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Nomenclatural notes on *Sarcocornia perennis* (Mill.) A. J. Scott (Amaranthaceae)

Ana Guilló, M. Ángeles Alonso, Ana Juan & Manuel B. Crespo

Abstract

GUILLÓ, A., M. Á. ALONSO, A. JUAN & M. B. CRESPO (2011). Nomenclatural notes on *Sarcocornia perennis* (Mill.) A. J. Scott (Amaranthaceae). *Candollea* 66: 331-335. In English, English and French abstracts.

Some nomenclatural comments are reported on *Sarcocornia perennis* (Mill.) A. J. Scott (= *Salicornia perennis* Mill.) (Amaranthaceae), a plant widely distributed in the saline areas of Western Europe and the Mediterranean basin. On the one hand, historical data on related taxa, including pre-Linnaean polynomials, are discussed. On the other, a neotype is selected to fix the use of the name, and a list of synonyms is also presented.

Key-words

AMARANTHACEAE – *Salicornia* – *Sarcocornia* – Nomenclature – Typification

Résumé

GUILLÓ, A., M. Á. ALONSO, A. JUAN & M. B. CRESPO (2011). Notes nomenclaturales sur *Sarcocornia perennis* (Mill.) A. J. Scott (Amaranthaceae). *Candollea* 66: 331-335. En anglais, résumés anglais et français.

Des commentaires nomenclaturaux sont présentés sur *Sarcocornia perennis* (Mill.) A. J. Scott (= *Salicornia perennis* Mill.) (Amaranthaceae), une espèce des régions salines d'Europe occidentale et du bassin méditerranéen, et sur plusieurs synonymes. Les données historiques en lien avec ces noms, y compris certains polynômes pré-linnéens, sont discutées. Un néotype est choisi pour fixer l'usage de ce nom.

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Introduction

The genus *Sarcocornia* A. J. Scott (*Amaranthaceae*, sensu APG III, 2009) was proposed to group dwarf shrubs, erect to prostrate, sometimes rooting at nodes, with sessile flowers inserted at the same level on the inflorescence axis, and seeds without perisperm, fleshy pericarp and papillose or hairy testa (SCOTT, 1977). Species of that genus are widespread almost in all continents (cf. KADEREIT & al., 2006), growing on saline soils, usually near the coast or in inland salt marshes of arid and semiarid regions all over the world.

Sarcocornia includes c. 25–26 species (cf. KADEREIT & al., 2006; STEFFEN & al., 2010). Two of them grow on the Atlantic coasts of Europe, extending southwards into the Mediterranean to Turkey. In America, c. 8 species are found, both near the coasts and in the Andine high plateaus and inland North America. In Africa, c. 14 species grow either on the Mediterranean coast in the north, or in South Africa, Namibia and Mozambique. Finally, other 3 taxa grow in Australia, New Zealand and Tasmania.

In Europe, two species are widely accepted: *S. perennis* (Mill.) A. J. Scott and *S. fruticosa* (L.) A. J. Scott. A number of subspecies and varieties have been described on the basis of small morphological differences which are mostly due to ecological causes. Both taxa are easy to distinguish according to features of stems and seeds. The former has stems rooting at the nodes and the seed testa is covered with short and hooked hairs, whilst the latter shows stems mostly not rooting and seed testa minutely tuberculate. However, that pattern can be disturbed by hybridization processes (cf. CASTROVIEJO & COELLO, 1980) as well as phenotypic plasticity in the stressful environments they usually share.

Background

Several pre-Linnaean authors have focused on European taxa of the *Salicornia-Sarcocornia* alliance and many polynomials have been applied to taxa in this aggregate. Descriptions by that time were short and poorly detailed, and usually did not refer features that are currently crucial for species identification (e.g. annual vs. perennial habit, and rooting vs. non-rooting stem). In the case of the woody taxa of *Sarcocornia* it is usually difficult to ascertain whether polynomials refer to *S. perennis* or *S. fruticosa*.

LINNAEUS (1753) accepted *Salicornia*, a genus name he had taken after TOURNEFORT (1703), to place two species in which he included many of the preexisting polynomials. On the one hand, *S. europaea* L. included two varieties: var. *herbacea* L. for annuals from France that SAUVAGES (1751) had named *Salicornia annua*; and var. *fruticosa* L. for woody perennials called *Kali geniculatum majus* by BAUHIN (1623) or *Salicornia sempervirens* by SAUVAGES (1751). Both taxa were quoted

to belong probably to different species. On the other hand, Linnaeus described *S. arabica* L. and cited again in synonymy BAUHIN's *Kali geniculatum majus* (1623), by error. In the second edition of *Species plantarum*, LINNAEUS (1762) raised var. *fruticosa* to the species rank as *S. fruticosa* (L.) L., to which he synonymised taxa of SAUVAGES (1751) and BAUHIN (1623), and corrected synonymy of *S. arabica* to include now BAUHIN's *Kali geniculatum minus* (1623).

In a similar way, GOUAN (1762) recognised two entities in *S. europaea*, one of these being annual and the other perennial. The latter was named var. *perennis* Gouan and was said to correspond to plants described previously by TOURNEFORT (1703, as *Salicornia geniculata sempervirens*), SAUVAGES (1751, as *Salicornia sempervirens*) and MAGNOL (1676, as *Kali geniculatum maius sempervirens*), being implicitly synonyms of the Linnaean *S. fruticosa*. All those plants were said to grow in the Mediterranean coast of southern France.

The binomial *S. perennis* Mill. was validly published by MILLER (1768). Together with a short description, he cited as synonym *Kali geniculatum perenne fruticosius* [sic] *procumbens*, a polynomial that RAY (1696) applied in the second edition of his *Synopsis* to plants found “propè insulam Shepey [sic]” by Mr. Hans Sloane. The same polynomial and description was reproduced later in the third edition of this work (RAY, 1724) and new data were added, including a new locality (“copiosius provenit in Insula Thamesis Grain vocata”) and references to the description of *Kali geniculatum sive Salicorniae* in BAUHIN & CHERLER (1651: 704) and the illustration on the preceding page (under *Kali minus, sive Sedum minus arborescens vermiculatum*). Miller's name is the type of the name of the genus *Sarcocornia*, described by SCOTT (1977).

Several names were proposed later for European woody plants very close to *Salicornia perennis*, most of them being indeed synonyms. This created a very confusing taxonomic scenario still not fully resolved. First, SMITH (1807) described and illustrated *S. radicans* Sm., a perennial plant he separated from *S. fruticosa*, on the basis of his previous (SMITH, 1800) *S. herbacea* β, which he had first stated erroneously to be annual. According to the data in the protologue that includes a good illustration, this plant is a synonym of *S. perennis* as indicated by BALL (1993), and not of *Arthrocnemum fruticosum* (L.) Moq. as suggested by both MOQUIN-TANDON (1840) and UNGERN-STERNBERG (1866). By that time, TENORE (1831) accepted several infraspecific taxa in *Salicornia fruticosa*, one of them (β *humilis* Ten.) fits the current concept of *S. perennis*. That name was partly the basis on which DUVAL-JOUBE (1868) founded his *S. sarmentosa* Duval-Jouve, a plant occurring in Camargue (southern France) that he regarded to be different from *S. fruticosa*, and with which it lived together. This latter author also added ‘an *S. radicans* Smith (non auct. Gall.)?’ in synonymy of his species, indicating a probable close

affinity to *S. perennis*. In fact, Duval-Jouve described his new species in a very accurate and detailed way that facilitates taxonomic identification with *S. perennis*. The reference to the prostrate, rooting stems that formed wide patches c. 1–2 m in diameter, only green at the periphery (“tiges nombreuses, à peine ligneuses, sarmenteuses, très-divisées, grêles, couchées, ascendantes, radicante vers leur base et s’étalant en larges plaques de 1 à 2 mètres de diamètre, de desséchées au centre et fraîches vers la circonférence.”) and the seed testa indument which is composed by hooked and curved hairs (“graine... couvert de poils oncinés ou courbes dirigés en tout sens”), are two features that undoubtedly point to synonymisation with *S. perennis*.

In the first comprehensive monograph of *Chenopodiaceae*, MOQUIN-TANDON (1840) segregated some woody taxa of *Salicornia* in the new genus *Arthrocnemum*, and maintained in *Salicornia* the annuals. No mention was made to *S. perennis*, though his *Arthrocnemum fruticosum* var. *radicans* (Sm.) Moq. (= *Salicornia radicans*) matches the current concept of the former. MOQUIN-TANDON’S (1840) segregation of the woody taxa of *Salicornia* in *Arthrocnemum* was fully adopted by UNGERN-STERNBERG (1866), though with a different specific arrangement.

WOODS (1851) described *Salicornia lignosa* Woods from plants collected in ‘Haling Island’ (southern coast of England), as being different from the annual *S. herbacea*. He remarked some resemblances with *S. radicans* (e.g. the diffuse growth), though concluded that neither both taxa were conspecific nor *S. lignosa* should be considered a variety of *S. fruticosa*. Contrarily to his opinion, *S. lignosa* is here synonymised to *S. perennis* on the basis of the seed testa, which again is “clothed in the same manner with hooked hairs” (WOODS, 1851: 30), as in *S. perennis*. Other morphological characteristics invoked as diagnostic between *S. lignosa* and *S. radicans* (*S. perennis*), such as the thickness and firm structure of the lower part of the plant in the former species (WOODS, 1851: 31), are very variable in wild populations and therefore lack in our opinion taxonomic significance.

More recently, SCOTT (1977) split some shrubby *Salicornia* in the new genus *Sarcocornia*, which had the name *Salicornia perennis* as type. However, BALL (1993) applied Moquin-Tandon’s concept of *Arthrocnemum* for all European woody *Salicornia* and sunk *Sarcocornia* in the latter, making a treatment equivalent to that of MOSS (1954) for the South African taxa.

Typification and synonymy

In the protologue of *Salicornia perennis*, MILLER (1768) transcribed a previous description and comments of RAY (1696) for *Kali geniculatum perenne fruticosius* [sic] *procumbens*,

though making a direct reference to materials collected by Sloane in Sheppey Island, near London. However, no original materials of that taxon are currently extant in the Sloane herbarium (Spencer, *pers. comm.*), at the Natural History Museum of London (BM). As no other element is available for typification in the cited protologue, a neotype is selected.

Salicornia perennis Mill., Gard. Dict. ed. 8: *Salicornia* n° 2. 1768.

- = *Sarcocornia perennis* (Mill.) A. J. Scott in Bot. J. Linn. Soc. 75: 367. 1977.
 - = *Arthrocnemum perenne* (Mill.) Moss in J. S. African Bot. 14: 40. 1948.
- Neotype** (here selected): “*Salicornia radicans*. Isle of Sheppey-Kent; c. 1850. Coll. ? Dr. B. Thompson Lowne”, K [K000450665] (Fig. 1).
- = *Salicornia herbacea* β Sm., Fl. Brit.: 2. 1800. *Salicornia radicans* Sm. in Sowerby & Sm., Engl. Bot.: sub tab. 1691. 1807. = *Arthrocnemum fruticosum* β *radicans* (Sm.) Moq., Chenop. Monogr. Enum.: 112. 1840. **Type**: not seen, synonymisation from description & illustration.
 - = *Salicornia lignosa* Woods in Bot. Gaz. (London) 3: 31. 1851. **Type**: not seen, synonymisation from description.
 - = *Salicornia sarmentosa* Duval-Jouve in Bull. Soc. Bot. France 15: 174. 1869. **Type**: not seen, synonymisation from description.
 - = *Salicornia fruticosa* β *humilis* Ten., Syll. Pl. Fl. Neapol.: 582. 1831. **Type**: not seen, synonymisation from description.

Observations. – Although CASTROVIEJO & COELLO (1980) made a type indication by literal reference to the locality of *S. perennis* in Miller’s protologue, it can not be accepted as a formal typification, since no type element was selected.

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Fig. 1.- Neotype of *Salicornia perennis* Mill.

[Thompson Lowne s.n., K] [© The Board of Trustees of the Royal Botanic Gardens, Kew. Reproduced with permission]

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