Centaurea erycina (*Asteraceae*), a new species from NW-Sicily

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Abstract

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Centaurea erycina, a new species from Sicily is described and illustrated from the calcareous rocks of San Giuliano Mt. near Erice village (NW-Sicily). Information about its karyology, distribution and relationships with the species related belonging to the *Centaurea cineraria* gr. in Sicily is given. A key to the species of this group in Sicily is also provided.

Introduction

During an investigation on the set of the third "Iter Mediterraneum" held in Sicily a new species belonging to the sect. *Pannophyllum* Hayek of *Centaurea* L. (*Asteraceae*) has been identified. The representatives of this section mainly occur in the southern and southeastern parts of Europe (Dostál 1976) and 75 % of them are regional endemics. In the Sicilian flora all species belonging to the Sect. *Pannophyllum,* including this new one, are endemics, confined to calcareous rocks, very often near the sea.

Centaurea erycina Raimondo & Bancheva**, sp. nova**

TYPUS – *Holotypus*: Sicily, San Giuliano Mt., Venus' castle (Erice village), carbonate rocks, 600 m a.s.l., 38° 02' N,12° 35' E, 31.05.1990, Raimondo & al., 0485 (PAL). – *Isotypi* in PAL, G, SEV, B, RNG, CAT, SOM).

ICONOGRAPHY – Fig. 1

DIAGNOSIS – *Planta perennis, tomentosa, canescens, 20-140 cm alta. Radix crassa, lignosa; caulis sulcatus adscendens vel erectus, parce ramosus, dense foliosus usque ad apicem; folia rosularia et caulina 1-2 pinnatipartita; folia ramorum 1-pinnatipartita vel integra; laciniae foliorum lanceolatae. Capitula in corymbum dispositae vel (raro) solitaria. Pedunculi 3-5 mm lati foliis praediti ad basim capituli. Involucrum ovoideo-globosum 16-22 (24) × 14-16 mm; bracteae oblongae vel lanceolatae cano-tomentosae vel*

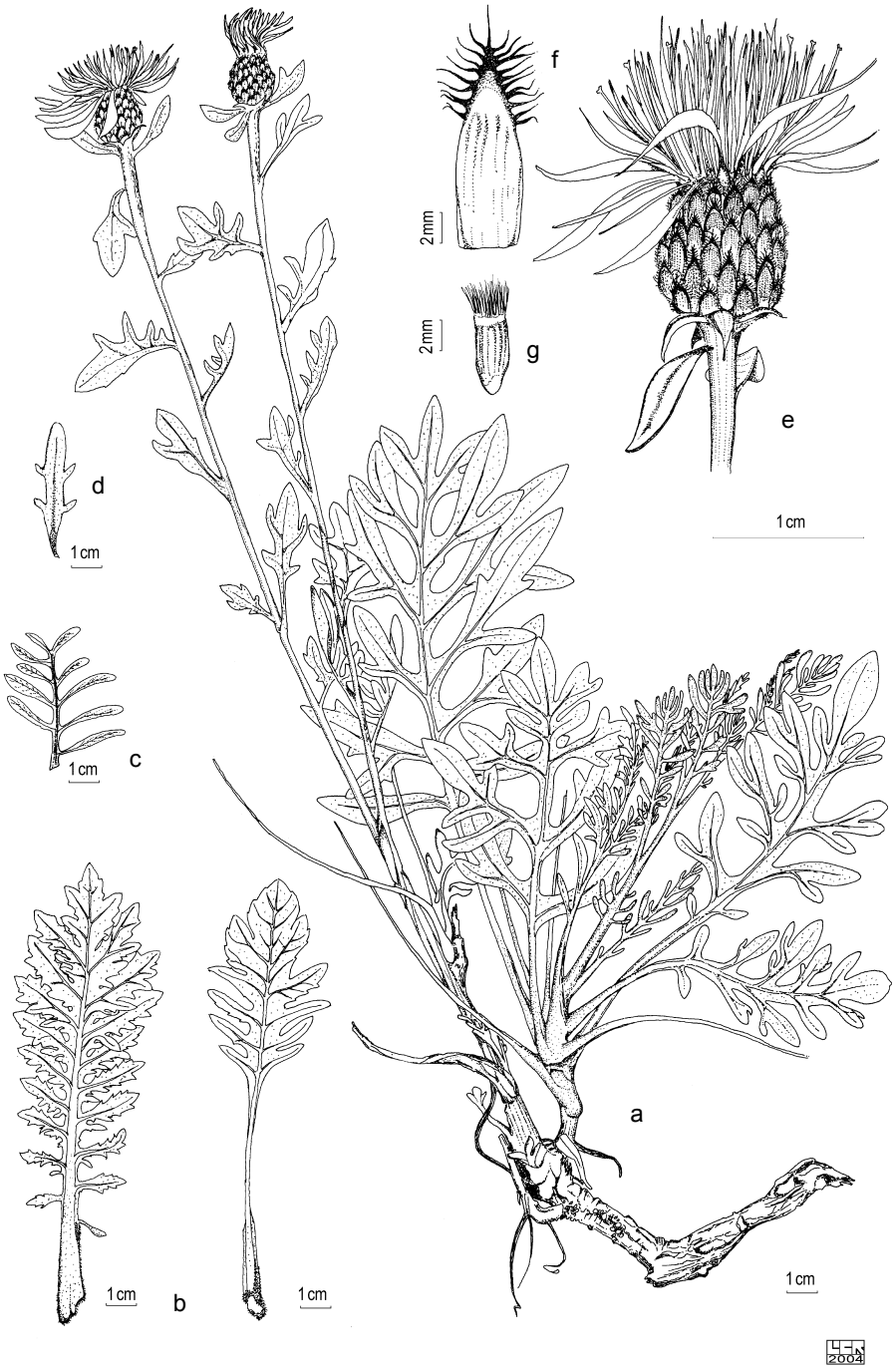

Fig. 1. *Centaurea erycina*: a) habit; b) rosette leaves; c-d) stem leaves; e) capitulum; f) bract; g) achene. Drawn by L. C. Raimondo.

arachno-tomentosae, postice 5-7 nervis praeditae, quorum 1-3 attingentes appendices; appendices triangulares vel anguste triangulares, brunneae vel spadiceae, breviter decurrentes, fimbriatae; appendices sub fimbriis 0,3-1 mm, marginatae; fimbriae (5-) 6-8 (-12), 2-3 mm longae; flosculi roseo-liliacini; achenia grisea 4-5 mm longi, 2 mm lati; pappus 2-3 mm longus.

ETYMOLOGY – The specific epithet refers to "Eryx", the ancient name of the present Erice town.

DESCRIPTION – Perennial plant, densely white tomentose. Roots strongly lignose. Stems 20-140 cm high, sulcate, ascending or erect, with few branches above, densely leafy up to the apex. Rosette and cauline leaves 1-2 pinnatisect; branch and stem leaves 1-pinnatisect to entire. Leaf segments lanceolate. Capitula (Fig. 2) in clusters of 2-21 or rarely solitary. Peduncles 3-5 mm wide, with 3-5 leaves below the capitula. Involucre ovoid-globose 16-22 (-24) mm × 14-16 mm. Bracts oblong-lanceolate, white tomentose to white arachnoideous, with 5-7 nerves on the back, 1-3 of them extending on the appendages. Appendages dark to light brown, shortly decurent at the base, fimbriate. The appendages below the fimbria, with a 0.3-1 mm wide margin. Fimbriae (5-) 6-8 (-12) on each side, 2-

Fig. 2. *Centaurea erycina*: details of the capitula characters.

3 mm long. Florets pink-liliac. Achenes grey, 4-5 mm long, 2 mm wide. Pappus 2-3 mm long.

BIOLOGICAL FORM – Chamaephyte rosulate with chasmophyte habit.

PHENOLOGY – Flowering June. Fruiting June-July.

CARIOLOGY – The chromosome number was obtained on metaphase plates of three living plants from the locus classicus. Root tips slides were prepared with colchicine (0.01 %) for 90 min, then fixed in acetic alcohol (1:3) for 2 h at room temperature, hydrolysed in 1 M HCl for 15 min at 60° C, stained in Gomori's haematoxylin (Melander & Wingstrand 1953) for 30 min at 60° C and squashed in 45% acetic acid.

The karyological analysis revealed that the somatic chromosome number of *Centaurea erycina* is $2n = 2x = 18$ (Fig. 3).

DISTRIBUTION AND ECOLOGY – The new endemic chasmophyte, *Centaurea erycina* (Fig. 4), grows on the calcareous rocks in San Giuliano Mt. (NW-Sicily), around and below the Venus' Castle (Erice village) at about 550-600 m a.s.l., as well on the walls of the Castle, made by the same rocks (Fig. 5). This area is characterized by mesomediterranean climate (*sensu* Bagnouls & Gaussen) with 16° annual mean temperature and about 800 mm annual mean rainfall. The air humidity is very high – almost always it is misty. In the typical habitat of the new species *Antirrhinum siculum* Mill., *Asplenium trichomanes* subsp. *quadrivalens* D. E. Meyer, *Athamanta sicula* L., *Brassica villosa* subsp. *drepanensis* (Caruel) Raimondo & Mazzola, *Centranthus ruber* (L.) DC., *Ceterach officinarum* DC., *Dianthus rupicola* Biv., *Iberis semperflorens* L.,

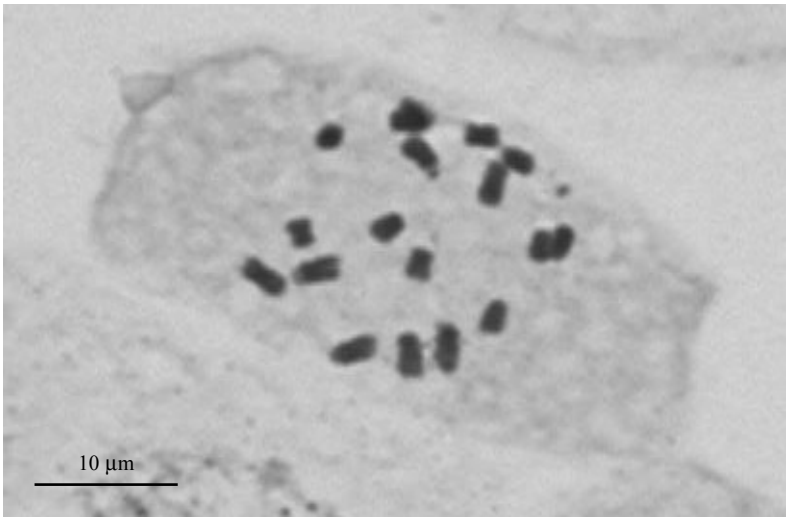

Fig. 3. Microphotograph of mitotic metaphase plate of *Centaurea erycina*, $2n=18$.

Fig. 4. *Centaurea erycina* in its *locus classicus.*

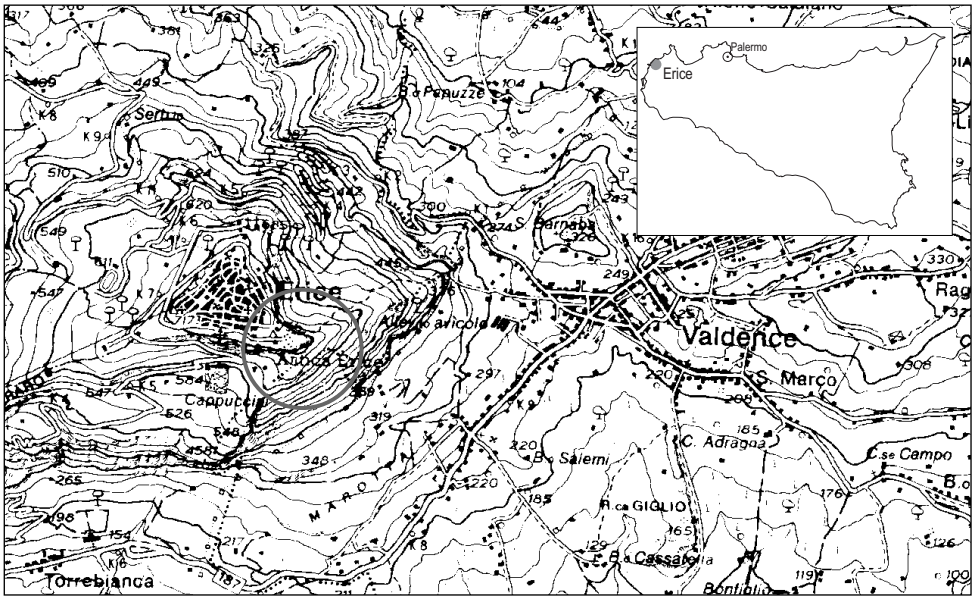

Fig. 5. The location of *Centaurea erycina* locus classicus (○).

Hypochoeris laevigata (L.) Ces., Pass. & Gibelli, *Satureja fruticulosa* (Bertol.) Grande, *Odontites bocconei* (Guss.) Walp., *Pimpinella anisoides* var. *gussonii* Bertol., *Lomelosia cretica* (L.) Greuter & Burdet, *Sedum album* L., *Sedum dasyphyllum* L., *Silene fruticosa* L., *Veronica cymbalaria* Bodard, etc. were present.

Centaurea erycina is a mesophylous, calciphylous chasmophyte related to rupestrian associations of the *Dianthion rupicolae* Brullo & Marcenò 1979 alliance (Cl. *Asplenietea trichomanis* (Br.-Bl. in Meier & Br.-Bl. 1934) Oberdorfer 1977; Ord. *Asplenietalia glandulosi* Br.-Bl. & Meier 1934), in the potential belt of temperate-Mediterranean vegetation (Pignatti 1979).

STATUS – According to IUCN (2001) *Centaurea erycina* should be classified as Critically Endangered – CR (CR B2b(iii)c(iii); C2a(i).

Referring to the population status it has been observed that 80% of the capitula are affected by a diptera *Trupanea amoena* (Frauenfeld): the larvas of this *Tephritidae*, as confirmed by literature, grow in the capitula of different species of *Asteraceae* (*Centaurea* L., *Senecio* L. and *Lactuca* L.) eating the achenes. This factor apparently impacts seriously on the spread capacity of the population.

Table 1. Comparison between *Centaurea erycina* Raimondo & Bancheva, *C. busambarensis* Guss., *C. ucriae* Lacaita subsp. *ucriae* and *C. saccensis* Raimondo, Bancheva & Ilardi. Measures taken from specimens kept in the *Herbarium Mediterraneum* (PAL).

	Centaurea erycina	***Centaurea busambarensis***	***Centaurea saccensis***	***Centaurea ucriae* ssp. *ucriae***
Indumentum	White tomentose	White tomentose	White tomentose	Grey tomentose to arachnoideous
Leaves close to the capitula [number, length in mm]	3-5 8-25	1-3 8-20	1 5-8	1-2 1-10
Involucrum [length, width in mm]	14-16 16-22 (-24)	14-18 16-30	12-15 14-16	10-14 8-15
Appendices	Oblong-lanceolate, white tomentose to white arachnoideous	Broadly lanceolate to lanceolate, glabrescent	Lanceolate, glabrescent	Broadly lanceolate to lanceolate, glabrescent
Width of the margin of the appendages below the fimbriae [wide in mm]	0.3-1	1-2	1-2	1-2
Veins [number]	5-7 on the back of the bracts, 1-3 on the appendages	5-7 on the back of the bracts	7-9 on the back of the bracts	7-9 on the back of the bracts
Achenes [length in mm]	4-5	*c.* 5	4-5	3-4
Pappus [length in mm]	3-4	*c.* 2.5	5-6	1.5-2.5

CONSERVATION – Some possible measures for conservation of *C. erycina* should be taken such as limiting the anthropic pressure and controlling the action of the parasite insect. Cultivation for both ornamental and landscape purposes could be proposed.

RELATIONSHIPS – *Centaurea erycina* belongs to *Centaurea cineraria* gr. (sect. *Pannophyllum*) – one of the taxonomically hardest groups in the Sicilian flora (Sommier, 1894; Lacaita 1915; Cela Renzoni & Viegi 1982; Bancheva & al., in press.). The closest relatives of the new species are *Centaurea ucriae* Lacaita subsp. *ucriae* (with which it was confused), *C. busambarensis* Guss. and *C. saccensis* Raimondo, Bancheva & Ilardi. The first one grows on the calcareous rocks of some mountains in the North Sicilian seaside at 0-150 m alt. The second one – in the interior of the island: Busambra, Pizzuta, Madonie mountains (near Isnello), at 500-1000 m alt. The third taxon has been described from the Tardara Gorges (Sciacca) in southeastern Sicily at 100 m a.s.l. (Raimondo & al., 2004). The comparative morphological features between *Centaurea erycina* and the taxa mentioned above have been illustrated in Table 1. On the basis of taxonomical studies, including isozyme analysis (Bancheva & al., in press.), 6 Sicilian representatives of the *Centaurea cineraria* group are distinguished: *C. busambarensis* Guss. *C. erycina* Raimondo & Bancheva, *C. ucriae* Lacaita subsp. *ucriae*, *C. ucriae* subsp. *umbrosa* (Lacaita) Cela Renzoni & Viegi, *C. saccensis* Raimondo, Bancheva & Ilardi and *C. todari* Lacaita. This latter taxon had been treated as a subspecies of *C. ucriae* by Cela Renzoni & Viegi (1982). We consider it as a separate species because it possesses well distinctive characters at both morphological and genetical level. The isozyme analysis (Bancheva & al., in press.) shows that *C. todari* manifests a very higher genetic similarity with the Campanian populations of *Centaurea cineraria* L. than the Sicilian populations of *C. ucriae*.

Key of the Sicilian *Centaurea cineraria* gr.

1. Plant densely white tomentose, the fimbriae 2-3 mm long . . . . . 2.
2. Peduncles of the capitula sparsely leafy, branch leaves 5-10 mm long, the pappus longer than the achene . . . . . *C. saccensis*

2*. Peduncles of the capitula densely leafy, branch leaves 10-20 mm long, the pappus shorter than the achene . . . . . 3.

3. Lower leaves entire or lyrate, involucral bracts glabrescent; the appendages below the cilia with a margin 2-3 mm wide; pappus ½ as long as the achene . . *C. busambarensis*

3*. Lower leaves 1-2 pinnatisect, involucral bracts white tomentose to arachnoid tomentose; the appendages below the cilia with a margin 0.3-1 mm wide; pappus 2/3 as long as achene . . . . . *C. erycina*

1*. At least lower leaves grey tomentose, arachnoideous or glabrescent, the fimbriae 1-1.5 (2) mm long . . . . . .4.

4. At least upper leaves grey tomentose, the leaf segments 6-20 mm wide .. *C. ucriae*

4a Lower leaves grey tomentose, the leaf segments 6-15 mm wide . . . . . *C. ucriae* subsp. *ucriae*

4b Lower leaves aracnoideous or glabrescent, the leaf segments 10-20 mm wide . . . . . .*C. ucriae* subsp. *umbrosa*

4*. Leaves glabrescent or rarely scarce arachnoideous, the leaf segments 1-2 mm wide . . . . . .*C. todari*

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Special tanks to prof. A. Carapezza, from Palermo University, for the identification of *Trupanea amoena* (Diptera, Tephritidae).
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