



NEW TAXONOMIC DATA FOR THE FLORA OF ALBANIA RECORDED ON THE SERPENTINE SUBSTRATE (Southeast Albania)

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SYNOPSIS

The serpentines are important habitats for rare and endemic plants of Albania. They cover more than 25 % of the territory and are extended from the Northeast to the Southeast part of the country. In the frame of the project "Study of the Plant Biodiversity in the Serpentine Substrate of the Southeast Albania" financed by Tirana University (2006-07), we have found *Linum punctatum* C. Presl. ssp. *pycnophyllum* (Boiss. & Heldr.) Gustavson, *Hypericum linarioides* Bosse and *Crocus flavus* Weston. Based on our determination we record them as new plant species for Albanian flora. Discovery of *Linum punctatum* C. Presl. ssp. *pycnophyllum* (Boiss. & Heldr.) Gustavson in Valamara and Kunora e Lurës Mountains is offering new data about the size of distribution, expanding more to the north than the North Pindhos, as it was known up to now.

MATERIAL AND METHODS

Species determination within current study was made thorough examination of the specimens collected during the fieldworks made in 2006, 2007 and 2008 in the serpentine substrates of the southeast Albania. For each site of new taxa observed, the exact locality, coordinates and the altitude are defined. The coordinates were recorded with the aid of GPS Alan Map 500. In addition to the species collected in the field, morphological comparative analysis has also been performed for the genus *Linum* L., *Hypericum* L. and *Crocus* L. The herbarised specimens are deposited in the Herbarium of the Department of Biology, Tirana University.

The recorded species were defined on basis of the Flora of Europe (TUTIN *et al.*, 1964-1980), the Flora of Italy and Turkey (PIGNATI, 1982; DAVIS, 1984), the Mountainous Flora of Greece (STRID & KIT TAN, 1985; 2002), the Excursionist Flora of Albania (DEMIRI, 1983) and the Flora of Albania (QOSJA *et al.* 1992; VANGJELI *et al.* 2000). For three identified species, high resolution digital photographs have been taken and they are deposited at the personal photosets of the author.

INTRODUCTION

There have been described respectively, 19, 15 and 11 plant species for the genus *Linum* L., *Hypericum* L. and *Crocus* L. in the flora of Albania. At the recent studies on the genus *Crocus* L., two additional species were described: *Crocus biflorus* Miller and *Crocus hadriaticus* Herbert (SHUKA & JAHOLLARI, 2007; SHUKA, 2008). Our investigation is presenting also a new *Crocus* and *Hypericum* species, which grow in both serpentine and limestone grounds and *Linum* specie that were identified only in serpentine substrate.

RESULTS AND DISCUSSION

Linum punctatum* C. Presl. subsp. *pycnophyllum (Boiss. & Heldr.) Gustavson (Syn. *L. pycnophyllum* Boiss. & Heldr.; *L. alpinum* subsp. *pycnophyllum* (Boiss. & Heldr.) Maire & Petitmengin) is part of the *L. perenne* group. *L. punctatum* subsp. *pycnophyllum* is a perennial taxon, that in Albania occurred only on serpentine substrates from 1900 m a.s.l., (lat.: 40 45 926⁰ N and long.: 020 27 541⁰ E), up to 2250 m a.s.l. (lat.: 40 46 478⁰ N; long.: 020 26 563⁰ E) in Valamara mountain range (Fig.1). It was found also in Kunora e Lurës, Mali i Lopës and Shebeniku mountains, whereas preferred habitats are meadows and alpine pastures. Flowering season is during the end of May and June, particularly following the snow melting.



Figure 1. *Linum punctatum* subsp. *pycnophyllum* (Boiss. & Heldr.) Gustavson.

The specimens have been collected by the author in Kunora e Lurës (23 August 2006) and in Valamara mountain range (2 June 2007; 26 August 2008). It was found

also in Mali i Lopës and Shebeniku mountain last year, by the Hungarian botanist Barina, Z. (pers. comm).

Based on the data (STRID & KIT TAN, 1985), it is a quite rare Mediterranean taxon that is growing in SE Turkey, Greece and Sicily (L. p. ssp. *punctatum*). Presence of these taxa in Albania shows their northern distribution limit in Balkan Peninsula.

***Crocus flavus* Weston** (Syn. *C. maesiacus* Ker-Gauler; *C. aureus* Sibth. & Sm.) is an annual species, that grows in the range of *Quercus* or *Fagus* habitats and grasslands from 150 m a.s.l.(Dumre area), to 1000 m a.s.l. in Qafa e Thanës - Pogradeci district. It was found in serpentine and limestone substrate. Flowering time is February on lower altitudes and on the highest levels in March.

The plants were collected by the author near Lini village and Qafa e Thanës Pogradeci district (25 March 2006), on serpentine and limestone substrate and in Marina, Dumre, Elbasani district (16 February 2008), on lat.: 40 56 558⁰ N; long.: 019 54 801⁰ E, altitude 163 m a.s.l (Fig. 2). This species was mentioned by DEMIRI (1983), but was not included in the Flora of Albania (VANGJELI *et al.* 2000) and their specimens were not found in national herbarium.

General distribution of *C. flavus* is Central and Eastern Balkan Peninsula (TUTIN *et al.* 1980).

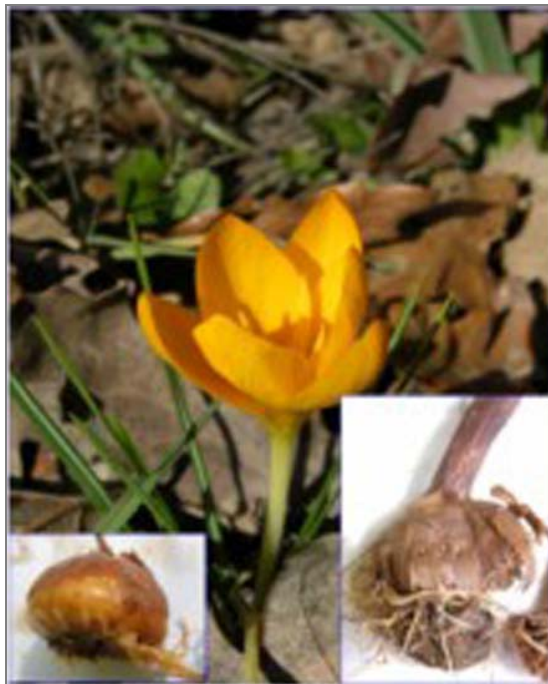


Figure 2. *Crocus flavus* Weston

***Hypericum linarioides* Bosse** (Syn. *H. alpestre* Steven; *H. repens* auct., non L.) is part of Sect. TAENIOCARPIUM occurs in mountain rocks or alpine pastures of the central parts of Balkan Peninsula, extending from Anatolia to the Crimea, Caucasus and NW Iran (STRID & KIT TAN, 2002).

This species were recorded for the first time in western slopes and rocks of the Gramozi mountain, Erseka district, on 16 July 2007, lat.: 40 21 746⁰ N; long.: 020 45 850⁰ E and altitude 2139 m a.s.l.

The distribution area of this species is extended along the border line with Greece, too. A year later (June, 2008), it was recorded by the author in limestone substrate of the Dry Mountain in Korça district. Flowering time of *H. linarioides* begin from the end of June up to July, depending of the altitude. It grows well from 1900 m a.s.l. up to 2450 m a.s.l. near the summit of Gramozi Mountain (Fig.3).



Figure 3. *Hypericum linarioides* Bosse.

All species described here are not mentioned for Albania by Tutin *et al.* (1972, 1980). The distribution areal of three above described species is given in the figure 4.

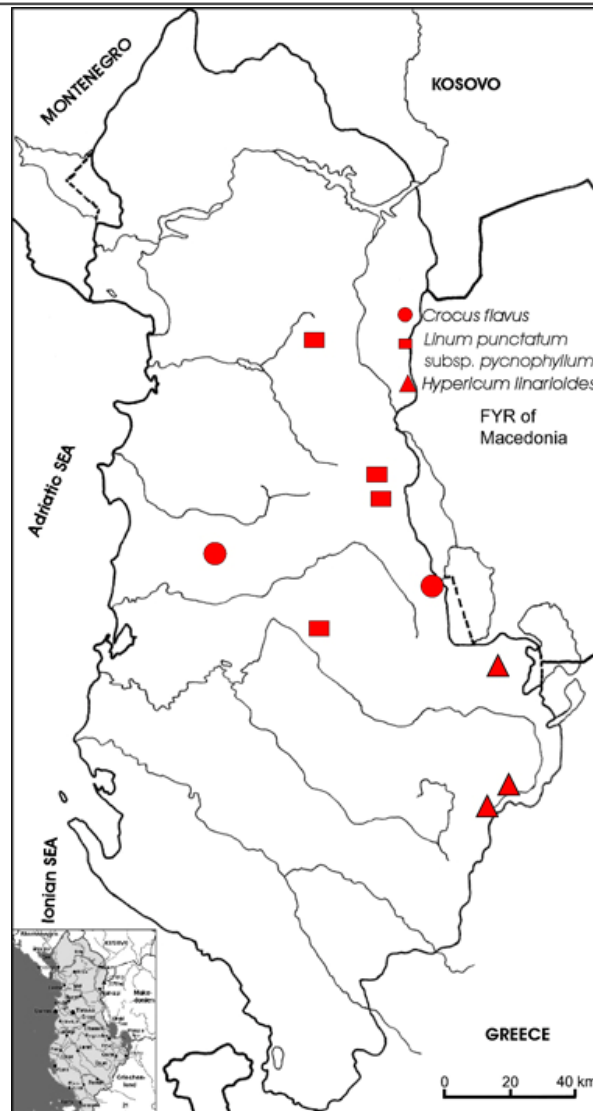


Figure 4. Distribution of *Linum punctatum subsp. pycnophyllum*, *Crocus flavus* and *Hypericum linarioides* in Albania.

CONCLUSIONS

Discovery of three new species comprise a contribution to the distribution range of above mentioned species and a great interest in the flora of Albania.

New localities recorded during fieldworks for rare and endangered taxa such as *Cistus albanicus* E. F. Warb. ex Heywood, *Hypericum haplophyllloides* Halacsy et Bald. ssp. *devollense* F.K. Meyer, *Centaurea pindicola* Griseb., *Bornmuellera baldacci* (Degen) Heywood. *Halascya sendtneri* (Boiss.) Doerfler, *Orobanche nowackiana* Markgraf, *Viola albanica* Halacsy and *Viola ducadjinica* W. Becker et Kosanin (SHUKA & KASHTA, 2008), make the southern serpentine substrate more misterious and attract a great interest in further study.

The presence of *Centaurea candelabrum* Hayek & Kosanin in Gjergjevica valley, south part of the country enlarges the distribution areal of this endemic species, too.

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