Crocus thomasii Ten. and *Crocus variegatus* Hoppe & Hornsch (Iridaceae) on Quarnero islands

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Abstract

The genus *Crocus* L. is largely undersampled on Quarnero ilslands. Discovery of autumn-flowering *Crocus thomasii* Ten. was reported for the islands of Pag and Rab, while early-spring species *Crocus variegatus* Hoppe & Hornsch. was found on the island of Rab. Field surveys out of growing season should not be neglected, in order to gain data on some taxa, currently known as rare.

Keywords: Croatia, *Crocus thomasii*, *Crocus variegatus*, flora, Pag, Rab

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Sažetak

Rijetki su nalazi roda *Crocus L.* na području kvarnerskih otoka. U radu se donose nalazi jesenske vrste *Crocus thomasii* Ten. s otoka Paga i Raba te ranoproljetne vrste *Crocus variegatus* Hoppe & Hornsch. s otoka Raba. Kako bi se bolje istražile te vrste, naglašava se važnost terenskih istraživanja i izvan vegetacijske sezone.

Ključne riječi: Hrvatska, *Crocus thomasii*, *Crocus variegatus*, flora, Pag, Rab

Introduction

Autumn flowering plants have been largely overlooked and insufficiently mapped in local floras, mainly because autumn season is less favoured by botanists to perform field trips. This is especially true in the Mediterranean parts of Croatia, particularly on remote islands, where spring and early summer flora actually encompass the majority of plant taxa. Combined with rather harsh weather and sea conditions (strong local winds), this explains why botanists more rarely perform field trips to Croatian islands during the autumn and winter seasons.

Thanks to the recently published detailed review of the genus *Crocus* in Croatia (Milović 2016), I had the opportunity to use the new identification key on the Quarnero islands field trip during the 2016 autumn season. Taking into account current taxonomic and nomenclature proposals, Milović (2016) concluded that Croatian flora consists of ten saffron taxa. According to Milović (2016) out of the three currently known autumn-flowering species, only *C. thomasii* Ten. actually occurs in Croatian flora, while all (although sparse) distribution data on *C. longifolius* Raf. and *C. pallasii* Goldb. should be attributed to *C. thomasii*. According to the latest taxonomic studies, *C. reticulatus* Steven ex Adams is treated as a synonym of *C. variegatus* Hoppe et Hornsch.

Material and methods

The Quarnero Bay (Kvarnerski zaljev) is located in the northern Adriatic Sea, between the Istrian peninsula and the northern Croatian Littoral mainland, including a number of islands, among which Cres, Krk, Pag, Rab and Lošinj are the largest.

The field trip to the Quarnero islands was carried out on two occasions, on 10th January 2014 and from 28th October to 1st November 2016. Several localities on the islands of Pag, Rab and Sveti Grgur were visited and flora mapping was performed. Collected specimens were dried and stored in the ZA herbarium. Nomenclature of the plant taxa follows Flora Croatica Database (Nikolić 2016).

Results and discussion

Prior to this study, there were no data on autumn-flowering *Crocus* on the Quarnero islands. On the other hand, there were many data for central and southern Adriatic islands, and mainland littoral. The northernmost known localities of *C. thomasii* in Croatia were Zadar (Milović & Mitić 2012) and southern Velebit Mt. (herbarium specimen kept in the Herbarium of the University of Ljubljana, collected by Brian Mathew 1973, ID: LJU39614). However, based on the recent review (Milović 2016), the old record of *C. pallassi* on the island of Rab (Morton 1914) can now be assigned to *C. thomasii* as well.

During the field trip to Quarnero islands *C. thomasii* (Fig. 1) was found on islands of Pag and Rab. On 30th October 2016 a small population was recorded on the very north of Pag, near the settlement of Lun (HTRS96: 5479243E , 4950095N). The population of roughly twenty specimens grew on a small grassland on the edge of olive groves in close vicinity to the sea. The accompanying herb species were *Chrysopogon gryllus* (L.) Trin., *Eryngium amethystinum* L., *Scilla autumnalis* L., *Teucrium polium* L., *Dactylis glomerata* L., *Bellis sylvestris* Cirillo, *Thymus longicaulis* C.Presl, *Petrorhagia saxifraga* (L.) Link and *Carlina corymbosa* L., while nearby shrub vegetation included *Juniperus oxycedrus* L., *Spartium junceum* L., *Paliurus spina-christi* Mill., *Phillyrea latifolia* L. and *Smilax aspera* L.

On 1st November 2016 *C. thomasii* was found on Kamenjak Mt., the central and highest hill on the island of Rab. The population, consisting of about 40 specimens, was recorded on the north-eastern slopes of the mountain ridge, on 360 m a. s. l. (HTRS96: 548329 E, 4959447 N). Here, the species

grew on somewhat harsher habitat compared to those on island of Pag. The north-eastern slopes of Kamenjak Mt are almost completely bare, with seemingly no vegetation. Owing to very strong and frequent bora wind blowing from the nearby mainland (Velebit Mt), as well as sheep overgrazing, the vegetation occurs solely on small patches of soil among the stones and rocks. *C. thomasii* occupies exactly those microhabitats, trampled and enriched by nitrogen due to sheeps. Along with saffron, some other taxa were noticed: *Marrubium incanum* Desr., *Crataegus monogyna* Jacq. (pigmy form), *Rhamnus intermedius* Steud. et Hohst., *Drypis spinosa* L. ssp. *jacquiniana* Murb. et Wettst., *Koeleria splendens* C.Presl, *Taraxacum laevigatum* auct. croat., *Desmazeria rigida* (L.) Tutin, *Valantia muralis* L., *Cynosurus echinatus* L., *Stachys thirkei* K.Koch, *Eryngium amethystinum* L., *Dactylis glomerata* L. and *Sedum sexangulare* L.

Figure 1. *Crocus thomasii* from the island of Rab (Photo: V. Šegota).

Despite being searched for, *C. thomasii* was not found on the neighbouring island of Sveti Grgur. Overall, I believe that this species is relatively common and should be present on the majority of Quarnero islands.

In addition, I recorded a late-winter flowering saffron *C. variegatus* Hoppe & Hornsch. (*C. reticulatus* Steven ex Adams) on the island of Rab (Fig. 2). A large population was noticed on 10th January 2014 on the very south of the island (Kozji vrh above Mišnjak ferry port). The last original report of this species on Quarnero islands dates more than 50 years ago (Horvatić 1963). Moreover, on Rab the species was recorded only once, hundred years ago by Morton (1914). Surprisingly, I recorded the species in bloom at the beginning of January, although its common flowering season is during February and March (Milović 2016, Nikolić 2016). The species was found to grow on rocky pastures in a mosaic of habitats dominated by *Salvia officinalis* L. and *Drypis spinosa* L. ssp. *jacquiniana* Murb.et Wettst, respectively.

Figure 2. *Crocus variegatus* from the island of Rab (Photo: R. Španić).

To conclude, even if the autumn and winter flora in the Mediterranean part of Croatia is not as diverse and attractive as its spring aspect, field surveys should not be neglected in these seasons, because some taxa currently known as rare could remain unexplored and overlooked.

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