



Studies on the genus *Atriplex* L. (Amaranthaceae) in Italy. III. *Atriplex macrodira* Guss.

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ABSTRACT *Atriplex macrodira* Guss. has been lectotypified and its close affinity to *Atriplex patula* L. is discussed. A new combination *Atriplex patula* var. *macrodira* stat. nov. is proposed.

Key words: Amaranthaceae, *Atriplex* L. sect. *Teutliopsis* Dumort, *Atriplex patula* L., Giovanni Gussone, new combination, typification

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INTRODUCTION

The genus *Atriplex* L. (Amaranthaceae) includes about 260 species that are mostly distributed in arid and semiarid regions of Europa, Asia, America and Australia (SUKHORUKOV & DANIN 2009).

The high morphological inter- and intraspecific variability had consequences in the taxonomy of the genus and several units (species, subspecies, varieties and forms) have been described, especially in earlier times (IPNI 2008). A consequence of this is a nomenclatural disorder caused by the misapplication of names.

Regarding Italy, some species described by GUSSONE (1844) need clarification. In this paper the identity of *Atriplex macrodira* Guss. is discussed. The work is part of a comprehensive study on the taxonomy and distribution, as well as biology of the genus *Atriplex* in Italy (IAMONICO 2010a, 2010b, 2011). The work is based on an extensive analysis of the literature, on personal investigation and on examination of specimens kept in the following Herbaria: CAT, FI, LINN, NAP, PAL and RO. Pictures of Linnean specimens are available on the web (LINNEAN SOCIETY COLLECTIONS ONLINE 2009).

LITERATURE ANALYSIS

A. macrodira was first described from Sicily (southern Italy) in 1844 “*In cultis erbosis; Palermo a Boccadifalco, a Monregale, Catania...*” (GUSSONE 1844). DE CANDOLLE (1849) reported *A. macrodira* as “*Species non satis notæ*” and provided a short description (including a part of the protologue by GUSSONE 1844) and the locality “*In Sicilia*”. BERTOLONI (1854) proposed *A. macrodira* as a variety (“*Varietas β*”) of *A. angustifolia* Sm. [*A. angustifolia* var. *macrodira* (Guss.) Bertol.] and indicated that it differs from the typical form in having the lateral lobes of the fruit bracts dentate (“*perigoniis fructus juxta cuspidulos laterales parce dentatis*”); the locality “*Panormo alle Grazie*” was reported. ARCANGELI (1882) proposed the new combination *A. patula* subsp. *macrodira* (Guss.) Arcang. for plants with dentate lateral lobes of the fruit bracts (locality: “*Sicilia*”). The author made the same choice in a subsequent work (ARCANGELI 1894). CESATI *et al.* (1884) included *A. macrodira* in the variability of *A. patula* (*A. patula β-macrodira*) highlighting the following diagnostic characters: bracts big with dorsally lanceolate tubercles and lateral dentate lobes (locality: “*In Sicilia*”).

CARUEL (1893) listed only the genera of Chenopodiaceae referring to BERTOLONI (1854) for the species. FIORI & PAOLETTI (1896-1898) considered *A. macrodira* as a form of *A. hastatum* var. *patulum* (sub *A. hastatum* ζ -*patulum* *c-macrodirum*) that was characterized by having the bracts longer than the seed and with large dorsal tubercles. BARONI (1907) did not report *A. macrodira*. FIORI (1925) indicated *A. hastatum* L. χ -*macrodirum* Tin. ex Guss. highlighting that the variety differs for the dimension of the bracts that are "...*assai più lunghe dell'achenio...*" ["...much longer than the achene..."]; he cited some regions of southern Italy as localities ("*Campan., Basil., Ischia., Sic. ecc.*"). AELLEN (1960) reported *A. patula* var. *angustifolia* (Sm.) Lange f. *macrodira* (Tineo) Graeb. that is characterized by the fruiting bracts "...*viel länger als die Frucht, fast dreieckig-spie ß-förmig, an den Öhrchen spärlich unregelmäßig gezähnt, an der Spitze vorgezogen, ganz grandig...*" ["...much longer than the fruit, almost triangular, with margin irregularly toothed, entire in the upper part..."]. Neither edition of the Flora Europaea (AELLEN 1964; AKEROYD 1993) quoted *A. macrodira*. Even ZANGHERI (1976) did not cite the species. In the more recent Italian flora, PIGNATTI (1982) cited *A. macrodira* as an extreme form of *A. patula* with foliaceous and dorsally tuberculate bracts. GREUTER *et al.* (1984) regarded *A. macrodira* as a doubtful synonym of *A. patula*. The recent Checklist of the Italian vascular flora and the subsequent update (CONTI *et al.* 2005; CONTI *et al.* 2007) also do not report the species. GIARDINA *et al.* (2007) accepted the name by ARCANGELI (1882) indicating the species as uncommon in "*Uncultivated ground and cultivations, also along the roads...*" in some Sicilian localities, most of them referring to literature (GUSSONE 1844; LOJACONO POJERO 1904; ZODDA 1908, 1929; PONZO 1929; CALVO *et al.* 1995).

TYPIIFICATION

Checking of the Herbaria allowed 10 specimens to be found that refer to *A. macrodira* (some collected by G. Gussone), three of which were kept in NAP in the Gussone collections, the others kept in RO and FI (see Specimina Visa). Based on the original detailed description of the species and on the localities reported (GUSSONE 1844), one of the exsiccata probably refers to the type specimens. Four labels (that are not pinned) are found in the sheet. A first label reports "*diff. ab angustifolia calycibus seminum undique muricatis a littorali calycibus seminum striatis undique sed minime ?atis. Settembre Bocca di Falco*". The second label reports "*Atriplex patula L.?... Ottobre...dal Torrente sotto Paradiso presso Boccadifalco*"; a detailed description was also provided. "*Caulis erectus vel adscendens 23 Ottobre Sotto Baida*" was written on the third label. The fourth label reports "*12. Atriplex macrodira*

Guss. Septembri, Octobri...In cultis herbosis". I suppose that the labels should be added in subsequent phases. G. Gussone noted an affinity of the plant with *A. angustifolia* Sm. (first label; September); subsequently he had a doubt on the determination of the plant and he reports "*Atriplex patula ? L.*" (second label; October); new examination of the plant allows Gussone to specify a character of the stem (third label; 23 October); at last, the collector decided to name the plant as *A. macrodira*, a new species (fourth label; September and October). In particular, the latter label allows the specimen to be established as a type of *A. macrodira*, reporting the two following elements:

1. the number "12", matches the code of *A. macrodira* reported in the protologue (GUSSONE 1844);
2. the words "*In cultis herbosis*", that is the same habitat cited in the protologue (GUSSONE 1844).

Regarding the locality, GUSSONE (1844) indicated "*Palermo a Boccadifalco...*" that is reported in the first and second labels.

The other two localities were also indicated in the protologue: "*Palermo...a Moregale...*" and "*...Catania*". A label in another sheet (that was also kept in NAP) reports "*A. macrodira Guss.! - Loc. Pianura di Catania - Ottobre - legit Gussone!*". This exsiccatum could be a syntype, referring to Catania city. As regard "*Monregale*", no specimens have been found; it is probable that G. Gussone did not collect any specimen but reported this locality only from field observations.

TAXONOMIC DISCUSSION

Based on analysis of the original description (GUSSONE 1844) and the specimens collected by G. Gussone, *A. macrodira* can be included in the Sect. *Teutliopsis* Dumort. that is characterized by the presence of herbaceous or cartilaginous fruiting bracts that are not clearly veined and have \pm dentate margins (AELLEN 1960). In particular, the species seems to be related with *A. patula*. This latter was described by LINNAEUS (1753) "*in Europe cultis, ruderatis*" as "*ATRIPLEX caule herbaceo patulo, foliis subdeltoideo-lanceolatis, calycibus feminum dicto dentatis*" and lectotypified by TASCHEREAU (1972) on a Linnean specimen (LINN 1221.19).

The comparison of type specimen of *A. patula* with the specimens of *A. macrodira* shows their morphological affinity, both in the shape of the leaves (the middle rhombic-hastate with cuneate base, the upper linear-lanceolate) and on the inflorescence (spicate, leafy only at base) and on shape of the fruiting bracts (rhombic and usually 2-lobed). Regarding the margin and the dorsal surface of the bracts, the plants collected by G. Gussone have the bracts dorsally tuberculate and the margins dentate (in the basal lobes) or entire (in the distal part), while the linnean type specimen

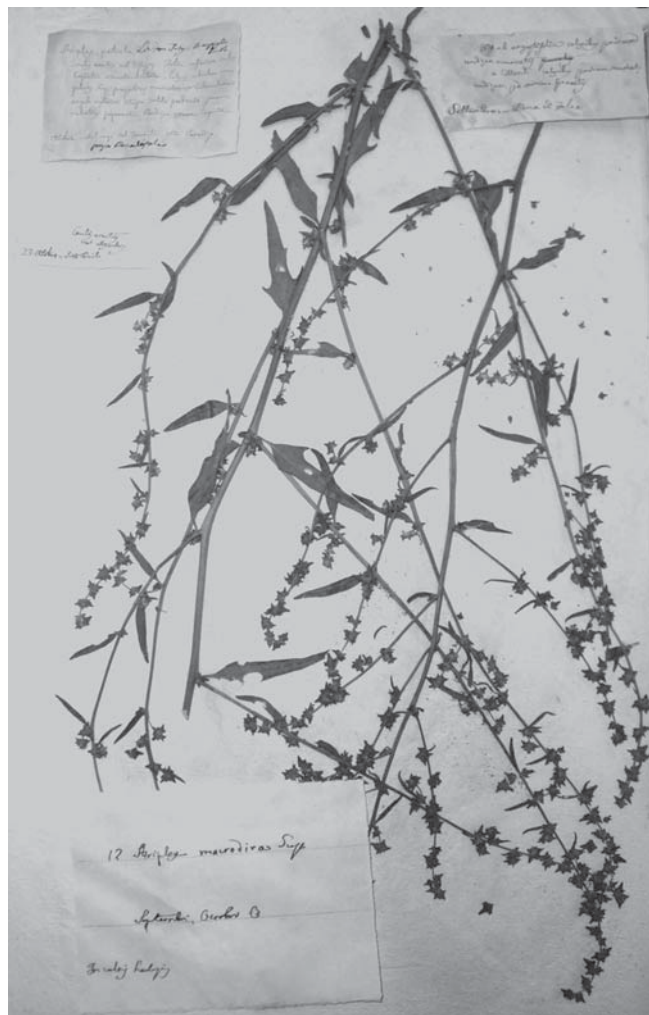


Fig. 1. Lectotypus of the name *Atriplex patula* L. var. *macrodira* (Guss.) Iamónico.

has the dorsal surface smooth or slightly tuberculate and the margins mostly entire. Examination of several specimens of *A. patula* (kept in RO, FI and in personal Herbarium of the author, Herb. Iamónico) shows variability of the characters of fruiting bracts, especially on the dorsal surface (smooth or slightly tuberculate) and margins (usually entire). This polymorphism has, moreover been reported in several important floras (e.g. AELLEN 1964; PIGNATTI 1982; CASTROVIEJO 1990; AKEROYD 1993; TAN 1997; JONSELL 2001; WELSH 2003).

Extensive analysis of literature, careful Herbaria investigations, comparison of the protologues and type specimens and examination of several exsiccata of *A. patula* has allowed the lectotype of the name *A. macrodira* to be designated.

As regard the taxonomic identity of this *taxon*, three considerations are being made:

1. the morphological features of *A. macrodira* are partially included in the variability of *A. patula*;

2. the distribution areas of both species are sympatric: *A. macrodira* is restricted to some region of central and southern Italy (Marche, Abruzzo, Puglia, Basilicat and Sicilia) and *A. patula* has a wide distribution (Europe, Asia, north America and, as alien, north Africa);
3. There are no shifts of ecological factors (e. g. the phenology).

So, the existence of separate species [*A. macrodira*, according to GUSSONE (1844)] or subspecies [*A. patula* subsp. *macrodira* (Guss.) Arcang. according to ARCANGELI (1882; 1894)] cannot be explained and the variety rank seems to be the better choice for the plant described by G. Gussone. The following new combination is proposed.

Atriplex patula L. var. *macrodira* (Guss.) Iamónico stat. nov.

Basionym: *Atriplex macrodira* Guss., Fl. Sicul. 2(2): 592 (1844)

Lectotype (here designated: NAP): Italia. Sicilia: Palermo a Boccadifalco, in cultis herbosis, IX et X (ante 1844), G. Gussone s.n. (Fig. 1).

≡ *Atriplex angustifolia* Sm. var. *macrodira* (Guss.) Bertol., Fl. Ital. (Bertoloni) 10: 420 (1854).

≡ *Atriplex patula* subsp. *macrodira* (Guss.) Arcang., Comp. Fl. Ital. (Arcangeli): 592 (1882).

≡ *Atriplex hastatum* L. var. *patulum* (L.) f. *macrodirum* (Guss.) Fiori & Paol., Fl. Italia 1: 306 (1896-1898).

≡ *Atriplex hastatum* L. var. *macrodirum* (Tin. ex Guss.) Fiori, Nuov. Fl. It. 1: 412 (1925).

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Specimina Visa

Atriplex patula L. var. *macrodira* (Guss.) Iamónico.

ITALIA, Marche: sub *Atriplex patula* L. v. *macrodirum* Tin. ex Guss., a Ripe, 16.X.1934, *sine collectore* s.n. (FI); **Abruzzo:** sub *Atriplex patula* L. b *macrodirum* (Guss.), Villavallelonga, 29.VIII.1903, *L. Grande* s.n. (FI); **Puglia:** Barletta, 1844, *A. Bruni* s.n. (FI); **Basilicata:** Lucania, Pignola, in arvis prope lacum, 800 m, 14.X.1893, *O. Gavioli* s.n. (FI); Potenza, Montereale, in ruderatis at que? in viaris, alt. 820 m, 18.IX.1936, *O. Gavioli* s.n. (RO); **Sicilia:** Palermo a Boccadifalco, in cultis herbosis, IX et X (ante 1844), *G. Gussone* s.n. (NAP); pianure di Catania, X (ante 1844), *G. Gussone* s.n. (NAP); Sicilia, X.1848, *G. Gussone* s.n. (NAP); Palermo, alla Grazia, *sine die* (ante 1849), *Tineo* s.n. (FI).

Atriplex patula L. s. s.

AUSTRIA, Vienna: Vienna, Ruderati, margini di strade, IX.1954, *sine coll. s.n.* (RO). **CROATIA, Istria:** Is. di Veglia, nel bosco di S. Elena pr. Veglia, 02.IX.1919, G. *Lusina s.n.* (RO). **ITALIA, Valle d'Aosta:** Aosta, X.1898, L. *Vaccari s.n.* (FI). **Veneto:** Venezia, al lido, VIII.1874, P. *Bargagli s.n.* (FI); Verona, lungo le mura, II.1890, *sine collectore s.n.* (FI). **Friuli-Venezia Giulia:** sub. *Atriplex hastatum* L. v. *patulum* (L.), valle (Natisone), 14.VIII.1901, M. *Minio s.n.* (FI). **Piemonte:** Torino, presso il Camposanto, 23.X.1899, *Ferrari s.n.* (RO); Dintorni di Torino, lungo Po, IX.1904, *Ferrari s.n.* (FI); margini di strada presso S. Anna di Valdieri, 1000 m, Val Gesso, 10.VIII.1962, P.G. *Bosso s.n.* (FI). **Liguria:** Genova, IX.1859, *sine collectore s.n.* (FI); Spezia, verso San Bartolomeo, X.1871, *sine collectore s.n.* (FI); Carrara, in cultis, X.1896, F. *Cortesi s.n.* (RO). **Emilia-Romagna:** Formigine, Prov. di Modena, 04.X.1883, *Adr. Fiori* (FI); sub. *Atriplex hastatum* L. v. *patulum* (L.), lungo il Rio della rocca a Ca di raggio nella marna turchina, Prov. di Reggio Emilia, IX.1899, *Adr. Fiori s.n.* (FI). **Toscana:** Negli orti a Castelfalfi Val d'Ervola, XI.1887, *sine collectore s.n.* (FI); Isola di Pianosa (Livorno), dal Paese all'Obelisco, 22.V.1998, R.M. *Baldini s.n.* (FI). **Marche:** sub. *Atriplex hastatum* L. v. *patulum* (L.), a S. Gregorio, 12.X.1945, *sine collectore s.n.* (FI). **Umbria:** Dintorni di Terni: né luoghi erbosi umidi, 12.IX.1893, *sine collectore* (FI). **Lazio:** Isola di Ponza, scendendo al Frontone, 16.X.1966, B. *Anzalone s.n.* (RO); M. Terminillo, Vallone Rio Fuggio (m 1000-1200) (verso Leonessa), 07.IX.1993, B. *Anzalone s.n.* (RO); Parco Naz. Del Circeo, Lago di Caprolace, X.1989, B. *Anzalone s.n.* (RO). **Abruzzo:** sub. *Atriplex hastatum* L. v. *patulum* (L.), in maritimis: Roseto, X.1949, *Zodda s.n.* (FI); L'Aquila, Laghi del Veroio, 28.IX.1972, B. *Anzalone s.n.* (RO). **Sardegna:** S.ta Margherita di Pula, Sardegna nord, X.1900, *Caneva s.n.* (FI). **Sicilia:** Sicilia, *sine die* (ante 1842), *sine collectore s.n.* (FI); Messina, *sine die* (ante XII.1866), *sine collectore s.n.* (FI). **ROMANIA, Transilvania:** in hortis ad Hajongart supra oppid. Cluj, alt. cca 410 m, 22.IX.1928, E.I. *Nyá rády s.n.* (RO).

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Botanica SERBICA



REZIME

Rod *Atriplex* L. (Amaranthaceae) u Italiji. III. *Atriplex macrodira* Guss.

Duilio IAMONICO

Atriplex macrodira Guss. je lektotipifikovan. U radu se diskutuje njegova sličnost sa *Atriplex patula* L. Daje se nova taksonomska kombinacija *Atriplex patula* var. *macrodira* stat. nov.

Ključne reči: Amaranthaceae, *Atriplex* L. sect. *Teutliopsis* Dumort, *Atriplex patula* L., Giovanni Gussone, nova kombinacija, tipifikacija

