

Gesneriaceae, pp. 259-263.

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The Greek mountain region is well known amongst botanists for its rich flora and high proportion of endemic species, but there has been no recent detailed Greek Flora. This is the second and final of two volumes produced by a team of some twenty-five botanists from several European countries which aims to fill the gap. The volume covers 1054 taxa (species and subspecies); about one-third of these were either not recorded for Greece in *Flora Europaea* or were recognised under a different name and/or at a different taxonomic rank. 1980 species and subspecies are included in vols 1 and 2 together; this is approximately one-third of the total number of vascular plant taxa in Greece. For each species and subspecies the following information is given: name and bibliographic reference; notes on nomenclature and typification; synonymy; description; ecology and flowering time; distribution (within the area and more generally); chromosome number; discussion of affinities and special features. Dichotomous keys to taxa at all levels are provided as well as comprehensive indices; 47 (mostly full-page) illustrations are included.

MOUNTAIN FLORA OF GREECE

VOLUME TWO

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Introduction	vii
Dicotyledones (from Gentianaceae)	1
Monocotyledones (from Liliaceae)	642
References	885
Index to scientific names	919
Index to mountain names	967
New taxa and new combinations in this volume	973

to bluish-violet, rarely white, 2-lipped; lower lip 3-fid; upper lip 2-partite almost to base. Anthers violet.

Dry, open habitats, 300-1800 m, mainly on limestone. Flowering May and June.

NORTH CENTRAL: Vourinos!, Olimbos!, Vermion!; NORTH EAST: Athos (RECHINGER 1943a: 548), Orvilos!, Falakron (S, obs.).

A fairly variable species scattered in C and S Europe, from Asturia to Romania and from Belgium to south central Italy, with isolated areas by central Volga and in northern Caucasus. $2n = 16$ was reported by STRID & ANDERSSON (1985: 213) in material from Olimbos, confirming several reports from elsewhere (France, Austria, Hungary, Yugoslavia and Italy).

2. *G. cordifolia* L., *Sp. Pl.*: 96 (1753)

Cited by LINNAEUS from several areas in C and S Europe. Lectotype: LINN 177/3, designated by MILLETTI & JARVIS (1987: 638).

Syn.: *G. bellidifolia* TEN., *Fl. Napol.* 1: 11 (1811-1815), non SALISB. (1796); *G. cordifolia* ssp. *bellidifolia* (TEN.) WETTST. in *Bull. Herb. Boissier* 3: 285 (1895); *G. cordifolia* ssp. *meridionalis* PODP. in *Verh. Zool.-Bot. Ges. Wien* 52: 668 (1902); *G. meridionalis* (PODP.) O. SCHWARZ in *Bot. Jahrb. Syst.* 69: 345 (1938).

Mat-forming dwarf shrub with creeping woody stems producing procumbent non-flowering shoots and erect flowering stems 1-12 cm. Basal leaves 12-40(-60) × 2-5(-12) mm, oblanceolate to obovate-spathulate, with indistinct veins; apex rounded, emarginate or 3-dentate. Flowering stems with 0-3(-5) small bracts. Flowering heads 10-15 mm diam.; outer involucral bracts 3-5 × 2-2.5 mm, ovate-lanceolate to elliptic-obovate, ciliate or ± hirsute; inner bracts longer and narrower. Calyx 3.5-5.5 mm, 2-lipped to almost regular, pilose, divided about halfway into 5 ciliate teeth. Corolla 7-8 mm, blue to bluish-violet, 2-lipped; tube shorter than lips; lower lip divided beyond middle into 3 linear lobes; upper lip shorter, 2-lobed. Anthers same colour as corolla.

Dry, grassy and rocky places, or rock crevices, usually on limestone, 1000-2500 m, but occasionally even higher (2900 m) or lower (500 m). Flowering May to August.

STEREA ELLAS: Gion!; N PINDHOS: Timfi!, Aaos valley by Timfi!; NORTH CENTRAL: Olimbos!, Vermion!, by Zoodochos Pigi between Pieria and Vermion!, Voras (VOLIOTIS 1981b: 238), Tzena!; NORTH EAST: Pangeon!, Menikion!, Orvilos!, Falakron!, Rodhopi (SCHWARZ 1938: 346).

A polymorphic species, scattered in mountains of C and S Europe with an isolated locality in N Anatolia; a closely related species, *G. dumulosa* O. SCHWARZ occurs in SW Anatolia. HAYEK (1930: 401-402) distinguished 3 subspecies in the Balkan Peninsula, but they overlap geographically and are scarcely distinct enough to merit taxonomic status. Most deviating is

a population from Tzena with slender leafless stems and deeply emarginate leaves; similar plants occur in S Yugoslavia. Several chromosome counts have been published, most of them indicating $2n = 32$, e.g. LARSEN (1957: 266) in material from France and Switzerland, RAVNIK (1965: 28) from Yugoslavia, CONTANDRIOPOULOS (1978b: 4) from Greece (Timfi, Olimbos), Spain and France, and MILLETTI (1987: 87) from Italy. However, LARSEN (1957: 267) reported $2n = 16$ in material of unknown origin identified as ssp. *bellidifolia*, and the diploid number was confirmed by SCHWARZ (1963: 6) in material from Albania and Bulgaria, and by KLIPHUIS & WIEFFERING (1972: 600) in material from France.

3. *G. stygia* ORPH. ex BOISS., *Diagn. ser.* 2, 4: 60 (1859)

Orig. coll.: "M. Chelmos, prope Stygem"; leg. ORPHANIDES 17.-29.6. 1852 (lectotype in G-Boiss!; isotypes in P!, etc.).

Syn.: *G. cordifolia* ssp. *stygia* (ORPH.) WETTST. in *Bull. Herb. Boissier* 3: 285 (1895).

Resembling no. 2, but differing in the following characters: Scarcely woody, with slender, partly underground creeping stems rooting at nodes; leaf blades suborbicular, obtuse, mucronulate; outer involucral bracts elliptic-lanceolate, ciliate and sparsely white-villous; calyx (4.5-5.5-7.0 mm, regular, divided almost to base into 5 linear-lanceolate, long-ciliate lobes.

Crevices and ledges of limestone rocks, sometimes in semi-shade in *Pinus nigra* woodland, 1300-2300 m. Flowering June and July.

PELOPONNISOS: Xerovouna (P 2724!, 4052!), Killini!, Chelmos!

Endemic. $2n = 16$ was reported by CONTANDRIOPOULOS (1978b: 4) in material from Chelmos.

GESNERIACEAE

Acaulescent perennial herbs. Leaves in a basal rosette, simple, exstipulate, soft-pubescent. Scapes one to several. Flowers solitary or up to 5 in an umbel, hermaphrodite. Calyx 4-, 5- or rarely 6-lobed, regular. Corolla 4- or 5-lobed, rotate to tubular, 2-lipped or almost regular. Stamens equal in number to the corolla lobes, or one of them reduced to a staminode or absent. Ovary superior, 1-locular. Fruit a narrowly ovoid, 2-valved capsule with numerous, very small seeds. - A large, chiefly tropical family with only five species in Europe (four in the Balkan Peninsula, one in the Pyrenees). The European species which are considered as Tertiary relicts all grow in shady rock crevices in hill regions or mountains (cf. CONTANDRIOPOULOS 1966a, QUÉZEL 1968).

1. Corolla distinctly 2-lipped with tube longer than lobes. Stamens 4; anthers connate in pairs or all 4

1. *Haberlea*

- Corolla almost regular with tube shorter than or equalling lobes. Stamens 4 or 5; anthers not connate 2.
- 2. Leaves crenate-dentate or shallowly lobed, green above. Corolla tube much shorter than lobes 2. **Ramonda**
- Leaves entire, silvery-sericeous or white-villous above. Corolla tube equalling lobes 3. **Jankaea**

1. *Haberlea* FRIV.

A. STRID

1. *H. rhodopensis* FRIV. in *Magyar Tud. Társ. Ék.* 2: 249 (1835)

Described from Bulgarian Rodhopi near the monastery of Batshkovo. Type not identified.

Syn.: *Haberlea ferdinandi-coburgi* URUM. in *Period. Spis. Bulg. Kniz. Druz.* 63: 573 (1902), described from Bulgaria.

Rosettes several, funnel-shaped, forming large cushions. Leaves (4-)6-12 × 1.5-3.5 cm; petiole indistinct; blade oblanceolate-obovate, acute, coarsely crenate-serrate, green and sparsely pubescent with obscure veins above, brownish or purplish and rather densely pubescent with prominent veins beneath. Scapes 1-3 from each rosette, 8-18 cm; scape, pedicels and calyx with multicellular glandular hairs. Umbel 2- to 5-flowered. Bracts up to 14 mm, linear. Calyx 5-lobed, brownish-purple; lobes about equalling tube, c. 5 × 2 mm, narrowly triangular, acute to shortly acuminate. Corolla 18-30 mm, 2-lipped; tube dorsiventrally flattened, up to twice as long as lobes, bluish-purple above, whitish beneath, with yellow and purplish dots in throat, pilose inside; lobes of lower lip 3, up to 10 × 8 mm, broadly obovate, white or pale bluish-mauve; lobes of upper lip 2, shorter. Stamens 4, in 2 pairs; shorter filaments c. 7 mm, longer ones c. 9 mm and strongly curved above; anthers small, dark, connate in pairs or all 4. Ovary conical; style c. 7 mm, straight. Capsule slightly exceeding calyx, subglabrous.

Damp, shady rock walls, usually at montane levels, occasionally up to 1950 m or down to near sea level (in ravines), generally on limestone. Flowering from May to mid-July according to the altitude.

NORTH EAST: Pangeon!, Falakron!, Rodhopi (near Gydhotos!), Karlik Dagħ (ZAGANIARIS 1940: 87). Also at low altitudes in the Nestos River gorge.

NE Greece, C and SC Bulgaria (QUÉZEL 1968: 950, VELCHEV 1984: 349). A distinct and attractive species of a monotypic genus, often grown in rock gardens. 2n = 48 (CONTANDRIOPOULOS 1966a: 273, material from Falakron); 2n = 38 (BORHIDI 1968: 257, material from Bulgarian Rodhopi).

2. *Ramonda* L.C.M. RICHARD

A. STRID

Rosettes ± flat. Leaves rugose, crenate-dentate or shallowly lobed, dark green above with ± sparse indumentum of whitish hairs, with a wool of long, ginger-brown hairs beneath. Bracts lacking. Flowers 4- or 5-merous, regular or almost so. Corolla rotate or broadly campanulate; lobes much longer than tube. Stamens short, but exerted from corolla tube; anther ± equalling filament. Style longer than stamens; stigma capitate, entire. Capsule much exceeding calyx. - Two species in the Balkan Peninsula and one in the Pyrenees; all are well-known in rock gardens.

1. Leaves irregularly gross-dentate; petiole indistinct, short and broad. Corolla usually 5-merous, cup-shaped. Anthers violet-blue

1. *R. serbica*

- Leaves regularly crenate-dentate; petiole at least half as long as blade, slender. Corolla usually 4-merous, rotate. Anthers usually yellow

2. *R. nathaliae*

1. *R. serbica* PANČIĆ, *Fl. Princ. Serb.*: 498 (1874)

Described from the area N of Niš. Type not identified.

Leaves 4-7 × 2-3.5 cm, obovate, irregularly gross-dentate or shallowly lobed, tapering to an indistinct, short and broad petiole. Scapes often several from each rosette, 5-12 cm, bearing 1-3 erect or slightly nodding flowers. Scape, pedicels and calyx glandular-pubescent. Flowers (4-)5-merous. Calyx divided almost to base into broadly oblong, obtuse lobes. Corolla broadly campanulate with erecto-patent lobes, 25-35 mm diam., violet or pinkish-violet, with ginger-brown wool at base of lobes. Anthers c. 2.5 mm, obtuse, violet-blue. Style 4-7 mm. Capsule c. 10 mm, sparsely glandular-pubescent.

Shady crevices of limestone rocks, 400-1500 m. Flowering from end of April to beginning of June.

N PINDHOS: Mitsikeli!, Foothills of Timfi (Vikos!, Aaos valley!); NORTH CENTRAL: Bela Voda (ZAGANIARIS 1940: 86), Voras (VOLIOTIS 1981b: 238, may refer to *R. nathaliae*).

SE Yugoslavia (near Niš) and adjacent parts of NW Bulgaria, Albania, NW Greece (cf. QUÉZEL 1968: 950, HILL 1986: 184). 2n = c.96 (CONTANDRIOPOULOS 1966a: 273, material from Vikos gorge).

2. *R. nathaliae* PANČIĆ & PETROVIĆ in PETROVIĆ, *Fl. Agri Nyss.*: 574 (1882)

Orig. coll.: "In rupestribus calcareis supra Jelašnica [Yugoslavia, SE Niš]", 1879 (lectotype in G!).

Resembling no. 1, but differing in the following characters: Petiole slender, rather distinctly set off, at least half as long as blade; blade elliptic to broadly obovate, regularly crenate-dentate. Corolla usually 4-merous, rotate, with patent lobes. Anthers yellow, sometimes with a blue tinge.

Shady rock crevices, 700-1800 m, on various substrates. Flowering May and June.

NORTH CENTRAL: Vermion (above Naoussa!), Voras (foothills NE of Pefkoton!), Pinovon!, Tzena! – A record from Smolikas ("Samarina", ZAGANIARIS 1940: 86) needs confirmation.

Scattered in S Yugoslavia, N Albania, and NC Greece (cf. QUÉZEL 1968: 950, HILL 1986: 184, PETKOVIĆ & al. 1985). Certainly close to *R. serbica* but sufficiently distinct, especially in leaf characters, to be retained as a separate species. $2n = 48$ (CONTANDRIOPOULOS 1966a: 273, material from Vermion and the Vardar gorge).

3. *Jankaea* BOISS.

A. STRID

1. *J. heldreichii* (BOISS.) BOISS. in *Pl. Orient. Nov.* 1: 5 (1875)

Basionym: *Haberlea heldreichii* BOISS., *Diagn. ser.* 2, 3: 141 (1856). Orig. coll.: "In rupibus reg. sylvaticae m. Olympi Thessaliae". HELDREICH 2499, 21.-24. Jul. 1851 (holotype in G-Boiss!).

Syn.: *Ramonda heldreichii* (BOISS.) FRITSCH in ENGLER & PRANTL, *Nat. Pflanzenfam.* IV(3b): 144 (1893).

In a letter to BOISSIER dated 28.8. 1851 (in the library of Conservatoire Botanique, Geneva) HELDREICH lists some of the more interesting plants from his recent expedition to Olimbos, including "une Gesneriacée! (*Haberlea Rhodopensis* Friv.?), par malheur seulement en fruits". Flowering material was collected by ORPHANIDES a few years later ("supra Hag. Dionysios, 4000'-8000', 16/28 Jul. 1857"), and the species was transferred to the monotypic genus *Jankaea*. The original spelling of the generic name is *Jancaea* which undoubtedly is unintentional. The genus was named after the Austrian botanist VICTOR JANKA (1837-1900, curator at BP); in *Fl. Or.* 4: 82 (1879) BOISSIER corrected himself, using the variant *Jankaea*.

Rosettes few, flat. Leaves 2-4.5 × 1-2.5 cm; petiole 0.4-1.2 cm, with a dense wool of long, soft, light brown hairs; blade obovate to broadly elliptic, entire, obtuse, white-villous to silvery-sericeous above (especially when young), light brown-villous beneath. Scapes 1-3 from each rosette, 3-10 cm, slender, bearing 1-3 nodding flowers. Scape, pedicels and base of calyx glandular-pubescent. Bracts lacking. Calyx divided almost to base into 5 oblong, obtuse lobes c. 3 mm. Corolla almost regular, broadly campanulate, 11-16 mm, bluish-lilac, divided to the middle into 4(-5) obovate lobes. Stamens 4, included in corolla tube; anthers free, ovoid, about as long as filaments (c. 2.5 mm), bluish-lilac. Style c. 7 mm, narrowly clavate. Capsule c. 7 mm, ovoid, acute, subglabrous.

Shady crevices of limestone rocks, especially near streams, generally between 700 and 1400 m, occasionally down to 400 m or up to 2400 m. Flowering from mid-May to beginning of August according to altitude.

A singular endemic of Olimbos, belonging to a monotypic genus and restricted to a few ravines on the E and N sides; locally abundant in inaccessible places and scarcely threatened (cf. STRID 1980: Plate 46, STRID & PAPANICOLAOU 1985: 108-110). $2n = 56$ (CONTANDRIOPOULOS 1966). Frequently cultivated in rock gardens and under glass in C and N Europe, but more difficult than *Haberlea* and *Ramonda*. A horticultural hybrid between *Jankaea heldreichii* and *Ramonda myconi* (L.) REICHENB. has been described as *Jankemonda vandedemii* HALDA (HALDA 1979). Healthy specimens were observed in the Edinburgh Botanic Garden in September, 1988.

OROBANCHACEAE

1. *Orobanche* L.

P. HARTVIG

Perennial (rarely biennial or annual) herbs without chlorophyll, parasitic on roots of herbaceous (rarely woody) angiosperms. Stems erect, simple, rarely branched. Leaves numerous, alternate, scale-like. Flowers in a dense terminal spike or raceme, hermaphrodite, sympetalous and zygomorphic. Bracteoles sometimes present (sect. *Trionychon*). Calyx cylindrical to campanulate, with 4 subequal teeth (sect. *Trionychon*) or more commonly divided into 2 lateral, entire or bifid segments (sect. *Orobanche*). Corolla cylindrical to campanulate, 2-lipped, 5-lobed. Stamens 4, included. Ovary superior, 1-locular, with 4 parietal placentae; style single; stigma ± bilobed. Fruit a loculicidal capsule; seeds numerous, very small. – C. 100 species in temperate and subtropical regions of both hemispheres; c. 25 species in Greece.

Most of the Greek species have a wide altitudinal range, depending on the host, and many of them are frequently or occasionally found in subalpine and alpine habitats. Most species are restricted in their choice of host plant to a particular family or genus. When collecting much care should be taken in digging out the connection with the host (not necessarily the nearest plant!), and detailed notes should be made on colours particularly of corolla and stigma. Herbarium specimens without such information are of limited value, and proper identification may be impossible.

Literature: BECK VON MANNAGETTA (1930).

1. Each flower subtended by 2 bracteoles as well as a bract. Calyx 4-toothed (sect. *Trionychon*) 2.
- Bracteoles absent. Calyx split to the base (or almost so) into two lateral, entire or bifid segments (sect. *Orobanche*) 6.