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RESEARCH ARTICLE

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Chromosome numbers for the Italian flora: 6

Lorenzo Peruzzi[1], Giovanni Astuti[1], Salvatore Cambria[2], Leonardo Cresti[1], Jacopo Franzoni[1], Francesco Roma-Marzio[3], Mario Spezia[4]

1 *Dipartimento di Biologia, Università di Pisa, Via Derna 1, 56126 Pisa, Italy* **2** *Dipartimento di Scienze Geologiche, Biologiche ed Ambientali, Università di Catania, via Longo 18, Catania, Italy* **3** *Sistema Museale di Ateneo dell'Università di Pisa, Orto e Museo Botanico, Via Luca Ghini 13, 56126, Pisa, Italy* **4** *Via Maso 5, 37024 Negrar (Verona), Italy*

Corresponding author: *Lorenzo Peruzzi* (lorenzo.peruzzi@unipi.it)

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Abstract

In this contribution, new chromosome data obtained on material collected in Italy are presented. It includes three chromosome counts for *Bupleurum baldense* Turra, *Colchicum lusitanum* Brot., and *Euphorbia gasparrinii* Boiss. subsp. *gasparrinii*.

Keywords

cytogeography, cytotaxonomy, chromosome number instability

How to contribute

Texts concerning new chromosome data should be submitted electronically to Giovanni Astuti (gastuti@biologia.unipi.it), including indications on voucher specimens and methods used.

Chromosome counts

Bupleurum baldense Turra (Apiaceae)

Chromosome number. 2*n* = 16 (Fig. 1)

Voucher specimen. ITALY. Toscana. Parco Nazionale delle Foreste Casentinesi (San Godenzo, Firenze), Passo del Muraglione lungo il sentiero che porta al Colle tre Faggi (WGS84: 43.92993 N, 11.65807 E), faggeta e ambienti rupestri, 900–950 m, 21 July 2018, *F. Roma-Marzio & L. Peruzzi* (diaspores collected in the field and stored in the Germplasm Bank of Department of Biology, Pisa, under acc. n° 20180055).

Method. Squash preparations were made on root-tips obtained from germinating seeds. Root tips were pre-treated with 0.4% colchicine for 3 hours and then fixed in Carnoy fixative solution for 1 hour. After hydrolysis in HCl 1N at 60 °C, the tips were stained in leuco-basic fuchsine.

Observations. *Bupleurum baldense* is a European species, whose range extends from W Europe (Spain, France, Great Britain) to Albania (Snogerup and Snogerup 2001, Euro+Med 2006 onwards). Despite this species was originally described for Italy (Snogerup and Snogerup 2001), this is the first count for Italian material (Bedini et al. 2010 onwards). Our count is consistent with previous ones published from Spain (Ruiz de Clavijo Jiménez 1993) and France (Cauwet 1967, 1978, Delay 1969, Natarajan 1978, Van Loon et al. 1978, Afzal-Rafii et al. 1985, Snogerup 1994).

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Colchicum lusitanum Brot. (Colchicaceae)

Chromosome number. 2*n* = 108 (Fig. 2)

Voucher specimen. ITALY. Veneto. Verona, in loc. Tre Tempi a nord di Avesa (WGS84: 45.490047 N, 10.982780 E), prato arido su calcare, 340 m, May 2018, *M. Spezia* (corms cultivated in the Botanic Garden of Pisa, under acc. n° 2018-284).

Method. Squash preparations were made on root-tips obtained from potted corms. Root tips were pre-treated with 0.4% colchicine for 3 hours and then fixed in Carnoy fixative solution for 1 hour. After hydrolysis in HCl 1N at 60 °C, the tips were stained in leuco-basic fuchsine.

Observations. *Colchicum lusitanum* is a W Mediterranean species, whose occurrence is well documented for Sardegna and for all central and southern Italian peninsular regions (Bartolucci et al. 2018). According to the latter authors, concerning northern Italy, this species is recorded also for Lombardia, Liguria, and doubtfully for Piemonte. Therefore, the studied population represents a new record for Veneto and for the whole NE Italy. Our chromosome count is in accordance with those reported by Persson (2009) for Toscana and Sardegna. On the contrary, D'Amato (1955, 1957) and Baldini (1997) reported a slightly different number, 2*n* = 106, for many popula-

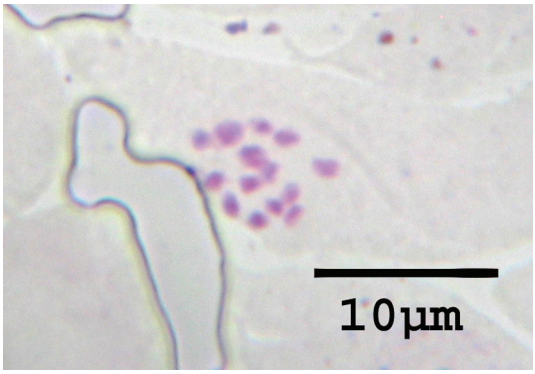

Figure 1. *Bupleurum baldense* Turra, 2*n* = 16. Scale bar: 10 µm.

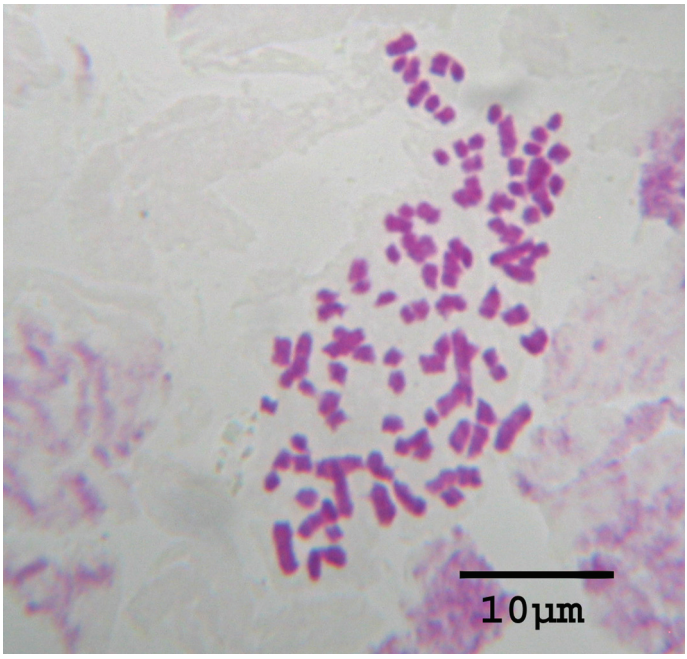

Figure 2. *Colchicum lusitanum* Brot., 2*n* = 108. Scale bar: 10 µm.

tions from central and southern Italy, including Toscana and Sardegna. For the latter region, Camarda (1979) published also a 2*n* = ca. 110 count. All these chromosome numbers were also reported by Fernandes and França (1977) for plants from Portugal. It is possible that 2*n* = 106 and 2*n* = ca. 110 are miscounts for 2*n* = 108, but we cannot exclude some degree of chromosome number instability within this species. Similar disagreements in chromosome counts can be found also in *C. autumnale* L. and *C. gonarei* Camarda. For the former species, D'Amato (1955, 1957) and Peruzzi and Galasso (2012) reported 2*n* = 38, whereas Persson (2009) 2*n* = 36 chromosomes;

for the second species, Camarda (1978) reported $2n$ = 180, whereas Persson (2009) $2n$ = 182 chromosomes. Persson (2009) herself documented chromosome number instability in other *Colchicum* taxa, such as *C. neapolitanum* (Ten.) Ten. subsp. *gracile* (K.Perss.) Fridl., *C. neapolitanum* subsp. *neapolitanum*, and *C. triphyllum* Kunze, with $2n$ = 80/82, $2n$ = 90/92, and $2n$ = 60/62 chromosomes respectively, often within a single population.

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Euphorbia gasparrinii Boiss. subsp. *gasparrinii* (Euphorbiaceae)

Chromosome number. $2n$ = 32 (Fig. 3)

Voucher specimen. ITALY. Sicilia. Parco regionale dei Nebrodi, Alcara Li Fusi (Messina), presso lago Maulazzo (WGS84: 37.940919 N, 14.670092 E), pascoli montani con *Cirsium vallis-demonii* Lojac. al margine della faggeta su substrato argilloso, 1450 m, 26 July 2018, *S. Cambria* (PI n° 012346).

Method. Squash preparations were made on root-tips obtained from germinating seeds. Root tips were pre-treated with 0.4% colchicine for 3 hours and then fixed in Carnoy fixative solution for 1 hour. After hydrolysis in HCl 1N at 60 °C, the tips were stained in leuco-basic fuchsine.

Observations. *Euphorbia gasparrinii* subsp. *gasparrinii* is a taxon endemic to S Italy, i.e. Sicily and Calabria, possibly extinct in the latter region (Bartolucci et al. 2018). Cresti et al. (2019) highlight a close morphometric and phylogenetic relationship of this subspecies with the allopatric *E. gasparrinii* subsp. *samnitica* (Fiori) Pignatti, endemic to C Italy (Abruzzo, Marche, and Molise). The same authors also hypothesized

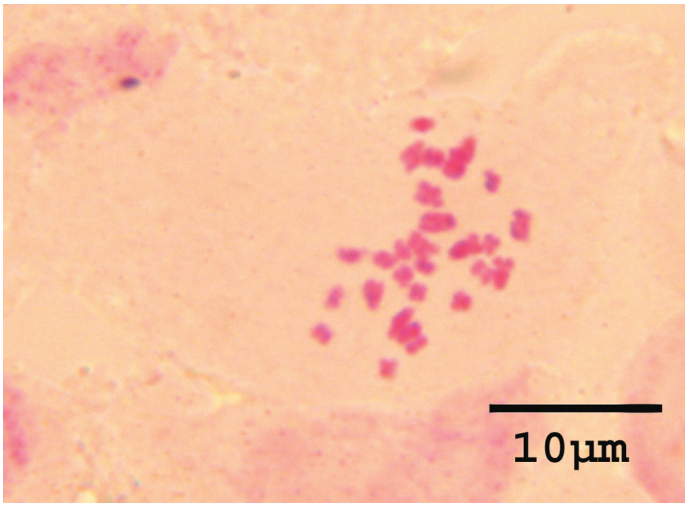

Figure 3. *Euphorbia gasparrinii* Boiss. subsp. *gasparrinii*, $2n$ = 32. Scale bar: 10 µm.

a putative tetraploid level for *E. gasparrinii* subsp. *gasparrinii*, by means of cytofluorimetric Relative Genome Size estimations. This is the first chromosome count for this taxon (Bedini et al. 2010 onwards), verified on the same Sicilian population studied by Cresti et al. (2019). Our count fully confirms the tetraploid status of this subspecies, given that *E. gasparrinii* subsp. *samnitica* was repeatedly reported as diploid with $2n$ = 16 chromosomes (Tessitore et al. 1993, Peruzzi and Cesca 2002, Cresti et al. 2019).

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