

UPDATING TO THE CHECKLIST OF THE ITALIAN VASCULAR FLORA: ASTERACEAE, GNAPHALIEAE

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Resumen. Se propone una actualización de los géneros italianos de la tribu Gnaphalieae (Asteraceae). Cuatro géneros (dos nativos y dos alóctonos) son novedades para la flora de Italia. Se indican sus nombres correctos, protólogos, principales sinónimos, comparación con los géneros afines y la lista de las especies italianas (se incluye la distribución regional). Se incluye también el catálogo de géneros y especies italianas de Gnaphalieae.

Palabras clave: *Asteraceae*, *Gnaphalieae*, flora vascular, Italia.

Summary. The checklist of the Gnaphalieae genera (Asteraceae) occurring in Italy is updated. Four genera (two native and two exotic) are new for the flora of Italy. Their accepted names, references, main synonyms, comparison with related genera and the list of the Italian species (including the distribution at regional level) are provided. The complete list (genera and species) of Italian Gnaphalieae is also given.

Key words: *Asteraceae*, *Gnaphalieae*, vascular flora, Italy.

INTRODUCTION

The Italian Flora includes 149 genera of *Asteraceae* Bercht. & J. Presl., *nom. cons.*, *nom. alt.* (= *Composite* Giseke, *nom. cons.*), of which 2 are endemic, while 23 comprise only exotic species (PERUZZI, 2010). At genus level, the *Asteraceae* is the first richest family in Italy.

The Tribe *Gnaphalieae* Cass. ex Lecoq. & Juill. consists of 11 genera in Italy (see PERUZZI, 2010). However, according to the current concepts (GREUTER, 2006-2009; GALBANY-CASALS & al., 2010) new *taxa* have to be added to the Italian flora.

As part of the collaboration in the revision of the *Asteraceae* for the *New Flora of Italy* (editor Prof. S. Pignatti), we here propose an updating to the Italian *Gnaphalieae* (on the basis of PERUZZI, 2010) also including the complete list of the Italian genera and species of this tribe (Table 1).

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| [<i>Anaphalis</i> DC.] | [<i>A. margaritacea</i> (L.) Benth. & Hook. f.] |
| <i>Antennaria</i> Gaertn. | <i>A. carpathica</i> (Wahlenb.) Bluff et Fingerh <i>A. dioica</i> (L.) Gaertn. |
| <i>Bombycilaena</i> (DC.) Smoljan. | <i>B. erecta</i> (L.) Smoljan. <i>B. discolor</i> (Pers.) M. Lainz |
| <i>Castroviejoa</i> Mill. | <i>C. frigida</i> (Labill.) Galbany, L.Sáez & Benedi <i>C. montelinasana</i> (Em. Schmid) Galbany, L.Sáez & Benedi |
| <i>Filago</i> L. | <i>F. arvensis</i> L. <i>F. congesta</i> DC. <i>F. discolor</i> (DC.) Andrés-Sánchez et Galbany <i>F. tyrrhenica</i> Chrtek et Holub ex Soldano et F. Conti |
| | ¹ <i>F. asterisciflora</i> (Lam.) Pers. (preliminary accepted by Greuter, 2006-2009) <i>F. carpetana</i> (Lange) Chrtek et Holub (preliminary accepted by Greuter, 2006-2009) <i>F. pygmaea</i> L. ² <i>F. eriocephala</i> Guss. <i>F. germanica</i> (L.) Huds. <i>F. lutescens</i> Jord. <i>F. pyramidata</i> L. |
| [<i>Gamochoaeta</i> Wedd.] = <i>Gnaphalium</i> sect. <i>Gamochoaeta</i> (Wedd.) Hoffm. = <i>Gnaphalium</i> subg. <i>Gamochoaeta</i> (Wedd.) Grenier | [<i>G. americana</i> (Mill.) Wedd.] [<i>G. antillana</i> (Urb.) Anderb.] [<i>G. pensylvanica</i> (Willd.) Cabrera] [<i>G. purpurea</i> (L.) Cabrera] |
| <i>Gnaphalium</i> L. = <i>Omalotheca</i> Cass. = <i>Filaginella</i> Opiz | <i>G. diminutum</i> Br-Bl. <i>G. hoppeanum</i> W. D. J. Koch <i>G. norvegicum</i> Gunnerus <i>G. supinum</i> L. <i>G. sylvaticum</i> L. <i>G. uliginosum</i> L. |
| <i>Helichrysum</i> Mill. | <i>H. italicum</i> (Roth) G. Don <i>H. litoreum</i> Guss. |
| | ³ <i>H. archimedeum</i> C. Brullo et Brullo (not reported by Greuter, 2006-2009) <i>H. barrelieri</i> (Ten.) Greuter (accepted as subspecies of <i>H. stoechas</i> in Greuter, 2006-2009) <i>H. hyblaicum</i> Brullo (preliminary accepted by Greuter, 2006-2009) <i>H. stoechas</i> (L.) Moench ⁴ <i>H. erreerae</i> Tineo <i>H. nebrodense</i> Heldr. (preliminary accepted by Greuter, 2006-2009) <i>H. panormitanum</i> Guss. <i>H. pendulum</i> (C. Presl.) C. Presl. <i>H. saxatile</i> Moris |

Table 1. The Italian genera and species of *Gnaphalieae* (alphabetical order). Accepted names are in italics-bold-face type, their synonyms in regular italics. Bracketed names are of xenophytic genera and species. Species complexes are highlighted in light grey. Taxonomically doubtful species are underlined.

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|--|---|
| <i>Laphangium</i> (Hilliard et B. L. Burt.) Tzvelev | <i>L. luteoalbum</i> (L.) Tzvelev |
| <i>Logfia</i> Cass. | <i>L. gallica</i> (L.) Coss. <i>L. heteranthera</i> (Raf.) Holub <i>L. lojaconoi</i> (Brullo) C. Brullo et Brullo <i>L. minima</i> (Sm.) Dumort <i>L. neglecta</i> (Soy.-Will.) Holub |
| <i>Leontopodium</i> Cass. | <i>L. alpinum</i> Cass. <i>L. nivale</i> (Ten.) Hand.-Mazz. |
| <i>Micropus</i> L. | <i>M. supinus</i> L. |
| <i>Pseudognaphalium</i> Kirp. | <i>P. undulatum</i> (L.) Hilliard. et B. L. Burt. |
| <i>Phagnalon</i> Cass. | <i>Ph. saxatile</i> (L.) Cass. <i>Ph. sordidum</i> (L.) Rchb. <i>P. metlesicsii</i> Pignatti (accepted as synonym of <i>P. rupestre</i> in Greuter, 2006-2009) <i>P. rupestre</i> (L.) DC. |
| [<i>Xerochrysum</i> Tzvelev] = <i>Bracteantha</i> Andreb. et Hegi | [<i>X. bracteatum</i> (Vent.) Tzvelev] |

1. The "F. pygmaea aggregate" according GREUTER (2008, 2006-2009).
2. The "F. germanica aggregate" according GREUTER (2008, 2006-2009).
3. The "H. stoechas aggregate" according GREUTER (2006-2009).
4. The "H. pendulum aggregate" according GREUTER (2006-2009).
5. The "P. rupestre aggregate" according GREUTER (2006-2009).

Table 1. Continuation.

MATERIAL AND METHODS

The nomenclature mainly follows GREUTER (2008, 2006-2009). Specific literature is also analyzed.

Examination of the specimens kept in the Herbaria B, K, WU, RO and LINN allows to verify the diagnostic characters of the genera here studied.

The taxa are listed in alphabetical order. For each genus are reported: exotic status [the letter "A" (= alien) is added to the left of the name for the xenophytic taxa], reference to the protologue, synonyms, notes on the related genera, list of the Italian species and subspecies with the regions (abbreviations according to CONTI & al., 2005) in which the taxa are recorded [the regional presences follow Conti & al. (2005, 2007) for the autochthonous species and CELESTI-GRAPOW & al. (2009, 2010) for the allochthonous species; if no regions are indicated, it means that the taxon was not reported by PIGNATTI (1982), CONTI & al. (2005, 2007) and CELESTI-GRAPOW & al. (2009, 2010) and the distribution in Italy is to verify].

LIST OF THE TAXA

A **Anaphalis** DC., *Prodr.* 6: 271. 1838

Anaphalis is the largest Asian genus in the tribe Gnaphalieae with the greatest diversity center in the Eastern Himalayans and includes about 110 species (NIE & al., 2012). The same authors show a weakly supported monophyly of *Anaphalis* and a clear nesting with *Helichrysum* L. (in particular the Mediterranean–Asian group). Two species (aliens) are recorded in Europe [*A. margaritacea* (L.) Benth. & Hook. f. and *A. triplinervis* (Sims) C. B. Clarke], of which one (*A. margaritacea*) is indicated for Italy (Northern and Central areas) as naturalized (ZANGHERI, 1976; GREUTER, 2006-2009). CONTI & al. (2005, 2007) and CELESTI-GRAPPOW & al., (2009, 2010) have not reported it.

From the morphological point of view, *Anaphalis* is similar to *Helichrysum*, *Pseudognaphalium* Kirp., *Xerochrysum* Tzvelev and *Gnaphalium* L. on the basis of the inflorescence and fruits characters. A diagnostic key follows:

1. Phyllaries brown or hyaline, inconspicuous *Gnaphalium*
1. Phyllaries white, yellow, pink, or reddish, conspicuous 2
2. Achenes and pappi dimorphics: achenes of the female florets present and well developed (oblong or subrounded, with glandular hairs or mammilla or almost glabrous in predominantly female capitula) with pappus filiform and almost smooth or slightly scabrid at tip; achenes of the male florets vestigial (usually absent in predominantly male capitula) with pappus not filiform, scabrid, pinnate-incrassate at tip of apex *Anaphalis*
2. Achenes and pappi monomorphic: achenes oblong, glabrous or with short to long hairs, smooth with pappus of capillary bristles (sometimes subplumose) *Pseudognaphalium*, *Xerochrysum*, *Helichrysum*

List of the Italian taxa:

1. *A. margaritacea* (L.) Benth. & Hook. f. [*Gnaphalium margaritaceum* L. = *Antennaria margaritacea* (L.) Sweet]

Logfia Cass., *Bull. Sci. Soc. Philom. Paris*: 143. 1819

Recent molecular studies on the *Filago* group (GALBANY-CASALS & al., 2010) show that *Logfia* can be considered an independent genus, with exception of *L. arvensis* L. that is clearly placed within the “true *Filago*” (*Filago* L. s.s.). This result supports the previous proposal by ANDERBERG (1991). According to these authors, an analytic key of *Filago* L. and *Logfia* is following [terminology according to GALBANY-CASALS & al. (2010) and MOREFIELD (1992)]:

1. Capitula solitary or in small cluster; phyllaries 5; external receptacular paleae obtuse to acute, coriaceous in fruit, deeply enclosing the female flowers; corolla of the external female flowers slightly attached to the fruit; achene oblong..... *Logfia*
1. Capitula usually in dense cluster (few capitula in *F. arvensis*); phyllaries mostly absent (present only in *F. arvensis*); external receptacular paleae acute to bristle-tipped, scarious in fruit, subtending the female flower (slightly enclosing the female flowers in *F. arvensis*); corolla of the external female flowers terminally attached to the fruit; achene reniform..... *Filago*

List of the italian taxa:

1. *L. gallica* (L.) Coss. [= *Gnaphalium gallicum* L., nom. altern. = *Filago gallica* L., nom. altern. = *Oglifa gallica* (L.) Chrtek et Holub].
Regions: all regions (old recorded in VDA) except FVG;
2. *L. heteranthera* (Raf.) Holub [= *Gnaphalium heteranthum* Raf. = *Oglifa heteranthera* (Raf.) Pignatti = *Filago heteranthera* Raf. = *F. cupaniana* (DC.) Parl.].
Regions: BAS, CAL, SIC, SAR. FIORI (1927) also indicated *F. heteranthera* in "Allumiere" (Lazio region, Central Italy), but the recent regional flora (ANZALONE & al., 2010) has not reported this reference: it can be considered doubt for Lazio;
3. *L. lojaconoi* (Brullo) C. Brullo & Brullo [= *Oglifa lojaconoi* Brullo = *F. lojaconoi* (Brullo) Greuter = *Filago cossyrensis* Tineo ex Lojac. 1903, non Lojac. 1885].
Regions: SIC;
4. *L. minima* (Sm.) Dumort [= *Gnaphalium minimum* Sm. = *Filago minima* (Sm.) Pers. = *Oglifa minima* (Sm.) Rchb.].
Regions: TAA, VEN, LOM, PIE, VDA, LIG, EMR, TOS, UMB, MAR, CAL, SIC; old recorded in FVG and LAZ;
5. *L. neglecta* (Soy.-Will.) Holub [= *Gnaphalium neglectum* Soy.-Will. = *Oglifa neglecta* (Soy.-Will.) Rchb. = *Filago neglecta* (Soy.-Will) DC.].
Regions: old recorded in TOS.

Micropus L., *Sp. Pl.* 2: 927. 1753

The genus *Micropus* was first described by LINNAEUS (1753: 927) with one species (*M. supinus*). CASSINI (1822) recognized *Micropus* as separate genus, placed out of *Inulae s.s.* The same choice was made by several subsequent authors, including the comprehensive work by ANDERBERG (1991), who treated *Micropus* as monotypic genus. MOREFIELD (2006) included in *Micropus* the

two American species of *Bombycilaena* (DC.) Smoljan. (*M. californicus* Fischer & C. A. May and *M. amphibolus* A. Gray). The phylogenetic analyses by GALBANY-CASALS & al. (2010) shows that both *Micropus* and *Bombycilaena* can be considered separate genera (excluding *B. californicus* from *Bombycilaena*) despite their high morphological similarity (capitula features). In particular *Micropus* is sister to the rest of the species included in the *Filago* group s.s. (as define by GALBANY-CASALS & al., 2010). From the morphological point of view, *Micropus* mainly differs from *Bombycilaena* in having opposite leaves (*Bombycilaena* has alternate leaves).

List of the Italian taxa:

M. supinus L.

Regions: FIORI (1927) reported this *taxon* in “...Friuli...Tosc., ma non più ritrovato in tempi recenti...” (“...Friuli...Tuscany, but not recently recorded...”). No Italian subsequent authors cited *M. supinus*: it can be considered doubtful in Italy;

A **Xerochrysum** Tzvelev, *Novosti Syst. Vysš. Rast.* 27: 151. 1990

= *Xeranthemum* L. p. p.

Xerochrysum is a genus of six Australian species, some of which are used as ornamentals, escaping from cultivation in other continents (NESOM, 2006; YOUSHENG & al., 2011). One species (*X. bracteatum*) is recorded in Europe (GREUTER, 2006-2009) where it is mostly considered casual, sometimes naturalized (such as in Portugal). As regard Italy, neither the name *X. bracteatum* nor its homotypic synonyms were cited in the national floras [from BERTOLONI (1833-1857) to CONTI & al. (2005, 2007) and CELESTI-GRAPPOW & al., (2009, 2010)]. A recent study on the phylogeny of Australian Gnaphalieae shows that *Xerochrysum* is non-monophyletic (BAYER & al., 2002). However the author does not provide taxonomic implications for the tribe, proposing to combine the sequence matrix of the study with that from the African one, also including additional taxa from South America, North America, and Eurasia. So, we here accept *Xerochrysum* as separate taxon.

From the morphological point of view, *Helichrysum* appears the genus more similar. The diagnostic characters refer to the habitus, the number of capitula and the shape of the phyllaries:

1. Usually annual herbs (sometimes perennial); capitula solitary (sometimes in small clusters of 2-3 heads); phyllaries broader, the inner ones lanceolate and acuminate at apex, yellow, white, red or purple*Xerochrysum*

1. Subshrubs; capitula arranged in dense corymbiform clusters; phyllaries narrower, rounded or acute at apex, yellow or white *Helichrysum*

List of the Italian taxa:

X. bracteatum (Vent.) Tzvelev [= *Xeranthemum bracteatum* Vent.] = *Helichrysum bracteatum* (Vent.) Andrews]

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