

## *ISATIS ARMENA* (BRASSICACEAE), NEW FOR FLORA PALAESTINA

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**Abstract.** We report three records of *Isatis armena* L. (Brassicaceae) from southwestern Jordan, new for Flora Palaestina. The species, typically of a broad Irano-Turanian distribution, is unprecedentedly reported from the Saharo-Arabian floristic region, nearly 1000 km remote from its known range.

**Key words:** Cruciferae, distribution, Jordan, new records, *Sameraria armena*

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The genus *Isatis* L. (Brassicaceae) comprises 79 species, centered in the Irano-Turanian region (Davis 1965; Warwick *et al.* 2006). According to a recent molecular phylogenetic study, the genus *Isatis* nests three additional Irano-Turanian genera, namely *Sameraria* Desv., *Pachypterygium* Bunge and *Tauscheria* Fisch., previously regarded as distinct (Moazzeni *et al.* 2010). Altogether, *Isatis sensu* Moazzeni *et al.* encompasses 92 species. In the Flora Palaestina area, two species of *Isatis* have been reported, namely the Mediterranean-Irano-Turanian *I. lusitanica* L., and the Saharo-Arabian *I. microcarpa* Boiss. (Rechinger 1952 – *I. lusitanica* as *I. aleppica* Scop.; Davis 1965; Zohary 1966). Here we report first records of *Isatis armena* L. [synonym *Sameraria armena* (L.) Desv.] from Jordan (Fig. 1), which are also new records for the whole of the Levant.

The first specimen of *I. armena* was collected on April 5<sup>th</sup> 2014 by Vered and Ori Fragman-Sapir at Jabal Umm Ad-Dami (Aqaba Governorate) near the Jordanian-Saudi border, in the phytogeographic district of Edom (29°18'37.35"N, 35°26'44.28"E; Fig. 2) at 1670 m a.s.l. (125919

HUJI, 2015ST030011 Amman!, acronym not assigned). The plant was found growing between rocks on slopes of red sandstone mountains in the desert. The plants were associated with diffuse, low vegetation, among *Artemisia sieberi* Besser, *Gymnocarpus decander* Forssk. and *Isatis lusitanica* L. The species was locally very rare and sporadic, with only two individuals viewed.

Two additional neighboring Jordanian populations were reported by Ya'ir Ur and Mimi Ron in the Ras-en-Naqb area (Edom, Ma'an Governorate), ca 80 km north of Jabal Umm Ad-Dami. The plants were found on April 23<sup>rd</sup> 2015 at 30°2'48.29"N, 35°27'1.34"E (Naqb 2; Fig. 2) and on May 23<sup>rd</sup> 2014 at 30°3'40.62"N, 35°26'41.22"E (Naqb 1; Fig. 2). At these two sites, *I. armena* was found as a weed in traditionally managed cereal fields on calcareous bedrock. Seeds from the 'Naqb 1' population were collected and are stored in the seed collection of the Royal Botanic Gardens in Jordan and in the Jerusalem Botanical Gardens (accession nos. 2015ST030010 and JBG2014-0515 respectively).

*Isatis armena* (Fig. 1) is a glabrous and glaucous annual herb growing up to 30 cm. The racemes bear auriculate leaves at their bases. The

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Fig. 1. *Isatis armena* L. in Jabal Umm Ad-Dami, Jordan. Photo O. Fragman-Sapir.

flowers have erect pedicels, becoming recurved at fruit set. The petals are pale yellow. The fruit is an indehiscent winged discoid silicle 1.2 cm in diameter, cordate at the base. The silicle surface is tomentose, except for the wing. The 4–5 mm wide, dark-veined wing encircles the locule. A stylar tip persists at the distal end of the silicle. *Isatis armena* is distinguished from the sympatric *I. lusitanica* and *I. microcarpa* by the orbicular silicle and its cordate base.

Seeds were sown at the Jerusalem Botanical Gardens in a net house in October 2014 and germinated only after cold stratification and addition of gibberellic acid. Germination occurred in early January and inflorescences appeared in March. Almost all flowers developed into fruits.

*Isatis armena* is new for Flora Palaestina area (Israel, the Palestinian Territory and western Jordan) as well as the whole Levant. We presume that the presence of the species is not episodic, since the plant was found in three different localities. The

species has a typical Irano-Turanian distribution, and was previously reported from Afghanistan, Pakistan, Iran (Hedge & Rechinger 1968), North Iraq, Armenia, Turkey, Caucasia (Davis 1965),

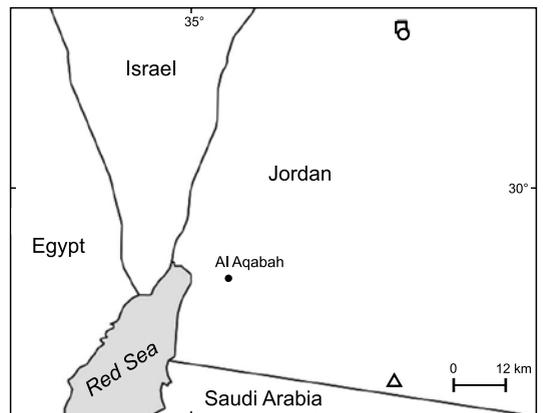


Fig. 2. New locations of *Isatis armena* L. in Jordan.  $\Delta$  – Jabal Umm Ad-Dami,  $\square$  – Naqb 1,  $\circ$  – Naqb 2. Retrieved from Shorthouse (2010).

Azerbaijan and Turkestan (Boissier 1867; Bush & Vasil'chenko 1970). It has not been reported from any Levantine country (Lebanon, Syria, Jordan and Israel), nor from Arabia. These recent findings from Jordan suggest that the distribution range of *I. armena* is disjunct. This distribution pattern is remarkable not only because of the nearly 1000 km gap between populations (south-western Jordan to northern Iraq), but also because of the extension of the species range far beyond of its typical Irano-Turanian floristic region, as Jabal Umm Ad-Dami is located in the Saharo-Arabian floristic region (Shmida *et al.* 1985).

Further surveys are needed to determine the full range of this species in Jordan and possibly in northern Saudi Arabia, as well as in the gap towards the populations north of the Levant. Due to its rarity, we recommend adding *I. armena* to the red data book of Jordan.

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