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Two New Taxa of *Crocus* (Liliiflorae, Iridaceae) from Turkey

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Abstract: Two new taxa of *Crocus* LINN. from western Turkey are described.

Zusammenfassung: Zwei neue *Crocus*-Arten aus der westlichen Türkei werden beschrieben.

Key words: *Crocus roseoviolaceus*, *Crocus minutus*, Turkey, Toros.

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Introduction

Turkish crocus populations were investigated systematically in the field by us since 1993 (KERNDORFF & PASCHE 1993, 1994, 1997, 2003, 2004a, 2004b, 2006, PASCHE 1993). Within the approximately 76 studied populations from all over Turkey several new taxa were found and described by us according to MATHEW (1982) as *Crocus biflorus* MILLER subspecies. In the meantime, all these populations were also analysed genetically using the biparental inherited ribosomal internal transcribed spacer (ITS: ITS1 + 5.8S rDNA + ITS2) region of nuclear ribosomal DNA (nrDNA) (HARPKE et al., 2011). A most important result is that species of series Laevigati form a monophyletic group (pp 0.99) basal to species of series Biflori, Flavi, Intertexti, Speciosi, Aleppici and the remaining species of series Reticulati, whereas *C. aerius*, *C. almehensis*, *C. chrysanthus*, *C. biflorus* ssp. *pseudonubigena*, *C. biflorus* ssp. *artvinensis*, *C. biflorus* ssp. *adamii*, and *C. biflorus* ssp. *tauri* form a strongly supported clade (1.00) divided by a basal split within the genus. Detailed results of this investigation were orally presented in February in Berlin (HARPKE et al., 2011). However, questions arose from these results about the systematic status of the investigated populations and the newly described taxa as well as for the genus as a whole. Fact is that the *C. biflorus* subspecies concept of MATHEW (1982) cannot longer be hold upright. This means for the two in this paper newly described taxa that they are no longer considered by us as a subsp. of *C. biflorus*.

Description of new taxa

1. *Crocus roseoviolaceus* KERNDORFF & PASCHE, species nova

H o l o t y p u s : Turkey, Pamphylia, Province Antalya, Toros Dağları, Taşeli Yaylası, 1600-1700 m, 11.3.2005, HKEP 0513 (LI, Gatersleben).

Cormus globosus, ca. 10 mm diam. Tunica coriacea, separata generaliter in fibras latas cum annulis indistinctis ad basem. Folia synantha, 3 – 3,35 – 4 (n=37) longa, atrovirida, 1 – 2 mm diam., glabra, sine costis. Folia vaginalia argentea-alba. Corolla fauce flava usque ad aurantiaca, glabra, perianthii tubus violaceus ad apicem, subter albidus. Perianthii segmenta exteriora 20 – 35 mm, plus minusve 25 mm longa, 5 – 10, plus minusve 7 mm lata. Segmenta interiora 18 – 33 mm, plerumque 24 mm, longa, 6 – 11 mm, plerumque 8 mm lata, ad paginam interiorem roseo-lilacinam usque ad violaceam. Segmenta exteriora extus punctata metallica-violacea vel bubalina, cum macula basilaris saturate violacea. Filamenta 2 – 6 mm, plus minusve 4,6 mm (n=37) longa, saturate flava vel aurantiaca, antherae 7-11 mm, plus minusve 8,9 mm, flavae vel nigrae. Pollen flavus. Stylus saturate aurantiacus usque ad rubrum, tubiformis ad apicem, 4 – 13 mm, plus minusque 7,5mm longus. Chromosomatorum somaticorum numerus 10.

Corm globose, about 10 mm in diameter. Tunics coriaceous splitting generally into rather broad segments with poorly devel-

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oped rings at base. Neck extension very short with few bristles, approximately 3 mm long. Cataphylls 3, silvery-white, skinny. Leaves 3 - 3,35 - 4 (n=37) shorter as flowers at anthesis, dark green, 1-2 mm in diameter, glabrous, no ribs underneath. Width of white stripe approximately 1/3 of leaf diameter or little less. Throat deep yellow to orange, glabrous, perianth tube violet near apex, whitish below. Outer segments between 20 and 35 mm but usually 25 mm long, between 5 and 10 mm mostly 7 mm wide. Inner segments between 18 and 33 mm but usually 24 mm long and between 6 and 11 mm frequently 8 mm wide. Inside all segments are rosy-lilac to violet without markings (photograph 1a, 1c). Outside of outer segments can be totally speckled metallic-violet (photograph 1b) or buff-coloured (photograph 1c) with violet stripes or featherings with a distinct dark violet blotch towards the perianth tube. Outside colouring of the inner segments is mostly uniformly rosy-lilac to violet without markings. Prophyll absent. Bract and bracteole present, silvery-white, conspicuous. Filaments 2-6 mm on average 4,6 mm (n=37) long, deep orange (photograph 1a), glabrous or scabrid; anthers 7-11 mm on average 8.9 mm (n=37) long, yellow or black, connective dark grey to black (photograph 1a). Pollen yellow. The styles are deep orange to red, divided into 3 branches which are very slightly trumpet-shaped towards the end; branches prominent 4-13 mm on average 7,5 mm long, scabrid (photograph 1a). The styles are mostly equal to longer as the stamens (95 %, n=37). Capsule and seeds not seen. Chromosome number 2n = 10.

In its overall appearance the new species seems to have a relationship to the two species from Cyprus. This can be seen e.g. from some characteristics like the deep coloured segments, the orange filaments and the genetic relation resulted by DNA-fingerprints. This connection can be dated back to Anatolia´s palaeogeographic history and is, from the present geographical position of the type location, not improbable. This one lies north of Cyprus directly across the Mediterranean sea. However, there are some questions to be solved especially concerning its DNA-fingerprint in connection with the species from Cyprus and other species from the Taurus.

Distribution and habitat: Turkey, Pamphylia, Antalya Province, very local, in open forests, along mountain slopes, together with *Cedrus libani*, *Pinus nigra* ssp. *pallasiana*, *Rubus*, grasses, and others. *Crocus roseoviolaceus* grows obviously only on calcareous formations and is until now only known to exist in the Pamphylian Taurus mountains.

2. *Crocus minutus* Kerndorff & Pasche, species nova

Holotypus: Turkey, Lycia, Antalya Province, northern Bey dağları, 1600-1700 m, 20.02.2011, HKEP 1101 (Gatersleben).

Cormus globosus, ca. 10 - 15 mm diam.. Tunica plus minusve coriacea, separata in fibras numerosas cum annulis ad basem. Cataphyllae 3 – 4, argenteo-albae. Folia 3 – 6, plus minusve 4, - 0,5 - 1 mm lata, glabra sine costa, rare 1 costa. Faux plerumque alba, rare pallide flava, glabra, rare sparsim ciliata. Perianthii tubi caerulei violacei ad apicem, albeo ad basem. Segmenta exteriora 15 – 22 mm, sed plerumque 18 mm longa, 3 – 5 mm lata. Segmenta interiora 13 – 21 mm, plerumque 16 mm longa, 3 – 5 mm lata, plerumque 4,9 mm lata. Segmenta alba ad paginam exteriorem et interiorem. Prophyllus absens. Bractea et bracteola argentea-alba. Filamenta plus minusve 3,1 mm longa, sine colore, glabra ad basem. Stylus sine colore, divisus in partes tres, fimbriatus, rami 4 – 7 mm, plerumque 5 mm longi, glabri. Chromosomatorum somaticorum numerus incognitus est.

Corm globose, about 10-15 mm in diameter. Tunics more or less coriaceous, splitting longitudinally into segments, with rings at base. Neck short, around 3-5 mm. Cataphylls 3-4, silvery-white. Leaves shorter to longer than flowers at anthesis, 3-6 but normally 4, green, 0.5-1 mm in diameter, glabrous, no ribs or very rarely one rib underneath. White stripe normally distinctly wider than 1/3 of leaf diameter. Throat mostly white or very light yellow (photograph 2a), glabrous to slightly ciliate. Perianth tube near the apex speckled light bluish-violet to greyish-blue, further down white (photograph 2b & c). Outer segments between 15 and 22 mm but usually 18 mm long, between 4 and 6 mm mostly 4,5 mm wide. Inner segments between 13 and 21 mm but usually 16 mm long and between 3 and 5 mm frequently 4,9 mm wide. Inside all segments are uniformly white without markings (photograph 1a), outside tightly speckled blue on white ground (photograph 2a, b & c). Prophyll absent. Bract and bracteole present, silvery-white, skinny, very conspicuous. Filaments on average 3.1 mm long, colourless (photograph 2a & c), glabrous at base; anthers yellow, arrow-shaped, tips of arro ws more or less intensive black, sometimes the black tips angled to the outside (photograph 2a); on average 6,9 mm long, connective colourless, thick and very prominent. Pollen yellow. The styles are colourless without exception, divided into 3 branches which are prominently extended broadly and fringed at the apex (photograph 2a, b & c); branches 4-7 mm but usually 5 mm long, glabrous. The styles are mostly shorter to equal compared to the stamens. Capsule and seeds not seen. Chromosome number unknown.

The uniformly white colour of the flowers with bluish-grey speckles on the outside of the outer segments as well as other constant features in combination like a distinctly formed white stigma, the thick and prominent white connective, and the always black tips at the end of the anthers are most characteristic for this overlooked crocus.

As genetic results show, the relatives of this tiny little crocus are *C. biflorus* ssp. *punctatus*, *C. biflorus* ssp. *caelestis*, *C. biflorus* ssp. *pulchricolor*, *C. sieheanus* and *C. danfordiae*.

Distribution and habitat: Turkey, Lycia, Antalya Province. As yet known from three mountain ridges, the Bey dağları, the Tahtalı dağı, and the Katrancık dağı in open areas, light forests, scrub, together with *Pinus nigra* subsp. *pallasiana*, *Juniperus*, *Cistus laurifolius*, *Verbascum*, *Crocus flavus* ssp. *dissectus*, *Ornithogalum*, *Colchicum* and others. *Crocus minutus* seems to prefer calcareous soils.

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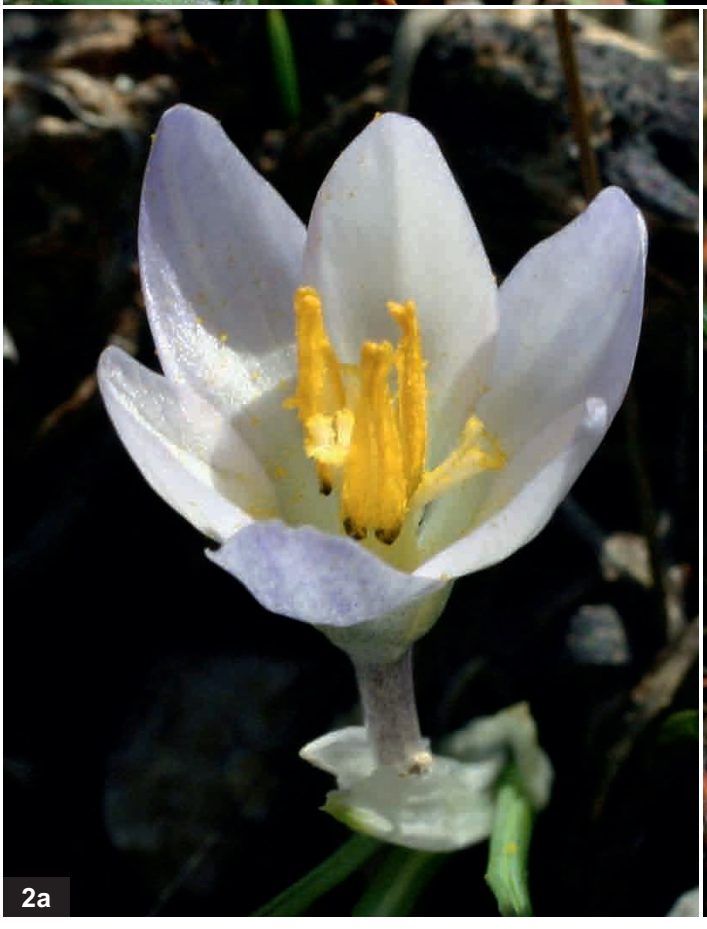

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