

SOME OBSERVATIONS ON *PINGUICULA BALCANICA* CASPER AND *P. HIRTIFLORA* TEN. (LENTIBULARIACEAE) FROM BALKANS

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During field trips in June 2006 through Greece to Bulgaria, while going to the IV IBBC (International Balkan Botanical Congress) held in Sofia, I visited three Balkan butterwort localities, two with *Pinguicula balcanica* Casper and one with *P. hirtiflora* Ten. I give here a brief account of these findings.

*Pinguicula balcanica* Casper

The name *P. balcanica* was described by Casper (1962) for the plants formerly called “*P. vulgaris*” or “*P. leptoceras*” by earlier Balkan botanists; the holotype of this species was collected in NW Albania. *Pinguicula balcanica* belongs to *P. sect. Pinguicula* (Casper 1966) and is marked by temperate growth-type (with hibernacula production), blue flowers with white dot(s) on the lower lip (mostly on lower lip’s median lobe: “*lobo intermedio lateralibus majore basi albido-maculato*”) and not well opened corollas (45-90° opening angle). A particular feature of this species is the partial (or even total!) overlap of the two upper corolla lip lobes (“*labium superum bilobum lobis late-ligulatis inter se tegetibus*”), while the three lobes of the lower lip are close but not overlapping (see Figures 1, 2). This species was collected in the following two localities:

- a) Bulgaria, Vitosha Mountain (near Sofia), ca. 1,700-1,800 m a.s.l., 23 Jun 2006, L. Peruzzi (PI).
- b) Bulgaria, Pirin Mountain, ca. 2,000 m a.s.l., 26 Jun 2006, L. Peruzzi, D. Uzunov, G. Caruso (PI).

In both localities the species occurred commonly in marshes, bogs and along streams (see Front Cover) on siliceous substrate. Specimens from the two localities were measured and compared with the full description given by Casper (1966) for this species (see Table 1). Some characters, which were proved to be useful taxonomic markers in sect. *Pinguicula* (Conti & Peruzzi 2006) were detected for the first time in this species, such as the dimensions of the calyx lips and of each type of corolla lobe (upper, lateral, median). All these features indeed confirm the intermediate character of this species

	Casper (1966)	Vitosha, Bulgaria	Pirin, Bulgaria
# of leaves/plant	5-9	6-8	4-8
Leaf size	20-50 × 10-20 mm	30-50 × 15-20 mm	30-50 × 14-16 mm
# of peduncles/plant	1-5	1	1-3
Peduncle length	(20)40-80(100) mm	100-130 mm	35-120 mm
Flower length (with spur)	(8)14-19(23) mm	20-25(27) mm	16-22 mm
Spur length	—	6-7 mm	5-6 mm
Calyx upper lip	—	1.5 × 2 mm	1 × 1.5 mm
Calyx lower lip	—	2 × 1.5 mm	2 × 1.5 mm
Corolla upper lip lobes	—	4-5 × 3.5-4.5 mm	4-4.5 × 3 mm
Corolla lower, lateral lip lobes	—	4.5-6 × 6-6.5 mm	3.5-5 × 3.5-4.5 mm
Corolla lower, median lip lobe	—	6.5-8 × 8-9 mm	4.5-5.5 × 3.5-5 mm

Table 1: Comparisons for *P. balcanica* among the quantitative data given by Casper (1966) and the two Bulgarian populations. In combined measurements, the first one is the length and the second one is the width.



Figure 1: *Pinguicula balcanica* (Bulgaria, Vitosha Mountain), close-up of a flower.



Figure 2: *Pinguicula balcanica* (Bulgaria, Vitosha Mountain), close-up of a flower.



Figure 3: Basal rosette of *P. balcanica*, showing roots and several gemmae-like structures (arrows) in Bulgaria, Vitosha Mountain.



Figure 4: *Pinguicula hirtiflora* (Greece, N Pindhos) in flower.



Figure 5: Hundreds of *P. hirtiflora* rosettes (Greece, N Pindhos) in flower.

between *P. vulgaris* L. *sensu lato* and *P. leptoceras* Rchb. *Pinguicula balcanica* is known in literature as heterophyllous (Casper 1966; Legendre 2000). We found no evidence for clear heterophylly in this species, as instead clearly occurs in other representatives of sect. *Pinguicula* (such as *P. longifolia* Ram. ex DC. *sensu lato*, *P. mundi* G. Blanca, M. Jamilena, M. Ruiz-Rejón & R. Zamora, *P. reichenbachiana* Schindler, *P. vallisneriifolia* Webb). According to our field observations, *P. balcanica* seems to be better classified as a homophyllous species. This matter—confirmed also by the examination of the pictures of Albanian material recently published by Casper (2006a)—suggests *P. balcanica* is even more closely related to *P. leptoceras*/*P. vulgaris* (both homophyllous species), even if it shows several unique combinations of character-states, as shown above. On the other hand, we also observed in this species the possible production of gemmae-like structures, which likely serve in the vegetative propagation of the individuals (see Figure 3). As far we are aware, this occurrence was never before evidenced in *P. balcanica* or similar species.

#### *Pinguicula hirtiflora* Ten.

After Strid (in Strid & Tan 1991), *P. hirtiflora* Ten. was considered for several years as a subspecies of *P. crystallina* Sibth. & Sm.; but seed anatomy features are significantly different in these two units (Degtjareva *et al.* 2004), supporting the reevaluation of two distinct species, despite their evident macro-morphological affinity. The name *P. hirtiflora*, first published by Tenore (1811), had a singular story, and was applied by its author—in different periods—to at least two different species (Peruzzi 2006; Casper 2006b). However, according to the typification made by Peruzzi *et al.* (2004), this name presently applies to a NE Mediterranean species belonging to sect. *Cardiophyllum*. This species is marked by tropical growth-type, homophylly, rose flowers more or less gradually fading to white and then bright yellow towards the corolla throat, corollas widely opened (120-180° opening angle), with all lobes divergent from each other and each of them more or less bilobed (see Figure 4). This species was collected in the following locality:

c) Greece, N Pindhos, along the road from Grevena to Metsovo, stillicidious scree, ca. 1,000 m a.s.l., 27 Jun 2006, L. Peruzzi, D. Uzunov, G. Caruso (PI).

In this locality *P. hirtiflora* occurs on a wet and slippery limestone scree along a road, with an incredibly high number of clustered individuals (see Figure 5). Morphological study of the individuals of this population indicated a close affinity with plants from the *locus classicus* in Campania, S Italy (measurements of these are reported in Peruzzi *et al.* 2004), but the Greek plants have a whiter corolla colouration-pattern. Populations from Albania (Casper 2006a) appear instead more similar in colouration-pattern to the Italian ones.

No access or collection permits were required to conduct these studies.

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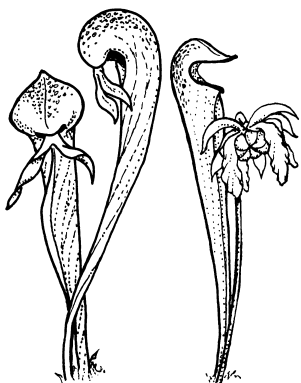
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Front Cover: *Pinguicula balcanica* growing in a streamside site, Pirin Mountain, Bulgaria. Article on page 100. Photograph by Lorenzo Peruzzi.

Back Cover: A remarkable discovery of *G. pygmaea* with tubers. See article on page 122. Photograph by Fernando Rivadavia.

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