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COMPLUTENSE

The name *Salicornietum perennis* (*sensu lato*) and global nomenclatural issues

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Abstract. The name *Zygophyllo fontanesii-Sarcocornietum perennis* is rejected as it is invalid and the new name *Halimiono portulacoidis-Salicornietum perennis* is proposed with two subassociations: *typicum* and *limonietosum canariensis*. The name *Salicornietum perennis* for Cuban communities is corrected to *Salicornietum ambiguae*.

Keywords: Homonymy; Syntaxonomy; *Salicornia*; *Sarcocornia*; *Nomina mutata*; Canary Islands; Cuba; ICPN.

[es] El nombre *Salicornietum perennis* (*sensu lato*) e implicaciones nomenclaturales generales

Resumen. Se rechaza el nombre *Zygophyllo fontanesii-Sarcocornietum perennis* por su condición inválida, y se propone el nombre nuevo *Halimiono portulacoidis-Salicornietum perennis* con dos subasociaciones: *typicum* y *limonietosum canariensis*. Se corrige el nombre *Salicornietum perennis* para las comunidades cubanas a *Salicornietum ambiguae*.

Palabras clave: Homonimia; Sintaxonomía; *Salicornia*; *Sarcocornia*; *Nomina mutata*; Islas Canarias; Cuba; CINF.

Introduction

Corrections of syntaxa names by errors occasioned by misidentification of the name-giving taxa, by mutations –sometimes proposed to the Nomenclature Commission, and sometimes directly applied for authors–, by homonymy, and by other reasons cause several changes in the phytosociological nomenclature. These processes are ruled by the ICPN (Weber *et al.*, 2000), although some real cases have a difficult fit under the current articles, raise doubts about the treatment to follow or simply they are not considered.

The history of the name *Salicornietum perennis* is an example of the several nomenclatural problems in Phytosociology and its resolution, with possible implications in syntaxa names of higher rank. The species of *Amaranthaceae* (conserved name according to Stevens, 2001 onwards) are very frequent in the supra-littoral vegetation of the European coasts and in salt pans (*Anabasis*, *Arthrocnemum*, *Halocnemum*, *Salicornia*, *Salsola*,

Sarcocornia, *Suaeda*, etc.), together with other halophytes able to tolerate high saline concentration and with frequent adaptations to physiological dryness. Linnaeus (1753) proposed the genus *Salicornia* for succulent, leafless, annual or perennial plants. Afterwards, A.J. Scott (1977) segregates the genus *Sarcocornia* for sub-shrubby and shrubby vivacious plants of the group. This gave rise to nomenclatural changes and proposals of change to adapt the phytosociological nomenclature of syntaxa with name-giving taxa based in perennial species of *Salicornia*. The taxonomical status of *Salicornia/Sarcocornia* has been discussed in recent years, with proposals of segregation into two independent genera or its assimilation. Molecular and taxonomical studies have supported their independence (Kadereit *et al.*; 2007; Steffen *et al.*, 2010; Guilló, 2013), but the more recent studies with many sampled species and wide distribution have supported their assimilation, because *Salicornia* is nested within *Sarcocornia*, which means that *Sarcocornia* is a paraphyletic taxon (Steffen *et al.*, 2015; Piraiinen *et al.*, 2017). In this paper, we adopted the current

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decision of considering a single genus *Salicornia*, supported by those recent studies.

Galán de Mera *et al.* (2015) pointed out the existence in Cuba of an association named *Salicornietum perennis* Samek 1973. Based on the taxonomical tendency of considering *Salicornia perennis* Mill. as *Sarcocornia perennis* (Mill.) A. J. Scott., they proposed the new name *Sarcocornietum perennis*, included in the tropical class *Batido-Sarcocornietea ambiguae* Borhidi 1996, *nom. mut. propos.* (Galán de Mera *et al.*, 2009). After that change, they argued that the Cuban association name is an earlier homonym of *Sarcocornietum perennis* described for the Canary Islands (Fernández & Santos, 1984). Given this homonymy, according to article 31 and 39 of the ICPN (Weber *et al.*, 2000) they proposed a new name for the Canarian association: *Zygophyllofontanesii-Sarcocornietum perennis* (M. Fernández & A. Santos 1984) Galán de Mera, García-Fuentes & Martínez-Quesada 2015, which *holotypus* is relevé 4, Tab. 2, Órzola, Lanzarote (Fernández & Santos, 1984).

Discussion

The name *Sarcocornietum perennis* of the Canarian association is a later homonym of the Cuban name *Salicornietum perennis* (Art. 32b), because both are based on homotypic synonymous taxa. Therefore the name of the Canarian community must be rejected as a later homonym (ICPN Definition V, Art. 31, 32b), and a new name must be formed (Art. 39).

It is clear that *Sarcocornietum perennis* M. Fernández & A. Santos 1984 must be rejected as illegitimate (Art. 32b, 31) and must be substituted by the next later name in the same rank that is in accordance with the rules (Art. 39a). As there is not such replacement name, Galán de Mera *et al.* (2015) based on Art. 44 –even if they no mentioned it– proposed the new name *Zygophyllo fontanesii-Sarcocornietum perennis* whose nomenclatural type is the same as that of *Sarcocornietum perennis* M. Fernández & A. Santos 1984, that is relevé 4 in table 2 of the original publication. Since 2002 it is mandatory that the name-giving taxa must be in the type relevé (Art. 16), but *Zygophyllum fontanesii* is not. This implies *Zygophyllo fontanesii-Sarcocornietum perennis* (M. Fernández & A. Santos 1984) Galán, A. García & Martínez-

Quesada 2015 is an invalid name according to Art. 5 and Art. 16, and must be rejected.

Accordingly, as no other validly published name is available to replace it, we propose a new name: *Halimiono portulacoidis-Salicornietum perennis* (M. Fernández & A. Santos 1984) Del Arco, Izco & Rodríguez 2017 with the same type as *Sarcocornietum perennis* M. Fernández & A. Santos 1984 (*Holotypus*: rel. 4, table 2, Órzola, Lanzarote), and accomplishes with requirements of Art. 16.

Within that original table, Fernández and Santos (1984) separated two groups. The first, relevés 1-5, contents the association type, but they did not mention any subassociation name, nor reference to the typical subassociation. The second group, relevés 6-8, refers to subass. *limonietosum canariensis* (*holotypus*: rel. 7). It is evident they consider two subassociations, because the second has a different type than the association type. The first group has a sufficient diagnosis (Art. 7), but they should have provided an epithet: *typicum* or derived from the driver taxa in the relevé type. They did not do it, and the ICPN do not mention a similar case nor indication of automatically consider such subassociation as typical, although it should seem reasonable. Thus, we are face with the paradox of an association without a typical subassociation and a subassociation that is not typical. In any case, for nomenclatural clarity we have considered the epithet *typicum* for the subassociation defined by relevés 1-5 (Fernández & Santos, 1984, table 2) and typified by rel. 4.

Furthermore, it is not appropriate to change the name of the Cuban association from *Salicornietum perennis* Samek 1973 to *Sarcocornietum perennis* Samek 1973 *nom. mut. propos.* (Galán de Mera *et al.*, 2015). It does not matter if the Cuban association is under the name *Salicornietum perennis* or *Sarcocornietum perennis*, both names are earlier homonymous of the name *Sarcocornietum perennis* M. Fernández & A. Santos 1984, a name illegitimate but validly published. We have to take into account that *Salicornietum perennis* Samek 1973 and *Sarcocornietum perennis* M. Fernández & A. Santos 1984 are derived from a nomenclatural synonym, homotypic taxa (Art. 32b) and this must be considered for all purposes. We have already rejected the later homonym *Sarcocornietum perennis* M. Fernández & A. Santos 1984 and it will be absurd to reject *Sarcocornietum perennis* Samek 1973

nom. mut. propos. as it could be interpreted from Art. 45b. For a differentiated treatment, it would be appropriate to distinguish between nomenclatural homonyms based on names with the same nomenclatural type (homotypic) and homonyms based on names with different nomenclatural types (heterotypic; Art. 45).

On the other hand, the species of *Salicornia* referred by Samek (1973) is *Salicornia ambigua* Michx. (= *Sarcocornia ambigua* (Michx.) M.A. Alonso & M.B. Crespo), a species from the Atlantic coasts of USA, Cuba and adjacent islands (Alonso & Crespo, 2008). Based on the ICPN, Art. 43, this fact leads us to the correction of the name *Salicornietum perennis* Samek 1973 to *Salicornietum ambiguae* Samek 1973 *nom. corr. hoc loco* Del Arco, Izco & O. Rodríguez.

Additional comment

Regarding to *nomina nova* names, as in *Zygophyllo fontanesii-Sarcocornietum perennis*, we would like to comment respect to the floristic composition of the holotypus that can be of general interest for phytosociological nomenclature purposes. The *nomina nova* has to have the same type that the replaced names (Art. 39a). The new name must form from the existing taxa in such relevé to accomplish with Art. 16. This rule is too strong for some old names and the rules that were mandatory for them when they were published should apply for the replacement names, but the present code does not consider it. Provisions to prevent this collision between Art. 39a and Art. 16 could be developed, over all when it is not possible to create a new name from the existing species in the type.

Conclusions

Halimiono portulacoidis-Salicornietum perennis (M. Fernández & A. Santos 1984) Del Arco, Izco & O. Rodríguez *nom. nov.*
[Replaced name: *Sarcocornietum perennis* M. Fernández & A. Santos 1984 in *Lazaroa* 5 (1983): 148, 1984, *nom. illeg.* (Art. 31); *Holotypus*: relevé 4, Table 2].

[= *Zygophyllo fontanesii-Sarcocornietum perennis* (M. Fernández & A. Santos 1984) Galán, A. García & Martínez-Quesada 2015, *nom. invalidum* (Art. 16)].

subass. *typicum* Del Arco, Izco & O. Rodríguez *subass. nova*

[*Holotypus*: *Sarcocornietum perennis* M. Fernández & A. Santos 1984 in *Lazaroa* 5 (1983): 148, 1984; relevé 4, Table 2 (Art. 2b, sufficient original diagnosis; Art. 26)].

subass. *limonietosum canariensis* (M. Fernández & A. Santos 1984) Del Arco, Izco & O. Rodríguez, *comb. nov.*

[*Basionym*: *Sarcocornietum perennis* M. Fernández & A. Santos 1984 subass. *limonietosum canariensis* M. Fernández & A. Santos 1984 in *Lazaroa* 5 (1983): 150, 1984; *Holotypus*: relevé 7, Table 2].

[= *Zygophyllo fontanesii-Sarcocornietum perennis* (Fernández & Santos) Galán, A. García & Martínez-Quesada 2015 “subass. *limonietosum canariensis* Fernández & Santos 1983”, *nom. invalidum* (Art. 3i, Art. 26)].

The nomenclature of the Cuban community involved is as follows:

Salicornietum ambiguae Samek 1973 *nom. corr.* Del Arco, Izco & O. Rodríguez 2017 (Art. 43, Art. 48)

[*Basionym*: *Salicornietum perennis* Samek 1973 in *Acad. Ci. Cuba*, ser. For. 18: 46, 1973; *Lectotypus*: Borhidi 1996: 526, relevé 6, tab. 108. Note: This is a transcription of relevé reference number 97, Table XII, Samek 1973, which constitutes the lectotype (Art. 39a)].

[= *Sarcocornietum perennis* Samek 1973 *nom. mut. propos.* Galán de Mera *et al.* 2015].

Authors of syntaxon names are according to Izco (2002).

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