

STUDIES ON THE GENUS *ATRIPLEX* L. (AMARANTHACEAE) IN ITALY. I. *ATRIPLEX* *PLATYSEPALA* GUSS.

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Resumen. Se tipifica *Atriplex platysepala* Guss. sobre un pliego conservado en el Herbario de la Universidad de Napoli “Federico II” (NAP). La consulta de la bibliografía, la comparación del material tipo y del protólogo con la de *A. prostrata* Boucher ex DC. y el estudio de otros material de herbario han permitido considerar *A. platysepala* sinónimo de *A. prostrata*.

Summary. *Atriplex platysepala* Guss. is typified on one herbarium specimen kept in NAP. The identity of the species is also clarified based on literature analysis, examination of type material and other specimens that allowed to include it in the synonym of *A. prostrata* Boucher ex DC.

INTRODUCTION

Atriplex L. (Amaranthaceae) is a genus of about 260 species mostly distributed in arid and semiarid regions of Europa, Asia, America and Australia (SUKHORUKOV & DANIN, 2009).

This genus is considered critical both for the high polymorphism (especially in the shape of the leaves and fruiting bracts) and for hybridization (AL-TURKI & al., 2000). Consequently, several units (species, subspecies, varieties and forms) were described, especially in the past (IPNI, 2008), favouring a nomenclatural disorder and a general complications in its taxonomy.

Regarding Italy, some species described by GUSSONE (1844) need a clarification. In this paper the identity of *Atriplex platysepala* Guss. is discussed.

The work is part of a more comprehensive study, carried out by the same author, on the taxonomy and distribution of the genus *Atriplex* in Italy.

MATERIALS AND METHODS

The work is carried out by extensive analysis of literature and investigation and esamination of the specimens kept in the Herbaria CAT, FI, G, NAP, PAL and RO.

RESULTS AND DISCUSSION

Literature analysis

A. platysepala was first described from Sicilia (southern Italy) in 1884 “*In erbosis cultis apricis; Piana de’ Greci, Corleone*” (GUSSONE, 1884). DE CANDOLLE (1849) reported *A. macrodira* as “*Species non satis notae*” and provided a description (including a part of the protologue by GUSSONE, 1844) and the locality “*In Sicilia*”; moreover he doubtfully indicated “*An A. hastatae varietas?*”. BERTOLONI (1854) included *A. platysepala* in the variability of *A. patula* L. (variety “ β ”), as a synonym (*A. triangularis* Willd. was also reported in the synonymy); the β -variety differs from the typical form in having the leaves smaller, mostly alternates, succulents, subentire, with median lobe lanceolate (“*foliis minoribus, crassiusculis, subintegerrimis, lobo medio lato-lanceolato, pluribus alternis*”). ARCANGELI (1882) proposed the new combination *A. hastata* subsp. *triangularis* (Willd.) Arcang. for plants with hastate-triangular leaves with entire margins, fruiting bracts rhomboidal with dentate margins and small seeds. The author made the same choice in a subsequent work (ARCANGELI, 1894). CESATI & al. (1884) considered *A. platysepala* at specific rank reporting the following diagnostic characters: leaves entire, fruiting bracts with acute lateral teeth in the basal part or with all margins entire (locality: “*Sicilia*”). PARLATORE (1893) listed only the genera of Chenopodiaceae referring to BERTOLONI (1854) for the species. FIORI & PAOLETTI (1896-1898) considered *A. platysepala* as a form of *A. hastatum* var. *triangulare* (sub *A. hastatum* γ -*patulum* *b-platysepalum*) that he characterized in having the bracts herbaceous. BARONI (1907) did not quote *A. platysepala* at all. FIORI (1925) indicated *A. hastatum* L. δ -*platysepalum* Guss highlighting that the variety differs for the dimension of the bracts that are “*...lunghe 6-8 mm...*” [“*...6-8 mm long...*”]; the author also indicates that the unit grows with *A. hastatum* γ -*triangulare* (“*Coll var. prec.*”). AELLEN (1960) reported *A. hastata* var. *macrotheca* Rafn. f. *platysepala* (Guss) Graeb. that is characterized by the fruiting bracts “*...fläch, dreieckig, zuletzt fast spießförmig, vom Grund bis zur Mitte scharf gezähnt, oberwärts gezähnt oder ganzrandig...*” [“*...almost triangular, with margin dentate in the basal and middle part, dorsally with tubercles...*”]. Both editions of the Flora Europaea (AELLEN, 1964; AKEROYD, 1993) have not quoted *A. platysepala*. The more recent Italian floras (ZANGHERI, 1976; PIGNATTI, 1982) have not also cited the species. GREUTER & al. (1984) indicated *A. platysepala* as synonym of *A. prostrata* DC. The recent Checklist of the Italian vascular flora and the subsequent update (CONTI & al., 2005; 2007) have not also reported the species. GIARDINA *et al.* (2007) have not quoted *A. platysepala*.

Herbarium investigations

The checking of the Herbaria allowed to find 6 herbarium sheets, kept in NAP (Gussone collection) and FI (see Specimina Visa). One of these includes two plants and two labels. Both specimens certainly refer to *A. platysepala*, based on the original detailed description of the species (GUSSONE, 1844). Regarding the labels, a first reports "*A. patula? Novembre = Piana de' Greci*", while in the second is wrote "*7. Atriplex platysepala Guss. ... Augusto, Septembri...In herbosis cultis et ad vias*". The number "7" makes the code of *A. platysepala* reported in the protologue, while the words "*In herbosis cultis*" are the same reported for the habitat (GUSSONE, 1844); no localities are reported. The locus classicus indicated by GUSSONE (1844), "*Piana de' Greci, Corleone*", is only reported in the label of the other specimen, but this cannot be referred to the *typus* because of the date of collection ("*Novembre*" instead of "*Augusto, Septembr*").

Taxonomic discussion

Based on the analysis of the original description (GUSSONE, 1844) and the specimens collected by G. Gussone, *A. platysepala* 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 to *A. prostrata* Boucher ex DC. [the rejected name *A. hastata* L. (TURLAND, 1996) was often misapplied to this species, but the name *A. hastata* in its strict sense refers to the European coastal taxon known as *A. calotheca* (Rafn) Fries].

A. prostrata was described by DE CANDOLLE (1805) "*...long du canal de Saint-Valery...aux environs du Havre*"; according to the protologue, this species is characterized by leaves with prominent lateral lobes and fruiting bracts without tubercles or spines on the dorsal surface. The lectotypification of *A. prostrata* was made by GUSTAFSSON (1976) on a specimen kept in G. The same author reported a detailed description of the species (sub *A. prostrata* subsp. *prostrata*) including several comments, measurements and iconographies on its morphological variation; regarding the fruiting bracts, he indicated that "*...the back from smooth to dentate...*".

The comparison of the lectotypus with the specimens of *A. platysepala* clearly shows their morphological affinity, both in the shape of the leaves (the middle and lower hastate with obtuse or truncate base) and on the inflorescence (spicate, leafless) and on the shape, margins and dorsal surface of the fruiting bracts (triangular-rhombic, with margins usually entire and dorsal surface reticulate, without tubercles or spines).

Several important floras report the same features for *A. prostrata*, highlighting one important diagnostic character: the base (obtuse or truncate) of the lower and middle leaves (e.g. AELLEN, 1964; PIGNATTI, 1982; CASTROVIEJO, 1990; AKEROYD, 1993; TAN, 1997; JONSELL, 2001; WELSH, 2003; GELIN & al., 2003).

Based on these observations, the morphological features of *A. platysepala* completely matched with those of *A. prostrata* and the species cannot be considered a separate unit.

CONCLUSIONS

Extensive analysis of literature, careful Herbarium investigations and comparison of the protologues allowed to designate the lectotype of the name *A. platysepala* and to clarify the identity of this species, that can be considered a synonym of *A. prostrata*.

An update of the synonymy of *A. prostrata* follows (the lectotypification of name *A. platysepala* is included).

- Atriplex prostrata*** Boucher ex DC., in Lam. & DC., Fl. Franç., ed. 3, 3: 387 (1805) – Lectotypus (marked as *Atriplex prostrata* Boucher): France, Henv. Du Havre, *J. Boucher* 386 (G-DC!).
- = *Atriplex patula* L. var. *prostrata* (Boucher ex DC.) Mert. & W.D.J. Koch, Deutschl. Fl. (Röhling), ed. 3, 314 (1826).
 - = *Atriplex hastata* L. var. *prostrata* (Boucher ex DC.) Lange, Haandb. Danske Fl., ed. 2: 638 (1859).
 - = *Atriplex triangularis* Willd., Sp. Pl. [Willdenow], ed. 4, 4(2): 963 (-964) (1806).
 - = *Atriplex latifolia* Wahlemb., Fl. Suec. 2: 660 (1826).
 - = *Atriplex platysepala* Guss., Fl. Sicul. 2(2): 590 (1844) – Lectotypus (here designated): Italia, Sicilia, in herbosis cultis et ad vias, Augusto-Septembri (ante 1844), *G. Gussone* (NAP!, specimen in the right) (Fig. 1, arrow).
 - = *Atriplex hastata* L. γ -*triangularis* (Willd.) Moq., Prodr. (DC.) 13(2): 95 (1849).
 - = *Chenopodium latifolium* (Wahlemb.) E.H.L. Rause, Deutschlands Flora, ed. 2, 5: 174 (1901).
 - = *Atriplex latifolia* Wahlenb. subsp. *prostrata* (Boucher ex DC.) Hiitonen, Suom. Putkilok.: 58 (1934).
 - = *Atriplex latifolia* Wahlemb. subsp. *triangularis* (Willd.) Hiitonen, Suom. Putkilok.: 58 (1934).

- = *Atriplex latifolia* Wahlenb. subsp. *triangularis* (Willd.) Rauschert, Feddes Rept. 85: 644 (1974).
- = *Atriplex patula* L. var. *triangularis* (Willd.) K.H. Thorne & S.L. Welsh, Great Basin Naturalist 44: 193 (1984).



Fig. 1. Lectotypus of the name *Atriplex platysepala* Guss.

SPECIMINA VISA SELECTA

- Atriplex platysepala* Guss. – **ITALIA. Basilicata.** Sub *Atriplex hastatum* L. v. *platysepalum* Guss., Potenza, in arvis loco dicti La Rosa, 750 m, VIII.1906, *O. Gavioli* (FI! s.n.). **Marche.** Sub *Atriplex hastata* L. v. *platysepalum* Guss., a Senigallia, 15.X.1894, *sine collectore* (FI! s.n.); sub *Atriplex hastata* L. v. *platysepalum* Guss., a Senigallia vicino alla Caserma, 12.X.1944, *sine collectore* (FI! s.n.). **Sicilia.** Piana de' Greci, in herbosis cultis et ad vias, Augusto-Septembri (ante 1844), *G. Gussone* (NAP! s.n.); Piana de' Greci, *sine die* (ante 1844), *G. Gussone* (NAP! s.n.); Catania, Cosentini, 1833, *G. Gussone* (NAP! s.n.).
- Atriplex prostrata* Boucher ex DC. – **FRANCE. Calvados.** Henv. Du Havre, *J. Boucher* (G-DC! 386). **ITALIA. Basilicata.** Sub *Atriplex hastata*, Potenza, in arvis, loco dicti La Rosa, 750 m, VIII.1906, *O. Gavioli* (FI! s.n.). **Campania.** Sub *Atriplex hastata*, a locus Licola, prope Neapolim, 26.VIII.1891, *sine collectore* (FI! s.n.); sub *Atriplex hastata*, sponde paludose alla foce del lago di Patria (Na), 13.IX.1953, *coll. illeg.* (FI! s.n.). **Emilia-Romagna.** Sub *Atriplex hastata*, raccolto fra le abitazioni a Casinalbo nel Modenese, 10.IX.1889, *A. Fiori* (FI! s.n.); sub *Atriplex hastata*, Modena, cortile Seminario, 4.X.1929, *Ugolini* (FI! s.n.). **Lazio.** Sub *Atriplex hastatum*, Roma, rive del Tevere, P.te Milvio, X.1980, *B. Anzalone* (RO! s.n.); sub *Atriplex hastatum*, Ladispoli – Cerveteri (Roma): loc. Campo di Marte, IX.1985, *B. Anzalone* (RO! s.n.); sub *Atriplex hastata*, Tenuta di Castelporziano, Roma, litorale esterno, IX.1987, *B. Anzalone* (FI! s.n.). **Liguria.** Sub *Atriplex hastata*, alla spiaggia di Voltri X (ante 1889), *sine collectore* (FI! s.n.); sub *Atriplex hastata*, Bordighera, arene marittime, 14.IX.1900, *C. Bicknell* (FI! s.n.). **Lombardia.** Sub *Atriplex hastata*, nel Mantovano, ante III.1842, *sine collectore* (FI! s.n.); sub *Atriplex hastata*, valli di Sermide, nei prati, 28.VIII.1884, *E. Ferrari* (FI! s.n.). **Marche.** Sub *Atriplex laciniatum* var. *triangolare* W., pr. La cupa di Ripe, 19.IX.1894, *sine collectore* (FI! s.n.); sub *Atriplex laciniatum* var. *tataricum*, a Borgo Pantone di Senigallia, 1944, *sine collectore*, det. *P.V. Arrigoni* (FI! s.n.); sub *Atriplex hastatum*, Macerata, VIII.1956, *B. Anzalone* (RO! s.n.). **Piemonte.** Sub *Atriplex hastata*, Salere di Agliano (Nizza di Monferrato), 18.VII.1912, *E. Ferrari et G. Nepi* (FI! s.n.). **Puglia.** Sub *Atriplex hastata*, palude di Barletta, *sine die* (XIX sec.), *sine collectore* (FI! s.n.); sub *Atriplex hastata*, in paludosis locus Alimini, VII.1875, *coll. illeg.* (FI! s.n.). **Sardegna.** Sub *Atriplex hastata*, Cagliari Saline di S. Pietro, *sine die* (ante XI.1866), *Gennari* (FI! s.n.); sub *Atriplex hastata*, Cagliari: presso al mare a S. Bartolomeo, 25.VIII.1915, *R. Sermagiotto* (FI! s.n.). **Sicilia.** Sub *Atriplex hastata*, in herbosis submaritimis, Palermo ai Ficarazzi, IX (XIX sec.), *Todaro* (FI! s.n.); sub *Atriplex hastata*,

Trapani, *sine die* (ante VII.1866), *sine collectore* (FI! s.n.). **Toscana.** Sub *Atriplex hastata*, isola del Giglio, Cala delle Cannelle, 06.VII.1895, *sine collectore* (FI! s.n.); sub *Atriplex hastata*, isola di Giannutri, costa a Nord di Cala Volo di Notte, 21.VII.1978, P.V. Arrigoni (FI! s.n.). **Umbria.** Sub *Atriplex hastata*, lago Trasimeno (Perugina), 22.VII.1955, F. Palombini (FI! s.n.). **Veneto.** Sub *Atriplex hastata*, Venezia al Lido, VIII.1874, P. Bargagli (FI! s.n.); sub *Atriplex hastatum*, Laguna di Venezia, 13-16.IX.1951, B. Anzalone (RO! s.n.); sub *Atriplex hastata*, Mesola, Bosco della Mesola, strada del canale Elciola, 22.VII.1964, P. Stampi (FI! s.n.).

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REFERENCES

- AELLEN, P. (1960). *Atriplex* L. In G. HEGI (ed.) *Illustrierte Flora von MittelEuropa*, ed. 2, **3(2)**: 677. Paul Parey. Berlin, Hamburg.
- (1964). *Atriplex* L. In T. G. TUTIN, V. H. HEYWOOD, N. A. BURGESS, D. M. MOORE, D. H. VALENTINE, S. M. WALTERS & D. A. WEBB (eds.) *Flora Europaea* **1**: 95-97. Cambridge University Press. Cambridge.
- AKEROYD, J. R. (1993). *Atriplex* L. In T. G. TUTIN, N. A. BURGESS, A. O. CHATER, J. R. EDMONDSON, V. H. HEYWOOD, D. M. MOORE, D. H. VALENTINE, S. M. WALTERS & D. A. WEBB (eds.). *Flora europea*, ed. 2, **1**: 115-117. Cambridge University Press. Cambridge.
- AL-TURKI, T. A., S. OMER, A. GHAGFOOR (2000). A synopsis of the genus *Atriplex* L. (Chenopodiaceae) in Saudi Arabia. *Feddes Repert.* **111**: 261-293.
- ARCANGELI, G. (1882). *Compendio della Flora Italiana*: 592. Ermanno Loescher. Torino.
- (1894). *Compendio della Flora Italiana*, ed. 2: 210-211. Tipografia Vincenzo Bona. Torino.
- BARONI, E. (1907). *Guida botanica*. Licinio Cappelli. Rocca S. Casciano.
- BERTOLONI, A. (1854). *Flora Italica, sistens plantas in Italia et in insulis circumstantibus sponte nascentes* **10**. Ex Typographaeo Haeredum Richardi Masii. Bologna.
- CASTROVIEJO, S. (1990). *Atriplex* L. In S. CASTROVIEJO, M. LAÍNIZ, G. LÓPEZ GONZÁLES, P. MONTERRAT, F. MUÑOZ GARMENDIA, J. PAIVA & L. VILLAR (eds.). *Flora Iberica* **2**: 503-513. C.S.I.C.. Madrid.
- CESATI, V., G. PASSERINI & G. GIBELLI (1884). *Compendio della Flora italiana*. Vallardi. Milano.
- CONTI, F., G. ABBATE, A. ALESSANDRINI & C. BLASI (eds.) (2005). *An annotated checklist of the Italian vascular flora*. Palombi & Partner. Roma.
- , A. ALESSANDRINI, G. BACCHETTA, E. BANFI, G. BARBERIS, F. BARTOLUCCI, L. BERNARDO, S. BONACQUISTI, D. BOUVET, M. BOVIO, G. BRUSA, E. DEL GUACCHIO, B. FOGGI, S. FRATTINI, G. GALASSO, L. GALLO, C. GANGALE, G. GOTTSCHLICH, P. GRÜNANGER, L. GUBELLINI, G. IIRITI, D. LUCARINI, D. MARCHETTI, B. MORALDO,

- L. PERUZZI, L. POLDINI, F. PROSSER, M. RAFFAELLI, A. SANTANGELO, E. SCASSELLATI, S. SCORTEGAGNA, F. SELVI, A. SOLDANO, D. TINTI, D. UBALDI, D. UZUNOV & M. VIDALI (2007). Integrazioni alla checklist della flora vascolare italiana. *Natura Vicentina*, **10**: 5-74.
- DE CANDOLLE, A. (1805). *Prodromus systematis naturalis regni vegetabilis* **3**. Victoris Masson. Parisii.
- (1849). *Prodromus systematis naturalis regni vegetabilis* **13**. Victoris Masson. Parisiis.
- FIORI, A. (1925). *Nuova Flora Analitica d'Italia* **1**. Ed. M. Ricci. Firenze.
- & G. PAOLETTI (1896-1898). *Flora analitica d'Italia* **1**. Tipografia del Seminario. Padova.
- GELIN, Z., S. L. MOSYAKIN, S. E. CLEMANTS (2003). *Atriplex* L. In Z. Y. WU, P. H. RAVEN & D. Y. HONG (eds.). *Flora of China* **5**. Science Press, Beijing and Missouri Botanical Garden Press. St. Louis.
- GIARDINA, G., F. M. RAIMONDO & V. SPADARO (2007). A catalogue of plants growing in Sicily. *Boccone* **20**: 56-59.
- GREUTER, W., H. BURDET & G. LONG (eds.) (1984). *Med-checklist. Pteridophyta, Gymnospermae, Dicotyledones (Acanthaceae-Cneoraceae)* **1**. Conservatoire et Jardin botanique de la Ville de Genève. Geneve.
- GUSSONE, G. (1844). *Florae siculae synopsis* **2(2)**. Ex Typis Tramater. Neapoli.
- GUSTAFSSON, M. (1976). Evolutionary trends in the *Atriplex* prostrata group of Scandinavia. Taxonomy and morphological variation. *Opera Botanica* **39**: 21.
- IPNI (2008). *The International Plant Names Index*. Url: <http://www.ipni.org/index.html>.
- JONSELL B. (ed.) (2001). *Flora Nordica 2. Chenopodiaceae to Fumariaceae* **2**. Swedish Royal Academy of Sciences. Stockholm.
- PARLATORE, F. (1893). *Flora italiana* **10**. Tipografico Fiorentino. Firenze.
- PIGNATTI, S. (1982). *Flora d'Italia* **1**: 165-169. Ed agricole. Bologna.
- SUKHORUKOV, A. P. & A. DANIN (2009). Taxonomic notes on *Atriplex* sect. *Teutliopsis* and sect. *Atriplex* in Israel and Syria. *Fl. Medit.* **19**: 15-23.
- TAN K. (1997). *Atriplex* L. In A. STRID & K. TAN (eds.), *Flora Hellenica* **1**. Koeltz Scientific Books. Königstein.
- TURLAND, N. (1996). 1224 - Proposal to reject the name *Atriplex hastata* L. (Chenopodiaceae). *Taxon* **45**: 325.
- WELSH, S. L. (2003). *Atriplex* L. In FLORA OF NORTH AMERICA EDITORIAL COMMITTEE (eds.). *Flora of North America north of Mexico* **4**. Oxford University Press. New York & Oxford.
- ZANGHERI, P. (1976). *Flora Italica* **1**. Cedam. Padova.