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Authors: Uotila, Pertti, Sennikov, Alexander N., and Danin, Avinoam

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PERTTI UOTILA<sup>1\*</sup>, ALEXANDER N. SENNIKOV<sup>2</sup> & AVINOAM DANIN<sup>3</sup>

## The nomenclature of *Portulaca oleracea* and *P. sativa* (*Portulacaceae*)

### Abstract

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The name of the common purslane, *Portulaca sativa*, is lectotypified with an illustration from Lobel's *Plantarum Seu Stirpium Icones* and a supporting epitype specimen is designated. *P. officinarum* is shown to be a superfluous, though formally legitimate, name for *P. oleracea*. Confirmed records of *P. sativa* s.str. for several European and Mediterranean territories are listed.

Additional key words: purslanes, Linnaeus, lectotypification, distributional data

### The pre-Linnaean taxonomic history of purslanes

Recognising two kinds of purslanes, cultivated and wild ones, dates already from the 1500s. Matthioli (1573) published two detailed drawings of plants named in Italian "*Portulaca domestica*" and "*P. salvatica*" [old Italian 'salvatica' = wild]. Somewhat later, Lobel (1576, 1581), without referring to Matthioli, provided his own descriptions and drawings of the same species named in Latin "*Portulaca domestica*" and "*P. sylvestris*". Dodoens (1583) reproduced the illustrations from Lobel but renamed "*Portulaca domestica*" to "*P. sativa*". The drawings of "*Portulaca domestica*" / "*P. sativa*" show larger capsules and leaves and a more erect habit than those of the wild "*Portulaca salvatica*" / "*P. sylvestris*". These are the most important features used to separate the cultivated and wild purslanes from each other still during the present days.

Bauhin (1623) recognised five species of *Portulaca*, of which two, "*Portulaca latifolia*, seu sativa" and "*P. angustifolia* sive sylvestris", reflect the division of purslanes into cultivated and uncultivated taxa. Under the first name he listed several synonyms published by earlier authors: "*P. hortensis*", "*P. domestica*", "*P. sativa*", "*P. major*", "*P. latioribus foliis*", which fit very well to cultivated plants. On the other hand, the earlier synonyms of the second name ("*P. sylvestris*", "*P. arvensis*", "*P. spontè nascens*", "*P. minor*", "*P. angustioribus foliis*") are referable to non-cultivated plants.

### *Portulaca oleracea* and *P. officinarum*

Linnaeus (1753: 445) validly published *Portulaca oleracea* in the first edition of his *Species Plantarum*, supplying it with the diagnostic phrase name "*P. foliis*

1 Botanical Museum, Finnish Museum of Natural History, P.O.Box 7, 00014 University of Helsinki, Finland; \*e-mail: [pertti.uotila@helsinki.fi](mailto:pertti.uotila@helsinki.fi) (author for correspondence).

2 Botanical Museum, Finnish Museum of Natural History, P.O.Box 7, 00014 University of Helsinki, Finland; & Herbarium, Komarov Botanical Institute of Russian academy of Sciences, Prof. Popov str. 2, 197376 St Petersburg, Russia; e-mail: [alexander.sennikov@helsinki.fi](mailto:alexander.sennikov@helsinki.fi)

3 Department of Ecology, Evolution, and Behavior, The Hebrew University of Jerusalem, 91904 Jerusalem, Israel; e-mail: [danin@vms.huji.as.il](mailto:danin@vms.huji.as.il)

cuneiformibus, floribus sessilibus” that was borrowed in a shortened form from Linnaeus (1737). The Linnaean species included both cultivated and uncultivated strains. Although it was the wild plants that were implied for the “species proper” (Sprague 1955), the cultivated plants were also included under the unnamed variety  $\beta$  with references to “*P. latifolia sativa* Bauh. pin. 288” and “*P. domestica* Lob. ic. 388”. The name *P. oleracea* was lectotypified by the specimen 625.1 in LINN (Geesink 1969; see Jarvis 2007), which belongs to one of the wild taxa that was formerly called *P. stellata* (Danin & H. G. Baker) Ricceri & Arrigoni (Danin & al. 2008).

Crantz (1766) published *Portulaca officinarum* Crantz with exactly the same diagnosis as the validating phrase name of *P. oleracea* in Species Plantarum (Linnaeus 1753). He omitted the earlier synonyms listed by Linnaeus, except for the element “*P. domestica* Lob. Icon. 388”, which he placed in the unnamed variety  $\beta$  as Linnaeus did. Similarly, the diagnosis for his *P. lanuginosa* Crantz (“*P. foliis subulatis alternis: axillis pilosis, floribus sessilibus terminalibus*”) is the same as the validating phrase name of *P. pilosa* L. (Linnaeus 1753: 445) (“*P. foliis subulatis alternis: axillis pilosis, floribus sessilibus*”) except for adding the word “terminalibus” at the end of the phrase. In the preface to his book, Crantz (1766, 1: LI) explains that he maintained “definitions” (diagnostic phrase names) of species mostly from Linnaeus (implying the second edition, up to date at that time, of his Species Plantarum). Crantz’s description of *P. officinarum*, copied from the Linnaean diagnostic phrase name of *P. oleracea* (Linnaeus 1762: 638 but identical with Linnaeus 1753), constitutes an indirect reference to the Linnaean species (Vienna Code, Art. 32.6, with Ex. 10, McNeill & al. 2006), which is therefore included in the concept of *P. officinarum*. Consequently, the Crantz’s name is a superfluous substitute for the earlier validly published name *P. oleracea* L., even though the epithet *oleracea* is not explicitly mentioned by Crantz (1766), and its nomenclatural type is that of *P. oleracea* L. (Art. 7.3). The same concerns *P. lanuginosa* Crantz, which is a superfluous substitute for *P. pilosa* L. The epithets of the other three *Portulaca* species in Crantz (1766) are accepted after Linnaeus (1753), along with their validating phrases.

Curious enough, the superfluous replacements in *Portulaca*, published by Crantz, are not illegitimate under the revised provisions for illegitimacy as defined in Art. 52 of the Vienna Code (McNeill & al. 2006). When referring to Linnaean species, Crantz consistently did so by quotation of Linnaean phrase names, but polynomials, although having been names in 18th century, are not names under the present rules (Art. 6.3 Vienna Code). A name is illegitimate if its protologue includes the type or all syntypes of a previously published legitimate name which epithet is to be adopted, or if that earlier name itself or its homotypic synonyms are cited (Art. 52.2 Vienna Code). The Linnaean names in *Portulaca* had neither holotypes

nor syntypes, and without citation of such earlier names the later names may not be illegitimate even if their concept is congruent with (or at least fully inclusive of) that of the earlier names.

Otherwise, if the name *Portulaca officinarum* were not considered superfluous, it should have been typified separately. In Crantz’s herbarium at the Hungarian Natural History Museum (BP) there is no material of *P. officinarum* or other *Portulaca* species (Keller 1943). The protologue of *P. officinarum* includes a reference to the illustration of *P. domestica* of Lobel (1581), and this illustration is the only extant material connected with Crantz, which consequently might be designated as the lectotype of *P. officinarum*. This would have changed the name of the common cultivated purslane, because this illustration is referable to *P. sativa*, and the obscure name *P. officinarum* predates the familiar *P. sativa*. In such a case the conservation of *P. sativa* would have been needed to maintain the traditional name of cultivated purslane.

To the best of our knowledge, the name *Portulaca officinarum* has not been accepted after its original publication.

***Portulaca oleracea* L., Sp. Pl.: 445. 1753  $\equiv$  *Portulaca officinarum* Crantz, Inst. Herb. 2: 428. 1766. – Lectotype (designated by Geesink 1969: 292; see also Jarvis & al. 1993, Jarvis 2007): *Löfling s.n.*, Herb. Linn. No. 625.1 (LINN).**

### ***Portulaca sativa***

Haworth (1803) picked the historical epithet from Dodoens and Bauhin and described the cultivated purslane as *Portulaca sativa* Haw. He provided an original description of the taxon, citing no herbarium specimen but including five references to previous publications: “*P. oleracea*  $\beta$  Linn. Sp. Pl. 1. 639. – Willd. Sp. Pl. 1. 859. – *P. latifolia sativa* Bauh. Pin. 288. 1. – *Portulacca*  $\alpha$ . Linn. Hort. Clif. 207. – *P. domestica* Lobel. Ic. 388”. All these references clearly belong to cultivated plants.

Adrian Hardy Haworth (1768–1833) cultivated and studied succulent plants in his garden at Chelsea. He did not always prepare herbarium specimens of his new taxa, and most of the specimens in his herbarium were later discarded by Henry Borron Fielding, who had bought the herbarium (Staffeu & Cowan 1979). According to Lanjouw & Staffeu (1957) some of his material is in Kew (K) and the Fielding herbarium (OXF). No specimen of *Portulaca sativa* was traced at K. At OXF, the only specimen of *Portulaca* from Haworth is labelled as *P. foliosa*. Among the historical collections in OXF there is a specimen by Jacob Bobart the Younger (1640–1719), named *P. sativa* and looking like such from the picture (The Oxford Plant Systematics and Diversity research group 2011). The written information on the sheet is limited to the name “*P. sativa*” [manu Bobart]. Bobart had a copy of Bauhin’s Pinax, which he provided with annotations

(at present in BM: Jackson 1886). So the name on the sheet refers to Bauhin's (1623) "*P. sativa*". However, it is not known whether Haworth would have visited Oxford during his lifetime and seen the Bobart herbarium. In the absence of herbarium material the picture of "*P. domestica*" in Lobel (1581), cited in the protologue of *P. sativa*, is designated here as the lectotype of *P. sativa* Haw.

However, the drawing cannot be determined to the microspecies level, according to the present-day taxonomy, because the seed size and seed surface characters, essential for the recognition of microspecies in the *Portulaca oleracea* aggr. (e.g. Danin & al. 1978, 2008; Danin & Bagella 2012), have not been illustrated. Thus an epitype is designated here to support the lectotype of *P. sativa*. The provenance of the epitype specimen belongs to the area where German, English, French, Spanish, Portuguese and Italian vernacular names listed under "*Portulaca domestica*" by Lobel (1576) are in use.

*Portulaca sativa* Haw., Misc. Nat.: 136. 1803 ["*Portulacca sativa*"].

Lectotype (designated here): [icon] *Portulaca domestica* in Lobel, Plantarum seu stirpium icones: 388. 1581. Epitype (designated here): Switzerland, Carouge, near Genève, 8.1899, *Chenevard* (G).

#### Verified distributional data for *Portulaca sativa*

The name *Portulaca sativa* has been used at species level in the literature of cultivated plants and in garden plant catalogues, but in floras and checklists this taxon is mostly treated as a variety or subspecies of *P. oleracea*. In the most recent treatment, in Euro+Med PlantBase (Uotila 2011), the taxa of the *P. oleracea* aggr., based on seed characters, are accepted as microspecies, i.e. at species level. In the database, records of *P. oleracea* subsp. *sativa* and var. *sativa* in European floras and checklists are accepted to provide the occurrence data of *P. sativa*, because the cultivated purslane in European floras and checklists seems to correspond well to the concept of *P. sativa* as defined by the epitype specimen. For instance, specimens of cultivated purslanes seen from Europe belong to *P. sativa*. On the other hand, all revised specimens of *P. sativa* with known provenance represent cultivated plants. Obviously, other European microspecies of the *P. oleracea* aggr. have not been generally cultivated, even though all of them are edible as well (Bosi & al. 2009). However, herbarium material of cultivated purslanes, especially with seeds, is scant, and so far too few specimens have been revised from European and Mediterranean territories.

With the description of another cultivated species of purslanes separated from *Portulaca sativa* s.l. (Danin & Bagella 2012), the identity of previous records of *P. sativa* is to be confirmed. Verified specimens of *P. sativa* s.str. have been already published from Switzerland (Danin & al. 2008), Finland and Asiatic Turkey (Danin

2011), Germany and Italy (Danin & Bagella 2012). Some newly confirmed European and Mediterranean records are added here on the basis of representative specimens: BELGIUM: Haven Van Gent, 27.9.1984, *Robbrecht & Jongepier* (ME); Huy, Décombres, 8.1912, *Henin* (LG). — FRANCE [Ga(F)]: Comines (cultivated), 9.1951, *Baily* (ME). — GERMANY: [Pfalz / Palatinate], Deidesheim 13, *Schultz Bipontinus* (M). — ISRAEL: HaYogev, cultivar, 8.2007, *Barazani* (HUJ). — RUSSIA [Rf(NW)]: Leningrad Region, Karelia australis, Räisälä, garden of the Rectory, previously cultivated, 27.8.1926, *Hiitonen* (H 699499).

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