).

*Logfia arvensis* (L.) Holub → **Filago arvensis** L.

*Achillea* L. in its traditional circumscription was found to be non-monophyletic (EHRENDORFER & GUO, 2006). Two unispecific genera (*Otanthus* Hoffsgg. & Link and *Leucocyclus* Boiss.) were therefore transferred to *Achillea*.

*Otanthus maritimus* (L.) Hoffsgg. & Link → **Achillea maritima** (L.) Ehrend. & Y.P. Guo

*Jacobaea* Mill. is a segregate of the polyphyletic genus *Senecio* L. and recent molecular investigations confirm its distinctness (PELSE & al., 2002). Generic status is furthermore supported by hybridization behavior: there are several hybrids within *Jacobaea* while there are none between *Jacobaea* and *Senecio*.

*Senecio cineraria* DC. → ***Jacobaea maritima*** (L.) Pelser & Meijden

### Amaryllidaceae

It is widely accepted that the much cultivated and escaped “Cape Belladonna” belongs with the genus *Amaryllis* L., not *Brunsvigia* Heister.

*Brunsvigia rosea* (Lam.) L.S. Hannibal → ***Amaryllis belladonna*** L.

### Hyacinthaceae

Recent molecular studies by MARTÍNEZ-AZORÍN & al. (2011) demonstrated that *Ornithogalum* L. should be divided in 19 monophyletic genera. Each of these has a particular syndrome of morphological characters.

*Ornithogalum arabicum* L. → ***Melomphis arabica*** (L.) Raf.

*Ornithogalum narbonense* L. → ***Loncomelos narbonense*** (L.) Raf.

*Ornithogalum pyrenaicum* L. → ***Loncomelos pyrenaicum*** (L.) J. Holub

### Cyperaceae

*Carex otrubae* is a synonym of *C. cuprina*, the latter having priority.

*Carex otrubae* Podp. → ***C. cuprina*** (Heuff.) A. Kern.

*Carex tumidicarpa* is a synonym of *C. viridula* (SCHMID, 1983). The endemic Macaronesian subspecies, although close to subsp. *oedocarpa* (Andersson) B. Schmid, can be upheld because of its morphological and geographical distinctiveness.

*Carex tumidicarpa* Andersson subsp. *cedercreutzii* Fagerstr. → ***Carex viridula*** Michaux subsp. ***cedercreutzii*** (Fagerstr.) B. Schmid

*Scirpus* L. in its traditional sense was a heterogeneous group and was segregated in the past decades. This new classification is now widely accepted (e.g. GOETGHEBEUR, 1998). Canarian representatives belong with five segregated genera.

*Scirpus cernuus* Vahl → **Isolepis cernua** (Vahl) Roem. & Schult.

*Scirpus holoschoenus* L. → **Scirpoides holoschoenus** (L.) Soják

*Scirpus maritimus* L. → **Bolboschoenus maritimus** (L.) Palla

*Scirpus supinus* L. → **Schoenoplectiella supina** (L.) Lye

*Scirpus triqueter* L. → **Schoenoplectus triqueter** (L.) Palla

### Commelinaceae

The genera *Setcreasea* K. Schum. & Sydow and *Zebrina* Schnizl. were included in *Tradescantia* L. by HUNT (1980, 1986). This classification is in accordance with molecular data (e.g. BURNS & al., 2011).

*Setcreasea pallida* Rose → **Tradescantia pallida** (Rose) D.R. Hunt

*Zebrina pendula* Schnizl. → **Tradescantia zebrina** Bosse

### Poaceae

The generic boundaries of bamboos long remained obscure and not all problems are solved yet. However, recent molecular studies confirmed that *Pseudosasa* Makino & Nakai is not related with *Arundinaria* Michaux and cannot be aggregated with it (TRIPLETT & CLARK, 2010).

*Arundinaria japonica* Steud. → **Pseudosasa japonica** (Steud.) Nakai

Recent phylogenetic studies with morphological and molecular data provided evidence on the monophyly of the genera *Cenchrus* L., *Pennisetum* Rich. (incl. *Kikuyuochloa* H. Scholz) and *Odontelytrum* Hack. (CHEMISQUY & al., 2010). These studies proposed the unification and transfer of species of *Kikuyuochloa*, *Pennisetum* and *Odontelytrum* to the genus *Cenchrus*, which has priority.

*Kikuyuochloa clandestina* (Chiov.) H. Scholz → **Cenchrus clandestinus** (Chiov.) Morrone

*Trachynia* Link is a monotypic genus separating one annual species from the remaining perennial species of *Brachypodium* P. Beauv. However, the lack of other diagnostic traits and the overall congruence of the shared characters with the perennial species prompted recent authors to classify the annual species within the broad *Brachypodium* genus (SCHIPPMANN, 1991; CATALÁN & al., 1995).

*Trachynia distachya* (L.) Link → **Brachypodium distachyon** (L.) P. Beauv.

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