

Revision and typification of names in Canarian *Sonchus* (Asteraceae: Cichorieae) published by or based on material from E. R. Sventenius

José A. Mejías, Arnaldo Santos-Guerra and Seung-Chul Kim

J. A. Mejías (jmejias@us.es), Dept of Plant Biology and Ecology, Univ. of Seville, Avda. Reina Mercedes no. 6, ES-41012 Seville, Spain. – A. Santos-Guerra, Unidad de Botánica (ICIA), Retama 2, ES-38400 Puerto de la Cruz, Tenerife, Islas Canarias, Spain. – S.-C. Kim, Dept of Biological Sciences, Sungkyunkwan Univ., 2066 Seobu-ro, Jangnan-Gu, Suwon, Korea 440-746.

In the present paper we analyse the validity and nomenclatural status of the names of 16 taxa (eight species, four interspecific hybrids, one subspecies and three varieties) in Macaronesian *Sonchus* described or collected by E. R. Sventenius. As there is much controversy regarding their validity, mainly concerning the proper indication of the types and their location, we conducted a general revision of exsiccata, collected by Sventenius and kept at ORT, GB and BC, in order to locate possible type material. As a result, we located five holotypes, designated six lectotypes (four of which are illustrations), two neotypes and two epitypes, and located six isotypes and one paratype. We propose accepting the validity of most of Sventenius's names in the group with the exception of those whose protologue includes more than one gathering. Because except for *S. ortunoi* Svent. the taxa have valid names subsequently published by L. Boulos, we introduce a valid name for *S. ortunoi* here. Furthermore, we indicate legitimate names in the more widely circumscribed *Sonchus* that is now recognized based on recent phylogenetic reconstructions; in addition, we introduce the new combinations *S. ×rupicola* (Svent.) A. Santos & Mejías and *S. ×decipiens* (Svent.) A. Santos & Mejías.

Diversity and systematic position of the woody *Sonchus* alliance

The highest taxonomic diversity within the cosmopolitan genus *Sonchus* L. s.l. is found within the woody *Sonchus* alliance from Macaronesia (Boulos 1974a, 1974b, Aldridge 1976a, 1976b, Kim et al. 1999b). The group constitutes a very well-defined monophyletic clade which, according to currently available literature and plant diversity databases, comprises 34 species and two subspecies (Boulos l.c., Greuter 2003, Arechavaleta et al. 2010), plus three varieties and five interspecific hybrids (Sventenius 1948, 1960, 1969, Reifenberger and Reifenberger 1997). Because the *Sonchus* s.l. probably does not contain more than 90 species, belonging to eight distinct clades (Kim et al. 2007), the Macaronesian alliance accounts for more than one third of the genus. This high diversity appears to have originated through an adaptive radiation process (Kim et al. 1996b, 1999b), a phenomenon documented in several Macaronesian plant groups (Bohle et al. 1996, Francisco-Ortega et al. 1997, Jorgensen and Olesen 2001, Park et al. 2001). The high morphological variability achieved by this process (Carlquist 1974), resulted in the segregation from *Sonchus* of several new genera throughout the 20th century (*Sventenia* Font Quer, *Babcockia* Boulos, *Taeckholmia*

Lactucosonchus (Sch. Bip.) Svent. = *Wildpretia* U. Reifenberger & A. Reifenberger, and *Chrysoprenanthes* (Sch. Bip.) Bramwell), three of which can be considered monotypic. However, molecular phylogenetic analysis performed over the last two decades (Kim et al. 1996a, 1996b, 1999a, 1999b, 2007, Lee et al. 2005) has shown that they are deeply embedded within the genus *Sonchus* and the segregations lack phylogenetic support. According to these results, Kim et al. (2007) recommended amalgamating all these taxa in *Sonchus* in order to promote holophyly (= monophyly s.s.). This approach was adopted by Kilian et al. (2009) in their recent classification of Cichorieae. From our point of view, this option makes it possible to regard all these taxa as the result of an insular adaptive radiation process (Mejías and Kim 2012) and promotes long-term nomenclatural stability (Pfeil and Crispy 2005, Mejías and Kim l.c.).

Although some of these Macaronesian endemic *Sonchus* taxa can be locally common (*S. palmensis*, *S. hierrensis*, *S. leptcephalus*), they are usually restricted to a small number of islands (often to a single one) and need quite a specific habitat, as is the rule for taxa raised in adaptive radiation processes on oceanic islands (Francisco-Ortega et al. 1997, Stuessy and Ono 1998, Baldwin et al. 1998, Baldwin 2003). As a result of this pattern, despite the long history of botanical expeditions in the region (Herrera Piqué 2006,

Francisco-Ortega et al. 2009, 2010), the largest number of taxa in the group was described during the 20th century. Thus a total of 15 species (44%) was introduced prior to this century while 19 (56%) were first described during the 20th century. In the early years of the 20th century, the most prominent researcher was J. Pitard (Pitard and Proust 1909), who described several taxa amongst which four species are currently recognized. But the most significant botanists working on the group were E. R. Sventenius (1910–1973) and L. Boulos (1932–). The first of these authors thoroughly explored the Canary Isles from 1943 to 1973 and proposed several new taxa in different taxonomic ranks. He also raised *Sonchus* L. subgen. *Lactucosonchus* Sch. Bip. to the generic rank. Boulos made a global taxonomic revision of the group (Boulos 1967a, 1967b, 1972, 1973, 1974a, 1974b). He referred most Macaronesian *Sonchus* representatives to the subgenus *Dendrosonchus* (Sch. Bip.) Boulos and proposed that arborescent taxa are representative of the ancestral habit in the genus; he also segregated the new genera *Babcockia* Boulos and *Taeckholmia* Boulos. We should also mention A. Aldridge, who made intensive observations on morphology (Aldridge 1976a) and anatomy (Aldridge 1977, 1978) and revised Boulos's classification (Aldridge 1976b). She did not find evidence supporting the segregation of *Babcockia* and *Taeckholmia*, and consequently proposed new combinations. Two decades later, Reifenger and Reifenger (1996) considered that the generic name *Lactucosonchus* was invalidly published and coined the name *Wildpretia* U. Reifenger & A. Reifenger as a substitute. The new name was rejected by Bramwell (2004) who also proposed the monotypic genus *Chrysoprenanthes* (Sch. Bip.) Bramwell for *Prenanthes pendula* Sch. Bip. (= *Sonchus pendulus* (Sch. Bip.) Sennikov). Recently, as was previously stated, Kim et al. (1996a, 1999a, 2007) made a deep molecular phylogenetic analysis of the genus *Sonchus* which provided solid proof of the adaptive radiation of the group in the Macaronesian. Two recently published relevant checklists summarize the current knowledge of the diversity of the group (Greuter 2003, Arechavaleta et al. 2010).

Publication and validity of names proposed by Sventenius

In four publications, E. R. Sventenius described seven new species, one subspecies, three varieties and four hybrids within the Macaronesian *Sonchus* group (Sventenius 1948, 1960, 1969, Bermejo et al. 1968). In addition, he gathered the original material used by P. Font Quer (1949) to introduce the monotypic genus *Sventenia*. There has been no doubt regarding the validity of the names included in the 1948 and 1949 publications (*Sonchus tuberifer* Svent., *S. tuberifer* var. *latisepta* Svent. and *Sventenia bupleuoides* Font Quer). On the contrary, the application of names coined at later dates has been controversial, mainly due to the introduction of typification as a requirement for the validity of names, published on or after 1 Jan 1958 (ICBN, Art. 37, McNeill et al. 2006). In order to comply with the new established rules, Sventenius usually included precise particulars of the gathering(s) into the protologues of new species in

the later publications: 'Additamentum ad floram Canariensem' (Sventenius 1960) and 'Plantae macaronesienses novae vel minus cognitae' (Sventenius 1969). First, in most cases he clearly indicated localities, often reported as *locus originis* (Sventenius 1960), and dates of gatherings (with inclusion of phenology details) in the protologues and, second, he specified the herbarium where exsiccata selected as type specimens were preserved (Sventenius 1960, p. IV, 1969, p. 60). There has been considerable controversy regarding the way in which these publications fulfilled the requirements of the Code for publication of valid names. Bramwell (1970, p. 18), Aldridge (1976a, p. 30, 1976b, p. 90–91) and Kunkel (1974, p. 27) support their general validity based on the opinion that localities, collecting dates and the indication that holotypes are conserved in the ORT herbarium (Hortus Acclimatationis Plantarum Araitapensis or Instituto Canario de Investigaciones Agrarias, former TENE) can be considered a precise indication of the type. The Code clearly specifies that before 1990 indication of the type may be achieved by reference to one gathering (Art. 37.2, 37.3), so inclusion of locality and date of collection in the protologues may be considered sufficient to validate names. This is the general situation for the names published in 1969 and several introduced in 1960. However, some protologues in the last publication mentioned (Sventenius 1960: 'Additamentum ...') include two locations and two gathering dates, which clearly invalidate the corresponding name (Art. 37.2, Ex. 1). This is why Boulos (1967a, p. 100, 1967b, p. 11), Reifenger and Reifenger (1996, p. 312) and N. Kilian and Greuter (Greuter 2003, p. 237) considered some names included in this publication not validly published. On the other hand, new taxa in the 'Additamentum ...' were illustrated by detailed plates which, according to the introduction to this work, were drawn from specimens designated as holotypes (Sventenius 1960, p. IV; "Illustrationes factae sunt ratione habitus holotyporum qui in Herbario Horti Plantarum Araitapensis asservantur" [= Illustrations were made according to the holotypes preserved at Orotava Botanic Garden]). Bramwell (1970) argued that the clear specification that holotypes were used as models for the illustrations can be considered an unequivocal identification of the type among the specimens preserved in the herbarium. In line with this thought and reasoning, it is obvious that holotypes should fulfil the following conditions: 1) they are preserved (at least deposited initially) in ORT, 2) they were collected in one of the localities and dates indicated in the protologue, and 3) their appearance suggests that they were used as main models for the respective species illustration.

Type specimens of Sventenius's names

Bearing all previous comments in mind, we undertook a revision of the nomenclatural status of names published by Bermejo et al. (1968, 1969) in Sventenius (1948, 1960) or based on plant material collected by him (Font Quer 1949). Our idea is to provide the unequivocal use of names, thus addressing the aforementioned controversies. To this end, we also revised the plant material collected by E. R. Sventenius preserved at ORT in order to clarify indications related to

type specimen assignments and, when necessary, to perform the required typifications. Currently, most of the abundant materials collected by him remain there. At the time of Sventenius's death (1973), plant material was grouped according to gathering trips. In 1974 and beyond, it was based upon a systematic criterion, but several duplicate materials remain in the original collections. No material of interest was located at CSIC (LPA), despite the fact that Sventenius directed this Institution since its foundation in 1952 until 1973 when he was run over and killed by a car. To complete our prospect, we made inquiries at several other herbaria too. We found some material of interest in the collections at GB and BC. Unfortunately, we did not have the opportunity to obtain the types assigned by L. Boulos, which are preserved at CAI. As far as we know, however, the details of these specimens were correctly published by Boulos (1967a, 1967b).

During the revision, we found notable inconsistencies when comparing details of the protologues with the herbarium material available. The data on gathering of specimens often did not match the dates and/or the locality details reported in the protologue. However, what is most striking are the illustrations in the 'Additamentum ...' (Sventenius 1960) for which, in spite of the author's indications (above), we did not recognize any material that may have served directly as a model. Considering that our study includes the bulk of the currently available material gathered by Sventenius, two options could be adopted under these circumstances: A) to propose that the typifications of the names were artificial and ineffective, and the names should therefore be considered invalidly published, or B) to assume that we no longer possess the types designated by Sventenius and to assign new types (lectotypes or neotypes) as substitutes (Art. 9.2, 9.6, 9.9, 9.11) among the remaining specimens collected by him, in order to fix and preserve the usage of the names. The first option would be in conflict with Article 37.2 of the Code and we would need to perform new descriptions of the species and to coin new names according to current rules. By the latter option, most names proposed by Sventenius may be considered validly published with the exception of those from the 'Additamentum ...' (Sventenius 1960) for which more than one locality or *locus originis* was indicated. From our point of view, in a systematic framework the second option (B) is the most conservative and provides higher nomenclatural stability. For example, given the hypothetical finding of Sventenius's holotypes, almost all the new names coined in accordance with the first option (A) should be considered invalidly published; whereas the second option will merely force types to be replaced.

Detailed current nomenclatural status of the names, types and typifications

According to the rationale developed above, we present below a list of the taxa in the Macaronesian *Sonchus* group described or collected by Sventenius, in each case incorporating the following information: 1) current nomenclatural status of the names and their synonyms, 2) types assigned to them by Sventenius or other authors, and 3) when necessary, new

typifications to validate names or to provide accurate types. Names are grouped according to the publication in which they appeared. In turn, publications are arranged chronologically. If the name was invalid or illegitimate, the legitimate name is indicated in the synonymy; in addition, we introduce new names or combinations when required.

1. Sventenius, E. R. S. 1948. Plantas nuevas o poco conocidas de Tenerife. – Bol. Inst. Nac. de Invest. Agrónóm. Madrid 18: 285–289

Sventenius introduced new names for one species and one variety in this paper, accompanied by complete Latin descriptions (Art. 36.1). Because publication took place before 1958, no type designation was required to validate the names (Art. 37.1).

1a. *Sonchus tuberifer* Svent. (1948, p. 285)

Protologue: "entre Chierfe y Monte Guama, 1000 m, el día 12 de mayo de 1946 – plantas con los últimos frutos –; Masca, 600 m, el día 15 de enero de 1947 – plantas recién entradas en floración".

Type: Svent., Bol. Inst. Nac. Invest. Agron. Madrid 18: illustration inserted between pages 286 and 287, indicated as *Sonchus tuberifer* Svent. (1948) (lectotype designated here). "Tenerife: Masca. 12.V.1947", E. R. Sventenius (handwritten label, ORT 17199!; epitype designated here).

Icones: Svent. in Bol. Inst. Nac. Invest. Agron. Madrid 18 (1948, p. 286, 287).

As indicated above, no type designation was required to validate the name in this case. In the protologue Sventenius also introduced the variety *latisecta*, based on differences in leaf morphology (Fig. 1) and robustness, and indicated two gatherings from the same area (above) but did not make any specification of localities for each taxon; moreover, he indicated that typical plants and variety *latisecta* plants grow together. Only one exsiccatum in GB (no. 194) fits in date and locality with the protologue, but it is labelled as var. *latisecta* and bears the indication "Archetypum!", most probably by Sventenius. In the protologue, a fairly detailed illustration is provided (Sventenius 1948, pp. 286–287) that, according to Art. 9, note 2 of ICBN, is part of original material; therefore, we designate this illustration as lectotype under the Art. 9.10. However, the representation of the tuber, main distinctive organ of the species, does not show its nature very clearly and makes the designation of an epitype convenient. Among the material collected by Sventenius, there is a very complete specimen with no indication of variety and labelled as "ORIGINAL" by a handmade annotation (ORT 2898); nevertheless, leaves show a triangular terminal lobe, which is the main diagnosis character for var. *latisecta*, and consequently the selection of this specimen is inadvisable. The exsiccatum ORT 17199 (Fig. 1A) collected by Sventenius in Masca on 12 May 1947, one year later than one of the dates indicated in the protologue, comprises a single specimen with typical leaf morphology, a well-developed tuber and usual plant conformation, and has therefore been designated as epitype.



Figure 1. Types assigned to *Sonchus tuberifer* Svent. (A) epitype of typical variety (ORT 17199), (B) leaf detail from *S. tuberifer* var. *latisecta* Svent. lectotype (GB no. 194).

1b. *Sonchus tuberifer* var. *latisecta* Svent. (1948, p. 288)

Protologue: see *Sonchus tuberifer*.

Type: “Nivaria, Masca, Roque Catana; 600 m s.m. In saxosis graminosis subumbrosis. Sat abundanter. 15. I. MXMXLVII [15.I.1947]. Sventenius” (typewritten label, GB no. 194; lectotype designated here).

Icons: Boulos in Bot. Not. 126: 195-fig. 34 (sub *Sonchus tuberifer*).

A specimen from the GB herbarium collected by Sventenius (GB, no. 194) is identified as var. *latisecta* and matches the data given in the protologue (see comments for the typical variety). The exsiccata includes a label from ORT with the indication “Archetypum!” and fits the author’s description in plant habit and leaf morphology (Fig. 1B); consequently, it is designated here as the lectotype for the variety.

2. Font Quer, P. 1949. *Plantae novae.* – *Collect. Bot.* 2: 199–203

A complete Latin description accompanied by a detailed illustration is included in this publication, where a single new name for a representative of *Sonchus* s.l. is introduced. According to Art. 37.1 typification is not needed to accomplish validity requirements.

Sventenia bupleuroides Font Quer (1949, p. 201)

Accepted name: *Sonchus bupleuroides* (Font Quer) N. Kilian & Greuter (in Greuter 2003, p. 237).

Protologue: “Hab. In Canariae Insulae, in fissuris rupium abruptarum locisque subumbrosis l. Risco Goyedra dicto (Canaria Major), ubi d. 21 maji (fl.) et 25 spt. (fr.) cl. E. R. S. Sventenius, cui dicatus genus, legit”.

Type: “Gran Canaria: Risco Goyedra. 850 m super mare. In fissuris rupium abruptis subumbrosis. Rara. (Fr.) 25.IX.MCMXLVIII [25.9.1948]. E. R. Sventenius” (typewritten label, BC 111045!; lectotype designated here). “Gran Canaria: Risco Goyedra; Bco. Palo Blanco. In fissuris rupium abruptis subumbrosis, 850 m super mare. 25.IX.MCMXLVIII [25.9.1948]. Plus minusve abundanter. E. R. Sventenius” (typewritten label, ORT 8563!; isolectotype). “Gran Canaria: Risco Goyedra. 850 m super mare. In fissuris rupium abruptis subumbrosis. Rara. (Fl.) 21.V.MCMXLVIII [21.5.1948]. E. R. Sventenius” (typewritten label, BC 111045!; paralectotype).

Icons: Font Quer in *Col. Bot.* 2 (1949, p. 202).

The protologue of this species is authored by P. Font Quer, who made the original description based on material collected by Sventenius. He proposed that the taxon forms part of a new genus for which he coined the name *Sventenia*. The amalgamation of this genus within the concept of a more broadly circumscribed *Sonchus* gave origin to the combination *Sonchus bupleuroides* N. Kilian & Greuter (Greuter 2003).

P. Font Quer indicated a single location in the protologue but two dates of gathering: 21 May and 25 Sep, although no mention of any year was made (and, as expected, no reference to an exsiccatum). Publication of the name *Sventenia bupleuroides* (in *Collectanea Botanica*. Vol. 2, fascicle 2) took place in Oct 1949, and assignment of the type must therefore consider this date. Two exsiccata comprise specimens collected by Sventenius on the aforementioned days of the months in 1948. One is kept at the herbarium ORT (ORT 8563) and comprises two specimens, one of which bears a well-developed inflorescence although no flowers or fruits remain. The other exsiccatum is preserved in the BC herbarium (BC 111045, Fig. 2) but retains a label from ORT, where the dates (Fl.) 21 May and (Fr.) 25 Sep are both indicated. It appears to comprise two specimens; one of them bears an inflorescence with a single flower head in bloom and several immature heads (Fig. 2B) while another specimen carries a very mature inflorescence without florets or fruits, but some mature well-developed fruits within a small transparent sachet are also included in the exsiccatum (Fig. 2A-A’). According to the indications in the protologue, we realised that the specimen in bloom was collected on 21 May 1948, whereas the one carrying the mature inflorescences was collected on 25 Sep 1948, and the fruits pertain

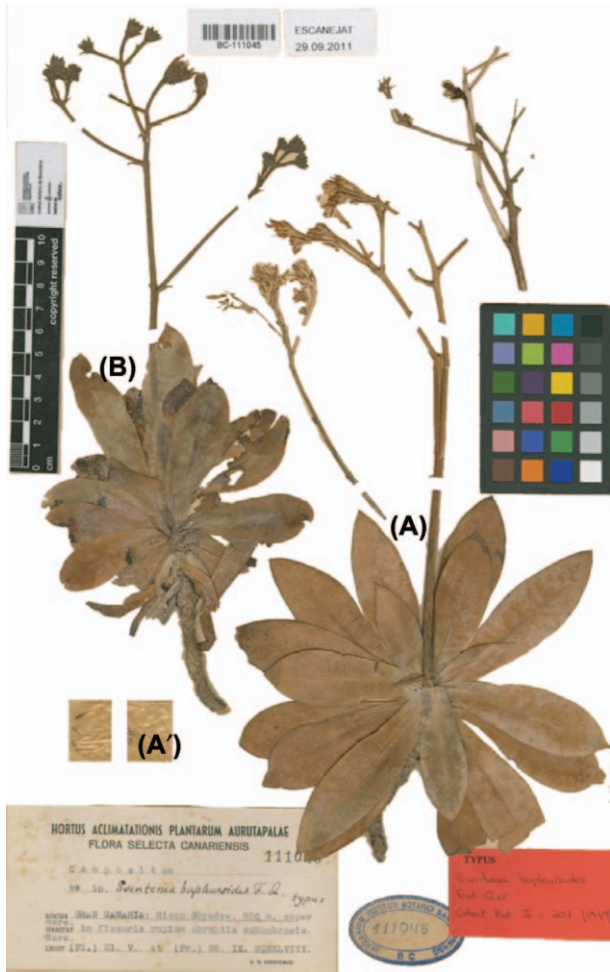


Figure 2. Lectotype (A + A') and paratype (B) of *Sonchus bupleuroides* (Font Quer) N. Kilian & Greuter (BC 111045).

to the latter date. Some other material kept at the ORT herbarium and collected in the *locus classicus* before Oct 1949 by Sventenius could be considered as original material (i.e. ORT 8559, including a fairly complete specimen, collected on 18 Jul 1949 and bearing flowers and fruits), but it is more reasonable to select one of the specimens gathered in 1948 and described above which, undoubtedly, was used by P. Font Quer for the description in the protologue. Because the existence of a long beak in the achene is the most distinctive character of *Sventenia* among *Sonchus* group representatives, the appropriate lectotype comprises the specimen in the exsiccatum BC 111045 carrying a mature inflorescence plus the fruits in the sachet from the same herbarium sheet (Fig. 2A-A'). The specimen in bloom from the same sheet is a paralectotype (Fig. 2B) and ORT 8563, collected on 25 Sep 1948, become an isolectotype.

3. Sventenius, E. R. 1960. Additamentum ad Floram Canariensem. – Agron. Invest. Nat. Hispanicum Inst., Madrid

In this publication, Sventenius introduced five new taxa at the specific level and three new hybrids. Their respective

protologues include a complete Latin description, one or two gatherings (*locus originis*) and a detailed illustration. Names whose protologue includes a single collection are considered to be validly published (Art. 37.2), however the incorporation of two gatherings clearly invalidates the respective name (Art. 37.2, Ex. 1). The hypothetical location of holotypes could have been achieved by means of the illustrations (Sventenius 1960, p. IV), but as discussed above the recognition of any material that would have served directly as a model for them was not possible.

3a. *Sonchus imbricatus* Svent. (1960)

Accepted name: *Sonchus bourgeaui* Sch. Bip. var. *imbricatus* (Svent.) Boulos (1973, p. 163).

Protologue: “Archipelagus Canariensis in parva insula “Roque del Este” dicta, ubi legi cum flore et fructu die 16 Aprilis 1954. Valde rara”.

Type: “In parva insula “Roque del Este” dicta, versus 70 m supra mare. In humosis inter rupes abruptas (*locus classicus*). Plus minusve abundanter. 16-IV-1954, Sventenius” (CAI, lectotype; Boulos 1973, p. 163), non vide. “Parva insula “Roque del Este” vulgo dicta. Habitat: in humosis inter rupes abruptas. Plus minusve abundanter. 70 m supra mare. Leg. 16 Aprilis 1954”, E. R. Sventenius (typewritten label, ORT 9029!; isolectotype). “Roque del Este. 16-IV-54. +/- abundante. 70 m. Sitio semi sombrío en humus”, E. R. Sventenius (handwritten label; ORT 17066!; isolectotype).

Icons: Svent., Addit. Fl. Canar. 76 (1960, Table XXX).

Sonchus imbricatus is the single Macaronesian endemic which does not form part of the woody *Sonchus* alliance radiation (Kim et al. 1996a). In spite of the restricted range, it is a relative of cosmopolitan common weeds in the genus (Kim et al. 2007). In the protologue (Sventenius 1960, p. 75), a single *locus originis* is indicated. Two exsiccata from this gathering are preserved at the ORT herbarium but none match the published illustration or show signs of having been designated as the holotype. One of the exsiccata (ORT 17066) bears the handwritten annotation: “*Sonchus imbricatus* nom. nud.”, which probably suggests a purpose of assignment at some stage. In any case, the name is considered as validly published (Art. 37.2). In 1967, Boulos (1967b, p. 7) subordinated this name to the species *S. bourgeaui* at the variety level, and some years later he designated a lectotype (Boulos, 1973, p. 163). According to the previous reference, the lectotype is preserved in CAI and the specimen was possibly donated by Sventenius. Herein we indicate two isolectotypes among specimens from ORT.

3b. *Sonchus* × *maynari* Svent. (1960)

Protologue: “Nivaria insula (Tenerife dicta) in anfractuosis Mascae, ubi reperta fuit die 14 Martii 1950. Valde rara”.

Type: Svent., Addit. Fl. Canar. 78 (1960, Table XXXI) (lectotype designated here).

Icons: idem.

Several specimens of this rare hybrid are preserved at ORT but, probably, most of them came from cultivation at the Viera y Clavijo Botanical Garden (Gran Canaria). Three specimens: ORT 17089, ORT 17090 and ORT 17091 are labelled as originating from the Masca area, the *locus*

originis indicated in the protologue, on dates prior to its publication, but we harbour some doubt with regards to their wild origin and none match the appropriate date in order to be confirmed as holotype material. ORT 17091 is annotated as “HOLOTYPUS” but Sventenius often made such annotations on plants from cultivation. According to Art. 9, note 2, illustrations are part of original material; therefore, we designate the illustration included in the publication (Sventenius 1960, p. 78, Table XXXI) as lectotype under the Art. 9.10. In this way, we also avoid the risk of assigning a specimen of garden origin as the type for this taxon. The illustration includes analytical details of reproductive characters, which makes the designation of an epitype unnecessary.

Sventenius proposed that this hybrid was the result of crosses between *Sonchus congestus* Willd. and *S. fauces-orci* Knoche. We agree with the second putative parent, but the presence of a leafless stalk suggests that *S. acaulis* (common in the area) rather than *S. congestus*, should be the other parent. Most likely, the confusion of taxa names underlies the erroneous assumption, as Sventenius named some material of *S. acaulis* from the region as *S. congestus* (ORT 17031, 17032, 17033, 28096).

3c. *Sonchus gonzalezpadroni* Svent. (1960), nom. inval. (Art. 37.1)

Accepted name: *Sonchus gomerensis* Boulos (1967b, p. 11).

Protologue: “Junonia Minor (Insula Gomera) in regione australe: in profunda valle “Marandón” vulgo dicta inter 600–800 m supra mare, ubi sat pauca est, die 6 Octobris 1956 cum fructu lecta fuit: postea in loco dicto “Barranco Ancones” supra oppidulum Valle Gran Rey ad 600 m altitudinis cum flore et fructu die 4 Septembris 1957 legi”.

Type: (assigned to *Sonchus gomerensis* Boulos): “Vallehermoso, Gomera, Canary, 27.7.1962, Boulos” (CAI; holotype, Boulos 1967b, p. 12), not seen. Isotypes in B, BM, CAI, G, K, MPU, O and P (Boulos 1967b, p. 12).

Icons: Svent., Addit. Fl. Canar. 80 (1960, Table XXXII) sub *S. gonzalezpadroni*; Boulos (1967b, p. 11, Fig. 5) sub *Sonchus gomerensis*; Bramwell, D. & Z. Bramwell (1990, p. 330, 2001, p. 377) sub *S. gonzalezpadroni*.

Both collections cited in the protologue for *Sonchus gonzalezpadroni* are represented by one specimen each in ORT (ORT 5460, ORT 5480). The two exsiccata bear a handwritten label with the indication “ORIGINAL”, but none conform to the complete illustration in the ‘Additamentum...’ (Sventenius 1960, p. 80, Table XXXII). The first one consists of a simple rosette of leaves; the second bears no flowers but has some fruits. Therefore, any of them can be identified as the *S. gonzalezpadroni* holotype. Some herbarium specimens obtained from plants cultivated at the Viera y Clavijo Botanic Garden (Las Palmas, Gran Canaria) collected on 6 Jun 1961 are labelled as “holotypus” with a handwritten indication (ORT 27545), but do not show any clear indication of the origin. Provenance and date of gathering (after publication of the name) prevent designation as the holotype. Therefore the name was not validly published (Art. 37.1, 37.2, Ex. 1).

Boulos (1967b, p. 11) recognized the taxonomic identity of the new species described by Sventenius, but

he considered that the proposed name was illegitimate (although, according to the rules of the Code, it should be corrected to invalid). As a consequence, he published the name *S. gomerensis* for this taxon with an extensive description and the correct designation of a holotype, incorporating *S. gonzalezpadroni* Svent. as a synonym of the new name.

3d. *Sonchus ortunoi* Svent. (1960), nom. inval. (Art. 37.1)

Protologue: “Junonia Minor (etiam Gomera dicta): in regione austro-occidentale: in profunda valle vulgo dicta “Marandón” versus 600 m supra mare, ubi legi die 6 Octobris 1956, et in magno cavo Argagae ad 200 m alt. die 31 Augusti 1957 lecta. In ambo loco sat pauca”.

Material from two collections by Sventenius prior to 1960 are kept at ORT, but none match the picture in the ‘Additamentum ...’. One specimen (ORT 9031, Fig. 3A) came from the gathering in Marandón on 16 Oct 1956 and can be considered a complete specimen; it also bears a handwritten label with the indication “ORIGINAL [sic]”. Another exsiccatum coming from “Barranco Argaga” (ORT 5490) is also labelled with the term “ORIGINAL” but does not fit the dates in the protologue and is badly damaged. Some other specimens kept at ORT came from cultivation at the Viera y Clavijo Botanic Garden in 1962 and 1963. They bear handwritten labels with the term “holotypus” (ORT 5087, ORT 23963, ORT 23964, etc., Fig. 3B) but as in previous cases, they should not be considered for purposes of typification. Under Art. 37.1 and 37.2 (Ex. 1), publication of the name did not fulfil requirements to be considered valid.

Boulos (1967b, p. 10) found *Sonchus ortunoi* Svent. to be an illegitimate synonym to *S. hierrensis* (Pit.) Boulos. On the contrary, Aldridge (1976b, p. 91) kept the two names as representatives of different species. This latter view is supported by molecular phylogenetic studies performed by Lee et al. (2005, Fig. 2–4) and Kim et al. (2007, Fig. 4–5), showing interesting divergences in genealogy among the material of both species. Delimitation of these species is not easy, but it is evident that plants with the *S. ortunoi* morphotype collected from central La Gomera (i.e. between Roque de Ojila and Roque de la Zarcita) have different ITS sequences from *S. hierrensis* on La Gomera as well as from other islands (El Hierro and La Palma). The material used in a previous analysis (Lee et al. l.c., Kim et al. l.c.) did not come from the locations indicated by Sventenius, and it is therefore premature to make any conclusive decision at present. Material from various populations of *S. hierrensis* and *S. ortunoi*, including the *locus classicus* of the latter taxon, has recently been collected and a phylogeographic study will be conducted to determine the taxonomic identity *S. ortunoi*.

The aforementioned discussion highlights the convenience of separating the two taxa and the need for a valid publication of the name of the present taxon. Such publication is performed here, and in order to preserve the usage of the name, we make reference to the effectively published description by Sventenius (1960, p. 81) and keep the epithet proposed by him:



Figure 3. Typification of some names of taxa introduced in ‘Additamentum ad Floram Canariensem’ (Sventenius 1960). (A) holotype of *Sonchus ortunoi* Svent. (ORT 9031), (B) handwritten label for a specimen of *S. ortunoi* cultivated in Botanic Garden Viera y Clavijo (Tafira area, Gran Canaria) (ORT 23964), (C) handwritten label for a specimen of *S. × decipiens* cultivated in Botanic Garden Viera y Clavijo (ORT 9040), (D) isotype of *S. capillaris* Svent. (ORT 9024), (E) epitype of *S. × rupicola* (ORT 8231).

Sonchus ortunoi Svent. sp. nov.

Type: “Gomera: Valle “Marandón” vulgo dicta, in clivibus petroso-argillosis. Sat pauca. Versus 600 mt, 6 Octobris 1956, E. R. Sventenius” (typewritten label, ORT 9031!; holotype designated here).

Icons: Svent., Addit. Fl. Canar. 82 (1960, Table XXXIII), Fig. 3A.

Validating description: in Sventenius (1960, p. 81).

3e. *Sonchus filifolius* Svent. (1960) nom. inval. (Art. 37.1)

Accepted name: *Sonchus sventenii* U. & A. Reifemberger (1996, p. 312).

Synonyms: *Taeckholmia canariensis* Boulos (1967a, p. 100); non *Sonchus canariensis* (Sch. Bip.) Boulos (1967b, p. 14). – *Atalanthus canariensis* (Boulos) A. Hansen & Sunding (1993,



Figure 4. Types assigned to some names of taxa introduced in ‘Plantae macaronesienses novae vel minus cognitae’ (Sventenius 1969). (A) holotype of *Sonchus pendulus* subsp. *flaccidus* (Svent.) N. Kilian & Greuter (ORT 8226), (B) holotype of *S. xjaquinocephalus* Svent. (ORT 17056), (C) neotype of *S. hierrensis* var. *benehoavensis* Svent. (ORT 4403), (D) neotype of *S. tectifolius* (ORT 7119).

p. 6) – *Taeckholmia filifolia* (Svent.) G. Kunkel (1974, p. 28); nom. inval. (Art. 37.1) – *Sonchus filifolius* N. Kilian & Greuter, in Greuter (2003, p. 237), nom. illegit. (Art. 52.1).

Protologue: “Junonia Minor (Insula Gomera dicta) in anfractu vulgo dicto “Marandón” ad 600 m supra mare, ubi legi in completa fructificatione et cum paucis floribus die 6 Octobris 1956; postea in magno cavo Argaga ad 150 m alt. die 31 Augusto et in Valle Gran Rey juxta locum vulgo dicto “Roque de Guada” ad 600 m altitudinis die 4 Septembris 1957 in plena florazione legi; in utraque loco datur abundanter”.

Type: (assigned to *Taeckholmia canariensis* Boulos): “Valle Gran Rey, Ile de Gomera, 25.7.1962, Boulos” (CAI; holotype, Boulos 1967a, p. 102 sub *Taeckholmia canariensis* Boulos), not seen. Isotypes in B and G (Boulos 1974b, p. 433).

Icones: Svent., *Addit. Fl. Canar.* 84 (1960, Table XXXIV sub *Sonchus filifolius* Svent.); Boulos (1967a, p. 103 sub *Taeckholmia canariensis* Boulos).

Two exsiccata collected by Sventenius in the area at the dates indicated in the protologue are preserved at ORT: ORT

5498 and ORT 9028. The first one came from the Marandón Ravine and fits the collection date, but it is equivocal because it was determined as *S. regis-jubae?* [sic] on a handwritten label, collected at a height of 250 m (rather than 600 m as indicated in the protologue) and does not fit the published illustration. The other specimen was collected in the Valle Gran Rey. It fits the date and altitude, but there is no exact indication that it came from Roque de Guadá, a place in the Valle Gran Rey. This exsiccatum comprises two branches, each carrying three floriferous stems, some of which could be used to draw the respective illustration (Sventenius 1960, p. 84, Table XXXIV), but it lacks the vegetative branches with well-developed leaves shown in the illustration. These inadvisable remarks for the identification of the holotype invalidate Sventenius's name (Art. 37.1, 37.2, Ex. 1).

Boulos included this species in the new genus *Taeckholmia*. Consequently, he made the combination *T. canariensis*, designated a correct type for the taxon and published the new name according to the current requirements of the Code (Boulos 1967a, pp. 100–102). On the contrary, Aldridge (1976a) and Reifenger and Reifenger (1996) argued that the diagnostic characters did not consistently separate *Taeckholmia* from *Sonchus*, and they therefore proposed to merge the new genus into *Sonchus*. Hence, Reifenger and Reifenger (l.c., p. 312) proposed the new combination *Sonchus sventenii*, because a new combination with the epithet *canariensis* had previously been used by Boulos (1967b, p. 14) for another species. As indicated above, the fusion of *Taeckholmia* with *Sonchus* has been clearly supported by molecular phylogenetic analysis (Kim et al. 2007, p. 588).

3f. *Sonchus capillaris* Svent., Addit. Fl. Canar. 1 (1960, p. 85)
Taeckholmia capillaris (Svent.) Boulos (1967a, p. 100)

Synonyms: *Atalanthus capillaris* (Svent.) A. Hansen & Sunding (1993, p. 6) – *Sonchus leptcephalus* Cass. subsp. *capillaris* (Boulos) Aldridge (1976b, p. 91).

Protologue: “Nivaria (Tenerife) in magno anfractu, vulgo dicto “Barranco de Tejina” inter 400–700 m alt., ubi datur plus minusve abundans. Legit cum flore et fructu die 18 Octobris 1957”.

Type: “Barranco de Tejina, Tenerife, 18.10.1957, E. Sventenius” (CAI; lectotype, Boulos 1967a, p. 101 sub *Taeckholmia capillaris* Boulos). “In anfractu vulgo dicto “Barranco de Tejina”, inter rupes apricis et siccis. Plus minusve abundanter 400–700 m Tenerife, 18.10.1957, E. Sventenius” (typewritten label, ORT 9024!; isolectotype). “In anfractu vulgo dicto “Barranco de Tejina”, inter rupes apricis et siccis. Plus minusve abundanter 400–700 m Tenerife, 18.10.1957, E. Sventenius” (typewritten label, ORT 9023!; isolectotype).

Icones: Svent. 86 (1960, Table XXXV); Boulos (1967a, p. 101 sub *Taeckholmia capillaris*).

With the name *Sonchus capillaris*, Sventenius designated one taxon comprising a group of plants growing exclusively at one locality in west Tenerife. He therefore indicated one single *locus originis* in the protologue. Two exsiccata from this gathering are preserved at ORT (ORT 9024, ORT 9023), but none of them fit the respective illustration enough to be identified as the holotype.

It is clear that Boulos (1967a, p. 100) considered this name as validly published and included the taxon within his new genus *Taeckholmia*, proposing the combination *T. capillaris* (Svent.) Boulos. In the publication, he also indicated the existence of a specimen preserved at CAI, collected by Sventenius in the *locus originis* on the date from the protologue (Boulos, 1967a, p. 101), which he considered to be the type. Some years later he labelled this specimen as an isotype (Boulos 1974b, pp. 431–432, Fig. 25), probably because Boulos was never certain whether Sventenius had made a correct type assignment. From our point of view, the specimen should be considered as a lectotype (Art. 9.2), and the exsiccata ORT 9023, ORT 9024 (Fig. 3D), previously cited, should be treated as isolectotypes.

3g. \times *Sonchustenia decipiens* Svent. (1960, p. 87)

Protologue: “Canaria Magna: Risco de Goyedra, ubi legit cum floribus et fructibus die 12 Maji 1952. Sat pauca”.

Type: Svent., Addit. Fl. Canar. (1960, p. 88, Table XXXVI) (lectotype designated here).

Icones: Svent., Addit. Fl. Canar. (1960, p. 88, Table XXXV).

Sventenius (1960, p. 88) indicated a single *locus originis* for this hybrid. As far as we know, no material coming from this or any other locality in the wild is available. The exsiccatum kept at ORT (ORT 9040) bears a handwritten label (Fig. 3C) that is not easy to interpret, but which clearly indicates that the specimen was cultivated at Viera y Clavijo Botanic Garden (Gran Canaria). The material matches well with the description of the protologue, but its origin makes it not very suitable for the designation of type. In the absence of another available specimen, we select the illustration incorporated in the protologue as lectotype (Art. 9, note 2, 9.10, 37.4).

This hybrid taxon appears to have originated by crosses between *Sventenia bupleuroides* Font Quer and *Sonchus leptcephalus* Sch. Bip. Because both parents should be amalgamated within *Sonchus*, a new combination is required:

***Sonchus* \times *decipiens* (Svent.) A. Santos & Mejías comb. nov.**

Basionym: \times *Sonchustenia decipiens* Svent., Addit. Fl. Canar. 1 (1960, p. 87)

3h. \times *Prenanthenia rupicola* Svent. (1960, p. 89)

Protologue: “Canaria Magna; supra pagum Goyedra, ubi die 18 Julii 1952 cum flore et fructu lecta fuit. Valde rara”.

Type: Svent., Addit. Fl. Canar. 90 (1960, Table XXXVII) (lectotype designated here). “Goyedra, entre Bco. Oscuro y Bco. Palo Blanco, 70 m, en rocas abruptas, muy escasa, 18.VII.1949”, E. R. Sventenius (handwritten label, ORT 8231!; epitype designated here).

Icones: Svent. (1960, p. 90, Table XXXVII).

The exsiccatum ORT 8231 (Fig. 3E) comprises one specimen that reliably fits the corresponding description and illustration. According to the label, it came from the *locus originis* but was collected exactly three years before the publication date 18 Jul 1949, rather than 1952 as indicated in the

protologue. This fact determines that the specimen cannot be regarded as the holotype. In the absence of any additional exsiccata suitable for typification, we select the respective illustration for the designation of the type. We also designate specimen ORT 8231 as epitype.

Sventenius proposed that this hybrid taxon had originated from crosses between *Sventenia bupleuroides* Font Quer and *Prenanthes pendula* Sch. Bip. Because both parents should be included in *Sonchus*, a new combination is required:

***Sonchus* × *rupicola* (Svent.) A. Santos & Mejías
comb. nov.**

Basionym: × *Prenanthenia rupicola* Svent., Addit. Fl. Canar. 1 (1960, p. 89)

**4. J. Bermejo et al. 1968. Terpenoides de los
Sonchus. VII. Lactonas sesquiterpénicas de *Sonchus
hierrensis* (Pit.) Svent. stat. nov. var. *benehoavensis*
Svent. var. nova. – Anales de Física y Química 64B:
893–898**

Sventenius introduced the name *Sonchus hierrensis* var. *benehoavensis* Svent. in this publication, but he fulfilled the publication requirements in the next reference. Therefore, we provide the details concerning the taxon below.

**5. Sventenius, E. R. 1969. Plantae macaronesienses
novae vel minus cognitae. – In: García-Cabezón
et al. (eds), Index Seminum quae Hortus
Acclimatationis Plantarum Arautapae. Ed. Jardín de
Acclimatación de Plantas de la Orotava, pp. 44–60**

Five new taxa were introduced in this publication: one species, one subspecies, two varieties and one hybrid. Complete Latin descriptions and references to one gathering were given in the respective protologues, except for *S. hierrensis* var. *benehoavensis*, from which most details come from Bermejo et al. (1968). According to Art. 30.4 and 37.2 the publication of these names was effective and valid. No illustrations were incorporated in the publication.

5a. *Prenanthes pendula* Sch. Bip. subsp. *flaccida* Svent., in García-Cabezón et al. (1969, p. 54).

Accepted name: *Sonchus pendulus* subsp. *flaccidus* (Svent.) N. Kilian & Greuter (Greuter 2003, p. 237).

Synonym: *Chrysoprenanthes pendula* subsp. *flaccida* (Svent.) Bramwell (2004, p. 163).

Protologue: “Canaria magna; ad magnas rupes Goyedrae, ubi primum legi cum flore et fructo die 18 julii 1949 et postea in locis variis regioni septentrionali magnae Canariae observanda”.

Type: “Gr. Can.: Goyedra, loc. cl., 18-VII-1949”, Sventenius (handwritten label; ORT 8226; holotype). “Gran Canaria. Risco Goyedra: cerca Bco. Oscuro. 700 m, ± abundante, 18.VII.1949”, Sventenius (handwritten label, ORT 8228; isotype).

As far as we know, the only material of this taxon collected by Sventenius is kept at ORT. Two specimens are available, the result of a single gathering at the Goyedra Ravine on 18 Jul

1949, and both match the indications in the protologue. The specimens quite accurately fit the description, but only one of them (ORT 8226, Fig. 4A) shows ripe flower heads where the morphology of the achenes can be checked, despite the fact that the plant appears to be sterile. This specimen has been considered to be the holotype, and we treat the other specimen (ORT 8228) as an isotype.

5b. *Sonchus abbreviatus* Link var. *gibbosus* Svent., in García-Cabezón et al. (1969, p. 55)

Accepted name: *Sonchus congestus* DC. var. *gibbosus* (Svent.) G. Kunkel (1972, p. 79).

Protologue: Canaria magna: “covallibus ad septentrionem, ubi mense februarii 1966 primum lectus”.

Type: “Gr. Can., Los Tilos, 23-II-1966, ± escaso, rocas humosas y algo sombrías”. Sventenius (sub *S. jacquini* DC var. *gibbosus* Svent.) (handwritten label, ORT 8942; holotype).

Two exsiccata of this taxon collected by Sventenius are preserved at ORT. Both came from the area known as ‘Los Tilos’ in Gran Canaria, located in the north of the island as the protologue indicates. Exclusively, ORT 8492 was collected in Feb 1966 and, in addition, it is the single specimen bearing reproductive organs; it has consequently been considered to be the holotype of the name. Furthermore, *S. abbreviatus* Link is synonymous to *S. congestus* DC., the later having priority. The new required combination was effectively published by Kunkel (1972, p. 79).

5c. *Sonchus* × *jacquinioccephalus* Svent., in García-Cabezón et al. (1969, p. 55)

Protologue: “Nivaria: supra oppidum Icod de los Vinos, in rupibus humidisculi-humosis, ubi inter parentes radicans, die 17 Febr. 1966 primum lectus”.

Type: “Tfe., Icod de los Vinos. Ladera sobre la población, rocas humosas, muy escaso, 17.II.66”. E. R. Sventenius (handwritten label, ORT 17086; holotype).

The specimen identified here as the holotype (Fig. 4B) is the only specimen kept at ORT matching the gathering details indicated in the protologue. It shows intermediate characters between the putative parents (*S. congestus* Willd. = *S. jacquini* DC. and *S. leptoccephalus* Cass.) and fits the description in the protologue, although higher relative similarity to *S. congestus* (= *S. jacquini*) in leaf morphology enables us to assume introgressive hybridization. Some other exsiccata (ORT 17074, ORT 17075) bear clearly intermediate leaves, but differ in locality and collection date from the indications in the protologue.

5d. *Sonchus hierrensis* (Pit.) Boulos var. *benehoavensis* Svent., in García-Cabezón et al. (1969, p. 56)

Protologue: “... recogido en la Isla de la Palma en el mes de mayo”, “Insula Palma (Archipiélago Canariensis): in regione austro-occidentale, ubi est sat abundanter” (Bermejo et al. 1968).

Type: “La Palma: Caldera. Cueva de Tanausú. Rocas. Muy escasa. 16-IV-1962” E. R. Sventenius (handwritten label, ORT 4403; neotype designated here).

Sventenius introduced this taxon in a previous publication (Bermejo et al. 1968), which forms part of a series dealing with organic chemical compounds in the genus *Sonchus*. He incorporated a complete Latin description, a comment on the general distribution area (La Palma Island) and information on a gathering for chemical analysis during the month of May (which can be considered as gathering date, although there is no concrete indication of the year). Its inclusion in the present publication is indicative of the preservation of the holotype at ORT, just as in the remaining taxa. In this way, Sventenius completed the requirements for the valid publication of the name here, although the gathering details are quite imprecise, and date of the name must be that of this publication (Art. 45.1). Any possible type material should be a specimen collected in La Palma during May in or before 1968. We found six exsiccata from La Palma labelled as *Sonchus hierrensis* var. *benehoavensis* by Sventenius among the material preserved at ORT, but none was collected during May. Therefore, inevitably, selection of a neotype is required. In the original description, Sventenius (in Bermejo et al. 1968, p. 893) indicated that this variety shows pyriform fruits, a character that he proposed as the main difference from the type variety. However, among the revised material collected by him, such morphology was detected in only one specimen (ORT 4403, Fig. 4C). Other exsiccata (ORT 4407, ORT 4386) show medium compressed oblanceolate fruits, while these are usually elliptical in shape in the typical variety. According to our observations in some other *Sonchus* species, the fruit coat often becomes thicker when flower head fertility is very low, as is the case of ORT 4403. This is likely the origin of pyriform fruits, instead of the usual oblanceolate. In any case, as the specimen ORT 4403 matches all the characters listed in the protologue, it has been assigned as the neotype.

5e. *Sonchus tectifolius* Svent., in Garcia-Cabezón et al. (1969, p. 56)

Protologue: “Nivaria: regione orientali versus meridionalem, ubi sat raro, die 15 junii 1966 primum lectus”.

Type: “Tfe., 8/6/1967”. E. R. Sventenius (handwritten label, ORT 7119!; neotype designated here).

This taxon appears to be very scarce, as indicated by the existence of a single exsiccatum collected by Sventenius at the Herbarium of the Instituto Canario de Investigaciones Agrarias (ORT 7119, Fig. 4D) with no duplicates. Because it does not fit the data from the protologue, we designated it as a neotype.

Boulos (1974b, p. 444) did include *S. tectifolius* within the *species dubiae* list of his monograph on the genus, perhaps because he did not obtain any specimens to examine. We are unaware of the existence of more material collected by Sventenius, and the present specimen lacks fruits. From a taxonomic point of view, the taxon appears to be close to *S. gummifer*, and indeed Aldridge (1976b, p. 90) subordinated the name to this taxon as *S. gummifer* Svent. subsp. *tectifolius* Aldridge. *Sonchus gummifer* is endemic to north-eastern Tenerife and the protologue of *S. tectifolius* clearly indicates that the latter taxon grows in southeastern Tenerife (see protologue); this suggests that it could be a morphological differentiation associated with rare habitats in this area of the

island. Further research is required to elucidate the adequate rank for this taxon.

Author’s note

The numbering used in present paper to refer to Articles and Notes of International Code of Nomenclature corresponds to the Vienna Code (2006), as can be deduced from the references. Since a new version with notable differences in the organization and numbering has been recently published (Melbourne Code, 2012) during the edition process of the paper, we list then Articles and Notes cited in the text with indication in brackets of numbering from Melbourne Code: Art. 9 note 2(9.1 and 40.4), 9.2(9.2), 9.6(9.7), 9.9(9.11), 9.1(9.12), 9.11(9.13), 30.4(30.7), 36.1(39.1), 37(40), 37.1(40.1), 37.2(40.2), 37.3(40.3), 37.4(40.4), 45.1(33.1).

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