

A REVISION ON THE GENERA *CHONDRILLA* AND *HETERODERIS* (ASTERACEAE) IN IRAN

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Two genera *Chondrilla* and *Heteroderis* have been revised in Iran. According to Flora Iranica no varieties of *Chondrilla juncea* is known from Iran. In this paper four varieties including var. *juncea*, var. *acantholepis*, var. *latifolia* and var. *longifolia* are known from Iran. Var. *longifolia* is described as a new variety. *Heteroderis pusilla* is divided to five varieties including vars. *pusilla*, *chaetocephala*, *leucocephala*, *gymnocephala* and *chorassanica*. Var. *chorassanica* is described as a new variety to the science. The new taxa are illustrated and key to the taxa are given.

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Key words. *Chondrilla*, *Heteroderis*, *Asteraceae*, new variety, Plant taxonomy, Khorassan, Iran.

مروری بر جنس‌های *Chondrilla* و *Heteroderis* از تیره Asteraceae در ایران

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واریت‌های گونه *Chondrilla juncea* که در فلورا ایرانیکا مترادف یکدیگر قرار دارند با توجه به وجود یا عدم وجود کرک‌های زیر روی رگبرگ میانی سطح خارجی برگ‌های داخلی گریبان و شکل و اندازه برگ‌های ساقه‌ای مجدداً به سطح واریته ارتقاء می‌یابند. علاوه بر این واریته var. *longifolia* که از شمال شرق ایران جمع‌آوری شده است به عنوان آرایه جدیدی برای این گونه معرفی می‌شود. این واریته با برگ‌های ساقه‌ای مستطیلی باریک به طول حداکثر ۱۱ سانتی‌متر می‌باشد. کلید شناسایی واریته‌ها و تصویر مربوط به واریته var. *longifolia* نیز ارائه شده است. واریته‌های شناخته شده گونه عبارتند از:

var. *juncea*, var. *acantholepis*, var. *latifolia*, var. *longifolia*.

گونه *Heteroderis pusilla* به پنج واریته به شرح زیر تقسیم می‌شود.

var. *pusilla*, var. *chaetocephala*, var. *leucocephala*, var. *gymnocephala*, var. *chorassanica*.

var. *pusilla* var. *chorassanica* *Heteroderis pusilla* به عنوان واریته جدیدی از شمال شرق ایران معرفی می‌شود. این واریته با داشتن فقط یک نوع کرک از نوع آردی بر روی سطح خارجی برگ‌های داخلی گریبان از سایر واریته‌های این جنس تفکیک می‌گردد. کلید شناسایی واریته‌ها و تصویر واریته جدید آورده شده است.

Introduction

The author has been preparing Flora of Iran, part of *Asteraceae*, *Lactuceae* (Assadi 1989). Therefore the genera *Chondrilla* and *Heteroderis* were studied. Seven species of *Chondrilla* and one species of *Heteroderis* were reported in Flora Iranica area (Lack 1977, Rechinger 1977). *Ch. evae* Lack and *Ch. mariae* Podlech are endemic to Afghanistan; *Ch. yossi* Kitamura is endemic to Afghanistan and Pakistan. *Ch. canescens* Kar. & Kir., *Ch. maracandica* Bunge and *Ch. phaeocephala* Rupr. are found in Middle Asia and Afghanistan. *Ch. Juncea* L. is mainly distributed in

Iran, out of Iran, distribution of the species is extended to neighboring countries of Iran, Europe and Africa (Rechinger 1977, Matthews 1975, Leonova 1964a). No further subdivision of the last species was recognized in Flora Iranica (Rechinger l. c.)

Heteroderis pusilla (Boiss.) Boiss. was originally described as *Chondrilla pusilla* Boiss. from S. Iran. At present distribution of the species extends to Iraq, Iran, Afghanistan, Pakistan and Central Asia (Rechinger 1977, Leonova 1964b). This species in Flora Iranica (Rechinger l. c.) was subdivided into four varieties including var. *pusilla*, var. *chaetocephala* (Bunge)

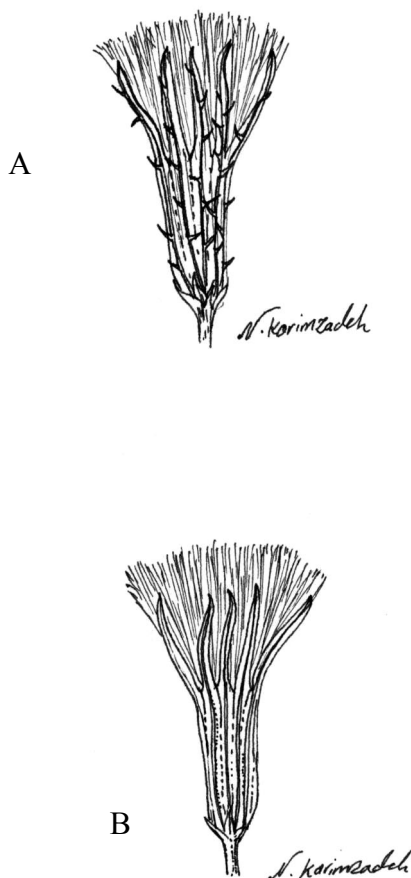


Fig. 1. Internal involucre bracts of *Chondrilla juncea*. A: var. *acantholepis*. B: var. *juncea* ($\times 2$).

Bornm., *leucocephala* (Bunge) Rech. f. and finally var. *gymnocephala* Rech. f. which was described as a new variety. All the specimens even the type specimen of the species (Kotschy 856) cited under the last variety, whereas no specimen was cited for the other varieties.

Both *Chondrilla juncea* and *Heteroderis pusilla* are quite variable in Iran. The aim of this paper is to present varietal subdivision of the two species in Iran.

Materials and Methods

More than 300 specimens of different herbaria of Iran: TARI, IRAN, FUMH, University of Shiraz Herbarium and University of Kerman Herbarium were revised. Stereomicroscope was used for morphological and micromorphological observations, attending to characters of parts of the flowers and outer surface of seed coat traits are some of the micromorphological observations.

Results and discussion

Chondrilla L.

Four varieties are recognized for *Chondrilla juncea* which can be distinguished in the following identification key. Also a new variety is included in the key and subsequently is described.

- 1a. Leaves filiform or linear, to 3 mm wide 2
- b. Leaves oblong-linear, 5-20 mm wide 3
- 2a. Inflorescence with divergent branches; outer surface of midrib of internal involucre bracts without setaceous hairs var. *juncea* (Fig. 1B)
- b. Inflorescence with straight branches; outer surface of midrib of internal involucre bracts with setaceous hairs var. *acantholepis* (Fig. 1A)
- 3a. Leaves 1.5-5 cm long and 0.5-1 cm wide var. *latifolia*
- b. Leaves 6-11 cm long and 0.5-1.5 cm wide var. *longifolia*

Chondrilla juncea L. var. *longifolia* Nasseh var. nov. (Fig. 2).

Herba biennis vel perennis, erecta, virgato-ramosissima. Folia caulina oblongo-lanceolata, elongata, 6-11 \times 0.5-1.5 cm. Involucra phylla exteriora et interiora nuda.

Razavi Khorassan: Chenaran, between Abghad and Fereizi, 1500 m, Ayatollahi & Zangoeei 13532 (holotypus FUMH).

Chondrilla juncea var. *longifolia* is rather close to var. *latifolia* but it has no setaceous hairs on the outer surface of internal involucre bracts and longer leaves up to 11 cm long. But the latter variety has occasionally setaceous hairs on the outer surface of internal involucre bracts and shorter leaves up to 5 cm long.

Heteroderis (Bunge) Boiss.

Syn.: *Barkhausia* sect. *Heteroderis* Bunge

Five varieties including a new one are recognized for *Heteroderis pusilla* in Iran. Following identification key is present to distinguish these varieties. Also a new variety is described (Fig. 5).

- 1a. Outer surface of internal involucre bracts glabrous var. *gymnocephala*
- b. Outer surface of internal involucre bracts covered with hairs 2
- 2a. Outer surface of internal involucre bracts covered with setaceous and farinose hairs var. *leucocephala*
- b. Outer surface of internal involucre bracts covered with setaceous hairs or farinose hairs 3
- 3a. Outer surface of internal involucre bracts farinose var. *khorrassanica*
- b. Outer surface of internal involucre bracts covered with setaceous hairs 4



Fig. 2. *Chondrilla juncea* var. *longifolia* ($\times 0.5$); fruit ($\times 3$).



Fig. 3. *Heteroderis pusilla* var. *chaetocephala* ($\times 0.67$); fruit ($\times 3$).

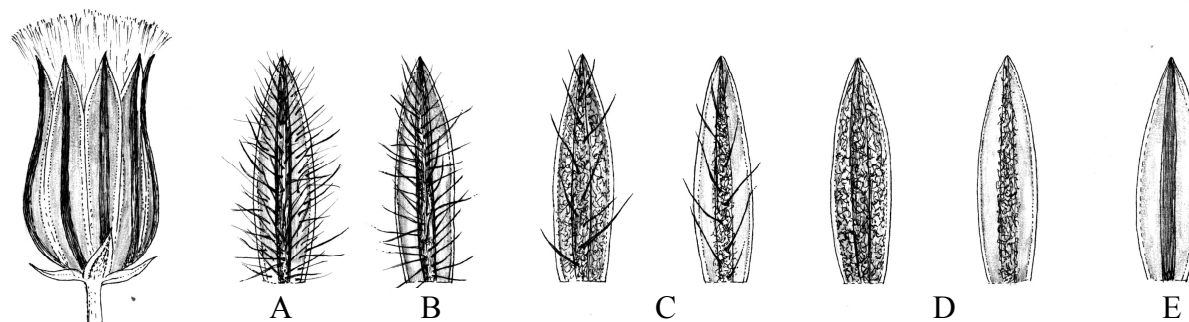


Fig. 4. Involucral bracts of *Heteroderis pusilla* and its varieties; A. var. *chaetocephala*; B. var. *pusilla*; C. var. *leucocephala*; D. var. *khorrassanica*; E. var. *gymnocephala* ($\times 3$).

4a. Outer surface of internal involucral bracts only along midrib covered with setaceous hairs var. *pusilla*

b. All parts of outer surface of internal involucral bracts covered with setaceous hairs var. *chaetocephala* (Fig. 3)

Heteroderis pusilla (Boiss.) Boiss. var. ***khorrassanica*** Nasseh, **var. nov.** (Fig. 3).

Herba annua. Caules longi, ascendentes vel erecti. Folia basalia oblongo-lanceolata, in petiolum brevem sensim attenuata. Capitula involucri Phylla interiora praeter indumentum albido-farinoso-floccosa.

Razavi Khorassan: N Sabzevar, 3 km towards Esfarayen, 1000 m, Joharchi & Zangooei 11323 (holotypus FUMH; isotypus TARI); SW Torbat Hydariyeh, Eskandarabad, 1050 m, Joharchi & Zangooei 19957; E Sabzevar, 1400-1450 m, Joharchi & Zangooei 11210. –Southern Khorassan: Between Birjand and Khosf, 10 km road of Khosf, 1300 m, Faghihnia & Zangooei 32079; SE Birjand, Between Nehbandan and Hosseinabad, 5 km of Khansharaf, 1250 m, Joharchi & Zangooei 10843.

Heteroderis pusilla based on having or lacking long setaceous and (or) farinose hairs on the outer surface of internal involucral bracts have formerly been divided to

four varieties. The new variety differs from all of them by having only farinose hairs on the outer surface of internal involucral bracts.

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