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Typification and taxonomic status of *Portulaca macrantha* (*Portulacaceae*)

Abstract

Domina, G., Schäfer, P. A. & Danin, A.: Typification and taxonomic status of *Portulaca macrantha* (*Portulacaceae*). — Fl. Medit. 20: 187-191. 2010. — ISSN 1120-4052.

The name *Portulaca macrantha* (Maire) Ricceri & Arrigoni and its basionym, *P. oleracea* var. *macrantha* Maire, from Morocco, are lectotypified. Seed micromorphology demonstrates that the species is distinct from the closely related *P. papillatostellulata* and *P. rausii*. It does not occur in Italy.

Key words: *Portulaca oleracea* aggr., N. Africa, Italy, Purslane.

Introduction

During the revision of *Portulaca* in Italy for the second edition of the *Flora d'Italia* by Pignatti & al., the original material belonging to the species of *Portulaca* reported from Italy has been revised.

In the first edition of the *Flora d'Italia* (Pignatti 1982) only *Portulaca oleracea* L. subsp. *oleracea*, *P. oleracea* subsp. *sativa* (Haw.) Čelak. and *P. grandiflora* Hook. are reported. The first, subcosmopolitan, was considered to be doubtfully native, the second was reported as cultivated and often naturalised, the third as occasionally escaping from cultivation. The studies by Danin & al. (1979) clearly showed that *P. oleracea* L. is not homogeneous but comprises a large number of unevenly distributed morphotypes, corresponding to distinct levels of polyploidy. The various taxa are uniform in vegetative morphology and can be distinguished only by seed size, seed-coat characteristics and chromosomes number. The taxa of this group were initially treated as subspecies (Danin & al. 1979) but were subsequently raised to specific rank on account of their reproductive isolation (Ricceri & Arrigoni 2000; Danin & Reyes-Betancort 2006).

The most recent accounts of *Portulaca* for the Italian territory are by Ricceri & Arrigoni (2000), Arrigoni (2006) and Danin & al. (2008). In the first *P. macrantha* (Maire) Ricceri & Arrigoni is proposed as the correct name for *P. papillatostellulata* (Danin & H. G. Baker)

Danin (*P. oleracea* subsp. *papillatostellulata* Danin & H. G. Baker). Original material of *P. macrantha* has now been studied, the name can be typified, and the taxonomic relationships of *P. macrantha* with the other taxa of the *P. oleracea* aggr. can be ascertained.

Material and methods

Original material was located in the Herbarium of the University Montpellier 2 [MPU] where Maire's herbarium is kept, during the project on the identification of African Plant Types funded by the Andrew W. Mellon foundation. Seeds were studied under the light microscope at magnifications of 500-1000 \times , and by scanning electron microscopy (Fig. 2). For that purpose, seeds were fixed onto metal stubs and coated with a 20 nm gold layer.

Results

Maire (1929), in the protologue, reported *P. oleracea* var. *macrantha* Maire from Agadir N'Ighir and Cap Ghir in Morocco and adds that it was cultivated in Algiers (Algeria) since 1926 for two generations, producing seeds with the same characteristics as those of the mother plant, but did not designate a holotype. In MPU, only one sheet of original material was found (Fig. 1), with two specimens: one collected on 3.4.1926 in Agadir, consisting of some fruiting branches of a plant collected and 3 envelopes with fragments and seeds, the other consisting of an envelope, to the left of the label, with fragments and seeds of the plants subsequently cultivated in Algiers. The material is well conserved and includes several mature seeds suitable for microscopic observation.

According to the ICBN (McNeill & al. 2006: Art. 8.2, 9.9) a single specimen can be designated as lectotype in order to fix the application of the name. We select the specimen collected near Agadir, excluding the envelope with subsequently cultivated material. The lectotype specimen fully agrees with the description in the protologue.

Portulaca macrantha (Maire) Ricceri & Arrigoni in Parlatores 4: 93. 2000 \equiv *P. oleracea* var. *macrantha* Maire in Bull. Soc. Hist. Nat. Afrique Nord 20: 18. 1929 \equiv *P. oleracea* subsp. *macrantha* (Maire) Maire in Jahandiez & Maire, Cat. Pl. Maroc 2: 195. 1932.

Lectotype (designated here): Morocco: "Dr. R. Maire ITER MAROCCANUM UNDECIMUM 1926 / *Portulaca oleracea* L. subsp. *macrantha* Maire in *rupestribus calcareis fino conspurcatis prope Agadir N'Ighir / 3.4*" [manu Maire] (MPU001992, Fig. 1, 2).

The diagnostic characters of *Portulaca macrantha*, as verified by the study of the lectotype specimen, can be summarized as follow: seeds > 0.85 mm in diameter, testa cells star-shaped, with papillae on the rays and small tubercles or papillae in the centre.

Portulaca macrantha clearly differs from *P. papillatostellulata* (Danin & H. G. Baker) Danin by its tuberculate (Fig. 2) rather than flat (Fig. 3) testa cells.

Portulaca rausii Danin, a species recently described from Sicily, shows some similarities with *P. macrantha*. These two species can be distinguished by the shape of the testa

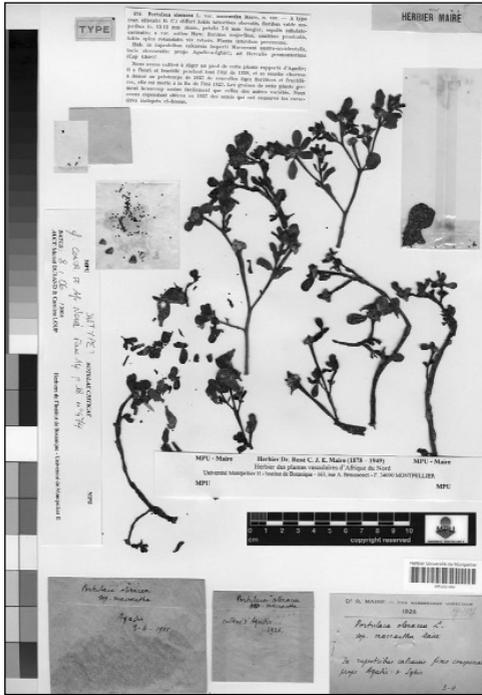


Fig. 1. The Lectotype of *Portulaca macrantha* (Maire) Ricceri & Arrigoni [Maire s.n., MPU001992] [©Herbarium of the University Montpellier II (MPU). Reproduced with permission].

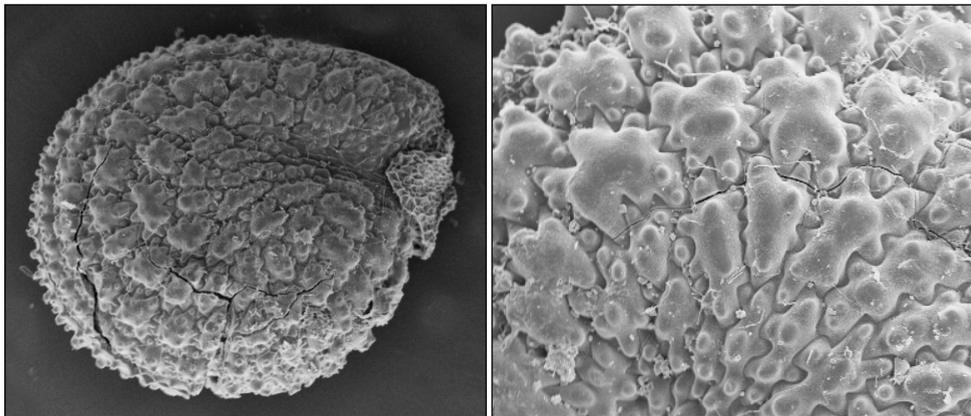


Fig. 2. Lectotype of *Portulaca macrantha* (Maire) Ricceri & Arrigoni [Maire s.n., MPU001992], SEM photographs of the seed [©Herbarium of the University Montpellier II (MPU) . Reproduced with permission].

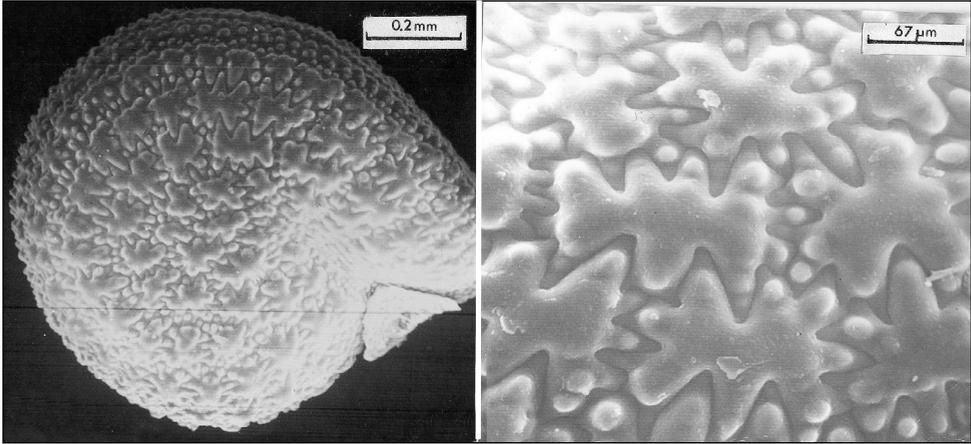


Fig. 3. *Portulaca papillatostellulata*: Palm Springs, California, Danin (from Danin & al. 1979) [reproduced with permission].

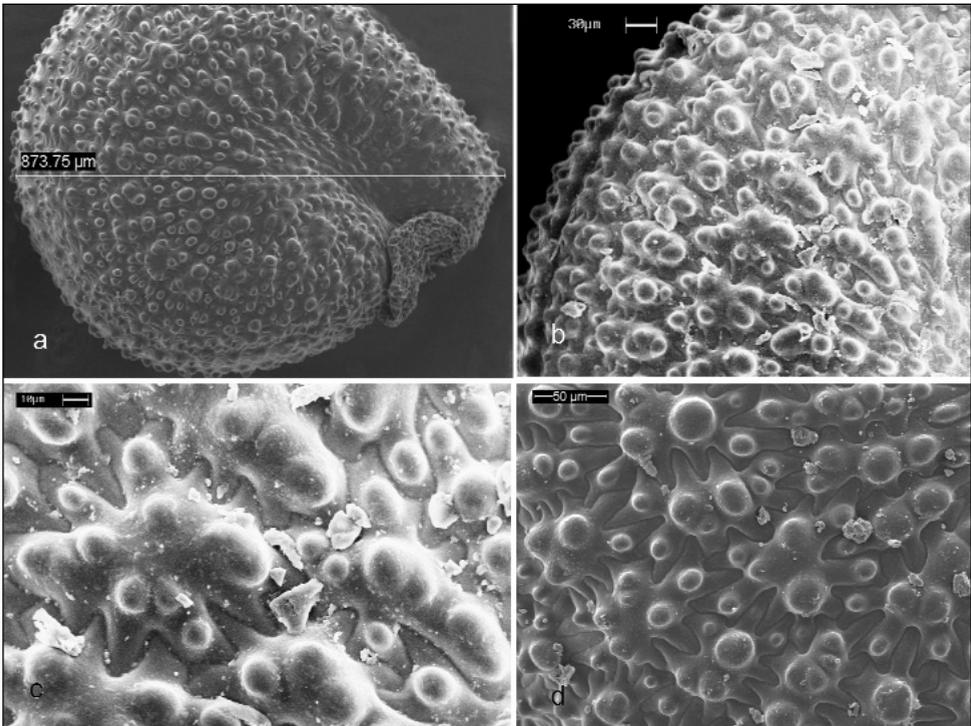


Fig. 4. *Portulaca rausii*: a, c, Rhodos, Arhipolli, 28.9.2005, Danin (HUJ); b, d, Sicily, Marsala, 18.9.2005, Danin & Domina (Huj, PAL) (from Danin & al. 2008) [reproduced with permission].

cells: mostly elongate in the Sicilian taxon, with numerous distinctive papillae on each cell (Fig. 4), versus few indistinct papillae and a mixture of isodiametric and elongate cells in the African one (Fig. 2).

Conclusion

Portulaca macrantha is a well differentiated taxon belonging to the *P. oleracea* aggregate, deserving the rank of an independent microspecies along with other previously recognised taxa. Its chromosome number remains to be ascertained. It does not occur in Italy, from where it was reported in error by Ricceri & Arrigoni (2000) and Arrigoni (2006).

Acknowledgements

Assessorato Agricoltura e Foreste della Regione Siciliana (L. R. 25/93) is gratefully acknowledged. We thank Dr. Carmela Di Libero, Dipartimento di Scienze Botaniche, Palermo, for the scanning electron microscopy.

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