

Lavatera stenopetala subsp. *plazzae* comb. et stat. nov. (Malvaceae), endemic taxon from north-western Sardinia (Italy)

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Background and aims – Taxonomic studies on Malveae J.Presl appear yet incomplete, especially in the genera *Malva* L. and *Lavatera* L. The taxon *L. plazzae* (described in 1995) was never examined from the taxonomic point of view. Despite this, the name *Lavatera plazzae* was synonymized with *Lavatera stenopetala*. As part of the revision of the genera *Malva* and *Lavatera* for a treatment of Malvaceae in the New Italian Flora, the present study reveals significant, previously overlooked morphological differences between *L. plazzae* and *L. stenopetala*.

Methods – Specimens from the Herbaria FI, MPU, P, RO and SASSA were examined, and a morphological analysis (27 characters) was performed. The phenotypic variability was illustrated by box plots. The variables were also processed singularly by means and T-test for independent samples comparing the same variable between the taxa.

Key results – *Lavatera stenopetala* Batt. subsp. *plazzae* (Atzei) Iamonico comb. et stat. nov. is proposed on the basis of a morphometric and taxonomic study of type material and other specimens. Morphological, ecological and chorological features are also provided in comparison with the nominal subspecies. A lectotype and epitype are designated for the name *Lavatera stenopetala*.

Key words – Algeria, Sardinia, Tunisia, *Lavatera*, endemic taxon, nomenclatural change, typification.

INTRODUCTION

Recent molecular studies (Ray 1995, Tate et al. 2005, Escobar et al. 2009) have shown that the traditional separation of *Malva* L. and *Lavatera* L., based mainly on the degree of fusion of the epicalyx bracts, is artificial and cannot be maintained. Ray (1995) emphasized the fruit morphological characters as diagnostic for the two taxa. Thus, the genus *Malva* was found to be monophyletic and several names in *Lavatera* were transferred to *Malva* (e.g. Ray 1998, Molero Briones & Montserrat Martí 2005, 2006, Banfi et al. 2005, Iamonico 2010, Valdés 2011, Conti & Bartolucci 2012). However, the taxonomic position of some *Lavatera* taxa remains doubtful and some authors (e.g. Bayer & Kubitzki 2003, Molero Briones & Montserrat Martí 2007) still accept the the genus *Lavatera* with the taxa included in the “Lavateroid clade” as defined by Ray (1995).

There are two ways to solve this taxonomic problem: split the genus *Lavatera* into several taxa or merge *Malva* and *Lavatera* into a single genus (for nomenclatural priority *Malva*). Lacking a comprehensive taxonomic study of Malveae J.Presl, I prefer to maintain the genus *Lavatera*, following the definition by Bayer & Kubitzki (2003).

L. stenopetala Batt. (from Algeria and Tunisia) and *L. plazzae* Atzei (from Sardinia) were not included in the molecular study by Ray (1995), but their general morphology matches with that of the “Lavateroid clade” and the same author indicated *L. stenopetala* as a member of this group (see also Ray 1995: 38, 42, figs 3 & 6).

Recently, Molero Briones & Montserrat Martí (2007) described the new species *L. valdesii* Molero & J.M.Monts. and compared it with the related taxa included in sect. *Olbia* (Medik.) DC. (*L. oblongifolia* Boiss., *L. olbia* L., *L. bryoniifolia* Mill., *L. stenopetala*). These authors also discussed the name *L. plazzae* observing the affinities with *L. stenopetala* and synonymizing the names.

Although the similarities between *L. stenopetala* and *L. plazzae* are obvious, it seems that the Spanish authors have not analyzed exsiccata of the Italian species (Molero Briones & Montserrat Martí 2007: 453–454 – see Appendix 2, list of herbarium materials). I therefore decided to study these taxa with the main aim to verify their taxonomic delimitation. Moreover, the name *L. stenopetala* is here investigated since it appeared to be yet untypified.

This study is part of the of the research work carried out by the author for the treatment of Malvaceae for the New Italian Flora (editor Prof. S. Pignatti) and within the initiative ‘Italian Loci Classici Censu’ (Domina et al. 2012), launched in 2010 under the auspices of the Italian Botanic Society (see e.g. Iamonico et al. 2011, Iamonico 2012a, 2012b, 2013a, 2013b, 2013c, 2013d, 2013e, Iamonico & Reveal 2012, Iamonico & Peruzzi 2012, Di Pietro et al. 2013).

MATERIAL AND METHODS

Specimens of *L. stenopetala* and *L. plazzae* from the Herbaria FI, MPU, P, RO and SASSA (abbreviations according to Thiers 2011) were examined. All cited specimens were seen.

A morphological analysis, based on 27 characters (fourteen qualitative and thirteen quantitative, see table 1) was performed. The data matrix obtained was processed by means of the software NCSS 2007. The variability of the characters is illustrated by box plots. The variables were also processed singularly by means and T-test for independent samples comparing the same variable between the taxa (table 2).

The ‘Melbourne Code’ (McNeill et al. 2012) is further referred to as ICN.

RESULTS AND DISCUSSION

Typification of the name *L. stenopetala*

L. stenopetala was first described by Battandier (1888: 113–114) who provided a detailed diagnosis (in French) plus the habitat (‘Terrains argilleux’) and the provenance (‘Mouzaïa les Mines, Téniet-el-Haäd, Dra-el-Mizan, Constantine, etc.’). The Algerian author reported ‘*L. stenopetala* Coss. et DR., inéd. ...’, so it is possible that specimens collected by E. Cosson and/or M. C. Durieu de Maisonneuve were used for the description of the new taxon. Indeed, Battandier (1888: X) stated “Nous avons ajouté aux plantes d’Algérie...des exemplaires de plantes sèches que nous devons à la générosité de M. le Dr Cosson” (“We have added to the Algerian plants...exsiccata kindly provided by Dr. M. Cosson”). M.C. Durieu de Maisonneuve carried out botanical research together with M. Cosson for the study of the North African flora and Algeria (see e.g. Cosson & Durieu de Maisonneuve 1867), so it is likely that the specimens used by Battandier (1888: X) were collected by M. Cosson and M. C. Durieu de Maisonneuve.

In the Herbarium MPU there are nine sheets of *L. stenopetala*, of which two (barcodes MPU004987 and MPU004991) were collected by J.A. Battandier from ‘A. Mouzaïa-lès-Mines, collines argileuses’ (the first one in August 1885, the second without date), and one (barcode MPU004990) by E. Cosson from ‘Champs incultes de la vallée de l’Oued Arbène entre Midcah et le marabout de Sidi-Ali Tamzit’ in 20 July 1854. The Cosson locality was not indicated in the protologue by Battandier (1888) and, although ‘...etc.’ is reported after the localities list, it is not unequivocally demonstrated that Battandier used specimens from this site in establishing the diagnosis. So, the Cosson specimens cannot be considered original material (see art. 9.3a of the ICN). The undated Battandier specimen cannot

Table 1 – Characters examined (those labelled with an asterisk are qualitative).

n°	Character
1	plant height (dm)
2	stem hairiness (glabrous or pubescent)*
3	basal leaves, shape (orbicular or ovate)*
4	basal leaves, lobes*
5	inferior and middle leaves shape (orbicular or ovate)*
6	inferior and middle leaves lobes*
7	middle leaves width (cm)
8	middle leaves length (cm)
9	ratio of characters 7/8
10	inflorescence bracts, shape (ovate or lanceolate)*
11	number of flowers per node
12	peduncle length (mm)
13	epicalyx segments, shape (ovate or lanceolate)*
14	epicalyx segments length (mm)
15	calyx segments shape (triangular or ovate)*
16	calyx segments length (mm)
17	ratio of characters 16/14
18	petal segments length (mm)
19	ratio of characters 18/14
20	ratio of characters 18/16
21	petal apex (obtuse or bilobed)*
22	petal colour*
23	number of mericarps*
24	mericarp surface (glabrous or pubescent)*
25	mericarp dorsal angles (acute or obtuse)*
26	seed shape (ovoidal or reniform)*
27	seed diameter (mm)

be considered for typification because it is possible that it was collected after 1888. The other one is original material (barcode MPU004987, image available from <http://www.collections.univ-montp2.fr/herbier-mpu-presentation/base-de-donnees-botanique-herbier-mpu>).

In the Herbarium P there are thirty-five sheets of *L. stenopetala*: nine were collected by E. Cosson from ‘Midcah’ (six), ‘Boghar’ (one), ‘Constantine’ (one) and ‘Setif’ (one), one by J.A. Battandier from ‘Mouzaïa lès Mines’. As explained above, we consider as original material only the specimens from Constantine (barcode P06728499, image available from <http://imager.mnhn.fr/imager2/g/2012/07/18/3/P06728499.jpg>) and Mouzaïa (barcode P06728500, image available from <http://imager.mnhn.fr/imager2/g/2012/07/18/3/P06728500.jpg>).

We have been unable to trace any further original material.

Since more than one locality was cited in the protologue by Battandier (1888), the specimens are syntypes (ICN art. 9.5). All the three exsiccata selected match the protologue and correspond to the current application of the name (e.g. Molero Briones & Montserrat Martí 2007), but they are not complete: those collected by A.J. Battandier lack leaves,

Table 2 – Mean differences between studied specimens of the taxa *L. stenopetala* and *L. plazzae*, according to T-test.
Significant differences are shown in bold.

	t	p	Mean difference
Plant height	5.9990	0.0000	-8.6875
Stem hairiness	0.5906	0.5592	0.5000
Basal leaves shape	1.4639	0.1536	0.25
Basal leaves lobes	0.3437	0.7335	0.125
Inferior and middle leaves shape	0.6901	0.4955	-0.125
Inferior and middle leaves lobes	1.1677	0.2521	-0.375
Middle leaves length	6.4173	0.0000	-5.9063
Middle leaves width	6.8115	0.0000	-6.0813
Ratio length/width (middle leaves)	1.7286	0.0942	0.0543
Inflorescence bracts shape	0.6956	0.4920	-0.125
Number of flower per node	3.7825	0.0070	1.0625
Peduncle length	0.089	0.9297	0.0625
Epicalyx segments shape	0.3437	0.7335	0.0625
Epicalyx segments length	10.3496	0.0000	-1.2600
Calyx segments shape	1.0476	0.3032	-0.1875
Calyx segments length	2.9142	0.0067	-0.7094
Ratio calyx/epicalyx	7.3678	0.0000	0.7875
Petal segments length	1.0804	0.2886	3.8125
Ratio petal length/epicalyx length	2.8708	0.0074	3.0588
Ratio petal length/calyx length	1.9531	0.0602	-8.7182
Petal apex	0.4152	0.6809	-0.0625
Petal colour	0.7454	0.4619	0.125
Number of mericarps	0.548	0.5877	0.3751
Mericarps surface	0.0456	0.9639	-0.0042
Mericarps dorsal angles	1.0541	0.3003	-0.125
Seed shape	0.4732	0.6395	0.0625
Seed diameter	1.2619	0.2167	-0.0625

while that from E. Cosson has no inflorescence. Despite this, there is no conflict with the diagnosis and a lectotype can be chosen among them (C.E. Jarvis, Natural History Museum, U.K., pers. comm.). We prefer to select the syntype collected by A.J. Battandier at MPU (barcode MPU004987) as the lectotype of *L. stenopetala*. The specimens by Cosson and Battandier at P are syntypes. For a better interpretation of the name, we select an epitype, the exsiccatum from J. Choullette fil. at P (barcode P06728506) made from a plant also with leaves and well preserved.

Taxonomic discussion

L. stenopetala and *L. plazzae* are shrubs, more or less branched, with leaf blades suborbicular, 3–5-lobed, pubescent to tomentose, and with crenate or dentate margins; leaves are petiolate. The flowers are solitary or arranged by 2–4, pedunculate, and subtended by a small deciduous bract; the epicalyx is shorter and the corolla longer than the calyx; petals are bilobed, and pale pink to whitish coloured. These features correspond to De Candolle's concept of *Lavatera* sect. *Olbia* (Medik.) DC. (De Candolle 1824: 438).

The analyses of the morphological and qualitative features made here show the morphological affinity between

the two taxa. Five characters are significative to distinguish them (plant height, middle leaves length and width, epicalyx length, and ratio calyx length/epicalyx length), while the other ones completely overlap. In particular the taxon *L. plazzae* includes higher plants with larger middle leaves (both length and width), longer epicalyx and a higher ratio calyx/epicalyx length (fig. 1). Moreover, the taxon *L. plazzae* has only solitary flowers, while the taxon *L. stenopetala* has also flowers arranged by 2–4. The T-test confirms the statistic significance of these characters (table 2). On the basis of a partial overlapping of these characters and the geographic separation (*L. stenopetala* occurs in northern Algeria and Tunisia, *L. plazzae* in north-western Sardinia), the two taxa cannot be considered synonyms and the subspecies appears the most appropriate rank for the taxon *plazzae*.

Taxonomic treatment

Lavatera stenopetala Coss. & Durieu ex Batt. (Battandier 1888: 113). – *Althaea stenopetala* (Coss. & Durieu ex Batt.) O.Kuntze (Kuntze 1891: 66). – *Malva stenopetala* (Coss. & Durieu ex Batt.) Soldano (Banfi et al. 2011: 94, November 2011). – *Malva stenopetala* (Coss. & Durieu ex Batt.) Valdés (Valdés 2011: 319, December 2011), **isonym** (ICN

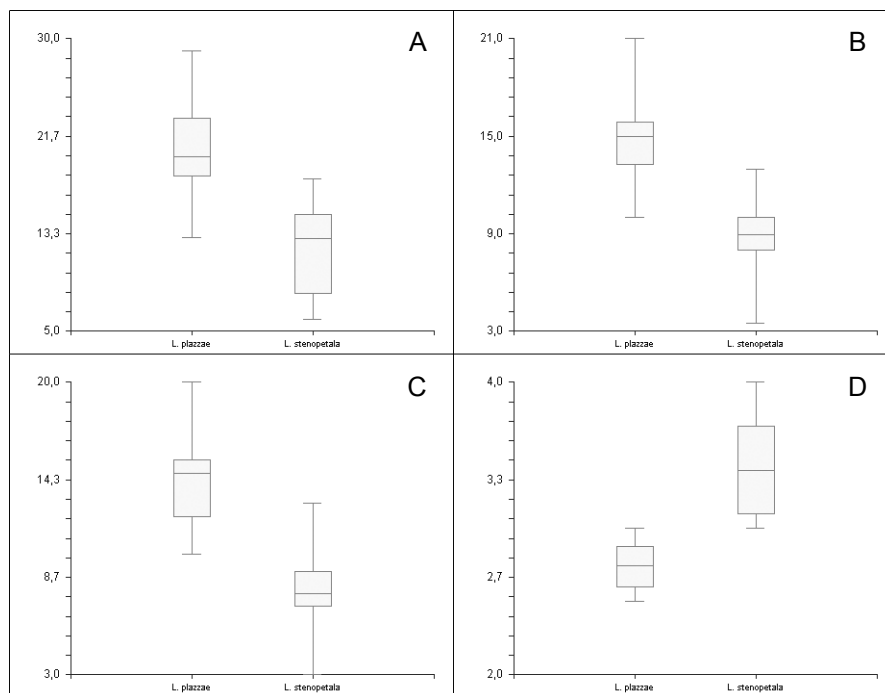


Figure 1 – Box-Plots for the diagnostic characters: A, plant height (measurements in dm); B, middle leaves length (cm); C, middle leaves width (cm); D, ratio calyx length/epicalyx length. Medians (horizontal bar), 25th and 75th percentiles, and maximum and minimum (whiskers) of selected features are shown.

art. 6.3 Note 2). – Types: Algeria, Médéa, A. Mouzaïa-lès-Mines, collines argileuses, Aug. 1885, *Battandier* s.n. (lecto-: MPU, **here designated**; barcode MPU004987, image available from <http://www.collections.univ-montp2.fr/herbier-mpu-presentation/base-de-donnees-botanique-herbier-mpu>); Algeria, Constantine, moissons au sud de Constantine, 18 Jul. 1857, *Choulette fil.* s.n. (epi-: P, **here designated**; barcode P06728506, image available from <http://imager.mnhn.fr/imager2/g/2012/07/18/3/P06728506.jpg>); Algeria, Constantine, champs près du Polygone de Constantine, 29 May 1888, *Cosson* s.n. (syn-: P – plants on the left; barcode P06728499, image available from <http://imager.mnhn.fr/imager2/g/2012/07/18/3/P06728499.jpg>); Mouzaïa lès Mines, 4 Aug. 1889, *Battandier* s.n. (syn-: P; barcode P06728500, image available from <http://imager.mnhn.fr/imager2/g/2012/07/18/3/P06728500.jpg>).

Perennial herb or suffrutex, (6–)13–15(–18) dm, woody at base, branched, slightly pubescent. **Leaves**: middle leaves with blade ovate, 3–5 lobed, crenate to dentate, cordate, pubescent on both surfaces, (3.5–)8–10(–13) × (3–)7–9(–13) cm; petiole longer than the blade; upper leaves similar, with smaller blades, 3-lobed (central lobe longer than the lateral ones), subcordate to subcuneate. Inflorescence in raceme. **Flowers** solitary or in 2–4 flowered racemes, peduncled; bract 1, deciduous. **Epicalyx** cup-shaped, with 3 pieces, 3–3.5(–4) mm long, ovate, obtuse at the apex, pubescent. **Calyx** longer than the epicalyx (3–4 times), with 5 sepals, 9–11(–12) mm long, with triangular lobes, fused in their lower third. **Petals** bilobed, cuneate at the base, (2–)4–6 cm long, rose with dark pink nail. **Anthers** reniform. **Pollen** whitish. **Staminal column** pubescent, pink to whitish. **Styles** smooth with rose stigmas. **Schizocarp** with 12–18 mericarps, glabrous, smooth, stri-

ate to minutely verrucose and with very thin lateral walls; mericarps completely enclosing the seed and, at maturity, separate from the fruit axis, leaving a flap between each pair of mericarps (lavateroid-type). **Seed** brown to black, 1.80 × 2.80 mm, smooth to minutely punctate, reniform.

Iconography – Cosson (1893–1897: tab. 100).

Ecology – Uncultivated lands on clay substrates.

Distribution – North-eastern Algeria from the Tell Atlas and the Constantine region (Quézel & Santa 1962) and Tunisia (Le Floch et al. 2010).

Other collections examined – **Algeria**: Constantine, moissons au sud de Constantine, 18 Jul. 1857, *Choulette fil.* (MPU); *ibid.*, MPU004759 (MPU); *ibid.*, MPU004985 (MPU); *ibid.*, MPU004986 (MPU); Constantine, May 1875, *Reboud* P04640180 (P); Constantine moissons, May 1876, *Reboud* MPU004988 (MPU); *ibid.*, MPU004989 (MPU). Médéa, A. Mouzaïa-lès-Mines, collines argileuses, s.d., *Battandier* MPU004991 (MPU, syntype); champs incultes de la vallée de l'Oued Arbène entre Midcah et le marabout de Sidi-Ali Tamzit, prox., 20 Jul. 1854, *Cosson* MPU004990 (MPU).

***Lavatera stenopetala* Coss. & Durieu ex Batt. subsp. *plazzae* (Atzei) Iamónico **comb. et stat. nov.** – *Lavatera plazzae* Atzei, Bollettino della Società Sarda di Scienze Naturali 30: 151 (Atzei 1995). – Type: Italy, Sassari, Fra la staz. ferrov. di Giave (ca. 1 km) e la Cant. di Cadrea, ai bordi della vecchia SS Carlo Felice, 19 Jul. 1991, *Atzei* B229bis (holo-: SASSA) (electronic appendix).**

[Description of only significant characters] Subshrubs or perennial herb (13–)19–23(–29) dm height, middle leaves (10–)13.5–15.5(–21) × (10–)12.5–15.5(–20) cm, epicalyx (3.6–)4–5.5 mm long, ratio calyx/epicalyx 2.5–3; flowers always solitary, with petals rose to whitish.

Iconography – Atzei (1995: 154, fig. 1).

Ecology – Cliff along margins of roads and crops and in uncultivated lands on calcareous and volcanic (trachyte and basalt) substrates at altitudes between 350 and 570 m a.s.l.

Distribution – North-western Sardinia, Sassari province (localities: Giave, Bonorva, Semestene, Pozzomaggiore, Cossoine) (Atzei 1995).

Other collections examined – Italy: Sardegna, Sassari, presso la Superstrada Cagliari-Sassari, nei pressi del bivio per Cossoine, 6 Jul. 1990, *Atzei* B229bis (SASSA); Sassari, al bivio della strada per Cossoine dalla Superstrada Cagliari-Sassari: zona incolta, 12 Jul. 1990, *Atzei* B229bis (SASSA); *ibid.*, s.n. (FI); *ibid.*, 13 Sep. 1990, *Atzei* B229bis (SASSA); Sassari, tra Cant. di Cadreas e bivio per Cossoine dalla Superstrada, poco prima del ponte sul Riu Mulinu: scarpata presso il bordo stradale, 25 Jul. 1990, *Atzei* B229bis (SASSA); Sassari, tra Cant. di Cadreas e bivio per Cossoine dalla Superstrada, poco oltre il ponte sul Riu Mulinu: scarpata presso il bordo stradale, 25 Jul. 1990, *Atzei* s.n. (FI); Sassari, tra Semestene e Pozzomaggiore, ca. 0,5 Km prima del bivio per Macomer, in prossimità del P.te Truddas, vicino al bordo stradale, 25 Jul. 1990, *Atzei* B229bis (SASSA); Sassari, Semestene, ca. 200 m dopo il paese sulla strada per Canto di Cadreas: nei pressi della strada, 25 Jul. 1990, *Atzei* B229bis (SASSA); Sassari, fra Cossoine (a ca. 1 Km) e Superstrada Cagliari-Sassari, in prossimità della strada, 25 Jul. 1990, *Atzei* B229bis (SASSA); Sassari, nei pressi del bivio per Romana, dalla Staz. ferroviaria di Giave: presso muro campestre, 25 Jul. 1990, *Atzei* B229bis (SASSA); Sassari, tra Giave e Bonorva, prima del ponte sulla ferrovia, in prossimità della strada, 25 Apr. 1991, *Atzei* B229bis (SASSA); Sassari, fra la staz. ferroviaria di Giave (a ca. 1 Km) e la Canto di Cadreas, ai bordi della vecchia SS Carlo Felice, 19 Jul. 1991, *Atzei* B229bis (SASSA); *ibidem*, 22 Jul. 1991, *Atzei* s.n. (FI); Sassari, Cossoine, presso la strada di penetrazione che porta verso il R. Alchennero, a ca. 200 m dall'inizio, 27 Jul. 1991, *Atzei* B229bis (SASSA).

Note – All specimens preserved at SASSA are included in a single folder that is numbered 'B229bis'. The collection dates and localities differ, however.

SUPPLEMENTARY MATERIAL

Supplementary data are available in pdf format at *Plant Ecology and Evolution*, Supplementary Data Site (<http://www.ingentaconnect.com/content/botbel/plecevo/supp-data>), and consist of a photograph of the holotype of *Lavatera plazzae* (SASSA).

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REFERENCES

- Atzei A.D. (1995) *Lavatera plazzae* sp. nov. (Malvaceae) from Sardinia. *Bollettino della Società Sarda di Scienze Naturali* 30: 151–157.
- Banfi E., Galasso G., Soldano A. (2005) Notes on systematics and taxonomy for the Italian vascular flora 1. *Atti della Società Italiana di Scienze Naturali del Museo Civico di Storia Naturale di Milano* 146: 219–244.
- Banfi E., Galasso G., Soldano A. (2011) Notes on systematics and taxonomy for the Italian vascular flora 2. *Atti della Società Italiana di Scienze Naturali del Museo Civico di Storia Naturale di Milano* 152(II): 85–106.
- Battandier J.A. (1888) *Flore de l'Algérie*. Paris, F. Savy.
- Bayer C., Kubitzki K. (2003) Malvaceae. In: Kubitzki K., Bayer C. (eds) *Families and genera of vascular plants* 5: 225–311. Berlin/New York, Springer-Verlag & Heidelberg.
- Conti F., Bartolucci F. (2012) Two new combinations in *Malva* (Malvaceae). *Annales Botanici Fennici* 49: 123–124. <http://dx.doi.org/10.5735/085.049.0121>
- Cosson E. (1893–1897) *Illustrationes Florae Atlanticae* 2. Parisiis, Republicae Typographeo.
- Cosson E., Durieu de Maisonneuve M.C. (1867) *Exploration scientifique de l'Algérie. Sciences naturelles: Botanique* 2. Paris, Imprimerie Impériale.
- De Candolle A.P. (1824) *Prodromus Systematis Naturalis Regni Vegetabilis* 1. Paris, Treuttel et Würtz.
- Di Pietro R., Iamónico D., Soldano A. (2013) (2150) Proposal to conserve the name *Plantago serpentina* against *P. strictissima* (Plantaginaceae). *Taxon* 62: 635–637. <http://dx.doi.org/10.12705/623.26>
- Domina G., Giusso Del Galdo G., Gargano D., Labra M., Peccenini S., Peruzzi L., Raimondo F.M. (2012) The Italian Loci Classici Census. *Taxon* 61: 1351–1353.
- Escobar P., Schönswetter P., Fuertes Aguilar J., Nieto Feliner G., Schneeweiss G.M. (2009) Five molecular markers reveal extensive morphological homoplasy and reticulate evolution in the *Malva* alliance (Malvaceae). *Molecular Phylogenetic and Evolution* 50: 226–239. <http://dx.doi.org/10.1016/j.ympev.2008.10.015>
- Iamónico D. (2010) *Malva subovata* subsp. *bicolor*, comb. & stat. nov. (Malvaceae). *Annales Botanici Fennici* 47: 312–314. <http://dx.doi.org/10.5735/085.047.0409>
- Iamónico D., Giovi E., Iberite M., Abbate G. (2011) Typification of *Trifolium latum* Sebast. (Fabaceae) and comparison with related species. *Annales Botanici Fennici* 48: 459–464. <http://dx.doi.org/10.5735/085.048.0603>
- Iamónico D. (2012a) Studies on the genus *Atriplex* L. (Amaranthaceae) in Italy. II. Lectotypification of *Atriplex elongata* Guss. (Amaranthaceae). *Candollea* 67: 181–185.
- Iamónico D. (2012b) *Amaranthus powellii* S. Watson subsp. *caciatoides* comb. & stat. nov. (Amaranthaceae). *Nordic Journal of Botany* 30: 12–16. <http://dx.doi.org/10.1111/j.1756-1051.2011.01080.x>
- Iamónico D. (2013a) Typification of the Linnaean name *Hypochaeris maculata* (Asteraceae). *Nordic Journal of Botany* 31: 222–224. <http://dx.doi.org/10.1111/j.1756-1051.2012.01612.x>
- Iamónico D. (2013b) Lectotypification of *Senecio doria* (Asteraceae). *Annales Botanici Fennici* 50: 71–72. <http://dx.doi.org/10.5735/085.050.0111>
- Iamónico D. (2013c) Typification of the Linnaean name *Trapa natans* (Lythraceae). *Plant Ecology and Evolution* 146: 254–255. <http://dx.doi.org/10.5091/plecevo.2013.845>
- Iamónico D. (2013d) Taxonomical and chorological study on the Central Mediterranean Basin endemic *Arenaria bertolonii* Fiori & Paol. (Caryophyllaceae). *Plant Biosystems* 147: 923–930. <http://dx.doi.org/10.1080/11263504.2012.753956>

- Iamónico D. (2013e) Lectotypification of the Linnaean name *Fagus castanea* (Fagaceae). *Nordic Journal of Botany* 31: 635–636. <http://dx.doi.org/10.1111/j.1756-1051.2012.01751.x>
- Iamónico D., Reveal J.L. (2012) Lectotypification of the Linnaean name *Carpinus ostrya* L. (Betulaceae). *Taxon* 61: 866.
- Iamónico D., Peruzzi L. (2012) Lectotypification of the Linnaean name *Acanthus spinosus* (Acanthaceae). *Phytotaxa* 62: 11–12.
- Kuntze O. (1891) *Clinopodium*. *Revisio generum plantarum* 2. Leipzig, A. Felix.
- Le Floch E., Boulos L., Vela E. (2010) *Catalogue synonymique commenté de la Flore de Tunisie*. Tunis, Ministère de l'Environnement et du Développement Durable & Banque Nationale des Gènes.
- McNeill J., Barrie F.R., Buck W.R., Demoulin V., Greuter D.L., Hawksworth D.L., Herendeen P.S., Knapp S., Marhold K., Prado J., Prud'Homme van Reine W.F., Smith J.F., Wiersema J.H. (eds) (2012) *International Code of Nomenclature for algae, fungi and plants (Melbourne Code)*: Adopted by the Eighteenth International Botanical Congress, Melbourne, Australia, July 2011. *Regnum Vegetabile* 154.
- Molero Briones J., Montserrat Martí J. (2005) Nomenclatura de algunas especies del género *Malva* Linnaeus (Malvaceae). *Fontqueria* 55: 285–292.
- Molero Briones J., Montserrat Martí J. (2006) Adiciones y enmiendas nomenclaturales en el género *Malva* L. (Malvaceae). *Lagascalia* 26: 153–155.
- Molero Briones J., Montserrat Martí J. (2007) A new species of *Lavatera* Sect. *Olbia* (Medik.) DC. (Malvaceae) from north-east Morocco. *Botanical Journal of the Linnean Society* 153: 445–454. <http://dx.doi.org/10.1111/j.1095-8339.2007.00618.x>
- Quézel P., Santa S. (1962) *Nouvelle Flore de l'Algérie et des régions désertiques méridionales*. Paris, CNRS.
- Ray M.F. (1995) Systematics of *Lavatera* and *Malva* (Malvaceae, Malveae): a new perspective. *Plant Systematics and Evolution* 198: 29–53. <http://dx.doi.org/10.1007/BF00985106>
- Ray M.F. (1998) New combinations in *Malva* (Malvaceae: Malveae). *Novon* 8: 288–295. <http://dx.doi.org/10.2307/3392022>
- Tate J.A., Fuertes Aguilar J., Wagstaff S.J., La Duke J.C., Slotta T.A.B., Simpson B.B. (2005) Phylogenetic relationships within the tribe Malveae (Malvaceae, subfamily Malvoideae) as inferred from ITS sequence data. *American Journal of Botany* 92: 584–602. <http://dx.doi.org/10.3732/ajb.92.4.584>
- Thiers B. (2011) *Index Herbariorum: A global directory of public herbaria and associated staff*. New York Botanical Garden's Virtual Herbarium. Available from <http://sweetgum.nybg.org/ih/> [accessed 20 Aug. 2013].
- Valdés B. (2011) Malvaceae. In: Greuter W., Raus T. (eds) *Med-Checklist Notulae* 30. *Willdenowia* 41: 318–319.

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