Great Basin Naturalist

Volume 24 | Number 1 Article 2

3-31-1964

Alyssum turgidum: a new species from Iran

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ALYSSUM TURGIDUM: A NEW SPECIES FROM IRAN

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An extremely interesting gathering of *Alyssum* was found in a collection of specimens sent to the author for identification and study by Dr. K. H. Rechinger of the Naturhistorisches Museum, Vienna, Austria. No specimen, possessing the very distinctive, inflated and turgid fruits, such as are diagnostic for the species described below, were discovered in any of the numerous European herbaria that have been visited by the author. This species, assigned to sect. *Odontarrhena* (Meyer) Koch, was apparently unknown to E. J. Nyárády, the monographer of this section. Likewise, as it was not mentioned or described in Parsa's more recent *Flore de l'Iran*, it probably had not been collected prior to 1961. In that year, Dr. Howard C. Stutz of the Brigham Young University, Provo, Utah, U.S.A., made the original collection. The author is indebted to Dr. Stutz for making the holotype available.

Alyssum turgidum Dudley, sp. nov.

Figs. A-E, G-K.

Holotype, Iran. Japarabad, dry south slopes, 5000 ft., 17 May 1961, *Stutz 1289* (BRY); isotype (W).

In Sectione *Odontarrhena* (Meyer) Koch siliculis globosis valde inflatis turgidis utriculiformis insignis. Ceterum ad. *A. haussknechtii* Boiss. accedens sed illa species fructibus maioribus et formae valde diverso, sepalis et petalis minoribus, indumentō parciore et pilis stellatis minoribus inter alia distinguitur.

Planta perennis, suffrutescens, basi multiramosa, 7-15 mm. lata, 5-10 cm. alta, ex toto indumento dense cinereo, e pilis stellatis appressis minute punctatis 4-6 radiatis radiis ramosis aequalibus 0.3-0.6 mm. diametro composito. *Caules floriferi* tenue, laxe ascendentes vel patentes, 5-15 cm. longi, a basi indumento albo denso tecti vel rubro-purpurei cum pilis stellatis facilis disjunctis. *Surculi steriles* basi caulium floriferorum conferti vel patentes, (0.5-)1.5-3(-5) cm. longi. *Folia caulium floriferorum* oblanceolata vel spatulata, post anthesin decidua, acuta, 7-15 mm. longa, 2-3 mm. lata. *Folia surculorum sterilium* obovato-spatulata, 2-10 mm. longa, 2-3 mm. lata. *Corymbi* ramosi, constricti, 1-3 cm. longi latique. *Pedicelli* rigidi, divergentes vel horizontales, 2.5-4.5 mm. longi. *Sepala* decidua, membranacea, ad apicem cucullata, ovata, obtusa, anguste hyalino-marginata, 1.5-2 mm. longa, 0.5-1 mm. lata, pilis stellatis sparsis provisa. *Petala* clavata vel obovata, integra vel subretusa, in unguem

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sensim attenuata, glabra, 2-2.5 mm. longa, 1-1.5 mm. lata. *Filamenta longa*, 2-2.5 mm. ala unilaterali in dimidio inferiore connata, apice libero acuto vel 1-2- denticulato. *Filamenta brevia*, 1.5-2 mm., appendice libera, oblanceolata, bifida, ca. 1. mm. longa praedita. *Stylus* 1-1.5 mm. longus, tenuis sed rigidus, in dimidio inferiore pilis stellatis minutis provisus. *Silicula* orbiculata vel oblata, globosa, magno turgida, utriculiformo-tumida, (3-)4-6 mm. longa et lata, valvis bene aequaliter inflatis, indumento sparse vel copiose provisis. *Ovulum* unum per loculum. *Semen* immaturum, ut videtur alatum. Fl. Apr.-May, fr. May-June.

From among the taxa allocated to sect. *Odontarrhena* (subsect. *Inflata*). *Alyssum turgidum* appears to be most closely allied to *A. haussknechtii* Boiss., a rare alpine endemic found only in the Anti-Taurus region of southern Turkey [Holotype. Turkey, C6: Prov. Maras, in rupestribus alpinis montis Berytdagh (Berit dagg) Cataoniae, 2844-3160 m., 10 Aug. 1865, *Haussknecht s.n.* (G); isotypes (BM, W)]. The fruit of *A. turgidum*, like that of *A. haussknechtii* has an orbicular medial cross-section. This is caused by the valves being strongly inflated. The tapered, conical and smaller fruit of *A. haussknechtii*, however, is inflated to its maximum extent only at its center (Pl. I, fig. F). A cross-section of a fruit of *A. haussknechtii* from above the middle point is not orbicular, but is transversely elliptic. In contrast, the valves of *A. turgidum* are completely inflated; the fruit being turgid and spherical, and a cross-section at any point is orbicular. The characters of a short stipe supporting the fruit and saccate valves are common to both species, but are not as prominent in *A. turgidum*.

The different type of indumentum on the fruits of these related species is also of distinguishing value. The stellate hairs which comprise the dense silvery white indumentum on the fruits of *Alyssum haussknechtii* are often twice the size and possess twice as many rays as the sparser hairs on the fruits of *A. turgidum*. As the fruits of *A. haussknechtii* mature, their indumentum is readily displaced. This phenomenon is not noticeable in *A. turgidum*. Though the shape of the sepals and petals, and the filament wings and appendages of these two species are similar, those of *A. haussknechtii* are always considerably larger.

In addition to the characters mentioned in the Latin diagnosis, *Alyssum turgidum* can be distinguished from *A. haussknechtii* by several others. The styles of *A. turgidum*, though as long as those of *A. haussknechtii*, are slender and tapered, with the basal and apical diameters being more or less equal. On the other hand, the styles of *A. hausknechtii* are strongly dilated towards their bases, and with the basal diameter two to three times as great as the apical. The inflorescence of both species is congested, but that of *A. turgidum* is branched and corymbose. The pyramidal inflorescence of *A. haussknechtii* is seldom branched and resembles that of a number of annual species in sect. *Alyssum*, such as *A. szowitsianum* Fisch. & Mey. and *A. marginatum* Steud. ex Boiss. In habit *A. turgidum* and

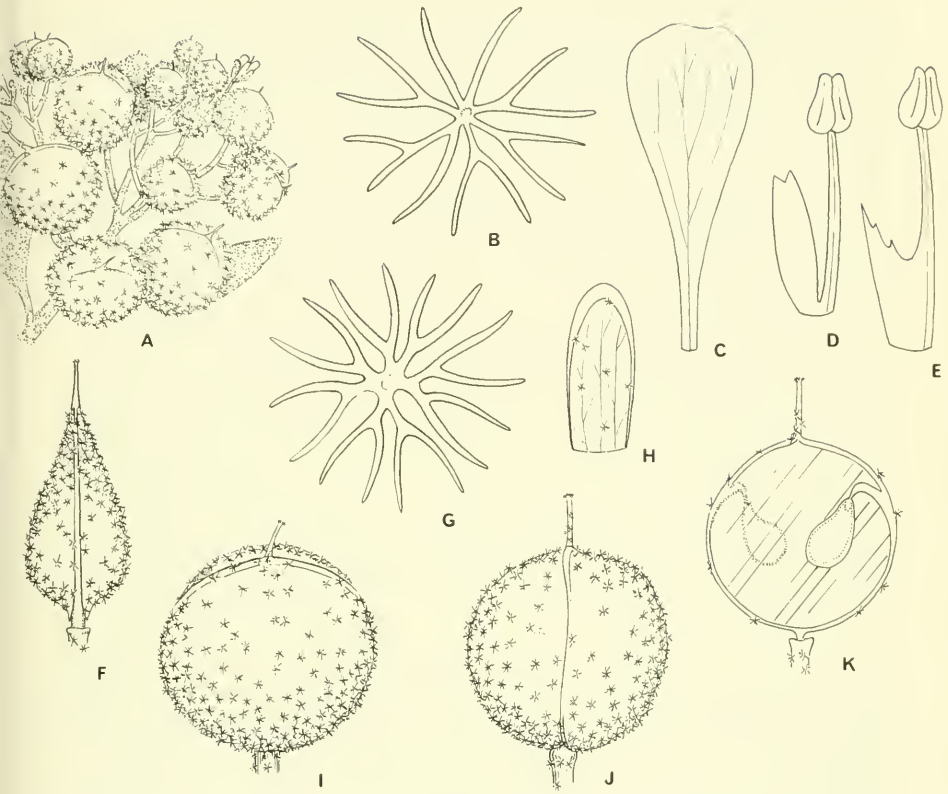

PLATE I

A-E, G-K - *Alyssum turgidum* Dudley. A, fruiting inflorescence, X 4.5. B, stellate hair from fruit, X 165. C, petal, X 30. D, short filament, X 27. E, long filament, X 27. G, stellate hair from stem, X 100. H, sepal, X 15. I, ventral view of fruit, X 10. J, lateral view of fruit, X 10. K, view of fruit with valves removed to show ovules, X 10.
F, *A. haussknechtii* Boiss. Lateral view of fruit, X 10.

A. haussknechtii are somewhat similar, and both taxa could be assigned to Nyárády's artificial group, the "Humiliores" (1929 & 1949). As a general rule, however, the plants of *A. haussknechtii* are more pulvinate with shorter and strict flowering stems. The flowering stems of mature individuals of *A. turgidum* are laxly ascending or sprawling in a decumbent manner. Nyárády omitted *A. haussknechtii* from his earlier systematic treatments of the taxa in sect. *Odontarrhena* (1926-1929) because he had not seen any material of it, but he did incorporate it as a component of his "Humiliores" in his diagnostic key (1929) and in his *Synopsis*. . . of 1949.

In the first supplement of *Florae Keredjensis*. . . (Repert. Sp. Nov. 40:253, tab. 238a. 1940.) Bornmüller & Gauba described a single gathering collected by Gauba in North Iran as *Alyssum nyaradyri* [Holotype, North Iran. An sehr heissen pflanzenarmen Hängen des südlich von Keredj in der Steppe gelegenen Sefidkuh. bei 1400 m., sehr selten, 1 June 1937. *Gauba 1374* (B-Herb. Bornmüller) - a fragment of this gathering given to Nyárády by Bornmüller].

The diagnosis of *Alyssum nyaradyi* (altered by Bornmüller in 1941 to nyárádii) allies it to *A. haussknechtii*, the same species to which *A. turgidum* is related. *Alyssum nyaradyi* is said to differ from *A. haussknechtii* by having subinflated and orbicular fruits. The original description of *A. nyaradyi* reads: "siculis orbicularibus, subvesiculoso-tumidis, 2 mm. diametricis. . . ." Nyárády comments in a note in the second supplement of *Florae Keredjensis*. . . (Repert. Sp. Nov. 50: 372. 1941.) that the densely congested, very small, swollen and roundish fruits characterized *A. nyaradyi* as a well defined new species. Although the original specimen of *A. nyaradyi* has not been examined by the present author, its description and diagnosis (which state that the fruits are only subinflated, subvesiculate and are only 2 mm. in diameter), permit the conclusion that it and *A. turgidum* are not conspecific. The fruits of the latter species are always utriculate, very strongly inflated and 2-3 times larger than those of *A. nyaradyi*.

In addition to the different types of fruit characteristics of these two species, a number of other obvious characters can be readily observed when the type description and habit photograph of *Alyssum nyaradyi* are compared with the type specimens of *A. turgidum*. The very woody caudex characteristic of *A. nyaradyi* is not well developed in the suffrutescent *A. turgidum*. The flowering stems of the latter are lax and usually decumbent, but those of *A. nyaradyi* are strict and generally erect (as in *A. haussknechtii*). The leaves of the flowering stems and sterile shoots of *A. nyaradyi*, judging from the measurements given by Bornmüller, are apparently always smaller by half than those of *A. turgidum*. Bornmüller described the pedicels of *A. nyaradyi* as being only 0.5 mm. long. The mature pedicels of *A. turgidium* consistently measure 2.5-4.5 mm. long, and its styles, which always have an indumentum, are 1-1.5 mm. long.

Whether *Alyssum nyaradyi* should be maintained as a distinct species must be left in abeyance until the original Gauba specimen is examined.[2] However, a single specimen collected by Gauba (No. 148) from the exact type locality of *A. nyaradyi* is to be found in the herbarium of the Naturhistorisches Museum, Vienna (W). This sheet, unfortunately, (determined by Nyárády is *A. nyaradyi*) was not furnished with any data as to the date of collection. The floral

2. Though the original set of Bornmüller's own New Eastern collections was deposited by him in the Haussenknecht herbarium in Jena, he sold his original herbarium (which probably contained the type of *Alyssum nyaradyi*) to the Botanical Museum at Berlin. As the single specimen of *A. nyaradyi*, which constitutes the type, cannot be located either in Jena or in Berlin, it is assumed that it was destroyed in the disastrous fire in the Berlin Museum in 1943.

and fruit (immature) characters of this plant permit it to be positively identified as *A. inflatum* Nyár., a species very distinct from *A. turgidum*. Furthermore, a number of additional collections of *A. inflatum* have been made from the type locality of *A. nyaradyi*.

Dr. Stutz recalled to the author (in correspondence) that *Alyssum turgidum* and a species of *Pedicularis* were abundant on the barren slopes of the collection site, and that they composed most of the green vegetation at that time of year (i.e., May).

Other species of *Alyssum* collected in the year of 1961 in Iran by Dr. Howard C. Stutz; specimens in the Brigham Young University Herbarium (BRY).

A. bracteatum Boiss. & Buhse; 30 miles W. of Quom, sterile volcanic soil, 5200 ft., 5 May 1961, *Stutz 1042*.

A. desertorum Stapf; 10 km. W of Kiraj, west facing slope, gravelly surface, clay below, ca. 5000 ft., 22 April 1961, *Stutz 675*.

A. stapfii Vierh.; 10 km. W of Kiraj, west facing slope, gravelly surface, clay below, ca. 5000 ft., 22 April 1961, *Stutz 679*.

A. szowitsianum Fischer & Meyer; 10 km. W of Kiraj, west facing slope, gravelly surface, clay below, ca. 5000 ft., 22 April 1961, *Stutz 676*.

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