

RESEARCH ARTICLE

## Critical taxonomical notes on poorly known *Johrenia porteri* Post ex Boiss. (*Apiaceae*)

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### Abstract

In addition to the incomplete type from Turkey, *Johrenia porteri* Post ex Boiss. is known from only two herbarium specimens of doubtful systematic position from Turkey-Syria border. The deficiencies in both type and other herbarium samples have been caused uncertainty and debate about the taxonomic position of the species. In this article, *Johrenia porteri* is epitipified and its taxonomic position has been clarified. The description of the species has been expanded with the studies conducted within the scope of the samples collected in different developmental periods from the type locality as well.

**Keywords:** Eudicots, epitipification, *Johrenia*, Turkey

### Introduction

The genus *Johrenia* (*Apiaceae*), known in Turkey with the Turkish name “Irazotu” (Güner et al. 2012), was described by Candolle (1829) based on *J. dichotoma* DC. According to the latest taxonomic analysis on some of the genera in *Apiaceae*, the generic name *Dichoropetalum* Fenzl has been restored and some species of *Johrenia* s.l. in Turkey have been transferred to *Dichoropetalum* (Pimenov et al. 2007). After this taxonomic arrangement, which was not adopted in the “Turkiye Bitkileri Listesi (Damarlı Bitkiler)” the number of taxa of the genus *Johrenia* distributed in Turkey has become 3. These taxa are *Johrenia silenoides* Boiss. et. Bal., *J. porteri* and *J. dichotoma* DC. (Chamberlain 1972; Pimenov et al. 2007; Menemen 2012).

*Johrenia porteri* is a poorly known species due to many taxonomic confusions. This species has been published from Kahramanmaraş (Boissier 1888), depending on the flowering and young fruity type specimens whose rosette leaves were missing (in G and BEI). In addition, the species has been known from doubtful specimens from another locality in Turkey (Hatay/Gaziantep: Kurd Da., in BEI and B) and from Syria (Chamberlain 1972; Pimenov et al. 2007).

Unlike type specimens, the specimens from Hatay/Gaziantep are stemless and consist only of rosette leaves.

Therefore, it has been reported that the origin of these specimens is not known and may represent another species (Pimenov et al. 2007). Bormüller (1930) reported that these samples belong to *Pimpinella saxifraga* L., but Pimenov et al. (2007) stated that this sample may be more suitable for *Pimpinella corymbosa* Boiss.

The taxonomic confusions do not allow the taxon identified as the *Johrenia porteri* to be accurately attributed to any genus, and type specimens in G and BEI and the others in B and BEI are not sufficient to clarify the taxonomic position of it. As the most probable taxonomic solution, it has been proposed to attribute the type specimens in BEI and G to *Peucedanum junceum* (Boissier) Mouterde and the others in B and BEI to *Pimpinella corymbosa* (Pimenov et al. 2007). The studies on more complete specimens from around the type locality are required (Pimenov et al. 2007). Although some studies have been done on the materials collected from the type locality before (Dogan et al. 2010; Ceter et al. 2012; Bagci and Dinc 2012), there is no published comprehensive study on the solution of taxonomic confusion. In this study, it is aimed to clarify the taxonomic position of *J. porteri* within the scope of the samples collected around the type locality.

**Materials and Methods**

In order to solve this taxonomic confusion, the field studies were carried out in Kahramanmaraş Kapuçam Mevkii, which is the type locality of *J. porteri* in different development periods. The specimens were collected both in April-June, when the individuals were in early vegetative development, and in July and September, when they were flowering and fruiting. These specimens are kept in KNYA herbarium. Morphological characters of the studied specimens were examined by using a binocular stereoscopic microscope and compared with the type specimen. The specimens examined as follows; [C6 Maras] in Syriae borealis collibus siccis ad Kapukhan ditionis Marasch (type BEI photo!); C6 Hatay/Gaziantep; Kurd dağı (BEI photo!); C6 Maras, Kapucam, Karacam topluluğu içi acik ve taslik-kayalik yerler, 600 m-650 m, 08.07.2009, Bağcı 3735 and M.Dinc (KNYA); ibid., 600 m-650 m, 13.07.2010, Bağcı 4118 and M. Dinc (KNYA); ibid., 06.08.2010, Bağcı 4132 and M. Dinc (KNYA); ibid., 650 m-655 m, 10.09.2010, Bağcı 4134 and M. Dinc (KNYA); ibid., 600 m-650 m, 15.04.2011, Bağcı 4139 and M. Dinc (KNYA); ibid., 655 m, 01.06.2011, Bağcı 4193 and M. Dinc (KNYA).

**Results**

The reason for the taxonomic uncertainty about *Johrenia porteri* is the missing type sample (Fig. 1) and the other herbarium sample (Fig. 2). The previous studies on the two type materials of *J. porteri* indicated that among the flowering and immature fruited samples, the one found in G was the holotype (i.e lectotype) and the one found in BEI was the isotype (i.e isolectotype) (Pimenov et al. 2007). As a result of this study, *J. porteri* is epitipified (Fig. 3) and its description is expanded within the scope of many examples collected from type locality.

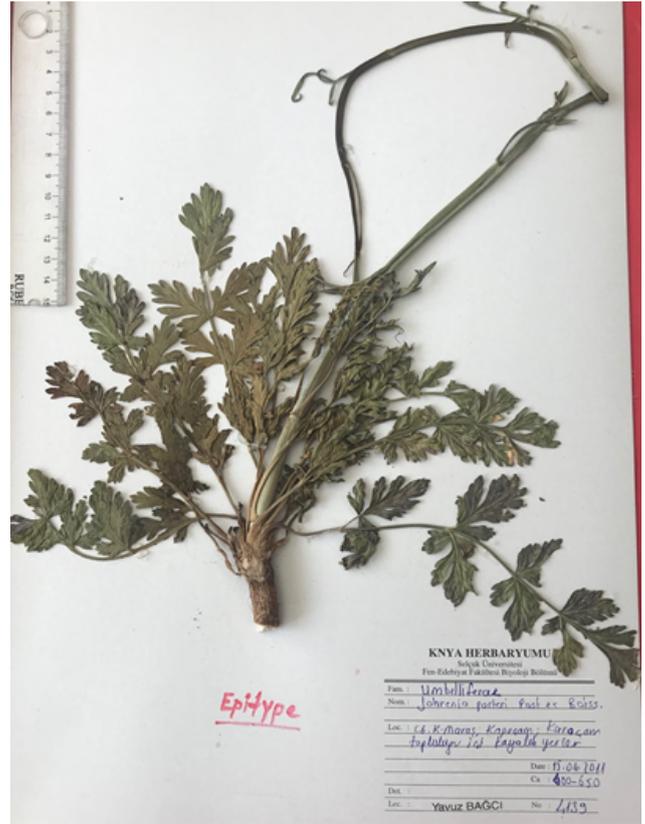


Figure 3. The epitope of *Johrenia porteri* designated here.

**Taxonomy**

***Johrenia porteri* Post ex Boiss., Fl. Or. Suppl. 266 (1888)**

**Type:** [Turkey C6 Maraş] in Syriae borealis collibus siccis and Kapukhan ditionis Marasch (lecto. G, isolecto. BEI photo!) (Fig. 1)

**Epitype (designated here):** [Turkey] C6 Kahramanmaraş: Kapuçam Mevkii, Karaçam topluluğu içi açık ve taşlık-kayalık yerler, 600 m-650 m, 15.04.2011, Bağcı 4139 and M. Dinç (KNYA) (Fig. 3).

**Description:** Tall perennial herbs. Rootstock thick, branched, crowned by a weak fibrous collar. Stem up to 200 cm long, strongly glaucous dichotomously branched above the middle, 5 mm-10 mm diameter, striate below and above, with withered petiols remaining from former year at base. Basal leaves 1-pinnate, up to 15 cm, oblong in outline, with 4-6 paired leaflets, ultimate leaf segments pinnatifid to pinnatisect, with linear to oblong lobe, glabrous, drying before anthesis; lower and median cauline leaves smaller with 2-3 paired undivided or trisect leaflets; upper leaves wholly reduced, simple and sessile. Basal leaf petioles up to 5 cm long and 3 mm-5 mm wide. Inflorescence dichotomously branched, umbels unequally 5-12 rayed, rays diffuse in flowering time, nearly erect in fruiting time; bracteoles 5-8, herbaceous, 3 mm-4 mm long, triangular lanceolate, strongly deflexed at fruiting time. Peduncles 0.5 cm-20 cm, rays 0.5 cm-2.5 cm, pedicels 4 mm-5 mm in fruiting. Flowers yellow, minute Stylopodium plane or slightly conic. Ripe fruit oblong-elliptic to ovoid, (5.2 mm-6.2 mm) × (3.3 mm-4.0 mm), exterior vittae embedded in the thick white margin, central area remaining green and differentiated (Figs. 3 and 4).



Figure 1. The type specimen of *Johrenia porteri* (BEI); (a): The specimen; (b): The label (with the permission of Post Herbarium (BEI) Curator Nada Sinno Saoud).

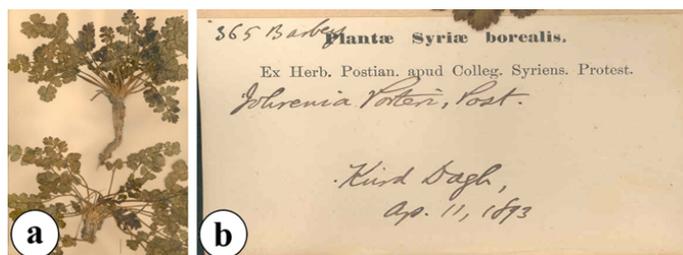
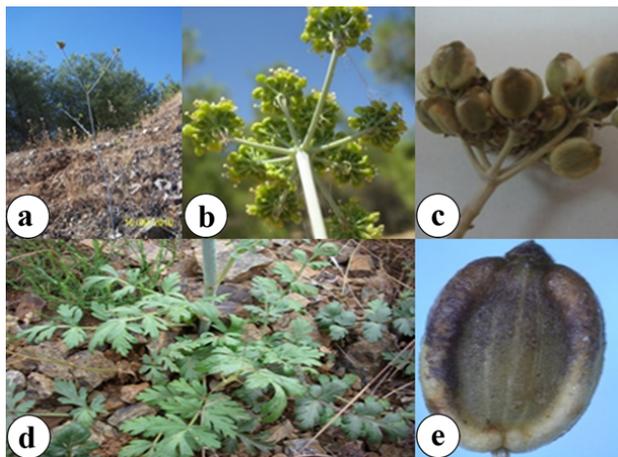


Figure 2. Hatay/Gaziantep specimen of *Johrenia porteri* (BEI); (a): The specimen; (b): The label (with the permission of Post Herbarium (BEI) Curator Nada Sinno Saoud).



**Figure 4.** Natural views of *Johrenia porteri* in different development period; (a): general view; (b): inflorescence; (c): infructescence; (d): radical leaves; (e): mature fruit (a, c, e from Bağcı 4134 and M. Dinç in September; b from Bağcı 4133 and M. Dinç in June; d from Bağcı 4139 and M. Dinç in April).

## Discussion and Conclusion

The observations during field studies indicate that the deficiencies in herbarium samples that cause taxonomic confusion are due to the development characteristics of the species because at the beginning of the stem development, the rosette leaves dry and crumble completely. Therefore, herbarium samples were collected incompletely and this caused taxonomic controversy and confusion. In this study, the taxonomic status of the species was clarified by eptipification.

The specimens in each development period obtained from the type locality, especially with their flower and fruit characters (yellow petals, the wingless mericarps, green in the middle, white and swollen-spongy at the margins, interior three ridges on the center of the mericarp reduced to raised lines, exterior two embedded in the thick margin etc.), are clearly compatible with the genus *Johrenia*. Therefore, it is suitable for this species to remain taxonomically in the genus *Johrenia*.

It has been reported that stemless *J. porteri* specimens from Hatay/Gaziantep may represent another species included in the genus *Pimpinella* L. (Bormüller 1930; Pimenov et al. 2007). Within the scope of the study, the comparative examination of the samples collected from the type locality of *J. porteri* indicates that the samples of Hatay/Gaziantep belong to *J. porteri*.

The only recorded specimen of *J. porteri* from Syria is identified by Mouterde (1970). However, Pimenov et al. (2007) stated that unlike the type of *J. porteri*, with the well-developed bracteoles that characteristically surpass umbellule, it probably belongs to recently described *Peucedanum longibracteolatum* (Parolly and Nordt 2005) or its close relative. In none of *J. porteri* samples collected from the type locality, the bracteoles do not exceed the umbellules. This situation supports the opinion of Pimenov et al. (2007) about the systematic position of the Syrian example.

## Conservation status

The data obtained from the study show that *J. porteri*

is a stenoendemic species known from only two localities approximately 100 km apart from each other in Turkey. The EOO (Extent of occurrence) is less than 100 km<sup>2</sup>, the AOO (Area of Occupancy) is less than 10 km<sup>2</sup>, and total number of mature individuals is approximately 100. The population at type locality is very near to picnic area, and under the serious threat of overgrazing. Based on these data and by the application of the criterion B1, B2ab (i,ii,v), this species is here assessed as Critically Endangered (CR) according to IUCN (2019).

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