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

LORENZO PERUZZI • Department of Biology • Unit of general and systematic botany • University of Pisa • via Luca Ghini 5 • 56126 Pisa • Italy • lperuzzi@biologia.unipi.it

Keywords: Observations: Bulgaria, Greece, Pinguicula balcanica, Pinguicula hirtiflora.

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 (45-90º 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 tegentibus”), 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.

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

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, homophyly, 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, stellicidious 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.

References
Carnivorous Plant Newsletter is dedicated to spreading knowledge and news related to carnivorous plants. Reader contributions are essential for this mission to be successful. Do not hesitate to contact the editors with information about your plants, conservation projects, field trips, or noteworthy events. Contributors should review the "Instructions to Authors" printed in the March issue of each year. Advertisers should contact the editors. Views expressed in this publication are those of the authors, not the editorial staff.

All correspondence regarding dues, address changes and missing issues should be sent to the Membership Coordinator at the ICPS. Do not send such correspondence to the editors. Checks for subscriptions and back issues should be made to the ICPS in US funds. Dues for 2007 are $25.

ICPS, Inc.
PMB 322
1564-A Fitzgerald Drive
Pinoles, CA 94564-2229, USA
icps@carnivorousplants.org

President: Doug Darnowski, doug@carnivorousplants.org
Vice President: Cindy Slezak, email: cindy@carnivorousplants.org
Secretary, Seed Bank: John Brittnacher, email: john@carnivorousplants.org, seedbank listed in this issue.
Treasurer: Richard Myers, email: richard@carnivorousplants.org
Board Member: Chris Teichreb, email: chris@carnivorousplants.org
Board Member: Bob Ziemer, bob@carnivorousplants.org

Editors:
Barry A. Rice, P.O. Box 72741, Davis, CA 95617, USA, email: barry@carnivorousplants.org
Jan Schlauer, Zwischenstr: 11, D-60594 Frankfurt, Germany, email: jan@carnivorousplants.org
Page Layout: Steve Baker, email: steve@carnivorousplants.org


The ICPS is the International Cultivar Registration Authority (ICRA) for cultivated carnivorous plants according to The International Code For The Nomenclature of Cultivated Plants. Send relevant correspondence to the ICPS, Inc.