

A NEW SUBSPECIES AND A RECORD OF LINARIA (SCROPHULARIACEAE) FROM IRAN

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Linaria chalepensis subsp. *gorganensis* Hamdi & Assadi is described as a new subspecies from Gorgan in Gorgan Province. It is related to *Linaria chalepensis* subsp. *chalepensis* (L.) Miller. but differs from it in having longer inflorescence and calyx. *Linaria genistifolia* (L.) Miller based on herbarium specimens is recorded from NW and N Iran for the first time.

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زیر گونه جدید و گزارشی جدید از جنس *Linaria* از ایران
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زیر گونه *Linaria chalepensis* subsp. *gorganensis* که از گرگان جمع‌آوری شده است به عنوان زیر گونه جدید شرح داده می‌شود. قرابت و ارتباط آن با زیر گونه *Linaria chalepensis* subsp. *chalepensis* مورد بحث قرار می‌گیرد. این گونه متعلق به بخش *Macrocentrum* است. این زیر گونه با داشتن گل‌آذین و کاسبرگ‌های بلندتر از زیر گونه نزدیک خود یعنی *Linaria chalepensis* subsp. *chalepensis* قابل تشخیص می‌باشد. به علاوه گونه *Linaria genistifolia* بر اساس نمونه‌های هرباریومی از شمال و شمال غرب ایران گزارش می‌شود. این گونه قبلاً از مرکز و شرق اروپا تا ترکیه و قفقاز گزارش شده بود.

Introduction

The genus *Linaria* Mill. is widely distributed throughout the northern hemisphere with its centre of distribution in the Mediterranean basin, W-South Asia, Eastern Asia and naturalized elsewhere in temperate regions (Hong 1983; Sutton 1988) and comprises annual or perennial herbs growing in a wide variety of habitats including dry and sandy soils and rocky slopes. This genus is divided to 7 sections mainly based on seed morphology. Geographically, *Linaria genistifolia* is distributed in Central and East Europe, Turkey and Caucasia and *Linaria chalepensis* in Mediterranean region and W S Asia. Sutton (1988) recognized 150 species, of which 25 occur in Iran (Boissier 1888; Parsa 1950; Sutton, 1988; Hamdi 2005; Hamdi & al. 2005 a, b & 2006, 2007 a, b). During the course of preparing a revision of the genus for the on going project of the Flora of Iran (Assadi & al. 1986-2007), many specimens preserved in Iranian herbaria (TARI, IRAN, TUH, FUMH), as well as new collections of fresh material were examined. We collected some materials of *Linaria* from the mountainous and subalpine

regions of N , N E and NW of Iran. an interesting taxon of the genus *Linaria* Miller, Sec. *Speciosae*, and sect. *Macrocentrum* were found.

Material and Methods

This study was mainly based on plant materials deposited in different Iranian herbaria, namely: FUMH, IRAN, TARI, TUH (abbreviations according to Holmgren & Holmgren, 1998). Several field trips have also been conducted in different parts of Iran and the specimens collected were similarly deposited in the same herbaria as above. Measurements of vegetative and floral parts as well as from the seeds were carried out under a stereomicroscope (Olympus SZH). In the *Antirrhineae* seed coat features reported to have paramount importance for the establishments of the systematic relationships between taxa at different ranks and even for species delimitation (Elisens, 1985; Sutton, 1988) thus, to investigate the seed coat sculpturing, mature seeds were mounted directly on 12.5 mm diameter stubs attached with sticky tape and then coated them in a sputter coater with a layer of

approximately 25 µm thickness of gold/palladium. Morphological observations were carried out in LEO 440I Scanning Electron Microscope. The terminology used for describing the seed coat features followed Sutton (1988), Segarra & Mateu (2001). To check for the stability of the morphological characters and their putative use as taxonomically informative several specimens from the same and from different populations were examined.

New subspecies

***Linaria chalepensis* (L.) Miller subsp. *gorganensis* Hamdi & Assadi, subsp. nov.**

Planta annua, herbacea, glauca, inflorescentia excepto glabra, erecta; caules fertiles 15-20 cm longi, supra ramosi. Folia calina fertiliū 10-20×0.3-0.4 mm, alterna, supra linearia, acuta. Inflorescentia 12-17 cm longa, floribus 8-9, laxa. Bracteae 16-17 mm longae. Pediceli 5 mm longi. Calyces lobi inaequales, 14-15mm longi, scariosi. Corolla 15-17mm longa, flava; tubus ad os 1.5-2 mm latus.

Typus: Iran: Golestan, Gonbad, Kashkalan, Sharif 6157 (holo. IRAN); Gonbad, 30 km Gomishan, toward Maraveh Tapeh, 30 m, Assadi & Maassoumi 55323 (TARI); Reidl & Ershad 16159 IRAN.

Glaucous annual herb, glabrous except for the inflorescence, erect; fertile stems 15 – 20cm long, branched. Leaves of fertile stems 10 – 20 ×0.3-0.4 mm, alternate, filiform, acute, at the base opposite. Inflorescence 12-17 cm long with 8-9 flowers, lax in flowering and fruiting stage. Bracts 16×17 mm long. Pedicels 5 mm long. Calyx lobes unequal, 14-15 mm long. Corolla 15 – 17 mm long, yellow; tube 1.5-2 mm width at mouth; spur 9-10 mm long, 1 mm width at base, straight, longer than the rest of corolla.

The new subspecies is compared with the type subspecies *L. chalepensis* subsp. *chalepensis* in table 1.

Table 1. Morphological comparison of *Linaria chalepensis* subsp. *chalepensis* and *Linaria chalepensis* subsp. *gorganensis*.

Characters	<i>L. chalepensis</i> subsp. <i>chalepensis</i>	<i>L. chalepensis</i> subsp. <i>gorganensis</i>
Corolla [mm]	15-18	15-17
Spur [mm]	10	9-10
Pedicel [mm]	1.5-4	5
Bracts [mm]	6-22	16-17
Calyx lobes [mm]	2.5-11	14-15
Number of flowers	4-24	8-9
Inflorescence [cm]	2-3	12-17

New record

***Linaria genistifolia* (L.) Miller**

Linaria genistifolia was previously recorded from Central and East Europe, Turkey and Caucasia (Sutton 1988). And from Iran, Firouzkuh, Gadouk by Islami & al. (2003) without mentioning herbarium specimen. In the course of this study it was identified from NW (Azerbaijan province) and N. (Mazandaran province) of Iran.

Mazandaran, Ramsar, Javaherdeh, western-south, 2500-2750 m, Wendelbo & Maassoumi 20889. Azerbaijan, Ardebil, Germe, Germe toward Ani, 6 km, 900-1200 m, Mozafarian & Nouroozi 34922; Germe toward Ani, 1000-1380 m, Mozafarian & Mohammadi 37733; Khalkhal toward Asalem, above Sefid Poshteh, 1900-2100 m, Wendelbo & Assadi 18547. Lorestan, Kouhrang, 2150 m, Pabou 29753. Tehran, toward Firouz-Kouh, before of Gadouk, margin of road, 2100-2400 m, Assadi & Hamdi 85667.

A short description of the species is as follows:

Bracts 4-5 ×1-2 mm, lanceolate, acute. Pedicels 3-4.5 mm long. Calyx lobes equal, 3.5-4×1.5-2 mm, acute, lanceolate, not scarios. Corolla 18-23 mm long, yellow; tube 5-5.5 mm broad at mouth; abaxial lip sinus 1.75-2 mm, the distance between lip tips 6-7 mm; spur 11-12 mm long, 1 mm broad at base, straight, equaling the rest of corolla.

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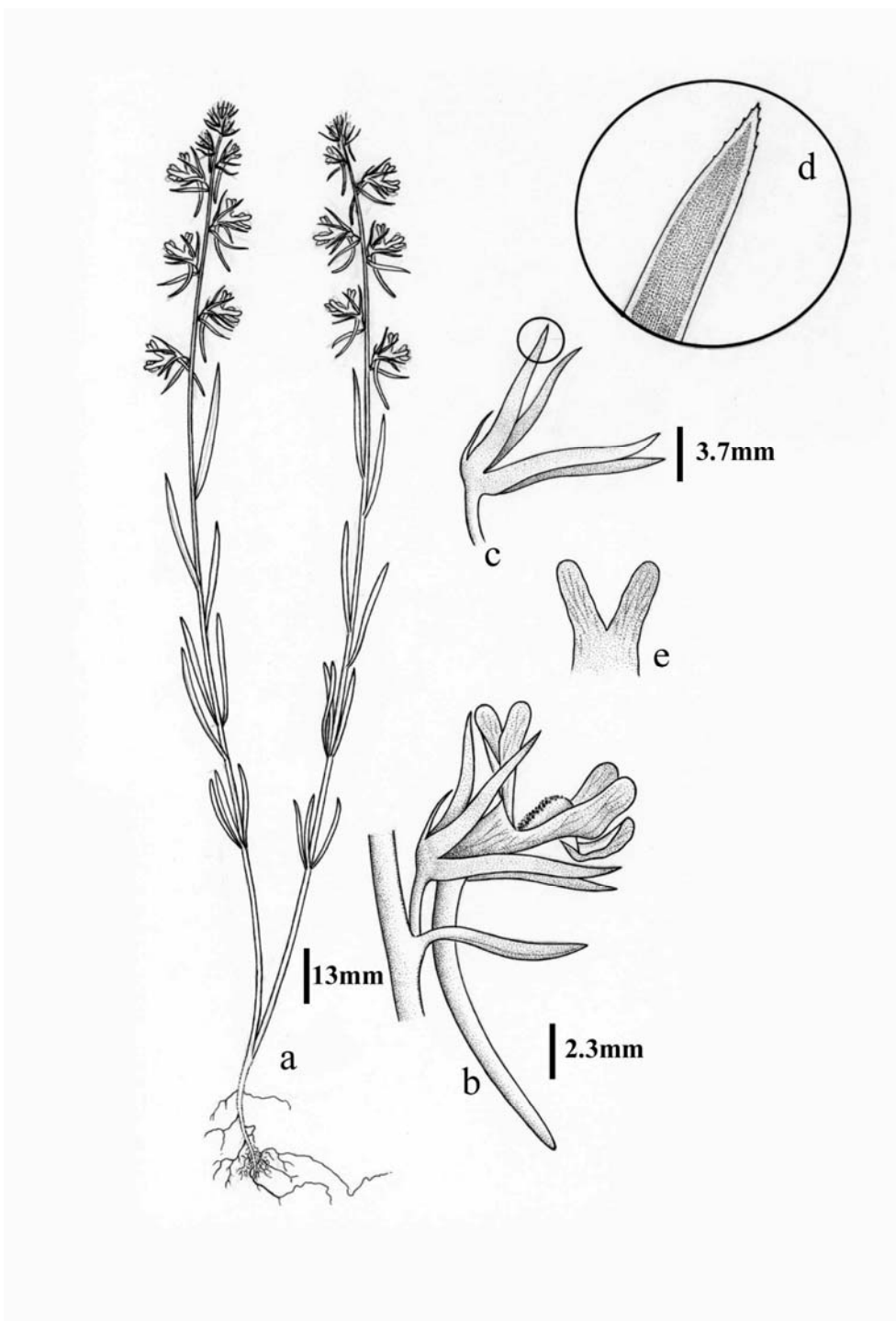


Fig. 1. *Linaria chalepensis* subsp. *chalepensis* –a: habit; b: flower; c: calyx.

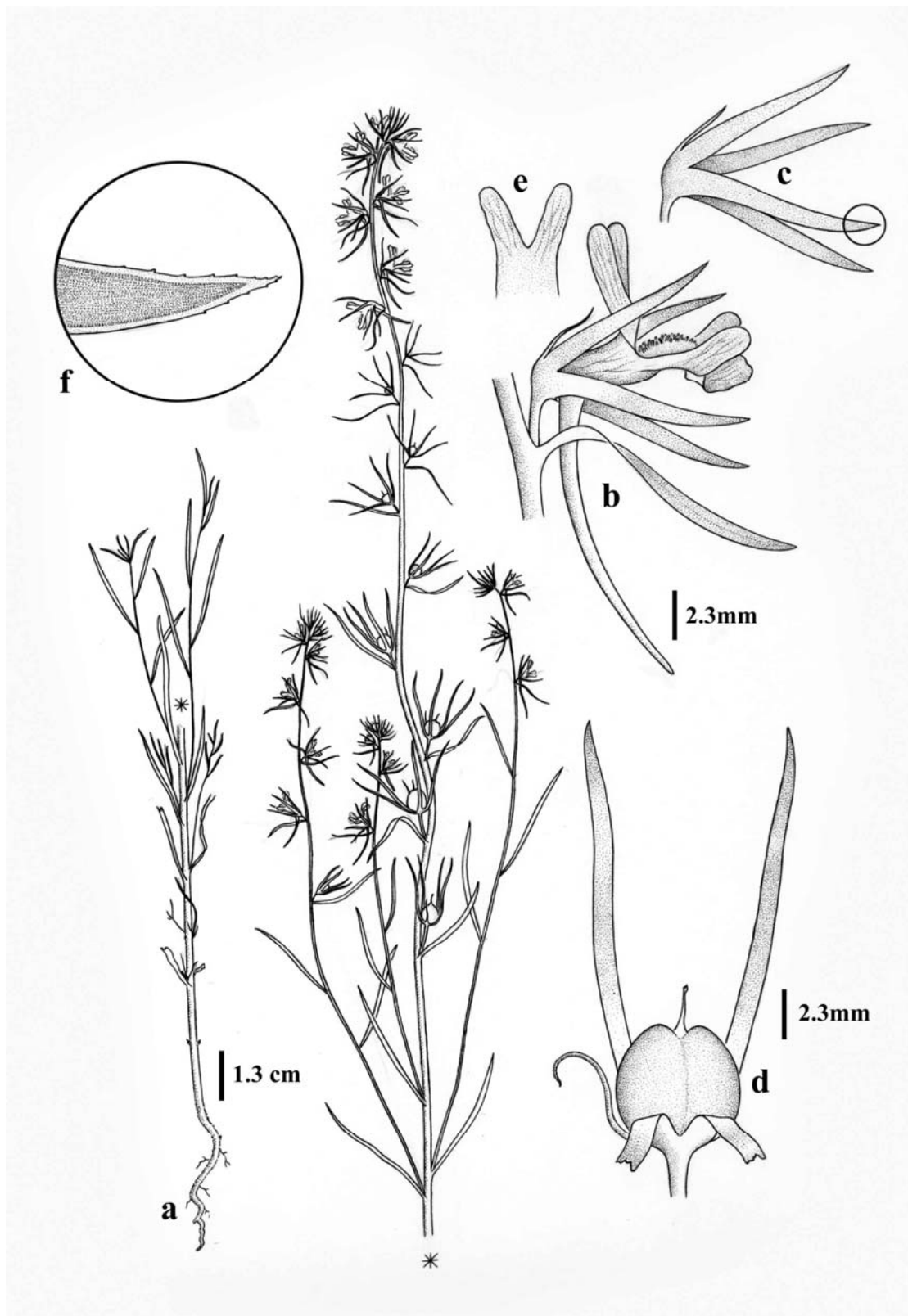


Fig. *Linaria chalepensis* subsp. *gorganensis* –a: habit; b: flower; c: calyx; d: capsule.

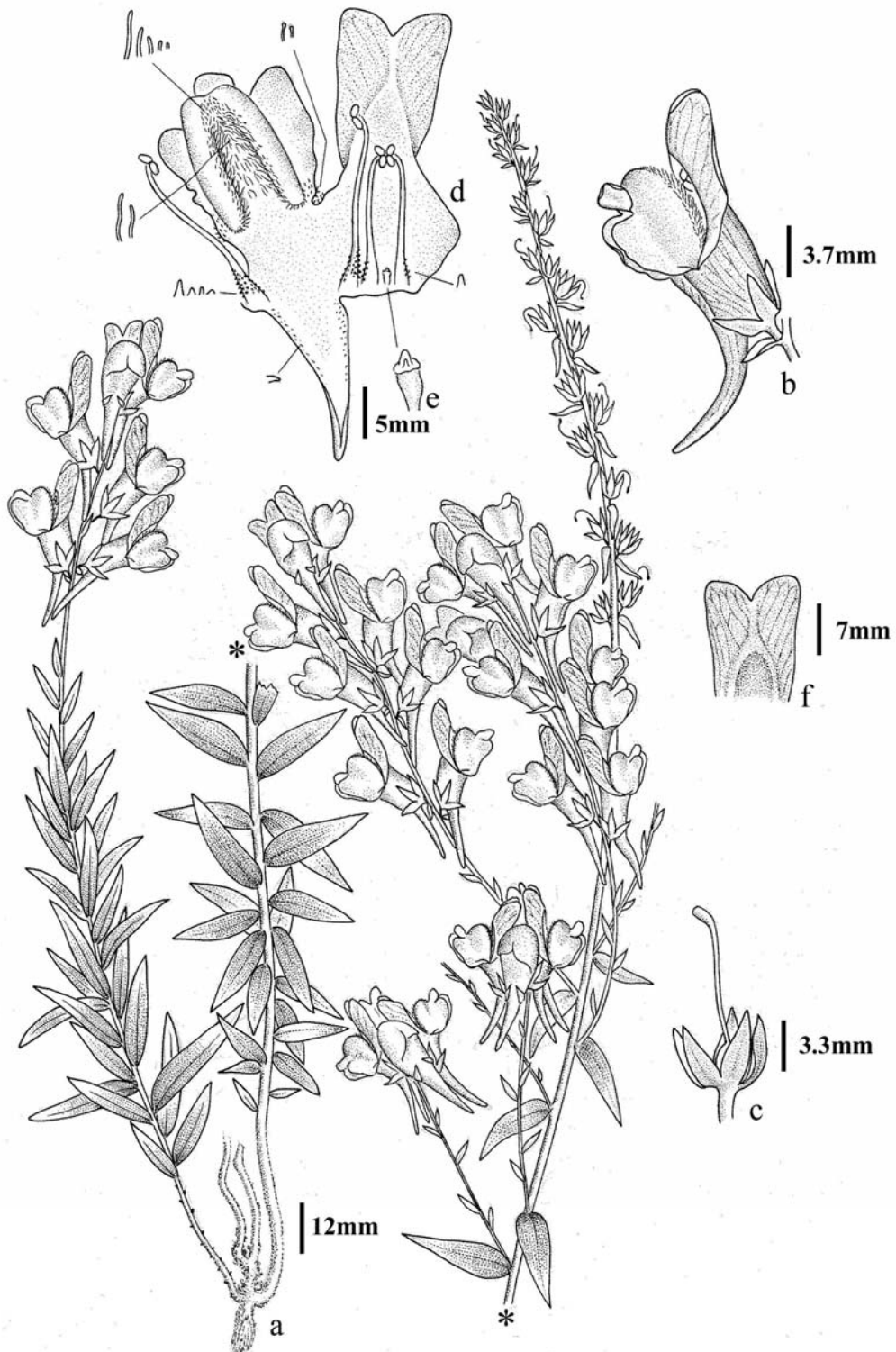


Fig. 3. *Linaria genistifolia* –a: habit; b: flower; c: calyx; d: opened corolla; e: sterile stamen.

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