

ONOSMA HAWRAMANENSIS (BORAGINACEAE), A NEW RECORD FOR THE FLORA OF IRAN

M. Advay, F. Attar & S. A. Ahmad

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Onosma hawramanensis S. A. Ahmad (Boraginaceae), is reported here as a new record from Kuhsallan Mountain (Hawraman region, Kurdistan province) for the flora of Iran. The geographical distribution of the new record and its diagnostic characters as well as its distribution map and illustrations are presented.

Mahfouz Advay (correspondence <mahfouzadvay@gmail.com>) & Farideh Attar, Central Herbarium of Tehran University, School of Biology, College of Science, University of Tehran, Iran.- Saman Abdolrahman Ahmad, College of Agriculture Engineering Sciences, University of Sulaimani, Iraq & Kurdistan Botanical Foundation, Sulaimani, Kirkuk Main Road, The American University in Iraq, Sulaimani, Iraq.

Keywords: New record; *Onosma*; Kuhsallan-Hawraman Mountain; Kurdistan; Iran.

Onosma hawramanensis گزارش گونه‌ای نو برای فلور ایران

محفوظ ادوای: دانشجوی دکتری، دانشکده زیست‌شناسی، دانشگاه تهران، تهران، ایران

فریده عطار: استاد دانشکده زیست‌شناسی، پردیس علوم، دانشگاه تهران، تهران، ایران

سلمان عبدالرحمان احمد: دانشیار، دانشکده علوم و مهندسی کشاورزی، دانشگاه سلیمانیه، بنیاد گیاه‌شناسی کردستان، دانشگاه آمریکایی

عراق، سلیمانیه، عراق

Onosma hawramanensis به عنوان گونه‌ای نو برای فلور ایران از کوه‌های هورامان-کوهسالان گزارش می‌شود. پراکنش جغرافیایی و صفات

مورفولوژیکی این گونه و همچنین تصاویر مربوط به آن ارائه می‌گردد.

INTRODUCTION

Onosma L. is one of the largest genera of Lithospermeae-Boraginaceae with ca. 250 species (He et al. 2020; Attar et al. 2020 and 2021; Mehrabian et al. 2022a and 2022b) occurring in xeric habitats, and distributed mainly in Mediterranean region, southwest Asia, and temperate Europe (Boissier 1879; Riedl 1967; Peruzzi and Passalacqua 2008; Binzet & al. 2010; Mehrabian & al. 2011a, 2014; Ranjbar and

Almasi 2014; Cecchi & Hilger 2021; M. Firat & R. Binzet 2021).

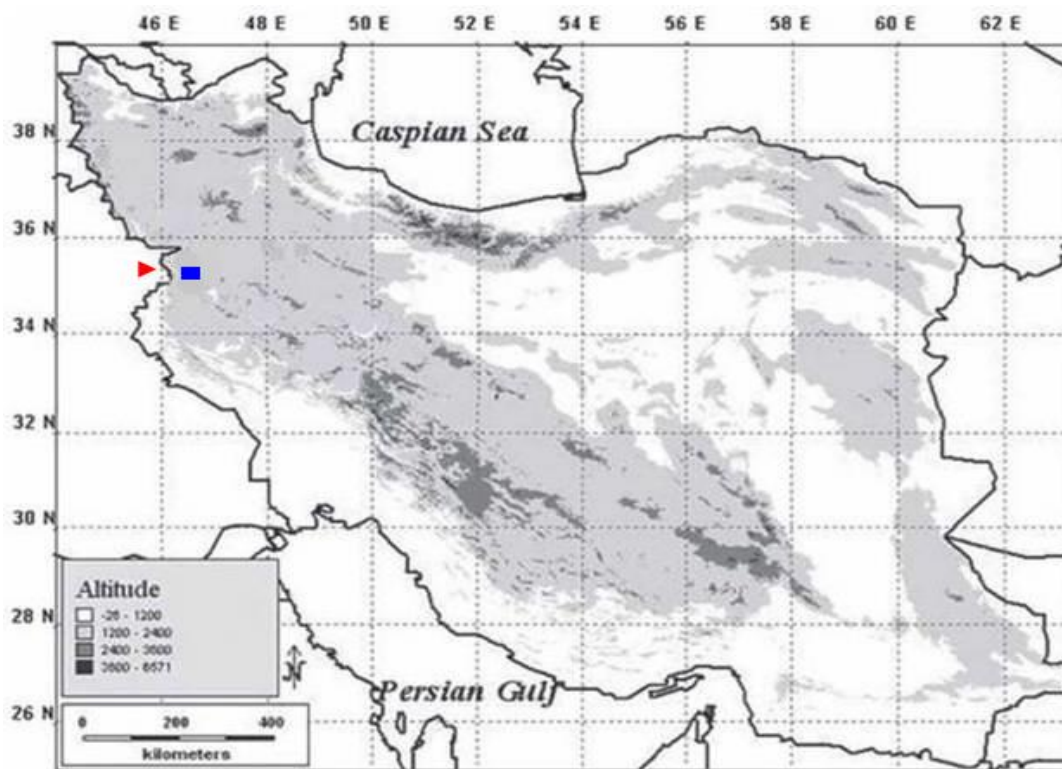
Turkey (105 taxa) and Iran (71 taxa) are the important centers of diversity of *Onosma* in the world (Teppner 1991; Binzet et al. 2014). The classification of *Onosma* faces different challenges because many similar species are described based on weak and unclear morphological characters, and consequently, they have often been confused (Kolarc'ik et al. 2010).

Based on morphological characteristics (indumentum type), three subsections have been recognized within the genus: 1. *Asterotricha* Boiss. (tubercles of setae with stellate hairs); 2. *Haplotricha* Boiss. (tubercles of setae glabrous); 3. *Heterotricha* Boiss. (possess an intermediate indumentum type), and taxonomic treatments within these three groups are highly controversial. According to Flora Iranica, 59 species of *Onosma* belonging to three sections (including *Protonosma*, *Podonosma*, and *Onosma*), two subsections, and 22 series are present in the Flora Iranica area (Riedl 1967). Also, according to Flora of Iran (in Persian), 37 species of *Onosma* are classified into three sections and three subsections (Khatamsaz 2002). Based on recent studies, sect. *Onosma* have 65 species of *Onosma* in Iran (Attar & Joharchi 2007, Attar & Hamzeh'ee 2007, Mehrabian & al. 2014, Ranjbar & Almasi 2014; Naqinezhad & Attar 2016, Attar & al. 2020, 2021; Mehrabian & al. 2022a, 2022b). However, in the last 20 years ca. 32 new species and new records of *Onosma* have been introduced from Iran. The Zagros Mountain in western Iran is an important center of

diversity of the genus *Onosma* (Attar & al. 2021). Hawraman district located between Kurdistan and Kermanshah provinces (North Zagros), is one of the species-rich regions of *Onosma*, having ca. 30% of the species reported from Iran.

MATERIAL AND METHODS

Specimens of *Onosma hawramanensis* were collected during a field survey in 2021 from Kuhsallan Mountain, Hawraman region, Kurdistan province (North-West of Zagros, Western Iran) by the first author. These specimens were identified using diagnostic keys of regional floras (Parsa 1949; Popov 1953; Riedl 1967, 1979; Khatamsaz 2002) and recent newly described species in the subsect. *Heterotricha* (Saman A. A. 2014; Mehrabian & Amini Rad 2018; Dehshiri 2018). Indumentum and nutlets were photographed by a Dino-Lite digital microscope AM413T. The specimens are deposited and preserved in TUH Herbarium. A distribution map of the studied taxa was created using ArcMap 10.6.1. (Map 1).



Map 1. The geographical distribution of *Onosma hawramanensis*.

RESULTS AND DISCUSSION

Onosma hawramanensis S. A. Ahmad, (Figs. 1 A-E, 2 A-F). *Harvard Papers in Botany*, Vol. 19, No. 2, 2014, pp. 201–202.

Plant perennial, canescent, woody at base. Stems 20–25 cm, several branched at base, few branched distally, hispid, with spreading white trichomes, 1–2 mm, dark brown after bark peeling off. Basal leaves 5–7 × 1.5–2.5 cm ovate-lanceolate, middle leaves broadly elliptic, 3–5 × 1–1.5 cm, sessile, base cuneate, margin entire, apex subacute, densely pubescent with ascending trichomes to 2 mm and with sparsely pubescent tuberculate base with simple trichomes; uppermost leaves elliptic-ob lanceolate, smaller. Inflorescence dense, scorpioid, 6–13 cm long, 5–12-flowered; bracts lanceolate, 10–20 ×

2–5 mm, lanceolate; flowering pedicels 1–3 mm, slightly elongated and 3–5 mm in fruit. Calyx 9–10 mm in flower, 12–15 mm in fruit, not accrescent, united at apex, densely white pubescent with trichomes to 2 mm; corolla yellow, tubular, 12–15 mm, slightly expanded at apex, pubescent outside, glabrous inside; teeth broadly triangular, ca. 1.5 × 1.5 mm; nectar annulus poorly developed, glabrous or sparsely pubescent; free part of filaments ca. 2 mm, arising from the middle of corolla, anthers free, linear, 6–7 mm, sagittate at base, sterile apex bidentate, to 1.5 mm. Fruits 5–5.5 × 3.5–4 mm, broadly ovoid, glossy, slightly reticulate, straight, glabrous, carinate adaxially, slightly so abaxially, apex straight, flattened.

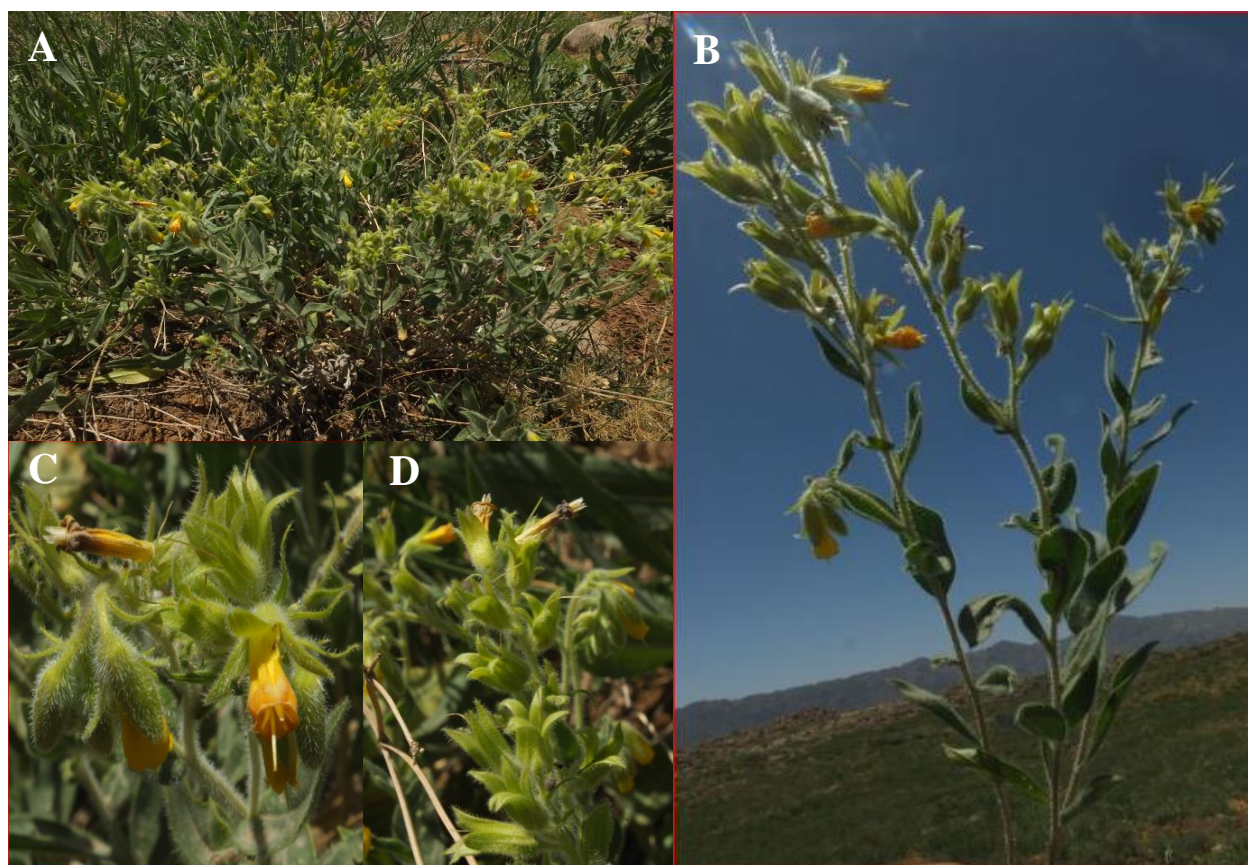


Fig. 1. *Onosma hawramanensis*. A, habit; B–D, inflorescence, and flower. Photos by Advay.

Specimens examined: Iraq. Kurdistan, Sulaimani Province, Rangin Mt., subalpine rocky grassland, 2004 m, 8 June 2012, *Saman A. Ahmad 12-997* (Holotype: SUFA!). Iran. Kurdistan Province, Hawraman region, Kuhsallan mountain, Selen village, 2400 m, 30 May 2021, Advay, 48749 (TUH!).

Distribution and Habitat: *Onosma hawramanensis* is known from the western slopes of northern Zagros near the border between Iran and Iraq, at 2200–2500 m a.s.l., growing at the mountainsides, grassy steppe, dominated by *Astragalus brachycalyx* subsp. *brachycalyx* Boiss., *Prangos ferulaceae* (L.) Lindl, *Chaerophyllum macrospermum* (Willd. ex Spreng) Fisch. & C. A. Mey. ex Hohen., *Marrubium* spp.,

Eryngium billardieri F. Delaroché., *Daphne mucronata* Royle, and *Scorzonera nivalis* Boiss. & Hausskn. in Boiss. (Figs.1 & 2). Flowering and fruiting in June-July.

Taxonomic Note

Onosma hawramanensis is placed in the sect. *Onosma* subsect. *Heterotricha* (Boiss.) Gürke based on its sparsely hairy tubercles of the leaf. This subsect. have eight taxa in Iran including *O. elwendica* Wettst., *O. kilouyense* Boiss. & Hausskn., *O. olivieri* Boiss., *O. lanceolata* Boiss. & Hausskn., *O. chlorotricha* Boiss. & Noe., *O. cornuta* Riedl, *O. zagrica* Dehshiri and *O. mousavii* Mehrabian & Amini Rad.

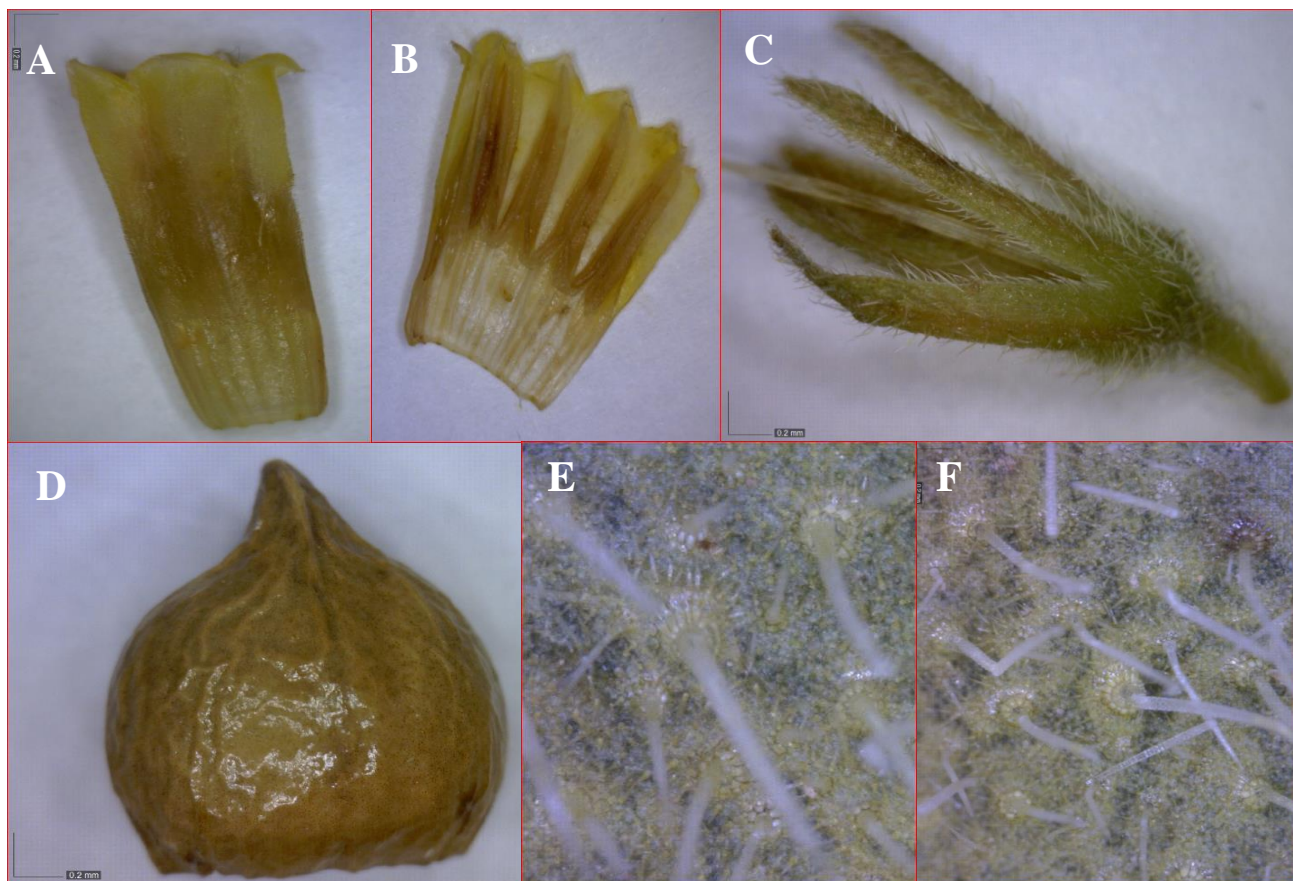


Fig. 2. *Onosma hawramanensis*. A & B, Inner and outer side of the corolla; C, calyx; D, nutlet; E–F, indumentum of basal leaf surface, showing setae with sparsely hairy tubercles. Photos by Advay.

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