

F. M. Raimondo, E. Bajona, V. Spadaro & E. Di Gristina

Recent and new taxonomic acquisitions in some native genera of *Asteraceae* from southern Italy and Sicily

Abstract

Raimondo, F. M., Bajona, E., Spadaro, V. & Di Gristina, E.: Recent and new taxonomic acquisitions in some native genera of *Asteraceae* from southern Italy and Sicily. — Fl. Medit. 31: 109-122. 2021. — ISSN: 1120-4052 printed, 2240-4538 online.

After a brief review of the recent acquisition in some native genera of family *Asteraceae* from southern Italy and Sicily, a new endemic species of *Anthemis* (sect. *Hiorthia*) is described from Sicily and named *Anthemis parlatoreana*. The locus classicus of the new taxon, falling in the NW Tyrrhenian coast of the island (Castellammare del Golfo, Trapani), coincides with that of *Ptilostemon greuteri*, another endemic very rare species of the Sicilian flora. Data on the morphology, distribution, ecology and conservation status of the new species are provided. The taxonomic relationships with the other Sicilian taxa of the same section, in particular *A. cupaniana*, are also analyzed. The simultaneous presence in the same site of other endemic plants enriches the area of the limestone reliefs of Castellammare del Golfo and all of north-western Sicily with biogeographic significance and biogenetic importance.

Key words: Italian flora, *Anthemis*, *Centaurea*, *Hieracium*, *Pilosella*, *Ptilostemon*, *Taraxacum*.

Introduction

In Sicily, as in the other Italian regions, the *Asteraceae* family is very rich of genera and species (see Bartolucci & al. 2018; Pignatti 2019). Some of this are very complex and still contain critical groups within them. In the Mediterranean flora, this condition occurs particularly in the genera *Anthemis*, *Centaurea*, *Hieracium* and *Taraxacum* (Greuter 2008). Several taxa belonging to these genera have recently been described or rediscovered in the flora of southern Italy and Sicily.

In this regard, for *Anthemis* can be mentioned 2 species; for *Hieracium* 7 species and 9 subspecies; for *Taraxacum* 9 species; for *Pilosella* 1 subspecies and for *Ptilostemon* 1 species.

With referring to *Anthemis*, the investigations on the vascular flora of the coastal reliefs of North West Sicily, allowed us to identify a new species in the sect. *Hiorthia* (DC.) R. Fernandes.

In this article, after a brief review of the taxa recently described or rediscovered for the southern regions of Italy and Sicily in the family *Asteraceae*, the new Sicilian species of *Anthemis*, here proposed with the name of *Anthemis parlatoreana*, is finally presented.

Review of recent acquisitions

Anthemis L.

In this genus were described:

A. messanensis Brullo [from Sicily (Brullo 1994)];

A. pignattiorum Guarino, Raimondo & Domina [from Sicily (Guarino & al. 2013)].

Centaurea L.

In this genus were described:

Centaurea poeltiana Puntillo [from Calabria (Puntillo 1996)];

C. aspromontana Brullo, Scelsi & Spampinato [from Calabria (Brullo & al. 2001)];

C. ionica Brullo [from Calabria (Brullo & al. 2001)];

C. pentadactyli Brullo, Scelsi & Spampinato [from Calabria (Brullo & al. 2001)];

C. scillae Brullo [from Calabria (Brullo & al. 2001)];

C. brulla Greuter [from Apulia and Basilicata (Greuter 2003)];

C. erycina Raimondo & Bancheva [from Sicily (Raimondo & Bancheva 2004)];

C. saccensis Raimondo, Bancheva & Ilardi [from Sicily (Raimondo & al. 2004)];

C. sarfattiana Brullo, Gangale & Uzunov [from Calabria (Brullo & al. 2004)];

C. giardiniae Raimondo & Spadaro [from Sicily (Raimondo & Spadaro 2006)];

C. lacaitae Peruzzi [from Campania (Peruzzi 2008)];

C. sicana Raimondo & Spadaro [from Sicily (Raimondo & Spadaro 2008)];

C. tyrrhena C. Brullo, Brullo & Giusso [from Sicily (Brullo C. & al. 2011)];

C. calabra G. Caruso, S.A. Giardina, Raimondo & Spadaro [from Calabria (Caruso & al. 2013)];

C. aegusae Domina, Greuter & Raimondo [from Sicily (Domina & al. 2017)];

C. heywoodiana Raimondo, Spadaro & Di Grist. [from Sicily (Raimondo & al. 2020)].

Hieracium L.

In this genus were described or rediscovered:

Hieracium pignattianum Raimondo & Di Grist. [described from Sicily (Raimondo & Di Gristina 2004)];

H. madoniense Raimondo & Di Grist. [described from Sicily (Raimondo & Di Gristina 2007)];

H. pallidum subsp. *aetnense* Gottschl., Raimondo & Di Grist. [described from Sicily (Gottschlich & al. 2013)];

H. hypochoeroides subsp. *montis-scuderii* Di Grist., Gottschl., Galesi, Raimondo & Cristaudo [described from Sicily (Di Gristina & al. 2013)];

H. busambarensense Caldarella, Gianguzzi & Gottschl. [described from Sicily (Caldarella & al. 2014)];

H. terraccianoii Di Grist., Gottschl. & Raimondo [described from Calabria (Di Gristina & al. 2014)];

H. barrelieri Gottschl., Raimondo, Greuter & Di Grist. [described from Campania (Gottschlich & al. 2015)];

- H. hypochoeroides* subsp. *peracutisquamum* Di Grist., Gottschl. & Raimondo [described from Basilicata (Di Gristina & al. 2015a)];
- H. hypochoeroides* subsp. *lucanicum* (Arv.-Touv.) Di Grist., Gottschl. & Raimondo [rediscovered from Campania (Di Gristina & al. 2015b)];
- H. hypochoeroides* subsp. *cilentanum* Di Grist., Gottschl. & Raimondo [described from Campania (Di Gristina & al. 2016a)];
- H. schmidtii* subsp. *nebrodense* (Tineo ex Lojac.) Di Grist., Gottschl. & Raimondo [rediscovered from Sicily (Di Gristina & al. 2016b)];
- H. pollinense* Zahn [rediscovered from Basilicata (Gottschlich & al. 2017a)];
- H. umbrosum* subsp. *abietinum* (Boiss. & Heldr.) Greuter [rediscovered from Basilicata (Gottschlich & al. 2017b)];
- H. jurassicum* subsp. *serrapretense* Di Grist., Gottschl. & Scafidi [described from Basilicata (Di Gristina & al. 2018)];
- H. racemosum* subsp. *lucanum* Di Grist., Domina, Gottschl. & Scafidi [described from Basilicata (Di Gristina & al. 2019)].

Taraxacum F. H. Wigg.

In this genus were described:

- T. carthusianorum* Aquaro, Caparelli & Peruzzi [from Calabria (Aquaro & al. 2008a)];
- T. lilianae* Aquaro, Caparelli & Peruzzi [from Basilicata (Aquaro & al. 2008b)];
- T. calabricum* Aquaro, Caparelli & Peruzzi [from Calabria (Aquaro & al. 2009)];
- T. cescae* Aquaro, Caparelli & Peruzzi [from Calabria (Aquaro & al. 2009)];
- T. garbarianum* Peruzzi, Aquaro, Caparelli & Raimondo [from Sicily (Peruzzi & al. 2009)];
- T. kirschneri* Aquaro, Caparelli & Peruzzi [from Calabria (Aquaro & al. 2009)];
- T. optima* Aquaro, Caparelli & Peruzzi [from Calabria (Aquaro & al. 2009)];
- T. pollinense* Aquaro, Caparelli & Peruzzi [from Calabria (Aquaro & al. 2009)];
- T. annalisae* Carlesi & Peruzzi [from Campania (Carlesi & Peruzzi 2012)].

Pilosella Vaill.

In this genus was described only:

- Pilosella hoppeana* subsp. *sicula* Di Grist., Gottschl. & Raimondo [from Sicily (Di Gristina & al. 2016c)].

Ptilostemon Cass.

In this genus was described only:

- Ptilostemon greuteri* Raimondo & Domina [from Sicily (Raimondo & Domina 2006)].

New acquisition

In *Anthemis*, to the two species mentioned above and described from Sicily, today we add a new species with the name of *Anthemis parlatoresana*.

Anthemis parlatoreana Raimondo, Bajona, Spadaro & Di Gristina *sp. nov.* (Fig. 1).

Diagnosis

Planta caespitosa perennis, suffruticulosa, viridis-cinerea, cum scapis ramosis, prostratis-ascendentibus, pluricephalibus. Folia petiolata, laciniata; inferiores virides et gradatim cinerea. Capitula fere 3-5, receptaculum insigniter conicum. Squamae externae sub-triangulares, acutae, canescentes, cum marginibus brunneis, scariosis et pilosis; internae cartilagineae. Flores radii 18-22; ligula alba, cum apice denticulato; flores disci tubulosi, flavi, cum petalis acutis, curvatis ab exteriori parte; antherae intense flavae. Fructus cuneatus, granulatus in longitudinem costatus, oblique coronatus.

Typus – Sicily: Castellammare del Golfo (Trapani), northern slopes of Pizzo Stagnone (Inici Mount), on calcareous rock, ca.400 m (a.s.l.), 10 June 2020, *Raimondo & Bajona* (holo PAL-Gr; iso PAL and FI).

Description (Figs 1-3)

Perennial plant, suffruticose, bushy, ashy-green, with branchy scapes, lying down-ascending, (20)30–60(70) cm long, hairy, with numerous capitula. Leaves green and gradually ashy, lacinate; basal leaves 7–10.5 cm long, with obtuse to acute lacinae; median leaves lacinate, 6–10 cm long; the apical leaves lacinate to entire, 1.5–2 cm long; petioles of the basal and median leaves 3–6 cm long; petioles of the cauline ones 2–3 cm long; the apical leaves sessile. Capitula (1)3–5(7); receptacle markedly conical, 1.5–1.8 cm wide at the base, high 0.7–0.8 cm. Involucral bracts outermost sub-triangular, acuminate, greyish sub-tomentose, brownish, scarios and sparsely hairy at the edges, 1.2–1.5 mm wide, 3 mm long; the innermost cartilaginous, lanceolate and sharp, 1 mm wide, 3.5–4.5 mm long. Ray florets (16)18–22(25), female; ligule white, with dentate apex, (12)13–14(15) mm long; disc florets tubular, golden yellow, with 6–7 mm long pointed petals, curved on the outside; anthers intense yellow. Achene cuneate, 2.5–3.0 × 1 mm long, granulated, longitudinally costate; corona obliquely truncated.

Flowering: April–June.

Etymology: The epithet of the name of the new Sicilian species commemorates one of the most famous Italian botanists of the 19th century: Filippo Parlato (Palermo 1816–Firenze 1877).

Distribution: Plant is currently known only from the northern coastal reliefs of Castellammare del Golfo in the Trapani province (NW Sicily). It is believed that the new species is however localized in this important carbonate sector of western Sicily (Fig. 4).

Biology and Ecology (Figs 5 and 6): Chamaephyte suffruticose (Ch suff). Ligulate flowers unisexual, female and frequently abortive.

A. parlatoreana is a robust and competitive plant. From the ecological point of view it is a very plastic species. It prefers the rocky habitat but also colonizes stony ground, rocky soils and, in general, inconsistent substrates in open places. The seeds have a high germinative power (Fig. 5b) and the plants spread the seeds widely even at medium dis-

tances, thus managing to colonize the suitable spaces below the rock environment or, in any case, close to it. *A. parlatoreana*, primarily inhabits the calcareous rocks (Figs 4a, 5b, 5c & 5e) facing to north and north-east, between 250 and 750 m (a.s.l.). It adapts to different habitats and competes well with the corresponding phytocoenoses. On the rocks, it is associated with *Allium subhirsutum* L., *Antirrhinum siculum* Miller, *Asplenium trichomanes* L., *Ballota rupestris* (Biv.) Vis., *Brassica villosa* subsp. *bivonana* (Mazzola & Raimondo) Raimondo & Mazzola, *Centaurea panormitana* subsp. *ucraiae* (Lacaita) Greuter, *Ceterach officinarum* DC., *Coronilla valentina* L. (Fig. 5h), *Cymbalaria pubescens* (C. Presl) Cufod., *Dianthus rupicola* Biv. subsp. *rupicola*, *Elichrysum rupestre* subsp. *stramineum* (Guss.) C. Brullo & Brullo, *Euphorbia bivonae* Steudel, *Hyoseris radiata* L., *Iberis semperflorens* L., *Lithodora rosmarinifolia* (Ten.) Johnston, *Lomelosia cretica* (L.) Greuter & Burdet (Fig. 5g), *Matthiola incana* subsp. *rupestris* (Raf.) Nyman, *Melica minuta* L. subsp. *minuta*, *Micromeria fruticulosa* (Bertol.) Silić, *Ranunculus rupestris* Guss., *Seseli bocconi* Guss., *Silene fruticosa* L., *Umbilicus rupestris* (Salisb.) Dandy; further down also with *Asparagus acutifolius* L., *Chamaerops humilis* L., *Coronilla valentina* L. (Fig. 5h), *Erica multiflora* L., *Euphorbia dendroides* L., *Galium aetnicum* Biv., *Malva arborea* (L.) Webb & Berthel., *Prasium majus* L., *Ptilostemon greuteri* Raimondo & Domina (Figs 5d and 5h), *Ruta chalepensis* L., *Teucrium flavum* L. (Fig. 5h), *Urginea maritima* (L.) Baker., and *Valantia muralis* L. In more mesophilous conditions it also associates with *Odontites bocconei* (Guss.) Walpers subsp. *bocconei*.

From the phytosociological point of view, due to its high frequency and coverage, the new species has a differential role in the phytocoenosis attributable to the *Dianthion rupicolae* Brullo & Marcenò 1979 alliance (*Asplenietalia glandulosi* Br.-Bl. & Meier 1934).

Taxonomic remarks: *Anthemis parlatoreana* is well distinct from the species of the *Anthemis* sect. *Hiorthia*. It is very close to the taxa of *Anthemis punctata* group, which in Sicily includes *A. cupaniana* Tod ex Nyman and *A. pignattiorum*. However, *A. parlatoreana* differs from these as it is a more robust and developed plant, very thermophilous, with a short vegetative stasis in mid-summer and early vegetative restart in autumn (Fig. 6a) rather than spring. Due to the ecology and the shape of the receptacle, *A. parlatoreana* is related to *A. pignattiorum* of the southern eastern coast of Sicily. However, it differs from *A. pignattiorum* by the greater length of the floral scapes, by the greater number of capitula per scape, by the greater number of ray florets, by the prominent conical receptacle and to have achenes with corona, rather than devoid of corona as in said species. Furthermore, it is related to *A. cupaniana*, from which, however, it differs by its ecology – as a more thermophilous plant – by the even longer scapes and with more capitula, as well as for the richer number of peripheral flowers of the capitula. It also differs in the markedly conical shape and the larger diameter of the receptacle, in the larger size and pubescence of the external involucreal scales (Fig. 2d).

From *Anthemis cretica* subsp. *columnae* occurring in Sicily, the new species differs by its longer and with more capitula scapes, by capitula with a greater number of ray florets, and by the conical rather than subglobose receptacle.

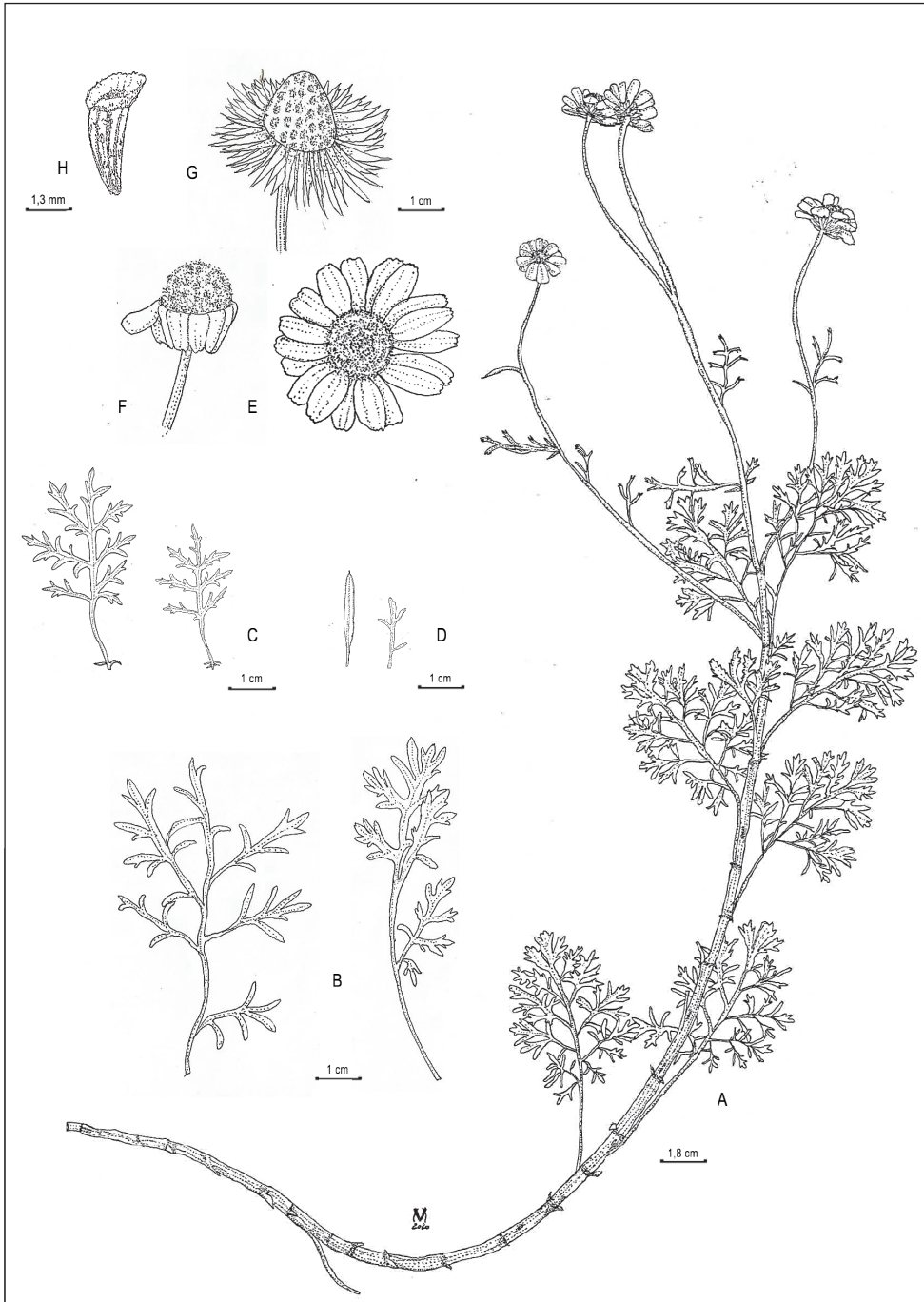


Fig. 1. Iconographic plate of *Anthemis parlatoireana*: a) plant; b) basal leaves; c) cauline leaves; d) apical leaves; e) capitulum in flower; f) receptacle; g) mature achene.



Fig. 3. Details of representative organs of the plant of *Anthemis parlatoreana*: a) mature capitula on the plant *in situ*; b-c) shape and size of the mature capitulum; d-f) shape and size of receptacle in mature capitulum; f) mixture of achenes and internal scales of the capitulum at maturity.



Fig. 4. Overall view of the coastal relief system of Castellammare del Golfo (Trapani) (from Google Earth).

Finally, from the others Sicilian perennial species included in the same section, the new taxon is distinguished from *A. messanensis* and from *A. ismelia* Lojac. – of the nearby coast of Palermo – in being a much more developed and competitive plant, as well as in the shape of the receptacle of the capitula, conical and not obtuse. Instead, *A. parlatoreana* is related to *A. ismelia* by the ecology and shape of the corona of the fruit. From *A. aetnensis* Schouw, it differs not only by its very different ecology, but also by its longer and with more capitula scapes, by the greater number of ray flowers and the different color of the ligules, which are totally white in the new species, while pinkish-purple, at least in the basal portion, in the Etna species (Brullo C. & Brullo 2020). With the latter, *A. parlatoreana* is related, however, to the shape of the corona of the fruit, obliquely truncated (Fig. 1H).

Conservation status: The new taxon is currently known only from one location not exceeding 300 hectares. However, its single known population consist of about 2500 mature individuals that produce many fertile seeds (Fig. 6b) and the renewal is evident and considerable. The recurrence of fires (Fig. 5a) is the main threat for the population, because the *locus classicus* is close to an inhabited center with a rapid urban development (Fig. 4). Although the plants grow preferably on rocks, the recurrent presence of fire could progressively reduce the number of mature individuals. Following the IUCN criteria (IUCN 2019), on the basis of criterion B, due to its restricted area (EOO < 100 km² and AOO < 10 km²), number of location (1) and declining inferred of the quality of habitat and number of mature individuals, *Anthemis parlatoreana* can be classified as *Critically Endangered* (CR): B1ab(iii,v) + 2ab(iii,v).



Fig. 2. *Anthemis parlatoireana*: a-b) plants in full bloom; c) capitulum in full bloom; d) detail of the external scales of the capitulum; e-f) plants and capitula at the end of flowering.

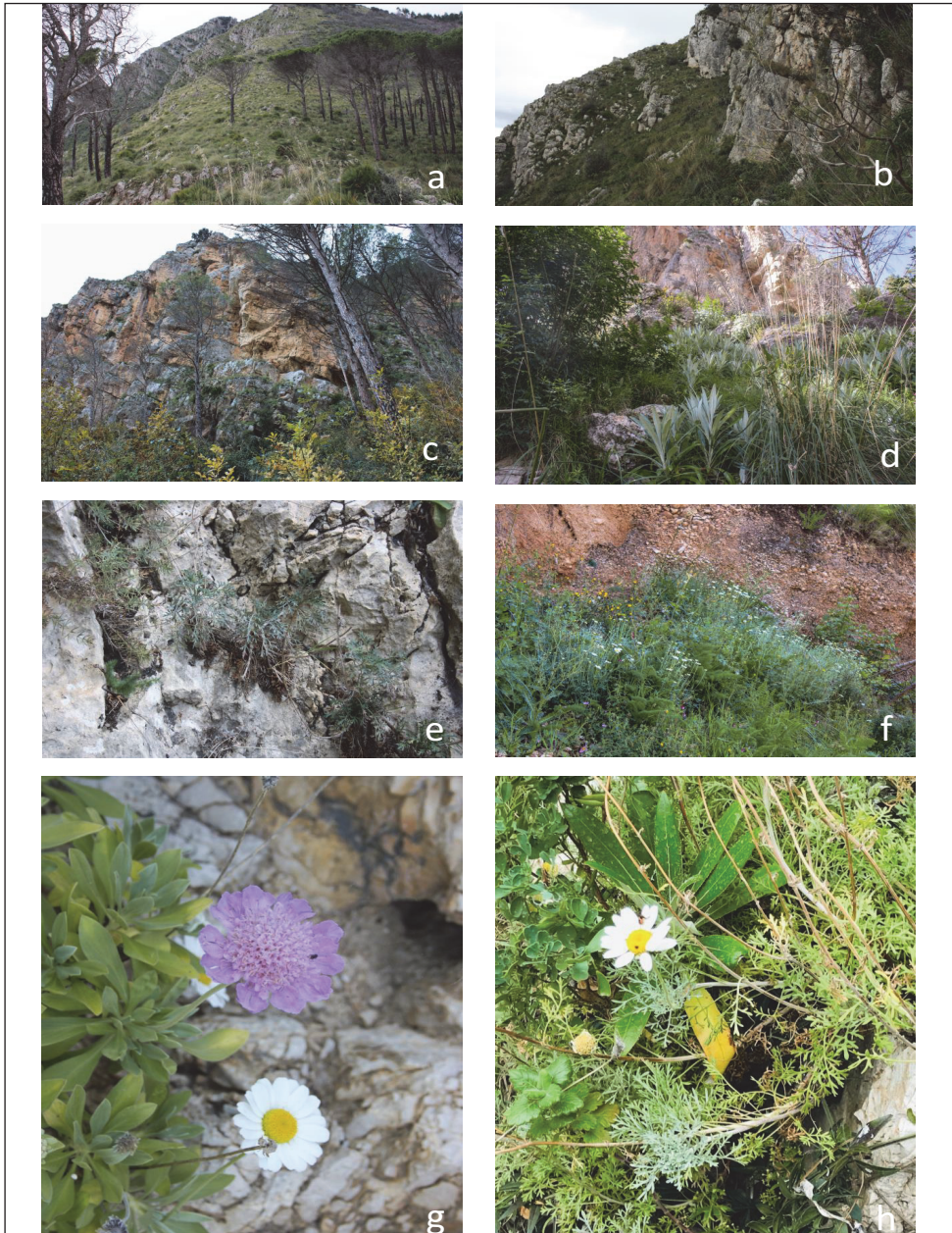


Fig. 5. *Anthemis parlatoreana*: a) habitat of on the northern summit of Pizzo Stagnone (873 m a.s.l.); b) different mesophilous habitats on limestone slopes of Pizzo Stagnone; c) termophilous rock habitats near his *locus classicus*; d) termophilous habitat on limestone debris with *Ptilostemon greuteri* and *Ampelodesmos mauritanicus*; e) chasmophytic habitus in the *locus classicus*; f) habitus of the species on detrital soil; g-h) the new species respectively with *Lomelosia cretica* and with *P. greuteri*, *Teucrium flavum*, and *Coronilla valentina*.



Fig. 6. *Anthemis parlatoresana*: a) autumn regrowth of a head in habitat; b) germination response of *A. parlatoresana* seeds 20 days after sowing in a plant pot.

Discussion and conclusion

In southern Italy and Sicily, the *Asteraceae* family, and some of its genera in particular, has had a significant increase in specific and subspecific taxa. This increase was particularly evident in the genera *Centaurea* (16 taxa), *Hieracium* (15 taxa), *Taraxacum* (9 taxa) and *Anthemis* (3 taxa, including the new species described here for Sicily). Particularly, the Sicilian flora is enriched by another endemic species of the genus *Anthemis* (*Asteraceae*, *Anthemideae*). In detail, it is a taxon belonging to the sect. *Hiorthia* and connected to the *Anthemis punctata* group that is also present in North Africa (Oberprelier 1998) and already represented in Sicily by two other endemics localized (*A. pignattiorum*) or more widespread in the carbonate mountains of western Sicily (*A. cupaniana*). The population of the new taxon occurs in an interesting area characterized by a high level of endemism, including taxa with very local distributions and at extinction risk, as in the case of *Ptilostemon greuteri* and *Brassica villosa* subsp. *bivonana*. *Anthemis parlatoresana* is therefore added to these latter taxa. It is localized in the area that has its center on Mount Inici (1064 m a.s.l.), a coastal relief close to the town of Castellammare del Golfo (Trapani, NW-Sicily), locality previously mentioned for *A. cupaniana* (Lojacono 1903). However, unlike the other two taxa, by its biological and ecological characteristics, it is not unlikely that the presence of the new taxon goes beyond this restricted area of the Trapani province.

Acknowledgements

The authors are grateful to *PLANTA* (Palermo) for its logistic support; to Prof. Svetlana Bancheva (Sofia) and Prof. Gianniantonio Domina (Palermo) for their critical reading of the text; finally, to Vincenzo Magro (Palermo) for the drawing of Fig. 1, and to Laura Bertini and Roberta Orlando for their precious collaboration within the *PLANTA* Center, in Palermo.

References

- Aquaro, G., Caparelli, K. F. & Peruzzi, L. 2008: The genus *Taraxacum* (*Asteraceae*) in Italy. I. A systematic study of *Taraxacum* sect. *Palustria*. – *Phytol. Balcan.* **14(1)**: 61-67.
- , — & — 2009: The genus *Taraxacum* (*Asteraceae*) in Italy. II. Five new species of *Taraxacum* sect. *Erythrocarpa*. – Pp. 161-169 in: *Proceedings of IV Balkan Botanical Congress, 2006.* – Sofia.
- Bartolucci, F., Peruzzi, L., Galasso, G., Albano, A., Alessandrini, A., Ardenghi, N. M. G., Astuti, G., Bacchetta, G., Ballelli, S., Banfi, E., Barberis, G., Bernardo, L., Bouvet, D., Bovio, M., Cecchi, L., Di Pietro, R., Domina, G., Fascetti, S., Fenu, G., Festi, F., Foggi, B., Gallo, L., Gottschlich, G., Gubellini, L., Iamonic, D., Iberite, M., Jiménez-Mejías, P., Lattanzi, E., Marchetti, D., Martinetto, E., Masin, R. R., Medagli, P., Passalacqua, N. G., Peccenini, S., Pennesi, R., Pierini, B., Poldini, L., Prosser, F., Raimondo, F. M., Roma-Marzio, F., Rosati, L., Santangelo, A., Scoppola, A., Scortegagna, S., Selvaggi, A., Selvi, F., Soldano, A., Stinca, A., Wagensommer, R. P., Wilhalm & T. Conti, F. 2018: An updated checklist of the vascular flora native to Italy. – *Pl. Biosyst.* **52(2)**: 179-303. <https://doi.org/10.1080/11263504.2017.1419996>
- Brullo, C. & Brullo, S. 2020: *Flora endemica illustrata della Sicilia.* – Reggio Calabria.
- , — & Giusso, G. 2011: Lectotipificazione e *loci classici* di alcuni endemismi della flora sicula. – Pp. 35–39 in: Peccenini, S. & Domina, G. (eds), *Loci classici, taxa critici e monumenti arborei della flora d'Italia.* Società Botanica Italiana. – Firenze.
- Brullo, S. 1994: *Anthemis messanensis.* – *Boll. Accad. Gioenia Sci. Nat. Catania, ser. 3,* **27**: 404.
- Brullo, S., Gangale, C. & Uzunov, D. 2004: The orophilous cushionlike vegetation of the Sila Massif. – *Bot. Jahrb. Syst.* **125(4)**: 453-488.
- , Scelsi, F. & Spampinato, G. 2001: *La Vegetazione dell'Aspromonte. Studio fitosociologico.* – Reggio Calabria.
- Caldarella, O., Gianguzzi, L. & Gottschlich, G. 2014: *Hieracium busambarensis*, a new species of the sect. *Grovesiana* (*Asteraceae*) from Sicily (Italy). – *Pl. Biosyst.* **148(3)**: 439-443. <https://doi.org/10.1080/11263504.2013.778352>
- Carlesi, V. & Peruzzi, L. 2012: The genus *Taraxacum* (*Asteraceae*, *Cichorieae*) in Italy. IV. Two new species of *Taraxacum* sect. *Palustria*. – *Willdenowia* **42**: 191-197.
- Caruso, G., Giardina, A. S., Raimondo, F. M. & Spadaro, V. 2013: A new species of *Centaurea* (*Asteraceae*) from Calabria (S Italy). – *Pl. Biosyst.* **147(3)**: 844-848. <http://dx.doi.org/10.1080/11263504.2013.829889>
- Di Gristina, E., Gottschlich, G., Galesi, R., Raimondo, F. M. & Cristaudo, A. 2013: *Hieracium hypochoeroides* subsp. *montis-scuderii* (*Asteraceae*), a new endemic subspecies from Sicily (Italy). – *Fl. Medit.* **23**: 49-55. <http://dx.doi.org/10.7320/FIMedit23.049>

- , — & Raimondo, F. M. 2014: *Hieracium terraccianoii* (Asteraceae), a new species endemic to the Pollino National Park (Southern Italy). – *Phytotaxa* **188(1)**: 55-60. <https://doi.org/10.11646/phytotaxa.188.1.8>
- , — & — 2015a: *Hieracium hypochoeroides* subsp. *peracutisquamum* (Asteraceae), a new taxon from Basilicata, southern Italy. – *Ann. Bot. Fennici* **52**: 376-380. <http://dx.doi.org/10.5735/085.052.0519>
- , — & — 2015b: Taxonomic remarks on *Hieracium sartorianum* var. *lucanicum* (Asteraceae), a little known taxon of Cilento (Campania, southern Italy). – *Nordic J. Bot.* **33**: 465-468. <http://dx.doi.org/10.1111/njb.00755>
- , — & — 2016a: *Hieracium hypochoeroides* subsp. *cilentanum* (Asteraceae), a new taxon from S Italy. – *Phytotaxa* **246(3)**: 192-197. <https://doi.org/10.11646/phytotaxa.246.3.3>
- , — & — 2016b: Rediscovery of *Hieracium nebrodense* (Asteraceae), a little-known endemic of Sicily (Italy). – *Phytotaxa* **265(1)**: 59-66. <https://doi.org/10.11646/phytotaxa.265.1.5>
- , — & — 2016c: *Pilosella hoppeana* subsp. *sicula* Di Grist., Gottschl. & Raimondo (Asteraceae), a new endemic subspecies from Sicily (Italy). – *Candollea* **71(1)**: 7-12. <https://doi.org/10.15553/c2016v711a2>
- , — & Scafidi, F. 2018: *Hieracium jurassicum* subsp. *serrapretense* (Asteraceae), a new hawkweed taxon from the Pollino National Park (southern Italy). – *Phytotaxa* **340(2)**: 186-190. <https://doi.org/10.11646/phytotaxa.340.2.8>
- , Domina, G., Gottschlich, G., Maturo, F. & Scafidi, F. 2019: *Hieracium racemosum* subsp. *lucanum* (Asteraceae), a new hawkweed from southern Italy. – *Phytotaxa* **425(5)**: 297-300. <https://doi.org/10.11646/phytotaxa.425.5.5>
- Domina, G., Greuter, W. & Raimondo, F. M. 2017: A taxonomic reassessment of the *Centaurea busambarensis* complex (Compositae, Cardueae), with description of a new species from the Egadi Islands (W Sicily). – *Israel J. Pl. Sci.* **64(1-2)**: 48-56. <https://doi.org/10.1080/07929978.2016.1257146>
- Gottschlich, G., Raimondo, F. M. & Di Gristina, E. 2013: *Hieracium pallidum* subsp. *aetnense* (Asteraceae), a new subspecies from Sicily (Italy), with notes on the taxonomy of *H. pallidum* Biv. – *Pl. Biosyst.* **147(3)**: 826-831. <https://doi.org/10.1080/11263504.2013.829882>
- , Scafidi, F. & Di Gristina, E. 2017a: *Hieracium pollinense* (Asteraceae), an endemic species to the Pollino National Park (Southern Italy) rediscovered. – *Acta Bot. Croat.* **76 (1)**: 95-97. <https://doi.org/10.1515/botcro-2016-0047>
- , Domina, G. & Di Gristina, E. 2017b: *Hieracium umbrosum* subsp. *abietinum* (Asteraceae), a further example of amphi-Adriatic disjunction. – *Pl. Biosyst.* **151**: 792-794. <https://doi.org/10.1080/11263504.2017.1341439>
- , Raimondo, F. M., Greuter, W. & Di Gristina, E. 2015: *Hieracium barrelieri*, a new hawkweed species from S Italy, with notes on Tenore's *Hieracium murorum* var. *barrelieri* (Asteraceae). – *Phytotaxa* **208(1)**: 70-74. <http://dx.doi.org/10.11646/phytotaxa.208.1.7>
- Greuter, W. 2003: The Euro Med treatment of *Cardueae* (Compositae) — generic concepts and required new names. – *Willdenowia* **33(1)**: 49-61.
- 2008: Med-Checklist, Dicotyledones (Compositae), **2**. – Palermo.
- Guarino, R., Raimondo, F. M. & Domina, G. 2013: A new species of *Anthemis* sect. *Hiorthia* (Asteraceae) from SE Sicily. – *Pl. Biosyst.* **147(3)**: 821-825. <http://dx.doi.org/10.1080/11263504.2013.829888>

- IUCN 2019. Guidelines for Using the IUCN Red List Categories and Criteria. Version 14. Prepared by the Standards and Petitions Committee. Cambridge U.K. Available from: <http://www.iucnredlist.org/documents/RedListGuidelines.pdf> [Last accessed 3.5.2021]
- Lojacono Pojero, M. 1903: Flora Sicula, **2(1)**. – Palermo.
- Oberprieler, C. 1998: The systematics of *Anthemis* L. (*Compositae*, *Anthemideae*) in W and C North Africa. – *Bocconea* **9**: 5-328.
- Peruzzi, L. 2008: *Centaurea lacaitae* Peruzzi. – Pp. 97-115 in: Masin, R., Cassanego, L. & Tietto, C. (eds), Notulae alla checklist della flora vascolare italiana 5. – *Inform. Bot. Ital.* **40(1)**.
- , Aquaro, G., Caparelli, K. F. & Raimondo, F. M. 2009: The genus *Taraxacum* (*Asteraceae*) in Italy. III. A new species of *Taraxacum* sect. *Erythrocarpa* from Sicily. – *Fl. Medit.* **19**: 73-79.
- Pignatti, S. 2018: Flora d'Italia, 2a ed., **3**. – Milano.
- Puntillo, D. 1996: A new species of *Centaurea* sect. *Phalolepis* from Calabria (S. Italy). – *Fl. Medit.* **6**: 219-222.
- Raimondo, F.M. & Bancheva, S. 2004: *Centaurea saccensis* (*Asteraceae*), a new species from SW-Sicily. – *Bocconea* **17**: 293-298.
- & Di Gristina, E. 2004: *Hieracium pignattianum* (*Asteraceae*), a new species from the Madonie Mountains (N-Sicily). – *Bocconea* **17**: 313-324.
- & — 2007: *Hieracium madoniense* (*Asteraceae*), a new species from Sicily. – *Pl. Biosyst.* **141(1)**: 86-92. <https://doi.org/10.1080/11263500601153982>
- & Domina, G. 2006: *Ptilostemon greuteri* (*Compositae*), a new species from Sicily. – *Willdenowia* **36(1)**: 169-175.
- & Spadaro, V. 2006: Una nuova specie di *Centaurea* (*Asteraceae*) dell'Etna (Sicilia orientale). – *Naturalista Sicil.*, s.4, **30(4)**: 371-378.
- & — 2008: A new species of *Centaurea* (*Asteraceae*) from Sicily. – *Bot. J. Linn. Soc.* **157(4)**: 785-788. <https://doi.org/10.1111/j.1095-8339.2008.00813.x>
- , Bancheva, S. & Di Gristina, E. 2020: *Centaurea heywoodiana* (*Asteraceae*) a new species from Nebrodi Mountains (N-E Sicily). – *Fl. Medit.* **30**: 369-376. <https://doi.org/10.7320/FIMedit30.369>
- , — & Ilardi, V. 2004: *Centaurea erycina* (*Asteraceae*), a new species from NW-Sicily. – *Bocconea* **17**: 299-306.

Addresses of the authors:

Francesco Maria Raimondo¹, Enrico Bajona¹, Vivienne Spadaro² & Emilio Di Gristina^{3*},

¹*PLANTA*/Center for Research, Documentation and Training, Via Serraglio Vecchio 28, 90123 Palermo, Italy. E-mails: raimondo@centroplantapalermo.org; bajona@centroplantapalermo.org

²Department STEBICEF/Section of Botany, Anthropology and Zoology, University of Palermo, Via Archirafi 38, 90123 Palermo, Italy. E-mail: vivienne.spadaro@unipa.it

³Department of Agricultural, Food and Forest Sciences (SAAF), University of Palermo, Viale delle Scienze, bldg.4, 90128 Palermo, Italy. E-mail: emilio.digrestina@unipa.it

*Corresponding author