

## New plant records for Khorassan province, Iran, IV; with complementary notes to its flora

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### Abstract

Thirty-nine vascular plant taxa from 33 genera in 18 families are recorded for the first time from Khorassan Province, Iran. All taxa are angiosperms (30 dicotyledons and 9 monocotyledons). Eight of these taxa are endemic to Iran. All specimens recorded here are deposited in FUMH and/or W, FAR, TARI. This contribution is a continuation to the recently published papers on this province (GHAHREMANINEJAD & al. 2005; JOHARCHI & al. 2007, GHAHREMANINEJAD & al. 2009). In these four papers 459 species are recorded for the first time from this province. Furthermore, specimens from Khorassan representing new taxa or new records for Iran published in other papers are listed here. Therefore this series of four papers serves as supplement to Flora Iranica for the Khorassan flora.

**Key Words:** Flora, Iran, Khorassan province, new records.

### Zusammenfassung

39 Taxa aus 33 Gattung in 18 Familien werden erstmals aus der Provinz Khorassan (Iran) berichtet. Davon sind 8 Endemiten des Iran. Die Belege sind in FUMH und/oder W, FAR, TARI deponiert. Dieser Beitrag ist eine Fortsetzung der kürzlich publizierten Beiträge zur Flora der Provinz Khorassan (GHAHREMANINEJAD & al. 2005; JOHARCHI & al. 2007, GHAHREMANINEJAD & al. 2009). In den vier Beiträgen wurden insgesamt 459 Arten erstmals berichtet. Als zusätzliche Information werden in dieser Arbeit jene Arten zusammengefaßt, die in anderen Publikationen erstmals für Khorassan berichtet bzw. neu beschrieben wurden. Die vier Publikationen können daher als Supplement zur Flora Iranica für diese Provinz betrachtet werden.

### Introduction

Khorassan Province is located in NE Iran, covering an area of 313,335 sq. km. It extends from 30°21' to 38°17' N and from 55°28' to 61°20' E. Recently 420 plant taxa have been recorded for the first time from this province (GHAHREMANINEJAD & al. 2005; JOHARCHI & al. 2007, GHAHREMANINEJAD & al. 2009). In the present paper 39 further taxa are added to the flora of the province. They are based on recent field research and critical evaluation of existing specimens. Thus collectively in these four papers 459 species are recorded for the first time from this province.

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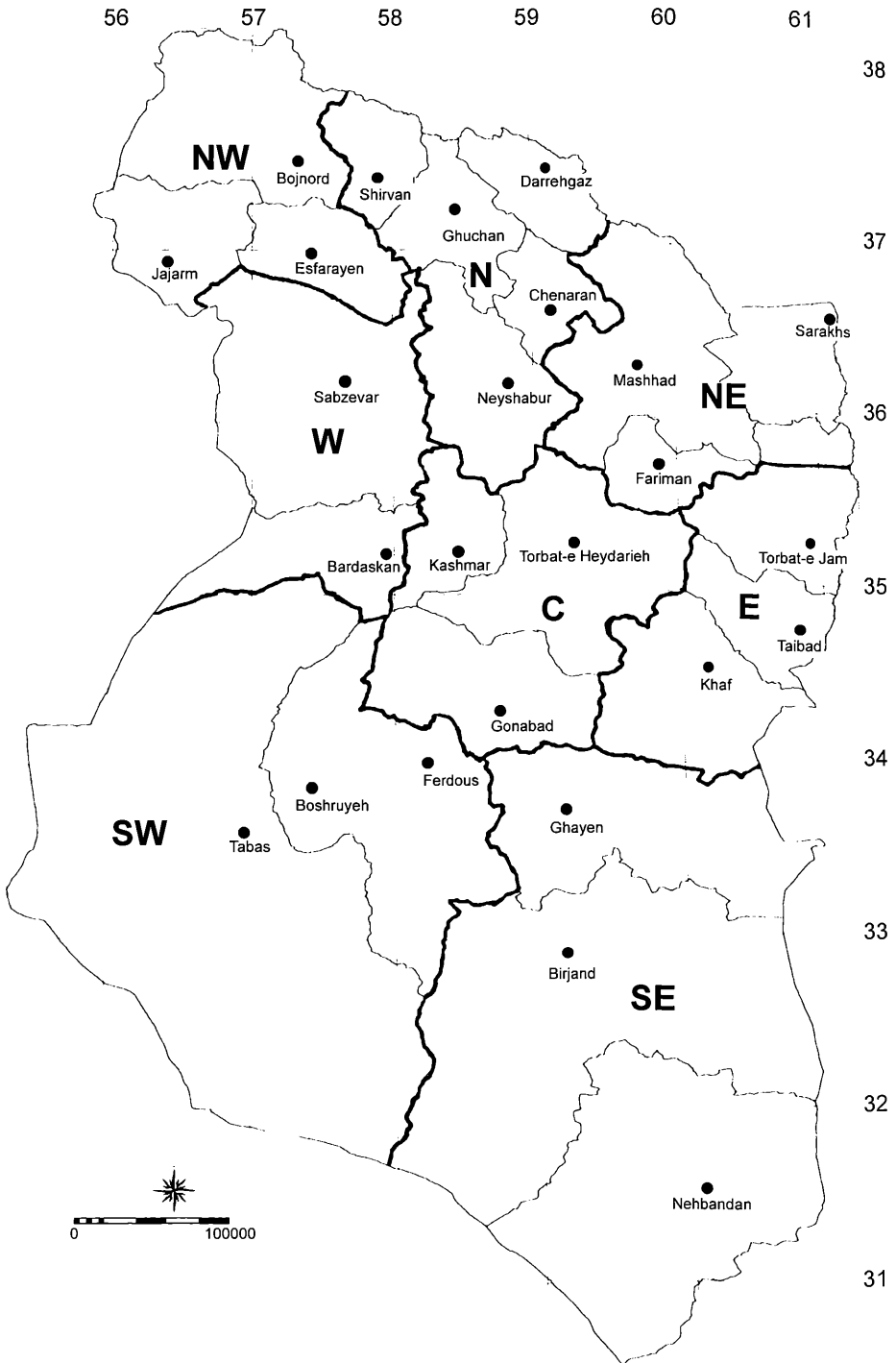


Fig. 1: Province of Khorassan. Localities in the catalogue are listed from NW to SE.

Unlike the previously published papers, the present paper includes some additional aspects. The extra information presented here relates to the specimens from Khorassan province published in other papers that represent taxa new to science or new to Iran.

This paper has three parts. Part one, as in the three previous papers, deals with recording new taxa for the first time from the province. All of these taxa have been recorded from other localities in Iran, but not from Khorassan province. Part two deals with new taxa for the flora of Iran, with specimens from the province. Part three deals with taxa new to science (all are endemic for the country).

In all of the three parts, these taxa have never been mentioned in Flora Iranica treatments. Therefore this information is very important for completing the inventory list of the flora of Khorassan Province.

Localities within Khorassan are sequenced from NW to SE, according to figure 1.

### New records for Khorassan Province

The following taxa are recorded for the first time from Khorassan province. They are thirty nine vascular plant taxa from 33 genera in 18 families. All taxa are angiosperms (30 dicots and 9 monocots). Eight of them are endemic to Iran. All specimens recorded here are deposited in FUMH and/or W, FAR, TARI.

#### Monocotyledons

##### Cyperaceae JUSS.

Ref.: KUKKONEN 1998.

*Carex distans* L., Syst. Nat., ed. 10, 2: 1263 (1759).

Khorassan: NW: Bojnord, between Gholaman and Jargalan, Kalateh-Mirza, 1310 m, 20.5.2008, Memariani & Zangoeei 40266 [FUMH]; – E Esfarayen, Sarigol National Park, Dahaneh-Ojagh valley, 1755 m, 6.5.2008, Joharchi & Zangoeei 39834, 39835 [FUMH].

Distribution in Iran: N, W, S, E, C.

*Carex divulsa* STOCKS in WITH., Bot., Arr. Brit. Pl., ed. 2, 2: 1035 (1787) **subsp. divulsa**.

Khorassan: NE: Mashhad, Ferdowsi University of Mashhad Campus 1064 m, 16.4.2006, Akramian 37203 [FUMH].

Distribution in Iran: N, W, S, E, C.

*Cyperus fuscus* L., Sp. Pl. 1: 46 (1753).

Khorassan: NW: NW Bojnord, Ghezel-Ghaleh towards Shatut, km5, 610 m, 31.8.2008, Joharchi & Zangoeei 41383 [FUMH]; – NE: Mashhad, Ferdowsi University of Mashhad Campus, 1035 m, 1.9.2006, Akramian 38443, 38444 [FUMH].

Distribution in Iran: N, W, S, E, C.

##### Poaceae BARNHART

Ref.: BOR 1970, KHODASHENAS 2009, AKHANI & SCHOLZ 1998.

*Aeluropus pungens* (M.BIEB.) C.KOCH, Linnaea 21: 408 (1848).

Khorassan: N: Darrehgaz, Chapeshlu, Kalateh-Kandi, 700 m, 28.5.1982, Zokaei & Joharchi 1398 [FUMH];

– NE: Sarakhs, Bazangan lake, 650 m, 6.10.1981, Ghorashialhosseini 1307G [FUMH]; – Sarakhs towards Sangar, km 45, 350 m, 22.5.1984, Joharchi & Zangooei 11179 [FUMH]; – E Salehabad, between Saghar-Cheshmeh and Garmab-e Olia, 490–500 m, 20.5.2003, Joharchi & Zangooei 34530 [FUMH]; – W: Esfarayen towards Sabzevar, km 71, 1100 m, 24.5.1983, Joharchi & Mahvan 10302 [FUMH]; – SW: SW Tabas, Kamar-Mahdi towards Fleurine mine, km 10, 1050 m, 27.4.2004, Faghihnia & Zangooei 35317b [FUMH]; – SE: Birjand, between Asghoul and Khorashad, Olang-e Rehizg, 1950 m, 13.6.1989, Joharchi & Zangooei 17794 [FUMH].

Distribution in Iran: E, C.

***Catabrosa capusii*** FRANCH., Ann. Scienc. Nat. Ser. 6, 18: 272 (1884).

Khorassan: NE: Mashhad, Binaloud Mt., Dehbar, 2400 m, 6.6.2006, Zangooei 37907 [FUMH].

Distribution in Iran: N, E.

***Catabrosella parviflora*** (BOISS. & BUHSE) ALEXEEV ex R. MILL, Fl. Turkey, 9: 496 (1985), **subsp. calvertii** (Boiss.) ALEXEEV ex R. MILL, Fl. Turkey, 9: 496 (1985).

Khorassan: N: S Darrehgaz, Kapkan, 1550 m, 30.4.1988, Joharchi & Zangooei 16285 [FUMH].

Distribution in Iran: W, E.

***Kengia serotina*** (L.) PACKER, Bot. Nat. 113: 291 (1960) **subsp. serotina**.

Khorassan: NW: W Bojnord, Darkash, 1500–1600 m, 7.8.2004, Aydani 35735 [FUMH, FAR].

Distribution in Iran: N, E.

***Colpodium violaceum*** (BOISS.) GRISEB. in LEDEB., Fl. Ross. 4: 384 (1853).

Khorassan: N: Darrehgaz, Tandoureh National Park, between Shekarab and Chehelmir, 2024 m, 9.5.2004, Memariani & Zangooei 35337 [FUMH].

Distribution in Iran: W, S, E. – Endemic for Iran & Iraq.

***Poa densa*** TROITSKY in TRUDY, Glavn. Bot. Sada 27: 619 (1928).

Khorassan: NW: W Bojnord, Badranlu pass, 1920 m, 12.6.1996, Raafeei & Zangooei 27281 [FUMH].

Distribution in Iran: N, E.

***Poa sinaica*** STEUD., Syn. Pl. Glum. 1: 256 (1854).

Khorassan: NW: NW Bojnord, E Eshghabad, 580 m, 15.4.2008, Memariani & Zangooei 39456 [FUMH]; – N: S Darrehgaz, Ab-e Garm, 950–1000 m, 3.6.1981, Ghorashialhosseini 520G [FUMH]; – NE: Kalat-e Naderi, Archangan, 830 m, 23.4.1989, Joharchi & Zangooei 17091 [FUMH]; – NE Kalat hills, 1000 m, 20.5.1985, Ayatollahi & Joharchi 13104 [FUMH]; – *ibid.*, Gholleh-Zo, 800 m, 20.5.1981, Ghorashialhosseini 404G [FUMH]; – E Mashhad, Radar, eastern hills, 950–1000 m, Joharchi & Safavi 12263 [FUMH]; – Mashhad towards Salehabad, Sarakhs bifurcation, 800 m, 16.4.1985, Ayatollahi & Rezaei 11960 [FUMH]; – Sarakhs towards Mozduran, km 14, 850 m, 7.4.1987, Ayatollahi 15037 [FUMH]; – *ibid.*, Shorlogh, 850 m, 17.4.1985, Ayatollahi & Safavi 12038a [FUMH]; – Salehabad, between Salehabad and Pol-e Khatoun, 500 m, 13.4.1993, Faghihnia & Zangooei 22706 [FUMH]; – W: S Sabzevar, Halakabad Mt., 1300 m, 23.4.1988, Joharchi & Zangooei 16148 [FUMH]; – C: Torbat-e Heydarieh towards Gonabad, km 24, 1200 m, 20.4.1986, Ayatollahi & Zangooei 13696 [FUMH]; – Bejestan towards Ghasemabad, km 10, 1200 m, 21.4.1993, Faghihnia & Zangooei 22840 [FUMH]; – N Gonabad, Lut-e Emrani, 900 m, 20.4.1986, Ayatollahi & Zangooei 13709, 13719 [FUMH]; – E: E Khaf, Dardevei, 1300 m, 1.5.1985, Ayatollahi & Zangooei 12446 [FUMH]; – SW: N Tabas, Ozbagu, Alimorad mine, 22.4.1986, Ayatollahi & Zangooei 13881 [FUMH]; – *ibid.*, Kalshaneh, 1000 m, 8.4.1985, Ayatollahi & Safavi 11846 [FUMH]; – Tabas towards Boshruyeh, km 45, 22.4.1986, Ayatollahi & Zangooei 13843 [FUMH]; – Tabas towards Kharv, km 9, 850–900 m, Ghorashialhosseini 1399G [FUMH]; – E Tabas, Chirouk Mt., 1400 m, 19.4.1987, Ayatollahi & Zangooei 15274 [FUMH]; – SE: SW Birjand, Hamand, 1900 m, 23.4.1983, Rashed & Safavi 10060 [FUMH]; – N Nehbandan, Shousf, 1600 m, 30.4.1976, Zargari 3428 [FUMH].

Distribution in Iran: N, W, S, E, C.

This species is recorded from E Iran in Flora Iranica. But the locality (E: Sistan: Kuh-e Khajeh, Sharif 9017-E) belongs to Sistan & Baluchistan province, not Khorassan.

***Puccinellia anisoclada*** V.KREZC. in KOMAR., Fl. URSS, 2: 487 (1934).

Khorassan: NE: NW Mashhad, Abghad river, 1250 m, 15.6.1993, Faghihnia & Zangooei 23321 [FUMH]; – S Mashhad, between Robat-Sefid and Olang-e Mohammad-Mirza, 1900 m, 4.6.2003, Ajani & Zangooei 34670 [FUMH]; – E Salehabad, between Saghar-Cheshmeh and Garmab-e Olia, 490–500 m, 20.5.2003, Joharchi & Zangooei 34532 [FUMH].

Distribution in Iran: N, W, E.

***Puccinellia tenuiflora*** (GRISEB.) SCRIBN. & MERR., Contr. U.S. Nat. Herb. 13: 78 (1910).

Khorassan: E: SE Torbat-e Heydarieh, Jangal, Kal-e Salar, 900 m, 4.5.1986, Ayatollahi & Zangooei 14075 [FUMH].

Distribution in Iran: W, E.

## Dicotyledons

### Apiaceae LINDL.

Ref.: ALAVA & al. 1987; MOZAFFARIAN 2007.

***Bunium kuhitangi*** NEVSKI, Act. Inst. Bot. Acad. Sci. URSS, Ser. 1, 4: 274 (1937).

Khorassan: NW: Bojnord, Gifan, towards Izman, km 12, 1700 m, 11.6.1996, Raafeei & Zangooei 27235 [FUMH].

Distribution in Iran: N, E.

### Asteraceae DUMORT.

Ref.: RECHINGER 1972, RECHINGER & al. 1977.

***Cousinia decipiens*** BOISS. & BUHSE, Nouv. Mem. Soc. Nat. Mosc. 12 (18): 125 (1860).

Khorassan: NW: W Bojnord, between Robat-e Gharabil and Cheshmeh-Khan, 1000 m, 16.5.2004, Joharchi 35383 [FUMH]; – ibid., Sharlogh, 1000 m, 15.8.1984, Ayatollahi & Zangooei 11598 [FUMH]; – Ghorkhod protected region, Zard towards Kasetan, km 11, 1515 m, 14.7.2008, Memariani & Zangooei 41067 [FUMH]; – ibid., NW Spakhu, 1813 m, 20.7.2008, Joharchi & Zangooei 41181 [FUMH]; – NE Bojnord, between Ghezalghan and Naveh, 1100 m, 29.5.2007, Memariani & Zangooei 39011 [FUMH].

Distribution in Iran: N, E, C. – Endemic for Iran.

### Boraginaceae JUSS.

Ref.: RIEDL 1967, KHATAMSAZ 2002.

***Trichodesma aellenii*** H.RIEDL, Oesterr. Bot. Zeitschr. 110: 539 (1963).

Khorassan: N: Neyshabur, N Mirabad, 1600–1900 m, Assadi & Mozaffarian 36100 [TARI].

Distribution in Iran: E, C. – Endemic for Iran.

### Brassicaceae BURNETT

Ref.: HEDGE & RECHINGER 1968.

***Alyssum baumgartnerianum*** BORNHM. in BAUMG., Jahresber. Kais.-Franz-Josef. Oberrealschule Baden b. Wien 48: 6 (1911).

Khorassan: N: NE Chenaran, Hezar-Masjed Mt. 2500 m, 10.5.2008, Nazari 39396 [FUMH, FAR].

Distribution in Iran: W, E.

***Arabis caucasica*** WILLD., Enum. Hort. Berol. Suppl. 45 (1813) **subsp. caucasica**.

Khorassan: NW: SW Bojnord, Rein, Shahneshin Mt., 1850–2010 m, 6.5.2006, Memariani & Arjmandi 37391 [FUMH].

Distribution in Iran: N, W, S, E, C.

***Thlaspi stenocarpum*** (BOISS.) HEDGE, Fl. Iranica, 57: 116 (1968).

Khorassan: NW: SW Bojnord, Rein, Bowly, 2350–2400 m, 28.5.2006, Memariani & Zangoeei 37811 [FUMH].

Distribution in Iran: N, E, C. – Endemic for Iran & Turkmenistan.

***Sisymbrium orientale*** L., Cent. Plant. 2: 24 (1756).

Khorassan: NE: Mashhad, Ferdowsi University of Mashhad Campus, 1070 m, 5.5.2006, Akramian 37315 [FUMH].

Distribution in Iran: W, E.

### **Caryophyllaceae** JUSS.

Ref.: RECHINGER & al. 1988.

***Arenaria serpyllifolia*** L., Sp. Pl. 423 (1753) **var. macrosepala** RECH.f., Feddes Repert. 48: 41 (1940).

Khorassan: NW: NW Bojnord, Rein towards Garmak, 1460–1640 m, 23.4.2006, Memariani & Zangoeei 37294 [FUMH].

Distribution in Iran: N, W, E, C. – Endemic for Iran.

***Cerastium glomeratum*** THUILL., Fl. Env. Paris ed. 2: 226 (1799).

Khorassan: NE: Kalat-e Naderi, Archangan, 830 m, 23.4.1989, Joharchi & Zangoeei 17087 [FUMH].

Distribution in Iran: N, W, S, E, C.

***Holosteum marginatum*** C.A.MEY. in HOHEN., Enum. Pl. Talysch 166 (1838).

Khorassan: NW: NW Bojnord, Rein, 1846 m 14.4.2006, Memariani & Zangoeei 37142 [FUMH].

Distribution in Iran: W, E.

***Silene palinotricha*** FENZL ex BOISS., Fl. Orient. 1: 621 (1867).

Khorassan: NW: SW Bojnord, N Jajarm, Moshamma, 1680 m, 13.5.2009, Memariani & Zangoeei 42390 [FUMH].

Distribution in Iran: N, E, C. – Endemic for Iran.

***Vaccaria grandiflora*** (FISCH. ex DC.) Jaub. & Spach, Ill. Fl. Orient. 3: tab. 231 (1848).

Khorassan: NW: N Bojnord, Naveh towards Ghatlish, km 6, 1350 m, 10.6.1996, Raffeei & Zangoeei 27157 [FUMH]; – S Bojnord, Bojnord towards Esfarayen, km 12, 1250 m, 28.6.1981, Zokaei 1156 [FUMH].

Distribution in Iran: N, W, E, C.

### **Chenopodiaceae** VENT.

Ref.: HEDGE & al. 1997, ASSADI 2001.

***Anthoclamis multinervis*** RECH.f., Feddes Repert. 48: 165 (1940).

Khorassan: C: N Gonabad, Lut-e Omrani, 860–900 m, 4.10.1991, Joharchi & Zangoeei 21052 [FUMH]; –

SW Kashmar, Kondor towards Bejestan, km 14, 1000 m, Assadi & Abuhamzeh 40168 [TARI].

Distribution in Iran: E, C. – Endemic for Iran.

### **Euphorbiaceae** JUSS.

Ref.: RECHINGER & SCHIMAN-CZEKA 1964.

*Euphorbia gedrosiaca* RECH.f., AELL. & ESPHAND., Anz. Math., Naturw. Kl. Oesterr. Akad. Wiss. 1951: 220 (1951).

Khorassan: SE: SW Birjand, on road of Sarchah, 1400 m, 23.4.1983, Rashed & Rezaei 10075 [FUMH]; – ibid., between Shahzileh and Tajk, 1700 m, 3.5.1998, Faghihnia & Zangooei 30394 [FUMH]; – ibid., Birjand towards Khosf, km 10, 1300 m, 20.4.1999, Faghihnia & Zangooei 32077 [FUMH]; – ibid., km 17, Rakat, 1420 m, 14.4.1981, Ghorashialhosseini & Zokaei 402 [FUMH]; – S Birjand, between Gol and Khalilan, 1700 m, 21.4.1999, Faghihnia & Zangooei 32190 [FUMH]; – Birjand, Borzaj, 1850 m, 18.5.1992, Faghihnia & Zangooei 21780 [FUMH]; – Birjand, Taghiabad, 1600 m, 27.4.1998, Faghihnia & Zangooei 30142 [FUMH]; – W Nehbandan, Ateshkadeh, 1500 m, 9.4.1998, Hojjat & Zangooei 29928 [FUMH]; – S Nehbandan, Sefarsang, 1300 m, 29.4.1996, Raafei & Zangooei 26462 [FUMH].

Distribution in Iran: W, S, E, C. – Endemic for Iran.

*Euphorbia grossheimii* PROKH., Izv. Glavn. Bot. Sada SSSR. 29: 551 (1930).

Khorassan: W: SW Sabzevar, Mehrabad, 920 m, 28.5.1984, Joharchi & Zangooei 11264 [FUMH].

Distribution in Iran: S, E, C.

### **Fabaceae** LINDL.

Ref.: MAASSOUMI 2003.

*Astragalus hamosus* L., Sp. Pl. 758 (1753).

Khorassan: NW: N Bojnord, Gifan road, before Ghezelghan, 947 m, 29.4.2008, Memariani & Zangooei 39623a [FUMH].

Distribution in Iran: N, W, S, E, C.

*Hedysarum callitrix* BUNGE ex BOISS., Fl. Or. 2: 523 (1872).

Khorassan: NE: NW Mashhad, Abghad river Mt., 1250 m, 150.6.1993, Faghihnia & Zangooei 23326 [FUMH].

Distribution in Iran: S, E, C. – Endemic for Iran.

### **Lamiaceae** LINDL.

Ref.: HEDGE & al. 1982.

*Salvia syriaca* L., Syst. Nat. ed. 10, 2: 854 (1759).

Khorassan: NE: NE Kalat-e Naderi, between Khesht and Kalat, 1200 m, 24.5.1994, Faghihnia & Zangooei 24032 [FUMH]; – ibid., Khesht Mt. 1500 m, 2.6.1997, Faghihnia & Zangooei 29024 [FUMH].

Distribution in Iran: N, W, S, E, C.

### **Malvaceae** JUSS.

Ref.: RIEDL 1976.

*Malva aegyptia* L., Sp. Pl. 1: 690 (1753) var. *aegyptia*.

Khorassan: NW: NW Bojnord, near Garmab, 680 m, Assadi & Maassoumi 55612 [TARI].

Distribution in Iran: N, W, S, E.

**Orobanchaceae** VENT.

Ref.: SCHIMAN-CZEIKA 1964.

*Cistanche laxiflora* AITCH. & HEMSL., Trans. Linn. Soc. Ser. 2, 3: 94 (1888).

Khorassan: C: 70 km, Neyshabur to Kashmar, Assadi &amp; Mozaffarian 35494 [TARI].

Distribution in Iran: W, S, E, C. – Endemic for Iran &amp; Afghanistan.

**Polygonaceae** JUSS.

Ref.: RECHINGER &amp; SCHIMAN-CZEIKA 1968.

*Persicaria orientalis* (L.) SPACH, Syst. Veg. 537 (1841).

Khorassan: NE: Mashhad, 1000 m, 10.5.1984, Rezaei 11424 [FUMH].

Distribution in Iran: N, E.

**Rosaceae** JUSS.

Ref.: BROWICZ &amp; al. 1969, KHATAMSAZ 1992.

*Cerasus mahaleb* (L.) MILLER, Gard. Diet. ed. 8, Cerasus No. 4 (1768).Khorassan: NE: Mashhad, Zoshk Mt. 1758 m, 16.8.2007, Joharchi 39216 [FUMH]; – *ibid.*, 1.5.2008, Joharchi 39731 [FUMH].

Distribution in Iran: W, E.

*Potentilla bungei* BOISS., Fl. Orient. 2: 718 (1872).

Khorassan: NW: W Bojnord, Darkash, Kanimokhtar, 2000–2100 m, 20.6.2004, Joharchi &amp; Aydani 35613 [FUMH, FAR].

Distribution in Iran: N, E, C.

*Potentilla pedata* NESTLER, Monogr. Pot.: 44 (1816).

Khorassan: N: Darrehgaz, Tandoureh National Park, Tiwan to Ortabolagh, km 5, 1980 m, 13.6.2004, Memariani &amp; Zangooei 35548 [FUMH].

Distribution in Iran: N, W, E, C.

**Rutaceae** JUSS.

Ref.: TOWNSEND 1966, JOHARCHI 2008.

*Haplophyllum affine* (AITCH. & HEMSL.) KOROVIN, Izv. Inst. Pochv. Geobot. S.A.G.U. 1: 22 (1925).

Khorassan: NE: E Salehabad, between Saghar-Cheshmeh and Garmab-e Olia, 550 m, 25.4.2007, Joharchi &amp; Nasseh 38725a [FUMH].

Distribution in Iran: S, E.

**Salicaceae** MIRBEL

Ref.: MEUMANN &amp; SKVORTSOV 1969.

*Salix aegyptiaca* L., Gent. Pl. 1: 33 (1755).Khorassan: NW: SW Bojnord, Rein, Delove valley, 1693 m, 22.4.2006, Memariani & Zangooei 37228 [FUMH]; – *ibid.*, 1690 m, 2.1.2006, Memariani & Zangooei 38543 [FUMH]; – *ibid.*, Alkhash valley, 1700 m, 2.10.2006, Memariani & Zangooei 38542 [FUMH].

Distribution in Iran: N, W, S, E, C.



**Scrophulariaceae** JUSS.

Ref.: FISCHER &amp; al. 1981.

*Scrophularia rostrata* BOISS. & BUHSE, Aufz. Transkauk. und Pers. Pfl., in Nouv. Mem. Soc. Nat. Mosc. 12: 163 (1860).

Khorassan: NW: NW Bojnord, N Kal-e Imani, 800 m, 29.4.2001, Joharchi &amp; Zangooei 33425 [FUMH].

Distribution in Iran: N, E. – Endemic for Iran.

**New records for Iran with specimen/s in Khorassan**

The following taxa are recorded for the flora of Iran with one or more specimens from Khorassan Province. These records are new since publication of the Flora Iranica treatments for each family. They have been recorded in different taxonomic papers and are collectively noted here to give an overview of subsequent changes to the flora.

The following 83 belong to 62 genera and 26 families. Except one fern, all belong to angiosperms and are presented based on alphabetical order of family name. Following the name the related reference is given.

**Pteridophytes****Dryopteridaceae** s.l. (Athyriaceae / Woodsiaceae)*Cystopteris fragilis* (L.) BERNH., Neues J. Bot. 1 (2): 27 (1805) **subsp. dickieana** (SIM.) HOOK.f., Fl. Brit. Isl.: 464 (1870).

Ref.: KHOSHRAVESH &amp; al. 2009.

Khorassan: N: Neyshabur, Sarvelayat, Shazdeh Hossein Asghar, 1600 m, 4.8.1992, Faghihnia &amp; Zangooei 22363 [FUMH].

Distribution in Iran: E.

**Angiosperms****Monocotyledons****Alliaceae** J.G.AGARDH*Allium barszczewskii* LIPSKY, Acta Horti Pterop. 18: 114 (1900).

Ref.: MEMARIANI &amp; al. 2007.

Khorassan: NW: SW Bojnord, Salouk Mt., 2400 m, 11.7.1994, Zangooei 24473 [FUMH]; – N: Neyshabur, Binaloud Mt., 2500 m, 11.7.1995, Raafeei & Faghihnia 26072 [FUMH]; – E Neyshabur, Kharw-e Olya, 1650–1750 m, 19.5.1996, Raafeei & Zangooei 27005 [FUMH]; – NE: SW Mashhad, Maj towards Binaloud summit, km 12, 2250 m, 21.6.1992, Joharchi & Zangooei 22008 [FUMH]; – Mashhad towards Kalat-e Naderi, km 50, 1250 m, 24.5.1994, Faghihnia & Zangooei 23998 [FUMH]; – Kalat-e Naderi, Khesht Mt. 1500 m, 2.6.1997, Faghihnia & Zangooei 29018 [FUMH]; – Fariman around dam Mt., 1500 m, 13.5.1981, Zokaei 882 [FUMH]; – SW Sarakhs, Ghorghoreh 1000 m, 30.5.1992, Joharchi & Zangooei 21949 [FUMH].

Distribution in Iran: E.

***Allium tenuicaule*** REGEL, Acta Horti Petrop. 10: 348 (1887).

Ref.: MEMARIANI & al. 2007.

Khorassan: N: Neyshabur, Binaloud Mt., 2500 m, 11.7.1995, Raafeei & Zangoeei 26072b [FUMH]; –NE:S Mashhad, Moghan Mt., 2500 m, 3.6.2001, Joharchi 33666 [FUMH].

Distribution in Iran: E.

### **Cyperaceae** JUSS.

***Bolboshoenus glaucus*** (LAM.) S.G.SMITH, Novon 5: 101 (1995).

Ref.: AMINIRAD 2003.

Khorassan: NE: Mashhad, Ferdowsi University of Mashhad Campus, 1035 m, 3.7.2006, Akramian 38198 [FUMH].

Distribution in Iran: N, E.

***Carex decaulescens*** V.KREZC. in SCHISCHK., Fl. URSS. 3: 599 (1935) **subsp. *decaulescens***.

Ref.: AMINIRAD 2008.

Khorassan: NE: Mashhad, Zoshk, north slopes of Binaloud Mt., valley of Abdollah river, 2100–3000 m, Mozaffarian 48846 [TARI].

Distribution in Iran: E.

### **Poaceae** BARBHART

***Apera interrupta*** (L.) P.BEAUUV., Ess. Agrost. 151 (1812).

Ref.: TAHERI & al. 2006.

Khorassan: NE: Fariman, Chenar village, near the river, 1500 m, 7.6.2003, Emami 35230 [FUMH].

Distribution in Iran: E.

***Leptochloa uninervia*** (J. PRESL) HITCHC. & CHASE, Contr. U. S. Natl. Herb. 18: 383 (1917).

Ref.: HAMZEHEE 2000.

Khorassan: C: Kashmar, 1098 m, Ramazanian 80073 [TARI].

Distribution in Iran: E.

***Leymus tianschanicus*** (DROB.) TSVELEV, Bot. Mts (Leningrad) 20: 469 (1960).

Ref.: EFTEKHARI & al. 2005.

Khorassan: W: 60 km south of Sabzevar, 2 km above the Chah-Sukhteh, 1500–1600 m, Eftekhari & Filehkesh 86990 [TARI].

Distribution in Iran: E.

***Secale cereal*** L., Sp. Pl. 84 (1753) **subsp. *cereal***

Ref.: RAHIMINEJAD & al. 2005.

Khorassan: N: Between Ghuchan and Mashhad, 1230 m, Saiedi & Hoseini 14680 [HIU]; – NE: Between Mashhad and Neyshabur, 1240 m, Saiedi & Hoseini 14685 [HIU].

Distribution in Iran: N, W, C, E.

**subsp. *ancesterale*** Zhuk., Trudy Prikl. Bot. 19, 2: 54 (1928).

Ref.: RAHIMINEJAD & al. 2005.

Khorassan: N: Between Neyshabur and Sabzevar, Saiedi & Hoseini 14684 [HIU].

Distribution in Iran: W, E, C.

## Dicotyledons

### Apiaceae LINDL.

*Bunium afghanicum* BEAUV., Bull. Soc. Geneve 21: 227 (1929).

Ref.: MOZAFFARIAN 2007.

Khorassan.: NE: Sarakhs towards Mashhad, km 9, 300 m, 28.4.1986, Ayatollahi & Zangooei 13974 [FUMH]; – Between Mashhad and Sarakhs, Shorlogh, 350 m, 17.4.1985, Ayatollahi & Rezaei 12031 [FUMH]; – *ibid.*, Bazngan lake, 800 m, 11.5.1984, Bakhshoudeh 10996 [FUMH]; – *ibid.*, Islam-Ghaleh hills, 450 m, 28.4.1986, Ayatollahi & Zangooei 13997 [FUMH]; – Mashhad towards Neyshabur, km 30, Amanabad, 1050 m, 14.4.1982, Ghorashialhosseini 1320G [FUMH]; – Fariman towards Torbat-e Jam, Rekhneh-e Gorg Mt., 1250 m, 8.5.1996, Faghihnia & Zangooei 26733 [FUMH]; – C: Torbat-e Heydarieh, Bayg towards Rudmajan, km3, 1500 m, 14.5.1996, Raafei & Zangooei 26834 [FUMH]; – S Torbat-e Heydarieh, Cheirabad, 900 m, 4.5.1991, Joharchi & Zangooei 19914 [FUMH]; – *ibid.*, Mohammadabad towards Jangal, km 14, 800 m, 4.5.1986, Ayatollahi & Zangooei 14050 [FUMH]; – Kashmar towards Neyshabur, km 59, 9.5.1985, Ayatollahi & Joharchi 12664 [FUMH]; – E: Taybad towards Fariman, Jafarabad, 1100 m, 2.5.1985, Ayatollahi & Zangooei 12529 [FUMH]; – E Torbat-e Jam, Mallu hills, 950 m, 28.4.1991, Joharchi & Zangooei 19705 [FUMH]; – *ibid.*, Rahmatabad. 1000 m, 27.4.1991, Joharchi & Zangooei 19641 [FUMH]; – SE: Birjand towards Ghayen, km 20, 18.5.1986, Ayatollahi & Zangooei 14319 [FUMH]; – Ghayen towards Birjand, km 30, 17.5.1986, Ayatollahi & Zangooei 14210 [FUMH].

Distribution in Iran: E. – Endemic for Iran & Afghanistan.

*Bunium chaerophylloides* (REGEL & SCHMALH.) DRUDE, in ENGLER & PRANTL, Natural. Pflanzenfam. 3, 8: 194 (1898).

Ref.: MOZAFFARIAN 2007

Khorassan: NE: SE Kalat-e Naderi, Ortakand, Khan-Zo river towards Cheshmeh, 1450–1700 m, 16.6.1996, Raafei & Zangooei 27360 [FUMH].

Distribution in Iran: E.

*Bunium intermedium* KOROV., Bot. Mat Gerb. Inst. Bot. & Zool. Anuzssr, 12, 26 (1948).

Ref.: MOZAFFARIAN 2007.

Khorassan: N: Chenaran: Akhلامad, Darreh-Abshar, 1550 m, 16.5.2001, Joharchi & Zangooei 33548 [FUMH]; – NE: Darrehgaz, Tandoureh National Park, between Shekarab and Chehelmir, 1650–2000 m, 8.6.1997, Raafei & Zangooei 29094 [FUMH].

Distribution in Iran: E.

*Leutea turcomanica* (SCHISCHK.) MOZAFF., Fl. Iran, 54: 443–444 (2007).

Ref.: MOZAFFARIAN 2007.

Khorassan: NW: Esfarayen, Shah-Jahan mountain region, Torkan mountain, near Noushirvan village, 1400–1500 m, Mozaffarian 48601 [TARI].

Distribution in Iran: E.

### Asteraceae DUMORT.

*Acanthocephalus benthamianus* REGEL & SCHMALH. in O.FEDTSCH., Izv. Obsh. Ljub. Estv. Antr. Etnogr. 3, 18: 47 (1881).

Ref.: MOBAYEN & IRANSHAHR 1984.

Khorassan: NW: NE Bojnord, between Ghatlish and Ghazi, 1500 m, 2.7.1981, Ghorashialhosseini 1239G [FUMH]; – *ibid.*, between Ghaleh-Mohammadi and Jafarabad, Mohammad Beig spring, 1550 m, 16.6.1991, Joharchi & Zangooei 20751 [FUMH]; – *ibid.*, Ghezlghan towards Soluklu, 1300–1388 m, 29.5.2007, Memariani & Zangooei 39012 [FUMH]; – W Bojnord, Haver, 1000 m, 10.5.2000, Joharchi &

Zangooei 32785 [FUMH, FAR]; –ibid., Haver to Barfandil, 1500 m, 6.6.2004, Joharchi & Aydani 35472 [FUMH, FAR]; –ibid., Badranlu pass. 1920 m, 12.6.1996, Raafeei & Zangooei 27268 [FUMH]; –ibid., Gharanodeh, 1485 m, 28.5.2008, Joharchi & Zangooei 40446, 40496 [FUMH]; – SE Bojnord, Chenaran, Zo, 1363 m, 27.5.2008, Joharchi & Zangooei 40396 [FUMH]; – N: Darrehgaz, between Shekarab and Chelhelmir, 1000–2300 m, 27.5.1991, Joharchi & Zangooei 20473 [FUMH]; – NE: Mashhad towards Kalat-Naderi, km 65, 1550 m, 19.6.1991, Faghinihnia & Zangooei 20895 [FUMH].

Distribution in Iran: E.

***Calendula karakalensis*** VASS., Fl. URSS 26: 895 (1961).

Ref.: JAFARI & JOHARCHI 2009.

Khorassan: NW: NW Bojnord, Shishkhan towards Khorramdeh, km 4, 548 m, 8.5.2007, Memariani & Zangooei 38827 [FUMH].

Distribution in Iran: E.

***Cephalorrhynchus picridiformis*** (BOISS.) TUISL, Ann. Nat. Mus. Wien 72: 619 (1968).

Ref.: JOHARCHI & AKHANI 2006.

Khorassan: C: SE Torbat-e Heydarieh, Pir-e Yahoo, 1600 m, 25.6.2003, Joharchi 34858 [FUMH].

Distribution in Iran: E. – Endemic for Iran, Afghanistan & Pakistan.

***Cousinia apiculata*** TSCHERNEVA, Bot. Mat. Herb. Acad. Nauk Uzbek. SSR. 17: 91 (1962).

Ref.: ATTAR & JOHARCHI 2002.

Khorassan: NW: Bojnord, Gifan, Misino Mt. 2000–2200 m, 24.7.1995, Raafeei & Zangooei 26140 [FUMH].

Distribution in Iran: E. – Endemic for Iran & Turkmenistan.

***Cousinia leucantha*** BORNHM. & SINT., Journ. Russe Bot. 1: 1 (1911).

Ref.: AKHANI 1996a.

Khorassan: NW: NE Bojnord, Gifan, Misino Mt., 1800–2000 m, 17.6.1991, Joharchi & Zangooei 20827 [FUMH].

Distribution in Iran: N, E. – Endemic for Iran & Turkmenistan.

***Cousinia pycnoloba*** BOISS., Diagn. Pl. Orient., Ser. 2, 3: 57 (1856).

Ref.: DJAVADI & ATTAR 2002.

Khorassan: N: N Neyshabur, Soumeeh, Binaloud Mt. 1350–2100 m, 2.8.1976, Termeh & Tehrani 9136 [IRAN].

Distribution in Iran: E. – Endemic for Iran, Afghanistan & Pakistan.

***Cousinia raddeana*** C.WINKL., Acta Hort. Petrop. 10: 473 (1887).

Ref.: ATTAR & JOHARCHI 2002.

Khorassan: NE: NE Mashhad, Chahchaheh towards pistachio forest, 1000 m, Ghahreman, Attar, Joharchi & Mehdigholi 27315 [TUH]; – ibid., after Kal-Sorkh, 850 m, 14.6.1995, Faghinihnia & Zangooei 25815 [FUMH]; –ibid., 1000 m, 9.5.2001, Joharchi & Zangooei 33523 [FUMH].

Distribution in Iran: E.

***Cousinia radians*** BUNGE, Delect. Sem. Hort. Dorpat. 3 (1845).

Ref.: ATTAR & GHahreman 2002.

Khorassan: N: Ghuchan, Emarat, 1800 m, 18.8.1992, Faghinihnia & Zangooei 22456 [FUMH]; – ibid., 2000

m, 15.7.1997, Hojjat & Zangoeei 29698 [FUMH]; – Chenaran, Radkan, 1700 m, 12.7.1993, Faghihnia & Zangoeei 23587 [FUMH]; – NE: Kalat-e Naderi, Gharasu, 1100 m, 15.7.1990, Faghihnia & Zangoeei 18934 [FUMH]; – *ibid.*, Hamman-Ghaleh bifurcation, 1000 m, 8.7.1986, Joharchi & Zangoeei 14767 [FUMH]; – *ibid.*, Hamman-Ghaleh, 1150 m, 2.5.1975, Zargari 1997 [FUMH]; – *ibid.*, between, Babafaraji bifurcation and Hamman-Galeh, bifurcation, 1205 m, 3.7.2005, Joharchi & Zangoeei 36817 [FUMH]; – 60 km from Mashhad on the road of Kalat-e Naderi, 1000 m, Ghahreman & al. 27667 [TUH].

Distribution in Iran: E.

*Cousiniopsis atractyloides* (C. WINKL.) NEVSKI, Acta Inst. Bot. Acad. Sci. URSS., Ser. 1, 4: 288 (1937).

Ref.: AKHANI & JOHARCHI 1995.

Khorassan: N: NE Darrehgaz, Hesar, 250 m, 16.5.1993, Joharchi & Zangoeei 23100 [FUMH]; – *ibid.*, 200 m, 3.6.1981, Ghorashialhosseini 539G [FUMH]; – *ibid.*, between Hesar and Hatam-Ghaleh, 300 m, Joharchi & Zangoeei 23103 [FUMH]; – NE: Mashhad towards Sarakhs, Mazdavand (Mozduran), SW hills, 950 m, 4.6.1988, Joharchi & Zangoeei 16736 [FUMH]; – Mazdavand towards Sarakhs, km 12, 800 m, 21.5.1985, Ayatollahi & Joharchi 13171 [FUMH]; – *ibid.*, km 14, 800 m, 21.5.1984, Ayatollahi & Mahvan 11149 [FUMH]; – Mashhad towards Salehabad, between Baghbaghu and Natu, 550 m, 18.5.1991, Joharchi & Zangoeei 20261 [FUMH]; – NE Mashhad, Sanganeh road, Ziladeh, 740 m, 20.5.1989, Joharchi & Zangoeei 17414 [FUMH]; – Mashhad towards Salehabad, 10 km after bifurcation of Agh-Darband to Madan, 600 m, 29.5.1993, Joharchi & Zangoeei 23153 [FUMH]; – E Salehabad, between Saghar-Cheshmeh and Garmab-e Olia, 490–500 m, 20.5.2003, Joharchi & Zangoeei 34489 [FUMH]; – *ibid.*, 30.4.2003, Zangoeei 34439 [FUMH]; – E: E Torbat-e Jam, between Mohammadabad and Mallu, 825 m, 4.5.2002, Joharchi 34065 [FUMH].

Distribution in Iran: E.

*Echinops transcaspicus* BORNEM., Beih. Bot. Centrbl. 36, 2: 226 (1918).

Ref.: DJAVADI 2008.

Khorassan: N: N Shirvan, Koosheh, Alkhas Mt. Region, 1900–2100 m, 15.7.1986, Termeh, Moussavi & Tehrani 51576 [IRAN].

Distribution in Iran: E. – Endemic for Iran, Turkmenistan & Afghanistan.

*Galatella litvinovii* NOVOPOKR., Tr. Bot. Inst. Acad. Nauk SSSR, Ser. 1, 7: 130 (1948).

Ref.: AYDANI & al. 2006.

Khorassan: NW: Bojnord, between Darkash and Haver, 1500 m, 28.9.2004, Joharchi & Aydani 35738 [FUMH, FAR]; – *ibid.*, between Haver and Kalateh-e Zamansoufi, 1400–1600 m, 24.8.2003, Joharchi 35168 [FUMH]; – SW Bojnord, Rein, Takhteh-e Bowly, 1860 m, 18.9.2006, Memariani & Zangoeei 38527 [FUMH]; – *ibid.*, Delove Mt., 1700–1750 m, 17.9.2007, Arjmandi & Zangoeei 39249 [FUMH]; – S Bojnord, Arkan, 1800 m, 21.9.1998, Faghihnia & Zangoeei 31807 [FUMH, FAR]; – N Bojnord, Gifan, Missino Mt., 2000–2200 m, 24.7.1995, Raafeei & Zangoeei 26126 [FUMH].

Distribution in Iran: E.

*Heteropappus altaicus* (WILLD.) NOVOPOKR., Sched. ad Herb. Fl. Ross. 8: 193 (1922).

*var. decrescens* GRIERSON, Fl. Iranica, 154: 10 (1982).

Ref.: DJAVADI 2003.

Khorassan: N: N Shirvan, Namanlu, Golul, Cheshmeh-Gabri, 2400 m, 19.7.1986, Termeh, Moussavi & Tehrani 31271 [IRAN].

Distribution in Iran: E.

*Inula acaulis* SCHOTT & KOTSCHY ex BOISS., Fl. Orient. 3: 195 (1875).

Ref.: NARIMISA & GHahremaninejad 2007.

Khorassan: N: Binaloud Mts, between Cheshmeh-Sabz and Boujan, 2500 m, 16.7.1985, Rashed & Ayatollahi 13420 [FUMH].

Distribution in Iran: N, E.

***Lachnophyllum gossypinum*** BUNGE, Rel. Lehm. 151 (1851).

Ref.: AKHANI & JOHARCHI 1995.

Khorassan: NE: Mashhad towards Sarakhs, Shurak, 800 m, 6.10.1981, Ghorashialhosseini 1280G [FUMH]; – *ibid.*, Mazdavand, 940 m, 14.10.1982, Zokaei 1519 [FUMH]; – Mashhad. towards Salehabad, between Baghbaghu and Natu, 650 m, 19.10.1991, Joharchi & Zangooei 21207 [FUMH]; – NE Mashhad, Chahchah towards Bazangan, km 11, 700–850 m, 17.8.1994, Akhani & Zangooei 24561 [FUMH, Hb-Akhani].

Distribution in Iran: E.

***Psychogeton cabulicus*** BOISS., Fl. Orient. 3: 156 (1875).

Ref.: EMADZADEH & JOHARCHI 2004.

Khorassan: NW: SW Bojnord, Saluk Mt. 2400 m, 11.7.1994, Zangooei 24477 [FUMH].

Distribution in Iran: E.

***Scorzonera ovata*** TRAUTV., Acta Horti Petrop. 1, 2: 275 (1872).

Ref.: SAFAVI 2004.

Khorassan: NE: E Salehabad, between Saghar-Cheshmeh and Garmab-e Olia 490–500 m, 20.5.2003, Joharchi & Zangooei 34494 [FUMH]; – E: SE Torbat-e Jam, Ghaleh-Hammam, 800 m, 24.4.1991, Joharchi & Zangooei 19681 [FUMH]; – SW: Tabas towards Boshruyeh, km 45, 22.4.1986, Ayatollahi & Zangooei 13835 [FUMH]; – SE: Nehbandan, Khan-Sharaf towards Tabasin, km 15, 1200 m, 30.4.1991, Faghihnia & Zangooei 19800 [FUMH].

Distribution in Iran: E.

***Tanacetum parthenifolium*** (WILLD.) SCHULTZ BIP., Tanacet.: 56 (1844).

Ref.: MOZAFFARIAN 2005.

Khorassan: NE: Mashhad, Zoshk, Binaloud Mt. 2100–3000 m, Mozaffarian 48842 [TARI].

Distribution in Iran: W, N, E, C.

## **Boraginaceae** JUSS.

***Argusia sogdiana*** (BUNGE) CZEREP., Sosud. Rast. SSSR: 112 (1981).

Ref.: AKHANI & JOHARCHI 1995.

Khorassan: NE: S Sarakhs, between Dowlatabad and Nowroozabad, 300 m, 14.4.1988, Joharchi & Zangooei 16192 [FUMH]; – Sarakhs, 220 m, Foroughi 3733 [TARI]; – N Sarakhs, Yaztapeh, 300 m, 22.4.1991, Faghihnia & Zangooei 19436 [FUMH]; – SW Sarakhs, Agh-Darband bifurcation, 550 m, 24.4.1975, Zargari 33 [FUMH].

Distribution in Iran: E.

***Lappula drobovii*** M. POPOV ex PAVL., Sov. Bot. 1: 27 (1934).

Ref.: KHATAMSAZ & JOHARCHI 1996.

Khorassan: NW: NW Bojnord, N Kal-e Imani, 900 m, 17.4.2007, Joharchi & Zangooei 33254 [FUMH]; – *ibid.*, between Ghorry-Meidan and Dashtak, 650–700 m, 28.4.2001, Joharchi & Zangooei 33406 [FUMH]; – *ibid.*, between Anabay and Gouynik, 1150 m, 29.4.2001, Joharchi & Zangooei 33490 [FUMH]; – W Bojnord, Almehr Mt., 1700 m, 9.7.1997, Raafei & Zangooei 29537 [FUMH]; – E Bojnord, Sisab Mt., 1450 m, 16.5.1988, Joharchi & Zangooei 16677 [FUMH]; – SE Esfarayen, between Safiabad and Dolchah, 1100 m, 15.5.1991, Faghihnia & Zangooei 20234 [FUMH]; – *ibid.*, Safiabad, Gharzi, 1250 m, 14.5.1991, Faghihnia & Zangooei 20205 [FUMH]; – N: S Darrehgaz, Gherkhghez hills, 450 m, 2.5.1988, Joharchi & Zan-

gooei 16477 [FUMH]; – NE Chenaran, Boghmech, around Gah village, Miah, 1500 m, 19.6.1997, Hojjat & Zangooei 29318 [FUMH]; – S Neyshabur, Golbu bifurcation, Madan-e Sang, 1650 m, 11.5.1991, Joharchi & Zangooei 20055 [FUMH]; – NE: E Kalat-e Naderi, Band-e Naderi, 800 m, 25.5.1994, Faghinihnia & Zangooei 24066 [FUMH]; – NE Mashhad, Ajdarkuh, 1300 m, 30.5.1993, Joharchi & Zangooei 23219 [FUMH]; – Mashhad, Ferdowsi University Campus, 1040 m, 5.5.2006, Akramian 37319 [FUMH]; – E Mashhad, W Mayami, Ordoluk Mt., 950–1000 m, 19.5.1991, Joharchi & Zangooei 20295 [FUMH]; – Mashhad to Salehabad, 10 km Mt. bifurcation towards Agh-Darband, 600 m, 29.5.1993, Joharchi & Zangooei 23160 [FUMH]; – Mashhad towards Sarakhs, Chahak hills, 800 m, 21.5.1986, Joharchi & Zangooei 14520 [FUMH]; – Sarakhs, Ghorghoreh Mt., 900–1000 m, 30.5.1992, Joharchi & Zangooei 21947 [FUMH]; – Sarakhs, between Shorlogh and Chehelkaman dam, 900 m, 10.4.1999, Hojjat & Zangooei 31840 [FUMH]; – Fariman, between Chenar and Someach, 1600 m, 22.5.1991, Faghinihnia & Zangooei 20406 [FUMH]; – W: NW Sabzevar, between Manidar and Azadvar, 1300 m, 15.4.2001, Joharchi & Zangooei 32207 [FUMH]; – NE Bardaskan, Sir, 1500 m, 13.4.1995, Faghinihnia & Zangooei 24768 [FUMH]; – C: N Kashmar, SW Rivash, Band-e Ghara, 1800 m, 8.5.1995, Faghinihnia & Zangooei 25373 [FUMH]; – Kashmar, W Rivash, Targh towards Bardaskan, 1550 m, 7.5.1995, Faghinihnia & Zangooei 25274 [FUMH]; – Torbat-e Heydarieh, NW Shadmehr, Ghouch-Palang Mt., 1350 m, 6.5.1996, Faghinihnia & Zangooei 26683 [FUMH]; – NW Torbat-e Heydarieh, Bayg towards Rudmajan, km 3, 1500 m, 14.5.1996, Raafei & Zangooei 26846 [FUMH]; – SW Torbat-e Heydarieh, Shadmehr, khoshdarreh, 1250 m, 5.5.1996, Faghinihnia & Zangooei 26636 [FUMH]; – S Torbat-e Heydarieh, Dasht-e Cheirabad, 900 m, 4.5.1991, Joharchi & Zangooei 19916 [FUMH]; – *ibid.*, Emrani towards Band-e Ozbak, km 25, 900 m, 26.4.1993, Faghinihnia & Zangooei 22934 [FUMH]; – SW Torbat-e Heydarieh, Eskandarabad, 1050 m, 4.5.1991, Faghinihnia & Zangooei 19964 [FUMH]; – Bejestan towards Gonabad, km 5, 1250 m, 26.4.1995, Raafei & Zangooei 25122 [FUMH]; – E Bejestan, Hojjatabad towards Helali, km 10, 1250 m, 9.5.1998, Raafei & Zangooei 30521 [FUMH]; – SW Gonabad, Senu, around of Hoz-e Beigi, 1350 m, 26.4.1991, Faghinihnia & Zangooei 19634 [FUMH]; – *ibid.*, Darreh-Nakho, 1600 m, 25.4.1991, Faghinihnia & Zangooei 19563 [FUMH]; – S Gonabad, Kakhk towards Boskabad, km 18, 1900 m, 10.5.1998, Raafei & Zangooei 30547 [FUMH]; – *ibid.*, Kakhk towards Ostad, Marghash bifurcation, 1500 m, 24.4.1991, Faghinihnia & Zangooei 19522 [FUMH]; – E: E Torbat-e Jam, Rahmatabad, 1000 m, 27.4.1991, Joharchi & Zangooei 19663 [FUMH]; – Torbat-e Jam towards Bakharz, km 10, Chah-Shur, 850 m, 12.5.1994, Faghinihnia & Zangooei 23898 [FUMH]; – Torbat-e Jam towards Taibad, km 35, 1050 m, 18.4.1990, Faghinihnia & Zangooei 18204 [FUMH]; – E Taibad, Dogharun, 650 m, 18.4.1990, Faghinihnia & Zangooei 18231 [FUMH]; – W Khaf, Band-e Salami, 1250 m, 29.4.1989, Joharchi & Zangooei 17156 [FUMH]; – W: SW Tabas, Tabas towards Yazd, km 100, 1400 m, Faghinihnia & Zangooei 28194 [FUMH]; – SE Tabas, Niaz, Hoz-e Morteza-Ali, 1350 m, 15.4.1996, Raafei & Zangooei 26269 [FUMH]; – N Ferdous, Ab-Garm, 1650 m, 26.4.1995, Raafei & Zangooei 25069 [FUMH]; – E Ferdous, Sorand towards Baghestan, km 12–15, 1500 m, 12.5.1998, Raafei & Zangooei 30668 [FUMH]; – W Ferdous, Boshruyeh towards Tabas, 1200 m, 4.5.1992, Faghinihnia & Zangooei 21596 [FUMH]; – SE: E Ghayen, Mohammadabad, 1050 m, 5.5.2002, Joharchi 34104 [FUMH]; – *ibid.*, Varaz towards Varazgh, km 4, 1600 m, 20.5.1998, Raafei & Zangooei 30816 [FUMH]; – NW Ghayen, Khezri, Boskabad dam, 1900 m, 2.5.1995, Faghinihnia & Zangooei 25249 [FUMH]; – N Birjand, Birjand towards Ghayen, km 40, 1900 m, 17.5.1992, Faghinihnia & Zangooei 21751 [FUMH]; – S Birjand, Akbarabad, 1750 m, 24.4.1983, Rashed & Rezaei 10110 [FUMH]; – *ibid.*, Band-e Dareh, 2000 m, 1.5.1995, Faghinihnia & Zangooei 25172 [FUMH]; – W Birjand, Aminabad, 1900 m, 2.5.1998, Faghinihnia & Zangooei 30364 [FUMH]; – Birjand, Mazar-e Shah Soleiman Ali towards Taghiabad, 1700 m, 27.4.1998, Faghinihnia & Zangooei 30134 [FUMH]; – E Birjand, Davarabad, 1645 m, 28.4.1984, Puyan 354P [FUMH]; – *ibid.*, Gazik Mt., 1400–1500 m, 14.5.1989, Joharchi & Zangooei 17338 [FUMH]; – N Nehbandan, km 15, 1500 m, 28.4.1997, Raafei & Zangooei 28322 [FUMH]; – W Nehbandan, Ateshkadeh, 1500 m, 9.4.1998, Hojjat & Zangooei 29932 [FUMH].

Distribution in Iran: E.

*Rindera cyclodonta* BUNGE, Mem. Sav. Etrang. Acad. Petersb. 7: 415 (1851).

Ref.: AKHANI & JOHARCHI 1995.

Khorassan: C: Kashmar towards Neyshabur, km 22, 9.5.1985, Ayatollahi & Joharchi 12663 [FUMH]; – NW Kashmar, Kalateh-Teimur 1800 m, 14.4.1995, Faghinihnia & Zangooei 24718 [FUMH].

Distribution in Iran: E, C.

***Solananthus turkestanicus*** (REGEL & SMIRNOV) KUSN., Mat. Fl. Kauk. 4, 2: 141 (1913).  
Ref.: KHATAMSAZ & JOHARCHI 1996.

Khorassan: NE: Between Mashhad and Sarakhs, SW Shorlogh, 900 m, 28.4.1994, Faghihnia & Zangooei 23845 [FUMH]; – ibid., Ghorghoreh, 900 m, 8.4.1992, Faghihnia & Zangooei 21415 [FUMH]; – C: NW Torbat-e Heydari, Bezgh Mt., 1900–2500 m, Assadi & Mozaffarian 35742 [TARI].

Distribution in Iran: E.

***Suchtelenia calycina*** (C.A.MEY.) DC., Prodr. 10: 163 (1846) var. ***acanthocarpa*** (KAR.) O.KUNTZE, Acta Hort, Petrop. 10: 219 (1887).

Ref.: KHATAMSAZ & JOHARCHI 1996.

Khorassan: NW: Bojnord towards Gifan, near Surk, 1000 m, Assadi & Maassoumi 50123 [TARI]; –NE: Between Mashhad and Sarakhs, Bazangan bifurcation, 650 m, 22.4.1991, Faghihnia & Zangooei 19413 [FUMH]; – E: E Torbat-e Jam, Mallu hills, 950 m, 28.4.1991, Joharchi 19710 [FUMH]; – ibid., 800 m, 28.4.2003, Joharchi & Zangooei 34423 [FUMH].

Distribution in Iran: E.

***Trichodesma bamianicum*** RECH.f. & RIEDL, Fl. Iranica, 48: 225 (1967).

Ref.: KHATAMSAZ & JOHARCHI 1996.

Khorassan: N: N Farouj, Ghaleh-Safa, 1750 m, 23.6.1997, Faghihnia & Zangooei 29348 [FUMH]; – Shirvan, between Shirvan and Khanlegh, Ghanat, 1000 m, 30.6.1981, Ghorashialhosseini 1106G [FUMH]; – S Chenaran, Freizi, Darmah valley, 1973 m, 18.6.2005, Memariani & Zangooei 36647, 36696 [FUMH]; E Neyshabur, Kharv-e Olia, 1200–1300 m, 7.6.1982, Ghorashialhosseini 1743G [FUMH]; – ibid., Dizbad-e Olia, 1800 m, 4.7.1996, Faghihnia & Zangooei 27779 [FUMH]; – NW Neyshabur, Damanjan, 1450 m, 19.6.1988, Joharchi & Zangooei 16937 [FUMH]; – NE: Mashhad, Torghabeh, 1200 m, Saghafi & Ramazani 240 [TARI]; – ibid., Pivajen, 1700 m, 30.6.1982, Zokaei 1434 [FUMH].

Distribution in Iran: E. – Endemic for Iran & Afghanistan.

## Brassicaceae BURNETT

***Boreava orientalis*** JAUB. & SPACH, Ill. Pl. Orient. 1: 3, t. 2 (1842).

Ref.: MOZAFFARIN 1985.

Khorassan: NW: NW Bojnord, 10 km from Raz to Pirboz, margin of farm, 1500 m, 21.5.2008, Memariani & Zangooei 40311 [FUMH]; – Esfarayen, northern slope of Shah-Jahan Mt., 1700–2500 m, Mozaffarian 48463 [TARI].

Distribution in Iran: E, C.

***Isatis trachycarpa*** TRAUTV., Acta Hort. Petrop. 9: 370 (1886).

Ref.: RECHINGER 1977.

Khorassan: E: E Torbat-e Jam, Hariroud, Pol-e Abrisham, 670 m, 4.5.2002, Joharchi 34095 [FUMH].

Distribution in Iran: E, C. – Endemic for Iran & Turkmenistan.

***Leptaleum hamatum*** HEMSL. & LACE, Linn. Soc., Bot. 28: 321 (1891).

Ref.: MEHRNIA 2006, JOHARCHI & AKHANI 2006.

Khorassan: C: S Gonabad, Kakhk Mt., between Kalateh-No and Pagodar, 2000 m, 24.4.1990, Faghihnia & Zangooei 18374 [FUMH]; – ibid., Kakhk towards Ferdous, km 26, 1900 m, 21.5.1997, Raafeei & Zangooei 28637 [FUMH]; – SE: NW Ghayen, Boskabad, 1900 m, 2.5.1995, Faghihnia & Zangooei 25266 [FUMH].

Distribution in Iran: E, C. – Endemic for Iran & Pakistan.

***Sameraria stenophylla*** RECH.f. & KOEIE, Anz. Math.-Nat. Kl. Oesterr. Akad. Wiss. 91: 61 (1954).



Ref.: MOAZZENI & al. 2006.

Khorassan: SE: E Ghayen, Petergan, Yazdan village, 450 m, 10.4.1988, Joharchi & Zangooei 16005 [FUMH].

Distribution in Iran: E, C. – Endemic for Iran & Afghanistan.

### Caprifoliaceae JUSS.

*Lonicera microphylla* WILLD. ex ROEM. & SCHULTES, Syst. Veg. 5: 258 (1819).

Ref.: GHahremaninejad & EZAZI 2009a.

Khorassan: NW: SW Bojnord, Salouk National Park. Darreh-Jowz, 1702 m, 15.4.2009, Ezazi 5320 [FAR, TARI].

Distribution in Iran: E.

### Capparidaceae JUSS.

*Cleome rostrata* BOBROV, Fl. URSS. 8: 633 (1939).

Ref.: SAGHAFI-KHADEM 1998.

Khorassan: C: N Kashmar, Chalpo, 1915 m, 31.7.2007, Memariani & Zangooei 39193 [FUMH]; – E: E Torbat-e Jam, between Mohammadabad and Mallu, 700 m, 14.9.1996, Saghafi *s.n.* [TARI]; – *ibid.*, 30.7.2003, Zangooei 35042 [FUMH].

Distribution in Iran: E.

*Cleome turkmena* BOBROV, Fl. URSS. 8: 633 (1939).

Ref.: MOZAFFARIAN 1991.

Khorassan: NE: SE Kalat-e Naderi, Ghalan-Ghosh, 950, 24.6.1987, Joharchi & Zangooei 15620 [FUMH]; – NE Mashhad, Sanganeh, 630 m, 11.9.2005, Zangooei 36983 [FUMH]; – *ibid.*, Chahchaheh towards Kalat road, km 24, 700 m, 17.9.1994, Akhiani & Zangooei 24550 [FUMH]; – *ibid.*, Kalat road towards Chahchaheh, Kalshur, 550 m, 26.10.1992, Faghihnia & Zangooei 22575 [FUMH]; – *ibid.*, Ziladeh towards Sanganeh, km 10, 650 m, 20.11.1991, Faghihnia & Zangooei 21364 [FUMH]; – *ibid.*, Karizak towards Bazangan, km 3, 650 m, 24.9.1996, Faghihnia & Zangooei 27824 [FUMH]; – Salehabad, N Saghar-Cheshmeh, 450 m, 15.7.2003, Ajani & Zangooei 34972 [FUMH]; – E: E Torbat-e Jam, between Mohammadabad and Mallu, 700 m, 22.10.1991, Faghihnia & Zangooei 21217 [FUMH]; – *ibid.*, 30.7.2003, Faghihnia & Zangooei 35041 [FUMH]; – *ibid.*, Mallu, 700 m, 15.9.1994, Akhiani & Zangooei 24506 [FUMH, Hb-Akhani].

Distribution in Iran: N, E. – Endemic for Iran & Turkmenistan.

### Caryophyllaceae JUSS.

*Acanthophyllum kandaharicum* GILLI, Feddes Repert. 59: 163 (1956).

Ref.: JOHARCHI & AKHANI 2006.

Khorassan: SE: N Nehbandan, Shosf, between Afzalabad and Marghzar, 1711 m, 18.5.2005, Joharchi & Zangooei 36242 [FUMH].

Distribution in Iran: E. – Endemic for Iran, Afghanistan & Pakistan.

*Acanthophyllum stenostegium* FREYN, Bull. Boissier, Ser. 2, 3: 866 (1903).

Ref.: JOHARCHI & AKHANI 2006.

Khorassan: NE: Kalat-e Naderi, at the beginning of Geroo road, 1000 m, 16.5.2005, Izadi 36220 [FUMH, Hb-Akhani].

Distribution in Iran: E.

**Chenopodiaceae** VENT.*Halimocnemis longifolia* BUNGE, A. H. P. 6, 2: 447 (1880).

Ref.: GHOBADNEJAD &amp; al. 2004.

Khorassan: C: 30 km N Gonabad towards Torbat-e Heydarieh, 871 m, 31.8.2003, Akhani &amp; Joharchi 17245 [IRAN, FUMH, Hb-Akhani].

Distribution in Iran: C, E.

**Crassulaceae** DC.*Pseudosedum longidentatum* BOISS., Acta Inst. Bot. Acad. Sei. URSS. 1: 109 (1933).

Ref.: JOHARCHI &amp; AKHANI 2006.

Khorassan: SE: SE Ghayen, between Dezg and Ahangaran, 1500 m, 15.5.1989, Joharchi &amp; Zangooei 17363 [FUMH, Hb-Akhani]; – NW Ghayen, Khezri, Pir-e Mardanshah, 1550 m, 19.5.1986, Ayatollahi &amp; Zangooei 14385 [FUMH]; – S Birjand, Band-e Omarshah, 1650 m, 18.5.1986, Ayatollahi &amp; Zangooei 14301 [FUMH].

Distribution in Iran: E.

*Rosularia subcapitata* (FREYN & SINT.) BORISS., Fl. URSS. 9: 123 (1939).

Ref.: AKHANI 1999.

Khorassan: NW: Bojnord, 14 km, E of Chamanbid, 1100 m, Wendelbo &amp; Cobham 14362 [TARI]; – Esfarayen, Shahjahan Mt. close to the Noushirvan village, 1400–2500 m, Mozaffarian 48984 [TARI]; – W of Bojnord, between Haver and Barfandil, 1700–1900 m, 6.6.2004, Joharchi &amp; Aydani 35478 [FUMH, FAR]; –N: Mashhad towards Kalat, km 45, 1800 m, Assadi &amp; Maassoumi 21375 [TARI]; –ibid., Sandoogh-Shekan pass., 1750 m, 24.7.2007, Zangooei &amp; Souzani 39172 [FUMH].

Distribution in Iran: E.

**Euphorbiaceae** JUSS.*Euphorbia consanguinea* SCHRENK in FISCH. & C.A.MEY., Enum. Pl. Nov., 1: 88 (1841).

Ref.: NASSEH &amp; al. 2006.

Khorassan: NE: Sarakhs, Dowlatabad, 300 m, 17.7.1990, Joharchi 19195 [FUMH].

Distribution in Iran: E.

*Euphorbia deltobracteata* PROKH., Consp. Syst. Tithym. Asiae Mediae 1491 (1933).

Ref.: PAHLEVANI 2007.

Khorassan: NW: NE Bojnord, Gifan, Missino Mt., 1800–2000 m, 17.6.1991, Joharchi &amp; Zangooei 20798 [FUMH]; –ibid., Gharalor, 1000 m, 24.5.1995, Faghihnia &amp; Zangooei 25542 [FUMH]; –NW Bojnord, S Tangeh-e Torkman, 1446 m, 17.5.2008, Joharchi &amp; Zangooei 40048 [FUMH]; –SE Esfarayen, Tangeh-e Baba Ghodrat, 1700 m, 16.6.1998, Raafeei &amp; Zangooei 31637 [FUMH]; –N: N Shirvan, Alkhass, 1800 m, 9.6.1998, Faghihnia &amp; Zangooei 31465 [FUMH].

Distribution in Iran: N, E. – Endemic for Iran &amp; Turkmenistan.

*Euphorbia franchetii* B.FEDTSCH. in O. & B.FEDTSCH., Consp. Fl. Turkest. 6: 310 (1916).

Ref.: NASSEH &amp; JOHARCHI 2004.

Khorassan: N: NE Ghuchan, Gunganlu Mt., 1650 m, 20.6.1996, Faghihnia &amp; Zangooei 27486 [FUMH]; –N Ghuchan, Bajgiran, Baba-Aselmeh, 1600 m, 15.7.1992, Faghihnia &amp; Zangooei 22251 [FUMH]; – Darrehgaz, Tandoureh National Park, between Shekarab and Chehelmir, 2000 m, 8.6.1997, Raafeei &amp; Zan-

gooei 29109 [FUMH]; –NE: NE Mashhad, Ajdarkuh, 1300 m, 30.5.1993, Joharchi & Zangooei 23235 [FUMH].

Distribution in Iran: E.

***Euphorbia rosularis*** A. THEOD., Bot. Mat. Gerb. Bot. Inst. AN SSSR, 9: 50 (1941).

Ref.: NASSEH & JOHARCHI 2004.

Khorassan: N: Chenaran, Golmakan, Cheshmeh-Sabz, 1560 m, 31.7.1992, Ayatollahi & Zangooei 22585 [FUMH]; – NE: Mashhad, Zoshk, Binaloud Mt., 2200 m, 13.11.1991, Joharchi & Zangooei 21323 [FUMH]; – ibid., Kang, 2100 m, 23.6.1996, Faghihnia & Zangooei 27607 [FUMH].

Distribution in Iran: E.

***Euphorbia turkestanica*** REGEL, Descr. Pl. Nov. Fedtsch. 78 (1882).

Ref.: NASSEH & JOHARCHI 2008.

Khorassan: NE: Mashhad towards Salehabad, E Goosh-Laghar, 700 m, 18.5.1991, Joharchi & Zangooei 20287 [FUMH].

Distribution in Iran: E.

## **Fabaceae** LINDL.

***Astragalus crassispinus*** BUNGE, Mem. Acad. Imp. Sc. Petersb. 11 (16): 132, 1868.

Ref.: GHAHREMANINEJAD 2005.

Khorassan: NE: SE Fariman, between Rekhneh-Gorg and Chenarbu, 28.6.1987, Joharchi & Zangooei 15394 [FUMH].

Distribution in Iran: E. – Iran & Afghanistan.

***Astragalus maximowiczii*** TRAUTV., Acta Horti Petrop. 9: 379 (1884).

Ref.: MAASSOUMI 1994.

Khorassan: NE: Fariman towards Torbat-e Jam, km 10, 1150 m, 23.5.1972, Foroughi 6046 [TARI]; – N Sarakhs, 220 m, 23.5.1972, Foroughi 6048 [TARI]; – Sarakhs towards Mashhad, km 10, 300 m, 16.4.1985, Ayatollahi & Rezaei 11982 [FUMH, FAR]; – S Sarakhs, between Dowlatabad and Nowroozabad, 300 m, 14.4.1988, Joharchi & Zangooei 16114 [FUMH, FAR]; – ibid., between Shirtapeh and Sadrabad, 370 m, 15.4.1988, Joharchi & Zangooei 16132 [FUMH]; – ibid., between Sangar and Shirtapeh, 330 m, 27.4.1989, Mozaffarian 67666 [TARI]; – N Sarakhs, Yaztapeh, 255 m, 22.4.1991, Faghihnia & Zangooei 19438 [FUMH]; – Sarakhs towards Mashhad, km 15, 400 m, 23.4.1991, Faghihnia & Zangooei 19458 [FUMH]; – S Sarakhs, Dowlatabad to Pol-e Khatun, km 30, 300 m, 27.4.1994, Faghihnia & Zangooei 23826 [FUMH]; – Sarakhs towards Yaztapeh, 270 m, 12.4.1999, Hojjat & Zangooei 31873 [FUMH].

Distribution in Iran: E.

***Astragalus ophiocarpus*** Benth. ex BOISS., Fl. Orient. 2: 224 (1872).

Ref.: RECHINGER & WENDELBO 1976.

Khorassan: NE: S Sarakhs, between Dowlatabad and Nowroozabad, 300 m, 14.4.1988, Joharchi & Zangooei 16092 [FUMH]; –W: NW Sabzevar, 6 km before Sarough, 1300 m, 21.5.1996, Raafei & Zangooei 27091 [FUMH]; –C: Between Torbat-e Heydarieh and Kashmar, NW Shadmehr, Ghouch-Palang Mt., 1350 m, 6.5.1996, Faghihnia & Zangooei 26671 [FUMH]; –S Torbat-e Heydarieh, Mohammadabad towards Jangal, km 14, 850 m, 4.5.1986, Ayatollahi & Zangooei 14044 [FUMH]; –SW: W Tabas, between Robot-e Khan and Robot-e Kalmard, 1000 m, 16.4.1996, Raafei & Zangooei 26374 [FUMH]; –E Tabas, Deyhook, Arababad towards Khour, km 50, 900 m, 8.4.1993, Faghihnia & Zangooei 22640 [FUMH]; –SE: W Birjand, Khouf towards Ghaleh-Zari, km 10, 1500 m, 26.4.1998, Faghihnia & Zangooei 30045 [FUMH]; – ibid., between Khour and Mazar-e Balanjir, Kalateh-Bagh, 1400 m, 20.4.1999, Faghihnia & Zangooei 32123 [FUMH]; – SW Birjand, between Mazar-e Shah Soleyman Ali and Taghiabad, 1700 m, 27.4.1998, Faghihnia & Zangooei 30107b, 30133 [FUMH]; – NE Birjand, 110 km on the road of Nehbandan, 1400 m,

1.5.1991, Faghihnia & Zangooei 19844 [FUMH]; – NW Nehbandan, Nehbandan towards Chahar Farsakh, km 15, 1400 m, 29.4.1997, Raafeei & Zangooei 28360 [FUMH]; – *ibid.*, Chahar Farsakh dam, 1450 m, 7.4.1998, Hojjat & Zangooei 29826 [FUMH]; – E Nehbandan, Maadan-e Hajat towards Bazarcheh Marzi, km 14, 1000 m, 30.4.1996, Raafeei & Zangooei 26500 [FUMH]; – Between Khansharaf and Maadan, 1300 m, 30.4.1991, Faghihnia & Zangooei 19759 [FUMH].

Distribution in Iran: S, E, C.

*Trigonella grandiflora* BUNGE, Arb. Naturf. Ver. Riga 1, 2: 218 (1847).

Ref.: AKHANI & JOHARCHI 1995.

Khorassan: NE: S Sarakhs, Shir-Tapeh, 250 m, 15.4.1988, Joharchi & Zangooei 16125 [FUMH, FAR].

Distribution in Iran: E.

### Geraniaceae JUSS.

*Erodium litvinovii* WORON., Mat. Fl. Kauk. 3, 7: 92 (1910).

Ref.: FAGHIHНИЯ & NASSEH 2002.

Khorassan: NE: NE Kalat-e Naderi, 1000 m, 20.5.1985, Ayatollahi & Joharchi 13101 [FUMH]; – E: E Torbat-e Jam, Mallu, 850 m, 15.9.1994, Akhani & Zangooei 24501 [FUMH].

Distribution in Iran: E.

### Lamiaceae LINDL.

*Marrubium duabense* MURATA, Acta Phytotax, Geobot. (Kyoto) 22: 23 (1966).

Ref.: GHAREMANINEJAD & EZAZI 2009b.

Khorassan: NW: SW Bojnord, Saluk National Park, Ahangaran Mt., 1950 m, 5.6.2008, Ezazi 5050 [FAR, TARI].

Distribution in Iran: E. – Endemic for Iran, Afghanistan.

*Scutellaria lindbergii* RECH.f., Fl. Iranica, 150: 68–69 (1982).

Ref.: ATTAR & JOHARCHI 2002.

Khorassan: NE: W Mashhad, Kang, 1800 m, 22.5.1990, Faghihnia & Zangooei 18642 [FUMH]; – *ibid.*, 1500–1600 m, 1.6.2005, Joharchi & Zangooei 36502 [FUMH].

Distribution in Iran: E. – Endemic for Iran & Afghanistan.

### Malvaceae JUSS.

*Alcea kopetdaghensis* ILJIN, Fl. URSS. 15: 677 (1949).

Ref.: PAKRAVAN & GHAREMAN 2002.

Khorassan: N: N Ghuchan, Emamgholi towards Bajgiran, Tang-e Dorbadam, 1480 m, Mozaffarian & Maassoumi 79137 [TARI].

Distribution in Iran: E. – Endemic for Iran & Turkmenistan.

### Plumbaginaceae LINDL.

*Limonium sogdianum* (POPOV) IK.-GAL., Tr. Bot. Inst. USSR. Ser 1, 2: 268 (1936).

Ref.: ASSADI 1989.

Khorassan: N: S Neyshabur, S Ataeyyeh, 1550–1600 m, 11.8.2003, Joharchi 35144 [FUMH]; – NE: Kalat-e Naderi, Khalaj, 550 m, 4.8.1982, Zokaei 1482 [FUMH]; – Mashhad towards Sarakhs, near Shurek, 750 m, 24.9.1975, Wendelbo & Foroughi 18861 [TARI]; – *ibid.*, between Abravan and Mozduran, 850 m, Rone-mark & Sardabi 23309 [TARI]; – Sarakhs, SW Mazdavand, 900 m, 4.6.1988, Joharchi & Zangooei 16731

[FUMH]; – *ibid.*, near Aghdarband mine, 600 m, 6.20.1981, Ghorashialhosseini 1285G [FUMH]; – C: N Kashmar, Chalpo, 1750 m, 16.10.1991, Faghiahnia & Zangooei 21176 [FUMH]; – *ibid.*, 24.10.2007, Memariani & Akhani 39322 [FUMH, Hb-Akhani]; – E: E Torbat-e Jam, between Mohammadabad and Mallu, 700 m, 22.10.1991, Faghiahnia & Zangooei 21228 [FUMH]; – *ibid.*, 11.10.1998, Assadi & Amirabadi 66787 [TARI]; – *ibid.*, Do-Abi bifurcation, 675 m, 3.6.2002, Joharchi 34168 [FUMH]; – SE: Ghayen towards Gonabad, km 10, 1450 m, 5.10.1991, Joharchi & Zangooei 21060 [FUMH].

Distribution in Iran: E.

*Popoviolimon turcomanicum* (POPOV ex LINCZ.) LINCZ., Bot. Zhurn. 56 (11): 1633 (1971).

Ref.: MOBAYEN & IRANSHAHR 1984.

Khorassan: NE: Kalat-e Naderi towards Khalaj-e Olia, 550 m, 20.5.1981, Ghorashialhosseini 354G, 375G [FUMH]; – Kalat-e Naderi towards Archangan, km 10, 1100 m, 1.6.1997, Faghiahnia & Zangooei 28978 [FUMH]; – Kalat-e Naderi towards Mashhad, km 15, 1000 m, 30.6.1992, Faghiahnia & Zangooei 22104 [FUMH]; – Kalat-e Naderi towards Khesht, 1200 m, 24.5.1994, Faghiahnia & Zangooei 24020 [FUMH]; – *ibid.*, 21.5.1986, Joharchi & Zangooei 14541 [FUMH]; – Kalat-e Naderi, Northeastern hills, 1000 m, 20.5.1985, Ayatollahi & Joharchi 13058 [FUMH]; – NE Mashhad, Chahchaheh towards Mozduran, km 5, 860 m, Ghahreman & al. 27312 [TUH]; – Sarakhs, Mazdavad (=Mozduran), SW hills, 900 m, 4.6.1988, Joharchi & Zangooei 16726 [FUMH]; Mazdavad towards Sarakhs, km 14, 900 m, 21.5.1985, Ayatollahi & Joharchi 13211 [FUMH]; – *ibid.*, between Mazdavad and Shorlogh, 600 m, 8.6.1991, Joharchi & Zangooei 20620 [FUMH].

Distribution in Iran: E.

### Polygonaceae JUSS.

*Calligonum paletzkianum* LITW., Trav. Mus. Bot. Ac. Sc. 11: 57 (1913).

Ref.: ASSADI 1989.

Khorassan: C: N Gonabad, Lut-e Emrani, 920 m, 7.5.1976, Zargari 5289, 5290 [FUMH]; – SE: E Ghayen, between Mohammadabad and Ahangaran, 1000 m, 5.5.2002, Joharchi 34106 [FUMH]; – c. 150 km east of Ghayen, on the road of Yazdan, east of the village Chah-Zard, 700 m, 19.10.1988, Assadi & Amirabadi 66658 [TARI].

Distribution in Iran: E. – Endemic for Iran & Turkmenistan.

*Persicaria glabra* (WILLD.) M.GÓMEZ, Ann. Inst. Segundo Enseñ. Habano 2: 278 (1896).

Ref.: AGHABEIGI 2001.

Khorassan: NE: Mashhad, Torogh area, 950 m, 11.6.2000, Termeh & Aghabeigi *s.n.* [IRAN].

Distribution in Iran: N, S, E.

### Ranunculaceae JUSS.

*Anemone tschernjaewii* REGEL, Acta Horti Petrop. 8: 690 (1884).

Ref.: JOHARCHI & AKHANI 2006.

Khorassan: NE: S Mashhad, Najafi Mt., 1200 m, 21.4.1985, Joharchi & Safavi 12117 [FUMH]; – Mashhad towards Kalat-e Naderi, old road, Sandugh-Shekan pass. 1700–1750 m, 22.4.1989, Joharchi & Zangooei 17053 [FUMH]; – *ibid.*, the new road, km 70, 1600 m, 10.4.1995, Faghiahnia & Zangooei 24712 [FUMH]; – Sarakhs, between Gonbadli and Shurijeh, 500 m, 8.4.1987, Ayatollahi & Zangooei 15076 [FUMH]; – SW Sarakhs, Agh-darband, 1500 m, 14.4.1999, Hojjat & Zangooei 31943 [FUMH]; – Sarakhs, Bazangan, 1500 m, 12.4.1993, Faghiahnia & Zangooei 22653 [FUMH]; – Bazangan cave, 1350 m, 13.4.1999, Hojjat & Zangooei 31903 [FUMH]; – NW Salehabad, Zalu Mt., 1383 m, 7.4.2004, Zangooei 35260 [FUMH].

Distribution in Iran: E.

**Rosaceae** JUSS.

***Amygdalus spinosissima*** BUNGE, *Alexandri Lehmann, Rel. Bot.* 1: 106 (1851)  
**subsp. *spinosissima*.**

Ref.: KHATAMSAZ 1988.

Khorassan: NW: W Bojnord, Almehr Mts, 1700 m, 9.7.1997, Raafeei & Zangooei 29557 [FUMH]; NW Bojnord, between Ghorry-Meydan and Dashtak, 650–700 m, 28.4.2001, Joharchi & Zangooei 33370 [FUMH]; – S Bojnord, between Hessar and Firuzeh, 1800 m, 4.7.1993, Faghihnia & Zangooei 23517 [FUMH]; – N: Darrehgaz, Tandoureh National Park, around Babanestan, 1000 m, 10.5.1999, Hojjat & Zangooei 32343 [FUMH]; – *ibid.*, Chehelmir, 1200 m, Assadi & Maassoumi 50797 [TARI]; – NE: W Mashhad, Kalateh-Zabetian, 1550 m, 25.6.1985, Akbarzadeh & Kharaghani 13230 [FUMH]; – Fariman towards Torbat-e Jam, Rekhneh-e Gorg, 1250 m, 8.5.1996, Faghihnia & Zangooei 26728 [FUMH]; – W: SW Sabzevar, Shir-Ahmad gard station, 1000 m, 16.5.1999, Faghihnia & Zangooei 32421 [FUMH]; – C: NW Torbat-e Heydarieh, near the Bezgh village, 1900 m, Assadi & Mozaffarian 35792 [TARI]; – SE: Ghayen, Zirkuh, Dahaneh-e Ahangaran, 1435 m, 19.5.2005, Joharchi & Zangooei 36278 [FUMH].

Distribution in Iran: E.

***Crataegus azarolus*** L., *Sp. Pl.* 477 (1753) **var. *azarolus*.**

Ref.: DONMEZ 2009.

Khorassan: NW: Bojnord, Sarivan pass., Donmez, Zarre & Arjmandi 14069 [HUB, FUMH].

Distribution in Iran: W, E.

***Crataegus pseudoheterophylla*** POJARK., *Fl. URSS.* 9: 506 (1939) **subsp. *turkestanica*** (POJARK) K.I.CHR., *Syst. Bot. Monogr.* 35: 98–99 (1992).

Ref.: KHATAMSAZ 1988.

Khorassan: NW: SW Bojnord, Rein, Alkhass valley, 1830–1900 m, 17.9.2006, Memariani & Zangooei 38502 [FUMH]; – W Bojnord, Badranlu pass., 1450 m, 27.7.1983, Joharchi & Zangooei 10623 [FUMH]; – NE: Near Kalat-e Naderi, 1100 m, Assadi & Abouhamzeh 43396 [TARI].

Distribution in Iran: E.

***Potentilla soongarica*** BUNGE in LEDEB., *Fl. Alt.* 2: 244 (1830).

Ref.: ABBASSI & al. 2006.

Khorassan: NE: Kalat-e Naderi, Layen Kohneh, 1650 m, 6.5.2004, Paryab & Rajaei 10637 [TARI].

Distribution in Iran: E.

***Pyrus pashia*** HAMILTON ex D.DON, *Prodr. Fl. Nepal* 236 (1825).

Ref.: ZAMANI & al. 2009a.

Khorassan: NW: W Bojnord, ca. 3 km after Darkash to Haver, 20.4.2007, Zamani & al. 38279 [TUH]; – *ibid.*, 1.8.2007, Attar & Zamani 37382 [TUH].

Distribution in Iran: E.

***Rosa webbiana*** WALL. ex ROYLE, *Ill. Bot. Himal. Mount.* 208 (1839).

Ref.: KHATAMSAZ 1988.

Khorassan: NE: c. 25 km SW Darrehgaz, Tandoureh National Park, Chehelmir, 1200 m, Assadi & Maassoumi 50764 [TARI]; – SE: Ghayen, Zirkuh, Mohammadabad, 1200 m, 21.5.1998, Raafeei & Zangooei 30860 [FUMH]; – *ibid.*, Dahaneh-e Ahangaran 1339 m, 19.5.2005, Joharchi & Zangooei 36263 [FUMH].

Distribution in Iran: E.

**Rubiaceae** JUSS.*Gaillonia dubia* AITCH. & HEMSL., Trans. Linn. Soc. Ser. 2, 3: 73 (1888).

Ref.: JOHARCHI &amp; AKHANI 2006.

Khorassan: SE: Ghayen, Zirkuh, W Darej-e Olia, 1233 m, 19.5.2005, Joharchi &amp; Zangooei 36260 [FUMH]; – ibid., Hemmatabad, 480 m, 29.5.1995, Raafeei &amp; Zangooei 25651 [FUMH]; – ibid., Dahaneh-e Ahangaran, 18.6.2002, Faghihnia &amp; Zangooei 34252 [FUMH]; – NE Birjand, Zeidan, 1930 m, 20.6.2005, Joharchi 36742 [FUMH].

Distribution in Iran: E. – Iran &amp; Afghanistan.

**Rutaceae** JUSS.*Haplophyllum erythraeum* BOISS., Diagn. 2, 1: 114 (1853).

Ref.: JOHARCHI &amp; ASSADI 2007.

Khorassan: C: Torbat-e Heydarieh towards Khaf, km 10, 1350 m, 5.5.1991, Joharchi &amp; Zangooei 19969 [FUMH]; – E: Torbat-e Jam, Cheshmeh-Gol, Moussavi &amp; Paryab 8185 [TARI]; – Torbat-e Jam towards Bakharz, km 10, 1070 m, Assadi &amp; Amirabadi 84601 [TARI]; – between Torbat-e Jam and Bakharz, 1050 m, Paryab &amp; Moussavi 1902 [TARI]; – Taibad towards Dogharoun, 800 m, Mozaffarian 67588 [TARI]; Khaf, Band-e Salami, 1250 m, 29.4.1989, Joharchi &amp; Zangooei 17154 [FUMH].

Distribution in Iran: E. – Iran, Afghanistan &amp; Pakistan.

*Haplophyllum obtusifolium* (LEDEB.) LEDEB., Fl. Ross. 1:40 (1842).

Ref.: AKHANI &amp; JOHARCHI, 1995.

Khorassan: N: S Darrehgaz, Gherkh-Ghez hills, 450–500 m, 12.6.1988, Joharchi &amp; Zangooei 16876 [FUMH]; – ibid., 7.7.1985, Ayatollahi &amp; Zangooei 13325 [FUMH]; – SE Darrehgaz, between Hessar and Hatam-Ghaleh, 300 m, 16.5.1993, Joharchi &amp; Zangooei 23106 [FUMH].

Distribution in Iran: N, E.

**Salicaceae** MIRBEL*Salix denticulata* ANDERSSON in KUNG, Svenska Vet-Akad. Handl.: 481 (1851).

Ref.: MAASSOUMI &amp; al. 2008.

Khorassan: NW: Bojnord, Badranlu towards Razo-Jargalan, 1200 m, Maassoumi &amp; al. 83380 [TARI]; –N: Neyshabur towards Kashmar (Chalpo), km 70, 1380 m, Maassoumi &amp; al. 83299 [TARI].

Distribution in Iran: C, E.

*Salix fedtschenkoi* GOERZ, Salic. As. 1: 21, 25 (1931).

Ref.: MAASSOUMI &amp; al. 2008.

Khorassan: N: NW, Neyshabur, Dahaneh-e Heidari, protected area, 1400 m, Maassoumi & al. 83292 [TARI]; – N Ghuchan, 2 km after Bajgiran bifurcation, Hamzee *s.n.* [TARI].

Distribution in Iran: E.

**Scrophulariaceae** JUSS.*Linaria bamianica* PATZAK in KOEIE & RECH.f., Kong. Danske vid. Selsk. Skr. 10 (3): 92, tab. 33 (1958).

Ref.: HAMDI &amp; al. 2006b.

Khorassan: E: N Torbat-e Jam, 10 km to Banitak, 1050 m, Joharchi 30649 [FUMH].

Distribution in Iran: E. – Endemic for Iran &amp; Afghanistan.

*Linaria leptoceras* KUPRIAN., Acta Inst. Bot. Sci. USSR, Ser. 1, Fl. Sist. Vyssh. Rast. 2: 299, tab. 2 (1963).

Ref.: HAMDI & al. 2006b.

Khorassan: N: N Shirvan, Kooseh, Alkhass Mt., 1900–2100 m, Termeh & al. *s.n.* [IRAN]; – *ibid.*, Oughaz, Ghorry-Zap Mt., 1900 m, 14.7.1997, Hojjat & Zangooei 29661 [FUMH]; – E Ghuchan, Goganlu Mt., 1650 m, 20.6.1996, Faghihnia & Zangooei 27499 [FUMH]; – N Ghuchan, E Bajgiran, Aselmeh, 1600 m, 15.7.1992, Faghihnia & Zangooei 22241 [FUMH].

Distribution in Iran: E.

*Scrophularia nikitinii* GORSCHK., Not. Syst. Leningrad 16: 333 (1954).

Ref.: JOHARCHI & AKHANI 2006.

Khorassan: NE: N Salehabad, Kuh-e Zalu, 1250–1300 m, 2.6.2003, Joharchi & Zangooei 34609 [FUMH].

Distribution in Iran: E. – Endemic for Iran & Afghanistan.

*Scrophularia rosulata* STIEFELH., Bot. Jahrb. 44: 475 (1910).

Ref.: ATTAR & al. 2006.

Khorassan: NW: N Bojnord, between Anabay and Goynik, 1150 m, 29.4.2001, Joharchi & Zangooei 33456 [FUMH]; – *ibid.*, Emam-Darreh, 1000 m, 17.4.2001, Joharchi & Zangooei 33278 [FUMH]; – *ibid.*, Gifan, 1300–1400 m, 16.6.1991, Joharchi & Zangooei 20778 [FUMH]; – *ibid.*, Gharalor, 1000 m, 24.5.1995, Raafei & Zangooei 25562 [FUMH]; – *ibid.*, between Surk and Ghezelghan, 1000 m, 1.7.1986, Joharchi & Zangooei 14669 [FUMH]; – N: N Ghuchan, Bajgiran. Aselmeh, 1600 m, 15.7.1992, Faghihnia & Zangooei 22244 [FUMH]; – NE: N Mashhad, Kalat-e Naderi towards Archangan, km 10, 1100 m, 1.6.1997, Faghihnia & Zangooei 28949 [FUMH].

Distribution in Iran: E.

*Veronica kopetdaghensis* B.FEDTSCH. ex BORISS., Not. Syst. Leningrad 17: 348 (1955).

Ref.: SAEIDI-MEHRVARZ & ASSADI 2003.

Khorassan: N: N Shirvan, Golul-Sarani protected region, 2600 m, 16.7.2000, Saeidi & Assadi 24232 [TUH]; – NE: NW Mashhad, Hezar-Masjed summit, 3000 m, 17.6.1997, Hojjat & Zangooei 29253 [FUMH].

Distribution in Iran: E. – Endemic for Iran, Turkmenistan & Afghanistan.

### Taxa new to science

The following 47 taxa from 27 genera and 16 families have been described as new since publication of the Flora Iranica treatments (for *Linaria* the treatment is not yet published). They are listed here to give an overview of subsequent changes to the flora. For all taxa type specimen/s and the holding herbarium are noted. 45 type localities are from Khorassan, these 45 taxa are endemic to the province. For two *Linaria* species the type specimens from neighbouring provinces (Golestan and Yazd provinces) are given as additional information.

### Angiosperms

### Monocotyledons

#### Alliaceae J.AGARDH

*Allium dolichovaginatum* R.M.FRITSCH, Rostaniha 9, suppl. 2: 66–67 (2008).

Ref.: FRITSCH & ABBASI 2008.



Khorassan: N: Chenaran, Akhlanda, near way Abshar (= waterfall), 1530 m, 22.4.2004, Fritsch, Keusgen & AminiRad 1021 [Holotype GAT].

Distribution in Iran: E. – Endemic for Iran.

*Allium joharchii* F.O.KHASS. & MEMARIANI, Rostaniha 7, suppl. 2: 63–69 (2006).

Ref.: KHASSANOV & MEMARIANI 2006.

Khorassan: NE: SW Sarakhs, southern hills of Rahmatabad village, 690–700 m, 2.6.2003, Joharchi & Zangoeei 34569 [Holotype FUMH]; – *ibid.*, 689 m, 15.5.2006, Khassanov, Joharchi & Zangoeei 37486 [FUMH]; – SW Sarakhs, between Mazdavand and Shurlogh, 600 m, 8.6.1991, Joharchi & Zangoeei 20615 [FUMH].

Distribution in Iran: E. – Endemic for Iran.

*Allium kuhsorkhense* R.M.FRITSCH & JOHARCHI, Rostaniha 7, suppl. 2: 265–269 (2006).

Ref.: FRITSCH & al. 2006.

Khorassan: NW: SW Bojnord, Rein, Bowly, 2350–2400 m, 28.5.2006, Memariani & Zangoeei 37801 [FUMH]; – *ibid.*, between Hessar and Shughan, 2500 m, 1.6.2008, Joharchi & Zangoeei 40624 [FUMH]; – SE Esfarayen, Safiabad, Ghanbarabaghi, 1700 m, 14.5.1991, Faghiniha & Zangoeei 20156 [FUMH]; – N: S Chenaran, Freizi, Darma valley, 1756 m, 1.5.2005, Emadzadeh & Memariani 36026 [FUMH]; – *ibid.*, 1918 m, 15.5.2005, Emadzadeh & Memariani 36150 [FUMH]; – Golmakan, between Talkhabad and Cheshmeh-Sabaz, 1800 m, 19.5.1990, Joharchi & Faghiniha 18546 [FUMH]; – Golmakan, Esjil, 1500 m, 4.5.1985, Joharchi 12547 [FUMH]; – Between Ab-Ghad and Freizi, Do-Abi, 1475 m, 1.5.2005, Emadzadeh & Memariani 35978 [FUMH]; – E Neyshabour, Darrud, 1800 m, 13.5.1983, Rezaei 10219 [FUMH]; – *ibid.*, Kharw-e Olia, 1650–1750 m, 19.5.1996, Raafeei & Zangoeei 26997 [FUMH]; – N Neyshabour, Binaloud Mt., 2500 m, 11.7.1995 Raafeei & Zangoeei 26082 [FUMH]; – NE: NW Mashhad, Talghor, 1550 m, 18.5.1985, Ayatollahi & Zangoeei 13033 [FUMH]; – W Mashhad, Forsgeh Mt., 2100 m, 3.6.1990, Faghiniha & Zangoeei 18742 [FUMH]; – *ibid.*, Maj towards Binaloud summit, km 12, 2250 m, 21.6.1992, Joharchi & Zangoeei 22007 [FUMH]; – *ibid.*, Kang Mt., 1800 m, 22.5.1990, Faghiniha & Zangoeei 18627 [FUMH]; – *ibid.*, 1500 m, 22.6.2003, Zangoeei 34793 [FUMH]; – S Mashhad, Moghan Mt., 2500 m, 3.6.2001, Joharchi 33672 [FUMH]; – *ibid.*, Moghan cave Mt., 1900 m, 21.5.1991, Faghiniha & Zangoeei 20391 [FUMH]; – Mashhad towards Torbat-e Heydarieh, km 64, Bazeh-Hoor Mt., 1650 m, 25.5.1997, Hojjat & Zangoeei 28722 [FUMH]; – *ibid.*, 19.6.2005, Nasseh & Zangoeei 36738 [FUMH]; – Fariman, Ghalandarabad, Boz-e Khoshk Mt., 1700 m, 25.5.1989 Ayatollahi & Zangoeei 17455 [FUMH]; – C: N Kashmar, SW Rivash (KuhSorkh), Band-e Ghara, 1800 m, 8.5.1995, Faghiniha & Zangoeei 25356 [Holotype: FUMH]; – *ibid.*, Between Targh and Kalateh-Teimur, 1800 m, 4.5.1994, Faghiniha & Zangoeei 23861 [FUMH]; – S Torbat-e Heydarieh, Dasht-e Kheirabad, 900 m, 4.5.1991, Joharchi & Zangoeei 19919 [FUMH]; – E: N Torbat-e Jam, between Teimanak-e Bala and Dosangheh, 1200 m, 11.5.1994, Faghiniha & Zangoeei 23873 [FUMH]; – SW Torbat-e Jam, Bezd Mt., 1600 m, 9.5.1996, Faghiniha & Zangoeei 26770 [FUMH]; – *ibid.*, 6.5.2007, Neshati & Zangoeei 38764 [FUMH]; – NW Taibad, Kordian, 1500–1600 m, 1.5.1985, Ayatollahi 12493 [FUMH].

Distribution in Iran: E. – Endemic for Iran.

*Allium oriento-iranicum* NESHATI, ZARRE & R.M.FRITSCH, Ann. Bot. Fennici 46: 599 (2009).

Ref.: NESHATI & al. 2009.

Khorassan: E: Torbat-e Jam, Bezd Mt., Gravely east slope, 1780–1820 m, 6.5.2007, NESHATI & ZANGOEEI 35912 [Holotype: TUH; isotypes: FUMH, TARI]; – SW Torbat-e Jam, Miansara Mt., 1300 m, 23.4.2002 Joharchi 34039 [FUMH]; – *ibid.*, Bezd Mt., 1300 m, 6.5.2007, Neshati & Zangoeei 38758, 38762 [FUMH]; – NW Torbat-e Jam, Jangal-e Bardu, 1500–1600 m, 24.6.2003, Joharchi 34822 [FUMH]; – NW Taibad, Kordian, 1500–1600 m, 1.5.1985, Ayatollahi 12464 [FUMH]; – C: N Kashmar, Rivash, between Targh and Kalateh-Teimur, 1800 m, 4.5.1994, Faghiniha & Zangoeei 23853 [FUMH]; – SE: SE Birjand, Borzaj, 2200 m, 30.4.1998, Faghiniha & Zangoeei 30262 [FUMH]; – E Birjand between Akbarabad and Hassanabad, 2300 m, 28.4.1998, Faghiniha & Zangoeei 30166 [FUMH].

Distribution in Iran: E. – Endemic for Iran.

### **Asparagaceae**

*Asparagus khorasanensis* HAMDI & ASSADI, Feddes Repert. 120 (7–8): 421 (2009).

Ref.: HAMDI & al. 2009.

Khorassan: NE: Mashhad towards Torbat-e Heydarieh, Robat-Sefid, 1750–1900 m, 15.6.1981, Assadi & Mozaffarian 35895 [Holotype TARI]; – C: Kashmar towards Neyshabour, 5 km to Chalpo, 1870–1900 m, 22.5.2007, Memariani & Zangoeei 38939 [FUMH].

Distribution in Iran: E. – Endemic for Iran.

### **Poaceae BARNHART**

*Aeluropus peterganicus* KHODASH., Iran. Journ. Bot. 14 (1): 13–15 (2008).

Ref.: KHODASHENAS 2008.

Khorassan: N: SW Kashmar, between Kaheh and Saadoddin, 750 m, 15.10.1991, Faghihnia & Zangoeei 21156 [FUMH]; – SE: E Ghayen, Daghe Petergan, 550 m, Khodashenas & Hoseini 6293 [Holotype TARI]; – 150 km E of Ghayen on the road to Yazdan, Kavir-e Petergan, 600 m, Assadi & Amirabadi 66677 [TARI]; – S Nehbandan, Khunik pass., 1200 m, 31.7.2001, Faghihnia 33933 [FUMH].

Distribution in Iran: E. – Endemic for Iran.

### **Typhaceae JUSS.**

*Typha kalatensis* ASSADI & HAMDI, Fl. Iran 42: 24 (2003).

Ref.: HAMDI & ASSADI 2003.

Khorassan: NW: Bojnord towards Shirvan, km 15, Baba-Aman, Hamdi 80885 [TARI]; – NE: 25 km to Kalat, Hamdi 80897a [Holotype TARI]; – Kalat-e Naderi, Archangan, Hamdi 80897b [Paratype TARI].

Distribution in Iran: E. – Endemic for Iran.

## **Dicotyledons**

### **Apiaceae LINDL.**

*Pimpinella khayyamii* MOZAFF., Bot. Zhurn. 88, 4: 122 (2003).

Ref.: MOZAFFARIAN 2003.

Khorassan: NW: Esfarayen, Shahjahan Mt. region, deep valley with rocky wall east of Danj village, 1400–1800 m, Mozaffarian 98672 [Holotype: TARI]; – Esfarayen, Shahjahan Mt. region, rocky soil Mt. Tourkan, from deep gorge close to Noushirvan village, 1400–2500 m, Mozaffarian 48633 [TARI]; – N: Mashhad towards Neyshabur, Dizbad, 1800 m, Mozaffarian 48910 [TARI]; – E Neyshabur, Baghshan, Garineh Mt., 1900 m, 3.7.1996, Faghihnia & Zangoeei 27772 [FUMH].

Distribution in Iran: E. – Endemic for Iran.

### **Asteraceae DUMORT.**

*Cousinia amicorum* TSCHERN., JOHARCHI & F.GHAHREM., Bot. Zhurn. 90 (3): 411–412 (2005).

Ref.: TSCHERNEVA & al. 2005.

Khorassan: NW: SW Bojnord, Saluki Mt., 2400 m, 11.7.1994, Zangoeei 24471 [FUMH]; – N: NW Neyshabur, Heydari Mt., 2000–2200 m, 8.7.2003, Joharchi 34915 [Holotype LE, isotype FUMH].

Distribution in Iran: E. – Endemic for Iran.

***Cousinia kadereitii*** MEHREGAN & ASSADI, Willdenowia, 39: 268 (2009).

Ref.: MEHREGAN &amp; ASSADI 2009.

Khorassan: C: c. 30 km S Fariman, between Chahar-Takab and Zharf, 2300 m, 4.7.2009, Assadi & Mehregan 91946 [Holotype TARI, isotypes B, IRAN]; – *ibid.*, between Kalleh-Menar and Zharf, 2200 m, 29.8.2000, Joharchi 33167 [FUMH]; – *ibid.*, Zharf Mt., 2200 m, 7.8.1985, Joharchi & Zangooei 13475 [FUMH].

Distribution in Iran: E. – Endemic for Iran.

***Cousinia longibracteata*** ATTAR & MIRTADZ., Iran. Journ. Bot. 15 (2): 149 (2009).

Ref.: ATTAR &amp; MIRTADZADINI 2009.

Khorassan: SE: Between Ghayen and Gonabad, 5.5.1999, Ghahreman & Attar 21764 [Holotype TUH]; – E Ghayen, Hajiabad towards Ahangaran, km 12, 29.5.2007, Eskandari & Torabi 11468 [IRAN]; – *ibid.*, km 37–43, 1300 m, 20.5.1998, Raafeei 30788 [FUMH]; – E Ghayen, Mohammadabad, 1050 m, 5.5.2000, Joharchi 34105 [FUMH]; – *ibid.*, Varazg towards Varazgh, km 4, 1600 m, 20.5.1998, Raafeei 30820 [FUMH].

Distribution in Iran: E. – Endemic for Iran.

***Cousinia pseudocandolleana*** ASSADI, Iran. Journ. Bot. 15 (1): 42 (2009).

Ref.: ASSADI 2009.

Khorassan: NE: 41 km N Mashhad on the road to Kalat-e Naderi, 1700 m, 17.7.1976, Assadi &amp; Maassoumi 21360 [Holotype TARI]; – Mashhad towards Kalat-e Naderi, the old road, Sandoogh-Shekan pass., 1750 m, 24.7.2007, Zangooei &amp; Souzani 39173 [FUMH].

Distribution in Iran: E. – Endemic for Iran.

***Echinops leiopolyceroides*** MOZAFF., Iran. Journ. Bot. 11 (2): 221 (2006).

Ref.: MOZAFFARIAN 2006a.

Khorassan: NW: Robat-e Gharabil to Bojnord, km 5, 1400 m, Mozaffarian & Maassoumi 79114 [TARI]; – *ibid.*, Mirzabailu to Bojnord, km 21, 1400 m, Assadi & Azadi 76097 [TARI]; – N: Ghuchan to Darrehgaz km 15, 1550 m, Mozaffarian 79157 [TARI]; – Shirvan, between Ziarat and Lojalli, 1200 m, Mozaffarian & Maassoumi 79123 [TARI]; – Ghuchan, between Ghara-Jeghah and Bardar, 1640 m, Mozaffarian & Maassoumi 79132 [TARI]; – Chenaran, Golmakan, Kalateh-Asheghan, 1500 m, 15.7.1985, Rashed & Ayatollahi 13375 [FUMH]; – NE: Mashhad to Kalat-e Naderi, km 40, Gujki, 1720 m, Mozaffarian 79724 [TARI]; – Fariman to Mashhad, km 15, 1460 m, Mozaffarian 79732 [TARI]; – Mashhad to Torbat-e Heydarieh, km 25, 1140 m, Mozaffarian 80437 [TARI]; – C: Kashmar to Neyshabur, km 22, 1900 m, Mozaffarian 79754 [TARI]; – Torbat-e Heydarieh, km 35, after Robat-Sang 1600 m, Mozaffarian 80442 [TARI]; – Torbat-e Heydarieh to Torbat-e Jam, km 70, between Jafarabad and Sarguloun, 1580 m, Mozaffarian 79737 [TARI]; – N Torbat-e Heydarieh, between Robat-Sang and Kadkan, 1750 m, 3.8.1999, Mozaffarian 79742 [Holotype TARI]; – E: Bakharz to Torbat-e Heydarieh, Chartagh, 1450 m, Mozaffarian 79734 [TARI]; – Torbat-e Jam, between Mousaabad and Kariz-Darreh, 1388 m, 1.7.2003, Joharchi 34970a [FUMH].

Distribution in Iran: E. – Endemic for Iran.

***Echinops sabzevarensis*** MOZAFF., Iran. Journ. Bot. 11 (2): 223–225 (2006).

Ref.: MOZAFFARIAN 2006a.

Khorassan: W: Sabzevar to Esfarayen, km 5, 1250 m, 4.8.1999, Mozaffarian 79760 [Holotype TARI]; – *ibid.*, km 9, 1150 m, Mozaffarian 80426 [TARI]; – SW Sabzevar, Parvand, 900 m, 21.5.2003, Joharchi & Zangooei 34544 [FUMH]; – N Sabzevar, between Ghezlar and Afchang, 1000 m, 12.6.2007, Joharchi & Zangooei 39118 [FUMH].

Distribution in Iran: C, E. – Endemic for Iran.

***Helichrysum persicum*** F.GHAHREM. & NOORI, Ann. Bot. Fennici 42: 73 (2005).

Ref.: GHahremaninejad &amp; NOORI 2005.

Khorassan: C: 30 km N Torbat-e Heydarieh, 1900 m, 15.7.1976, Assadi & Maassoumi 21312 [Holotype TARI].

Distribution in Iran: E. – Endemic for Iran.

*Scorzonera joharchii* SAFAVI, Nord. J. Bot. 24: 261–263 (2006).

Ref.: SAFAVI 2006.

Khorassan: SE: E Birjand, between Tabas-e Masina and Gazik, 1350 m, 14.5.1989, Joharchi & Zangooei 17266 [Holotype: TARI; isotype: FUMH].

Distribution in Iran: E. – Endemic for Iran.

*Senecio joharchii* F.GHAHREM., EZAZI, RAHCH. & ATTAR, Feddes Repert. 121 (1–2): 27–31 (2010).

Ref.: GHAHREMANINEJAD & al. 2010.

Khorassan: NW: NW Esfarayen. Saluk National Park, Ahangaran Mt., 1861 m., 16.4.2008, Ezazi & Rahchamani 4692 [Holotype FAR; isotype TUH].

Distribution in Iran: E. – Endemic for Iran.

*Tanacetum joharchii* SONBOLI & KAZ.OSALOO, Nordic. Journ. Bot. 28 (1): 74 (2009).

Ref.: SONBOLI & al. 2009.

Khorassan: N: S Darrehgaz, Gorneh towards Rishkhar, km 9, Aleza region, 2050 m, 7.6.1997, Raafeei & Zangooei 29141 [FUMH]; – Chenaran, between Boghmech and Hezar-Masjed, 2700 m, 22.7.2003, Zangooei 35029 [FUMH]; – ibid., Boghmech towards Hezar-Masjed summit, km 37, 2400 m, 16.6.1997, Hojjat & Zangooei 29242 [FUMH]; – NE: 95 km N Mashhad, NW Mareshk, Hezar-Masjed Mt., 2500 m, 25.6.1996, Faghihnia & Zangooei 27573 [FUMH]; – S Mashhad, Moghan towards Ghar-e Moghan, 2000 m, 25.5.2009, Joharchi & Zangooei 42666 [Holotype MPH (with no. 1239), isotype FUMH]; – ibid., Moghan Mt., 1900 m, 21.5.1991, Faghihnia & Zangooei 20370 [FUMH]; – S Mashhad, Pivajen Mt., 2200–2400 m, 28.7.1986, Termeh, Moussavi & Tehrani 12199 [IRAN].

Distribution in Iran: E. – Endemic for Iran.

## **Boraginaceae** JUSS.

*Heliotropium disciforme* AKHANI, Linzer Biol. Beitr. 23 (2): 569 (1991).

Ref.: AKHANI 1991.

Khorassan: NE: c. 100 km NE of Mashhad, 5 km after Sanganeh towards Mashhad, 650 m, 17.6.1990, Akhani 6480 [Holotype MMTT, isotype W]; – 19 km SE of Kalat-e Naderi, Ghalan-Ghoush, 950 m, 25.7.1987, Joharchi & Zangooei 15618 [FUMH]; – Mashhad, Chahchaheh towards Mashhad, km 24, 700 m, 17.9.1994, Akhani & Zangooei 24544 [FUMH].

Distribution in Iran: E. – Endemic for Iran.

*Onosma khorassanica* ATTAR & JOHARCHI, Rostaniha 7, suppl. 2: 111–114 (2006).

Ref.: ATTAR & JOHARCHI 2006.

Khorassan, N: W Darrehgaz, Zinadanlu, 1000 m, 6.5.1988, Joharchi & Zangooei 16398 [Holotype FUMH, isotype TUH].

Distribution in Iran: E. – Endemic for Iran.

## **Chenopodiaceae** VENT

*Kaviria zehzadii* (AKHANI) AKHANI, Int. J. Plant Sci., 168 (6): 949 (2007).

Ref.: AKHANI 1996b, AKHANI & al. 2007.

Khorassan: E: E Torbat-e Jam, between Mohammadabad and Malu, 700 m, 22.10.1991, Faghihnia &

Zangooei 21222 [Holotype Hb-Akhani, Isotype, FUMH]; –*ibid.*, c. 37 km E of Torbat-e Jam, 9 km after Mohammadabad towards Malu, 750–760 m, 15.8.1994, Akhani & Zangooei 10029 [Hb-Akhani]; – *ibid.*, c. 38 km E of Torbat-e Jam, 11 km after Mohammadabad towards Malu, 720–740 m, 15.8.1994, Akhani & Zangooei 10035 [Hb-Akhani].

Distribution in Iran: E. – Endemic for Iran.

### **Fabaceae** LINDL.

*Astragalus attarae* PODLECH, Ann. Naturhist. Mus. Wien, B, 105: 568 (2004).

Ref.: PODLECH 2004.

Khorassan: N: 10 km from Mashhad toward Kalat-e Naderi, 1500 m., 9.5.2001, Ghahreman & al. 27520 [Holotype THU, isotype MSB]; – C: NW Torbat-e Heidariyeh (= NE Kashmar, Bezgh Mt, 1600 m., 9.5.2001, Ghahreman & al. 27429 [TUH]; – C: NW Torbat-e Heidariyeh (= NE Kashmar, Bezgh Mt., 1600 m., 9.5.2001, Ghahreman & al. 27429 [TUH].

Distribution in Iran: E. – Endemic for Iran.

*Astragalus ghouchanensis* SOUZANI, ZARRE & MAASSOUMI, Ann. Bot. Fennici, 46: 588 (2009).

Ref.: SOUZANI & al. 2009.

Khorassan: N: Ghouchan to Neyshabour, before Chakane, Borselan, 3 km after Borselan to Golmokharan, margins of farms, hills of the left road, 1664 m., 24.6.2007, Souzani 35929 [Holotype TUH, isotypes FUMH, TARI].

Distribution in Iran: E. – Endemic for Iran.

*Astragalus neo-assadianus* RANJBAR, Bot. J. Linn. Soc. 143: 197 (2003).

Ref.: RANJBAR & KARAMIAN 2003.

Khorassan: NW: between Bojnord and Esfarayen, 1500 m, 23.5.1983, Joharchi & Mahvan 10280 [Holotype FUMH].

Distribution in Iran: E. – Endemic for Iran.

*Astragalus razensis* NASSEH & JOHARCHI, Iran. J. Bot. 15(2): 154–156 (2009).

Ref.: NASSEH & JOHARCHI 2009.

Khorassan: NW: NW Bojnord, SW Raz, 10 km on the road towards Pirboz, 1500 m, 21.5.2008, Memariani & Zangooei 40308 [Holotype FUMH, isotype TARI].

Distribution in Iran: E. – Endemic for Iran.

*Astragalus zangoonianus* MAASSOUMI, SAFAVI & NASSEH, Iran. J. Bot. 9 (1): 64 (2001).

Ref.: MAASSOUMI & al. 2001.

Khorassan: C: Kashmar towards Neyshabur, km 55, 1850 m, 11.5.1991, Joharchi & Zangooei 20083 [Holotype TARI, isotype FUMH]; – Torbat-e Hydariyeh, Khorgh, 1750–2000 m, 2.4.1994, Paryab & Moussavi 3050 [TARI].

Distribution in Iran: E. – Endemic for Iran.

*Hedysarum bojnordense* RANJBAR & JOHARCHI, Nord. J. Bot. 25 (1–2): 12 (2008)

Ref.: RANJBAR & al. 2008.

Khorassan: NW: NW Bojnord, between Gharaghanlu and Yekeh-Seoud-e Paevin, 17.7.2003. Joharchi 34784 [Holotype FUMH, isotype BASU]; –*ibid.*, Ghorry-Darrh, 900 m, 16.6.2003, Joharchi 34776 [FUMH]; – W Bojnord, Robat-e Gharabil towards Jajarm, km 20, 1600 m, 29.5.1998, Hojjat & Zangooei 31077 [FUMH].

Distribution in Iran: E. – Endemic for Iran.

***Hedysarum glabrifoliolatum*** RANJBAR, Nord. J. Bot. 26 (1–2):17 (2008).

Ref.: RANJBAR & al. 2008.

Khorassan: N: Ghuchan, Farouj towards Oghaz-e Kohneh, Ghale-Safa Mt., 1750 m, 23.6.1997, Faghilnia & Zangooei 29350 [Holotype FUMH, isotype BASU].

Distribution in Iran: E. – Endemic for Iran.

***Hedysarum johartchii*** RANJBAR, Ann. Bot. Fennici, 43: 153 (2006).

Ref.: Ranjbar & al. 2006.

Khorassan: NE: Sarakh, Bazangan pass, 850 m, 4.8.1988, Joharchi & Zangooei 16753 [FUMH]; – Kalat-e Naderi, Zavin towards Chenar, km 5, 1050 m, 20.5.1985, Joharchi & Zangooei 13129 [Holotype: FUMH].

Distribution in Iran: E. – Endemic for Iran.

***Hedysarum longipedunculatum*** RANJBAR & KARAMIAN, Nord. J. Bot. 26 (1–2): 11 (2008).

Ref.: RANJBAR & al. 2008.

Khorassan: NW: W Bojnord, between Darkash and Haver, 1350 m, 8.7.2001, Joharchi 33858 [Holotype FUMH, isotype BASU].

Distribution in Iran: E. – Endemic for Iran.

***Hedysarum paucifoliolatum*** RANJBAR & OLANJ, Nord. J. Bot. 26 (1–2): 14 (2008).

Ref.: RANJBAR & al. 2008.

Khorassan: N: Shirvan towards Bajgiran, Alkhass, 1800 m, 9.6.1998, Faghilnia & Zangooei 31470 [Holotype FUMH, isotype BASU].

Distribution in Iran: E. – Endemic for Iran.

***Onobrychis assadii*** RANJBAR, TOLUI & AMIRAB., Ann. Bot. Fennici, 44: 481 (2007).

Ref.: RANJBAR & al. 2007.

Khorassan: N: N Shirvan, between Amiranlu and Palkanlu, 1500 m, 22.5.1994, Moussavi & Abbasi 4680 [Holotype TARI].

Distribution in Iran: E. – Endemic for Iran.

***Onobrychis iranensis*** AMIRAB. & GHANAVATI, Iran. J. Bot. 15 (1): 46 (2009).

Ref.: AMIRABADIZADEH & al. 2009.

Khorassan: SE: 63 km from Ghayen to Birjand, near Sedeh, 1760 m, 19.5.2003, Assadi & Amirabadi 9331 [Holotype MRCH, isotype TARI].

Distribution in Iran: E. – Endemic for Iran.

## **Grossulariaceae** LAM. & DC.

***Ribes khorasanicum*** SAGHAFI & ASSADI, Iran. J. Bot. 7 (1): 8 (1996).

Ref.: SAGHAFI & ASSADI 1996.

Khorassan: N: S Darrehgaz, Gharaghat valley, 2500 m, 28.5.2001 Joharchi 33594 [FUMH]; –ibid., Zu-e kharab, 2400 m, 18.6.2000, Hojjat & Zangooei 32935 [FUMH]; –NE: Hezar-Masjed Mt., 3 km West of Zubala village, Takht-e Yakhchal, 2300 m, 24.5.1994, Saghafi, Omrani & Amirabadi 3242 [Holotype TARI]; – Kalat-e Naderi, old Layen, Takht-e Yakhchal, 2037m, 22.5.2004, Adibi 35407 [FUMH].

Distribution in Iran: E. – Endemic for Iran.

**Lamiaceae** LINDL.*Nepeta binaloudensis* JAMZAD, Iran. J. Bot. 5 (1): 25–26 (1991).

Ref.: JAMZAD 1991.

Khorassan: N: Chenaran, Binaloud Mt., Between Cheshmeh-Sabaz and Boujan, 2600 m, 16.7.1985, Rashed & Ayatollahi 13410 [FUMH]; – ibid., Golmakan, Cheshmeh-Sabz, 1560 m, 26.6.1985, Ayatollahi & Zangooei 13260 [FUMH]; – E Neyshabour, Garineh, 1900 m, Faghihnia & Zangooei 27754 [FUMH]; – NE: Mashhad, N. slope of Binaloud Mt., above Zoshk village, Rudkhan-e Abdollah, 2000–3000 m, 3.4.1984, Mozaffarian 48860 [Holotype TARI]; – W Mashhad, Zoshk Mt., 2300 m, 23.6.2001, Joharchi 33804 [FUMH]; – ibid., Dehbar Mt., 2400 m., 29.6.2005, Zangooei 36806 [FUMH]; – ibid., Between Dehbar and Binaloud summit, 2400 m, 23.6.2002, Joharchi & Nasseh 34273 [FUMH]; – ibid., Forsgah Mt., 2000 m, 3.7.1989, Faghihnia & Zangooei 17886 [FUMH]; – ibid., Zoshk Mt., 2100–2500 m, 2.6.1991, Joharchi & Zangooei 20603 [FUMH]; – ibid., Kang Mt., 2100 m, 5.8.1991, Faghihnia & Zangooei 21002 [FUMH].

Distribution in Iran: E. – Endemic for Iran.

**Plumbaginaceae** LINDL.*Acantholimon flabellum* ASSADI, Iran. J. Bot. 11 (1): 33–35 (2005).

Ref.: ASSADI 2005.

Khorassan: N: Bajgiran to Namanlu, 1500–2500 m, 21.7.2003, Maassoumi & al., 84215 [Holotype TARI]; – N Ghouchan, Bajgiran, Ghara-Jeghah, 1750–2000 m, 16.6.1981, Ghorashialhosseini 756 [FUMH]; – N Shirvan, Takht-e Golul, 2000 m, 9.7.1990, Faghihnia & Zangooei 18886 [FUMH].

Distribution in Iran: E. – Endemic for Iran.

**Polygonaceae** JUSS.*Atraphaxis intricata* MOZAFF., Iran. J. Bot. 12 (2): 107–109 (2006).

Ref.: MOZAFFARIAN 2006b.

Khorassan: NW: Bojnord, c. 20 km from bifurcation of Raz-Bojnord road to Raz, 1650 m, 5.6.2003, Mozaffarian 83695 [Holotype TARI]; – NW Bojnord, 23 km from bifurcation of Raz road to Raz, 1700 m, 14.5.2008, Memariani & Zangooei 39933 [FUMH].

Distribution in Iran: E. – Endemic for Iran.

**Rosaceae** JUSS.*Crataegus azarolus* L. var. *assadii* (KHAT.) K.I.CHR. & ZIEL., Nord. J. Bot. 26 (5–6): 344–360 (2008).

Ref.: KHATAMSAZ 1991, CHRISTENSEN &amp; ZIELINSKI 2008.

Khorassan: NW: W Bojnord, Badranlu pass., Assadi & Maassoumi 50895 [Holotype: TARI]; – ibid., 1350 m, 30.5.1984, Joharchi & Zangooei 11415 [FUMH]; – ibid., 1400 m, 7.10.2005, Arjmandi 41836, 41837 [FUMH]; –S Bojnord, Assadi pass., 1450 m, 8.10.2005, Arjmandi 41833 [FUMH]; –SW Bojnord, Rein, 1720 m, 30.9.2004, Arjmandi 35757, 35758 [FUMH]; – ibid., 26.5.2004, Arjmandi 35434 [FUMH]; – ibid., Alkhas valley, 1830–1900 m, 17.9.2006, Memariani & Arjmandi 38503 [FUMH].

Distribution in Iran: E. – Endemic for Iran.

*Geum iranicum* KHAT., Iran. J. Bot. 3 (2): 90–92 (1987).

Ref.: KHATAMSAZ 1987.

Khorassan: N: ca. 45km N. of Shirvan, Golul-Sarani protected area, 2300–3000 m, Assadi & Maassoumi 50439 [Holotype TARI].

Distribution in Iran: E. – Endemic for Iran.

*Pyrus giffanica* ZAMANI & ATTAR, *Phyton* (Horn) 49 (1): 111–115 (2009).

Ref.: ZAMANI & al. 2009b.

Khorassan: NW: Bojnord to Gifan, Ghazi village, 1040 m., 11.9.2007, Zamani, Zangoeei & RaeiNiaki 37586 [Holotype TUH, isotype FUMH]; – *ibid.*, 16.4.2008, Attar, Zamani & Malaki 37952 [Paratype: TUH].

Distribution in Iran: E. – Endemic for Iran.

## Rubiaceae JUSS.

*Asperula oppositifolia* REGEL & SCHMAL., *Izv. Obsheh. Ljub. Estesv. Antrop. Etnogr.* 34, 2: 42 (1882) **subsp. rechingeri** F.GHAHREM., JOHARCHI & AYDANI, *Rostaniha* 7, suppl. 2: 208–210 (2006).

Ref.: GHAREMANINEJAD & al. 2006.

Khorassan: NW: W Bojnord, Ala-Dagh Mt. Kanimokhar valley, 2100 m, 20.6.2004, Joharchi & Aydani 35596 [Holotype FUMH, isotype FAR]; – *ibid.*, Jowzak, Cheshmeh-eEshgh, 1000 m, 9.5.2000, Joharchi & Zangoeei 32752 [FUMH]; – *ibid.*, 1194 m., 24.4.2008, Joharchi & Zangoeei 39600 [FUMH]; – *ibid.*, between Darkash and Haver, 1700–1900 m, 6.6.2004, Joharchi & Aydani 35497 [FUMH, FAR]; – *ibid.*, Darkash, Piaz-Kuh, 1300–1350 m, 19.6.2007, Joharchi & Nasseh 39121 [FUMH]; – SW Bojnord, Rein, Topal-Rayeh, 1950–2050 m, 7.6.2006, Memariani & Zangoeei 37926 [FUMH]; – *ibid.*, between Rein and Arkan, Gharanghah-Zo, 2050 m, 20.5.2006, Memariani & Zangoeei 37564 [FUMH].

Distribution in Iran: E. – Endemic for Iran.

## Scrophulariaceae JUSS.

*Linaria golestanensis* HAMDI & ASSADI, *Iran. J. Bot.* 11 (2): 252 (2006).

Ref.: HAMDI & al. 2006a.

Khorassan: NW: W Bojnord, between Ashkhaneh and Chakhmaghlu, 1600 m, 28.6.2000, Zangoeei 33012 [FUMH]; – Between Darkash & Haver, 1600 m, 2.7.2000, Faghiehnia & Zangoeei 33044 [FUMH]; – *ibid.*, Darkash, between Kanibid and Kanimokhtar, *Quercus* forest, 1700 m, 20.6.2004, Joharchi & Aydani 35574 [FUMH, FAR]; – SW Bojnord, Rein, Delove valley, 1650–1700 m, 3.7.2006, Memariani & Zangoeei 38240 [FUMH].

Golestan: ES Maraveh-Tappeh, Shalami Mt., 1200 m., Faghiehnia & Zangoeei 32889 [Holotypus TARI].

Distribution in Iran: N, E. – Endemic for Iran.

*Linaria kavirensis* HAMDI & ASSADI, *Ann. Bot. Fennici* 45: 75 (2008).

Ref.: HAMDI & al. 2008.

Khorassan: NE: E Salehabad, between Saghar-Cheshmeh and Garmab-e Olia, 523–550 m, 25.4.2007, Joharchi & Nasseh 38735 [FUMH]; – E: Torbat-e Jam towards Salehabad, S Banitak, 1000 m, 30.4.2003, Zangoeei 34437 [FUMH]; – SW Torbat-e Jam, MianSara Mt., 1300 m, 23.4.2002, Joharchi 34040 [FUMH].

Yazd: Taft, Taft-Kuh, 1000–1300 m., 24.4.1995, Dehghanzadeh 26052 [Holotype TUH].

Distribution in Iran: C, E. – Endemic for Iran.

*Linaria khorasanensis* HAMDI & ASSADI, *Willdenowia* 35 (2): 299 (2005).

Ref.: HAMDI & al. 2005.

Khorassan: N: S Shirvan, Vark, 1850 m, 25.6.1994, Zangoeei 24284 [FUMH]; – NE Neyshabur, Dizbad-e Olia, 1800 m, 20.6.1988, Joharchi & Zangoeei 16975 [FUMH]; – NE: SW Mashhad, Moghan, 2300 m, 3.6.2001, Joharchi & al. 33665 [Holotype FUMH, isotype: TARI]; – *ibid* Pivajen, Ghar-e Kohneh Mt., 2000 m, 16.6.1993 Faghiehnia & Zangoeei 23396 [FUMH]; – S Fariman, Kalleh-Menar, 2000 m, 8.10.1996, Faghiehnia 27948 [FUMH]; – C: Torbat-e Heydarieh, Rudmajan 1750 m, 23.7.198, Ayatollahi & Zangoeei 15608 [FUMH].



Distribution in Iran: E. – Endemic for Iran.

*Scrophularia alhagioides* ATTAR & JOHARCHI, Iran. J. Bot. 12 (2): 193–195 (2006).

Ref.: ATTAR & al. 2006.

Khorassan: NW: NW Bojnord, between Ayer-Ghayeh and Soukhli, ca. 1000 m, 12.6.2001, Joharchi 33747 [Holotype FUMH].

Distribution in Iran: E. – Endemic for Iran.

*Scrophularia crassipedunculata* ATTAR & JOHARCHI, Iran. J. Bot. 12 (2): 195 (2006).

Ref.: ATTAR & al. 2006.

Khorassan: N: SE Chenaran, Cheshmeh-Sabz, 1560 m, 31.10.1985, Ayatollahi & Joharchi 13630 [Holotype FUMH]; – S Chenaran, Frizi, Dermeh valley, 1973 m, 11.6.2005, Emadzadeh & al. 26644 [FUMH]; – E Neyshabour, Dizbad-e Olia, slope of Ghojghar Mt., 2200–2300 m, 10.8.2003, Joharchi 35134 [FUMH]; – ibid., Baghshan, Garineh, 1900 m, 3.7.1996, Faghiniha & Zangooei 27771 [FUMH]; – NE: Between Mashhad and Neyshabour, Pivajen, 1900 m, 29.7.1992, Faghiniha & Zangooei 22333 [FUMH].

Distribution in Iran: E. – Endemic for Iran.

*Scrophularia khorassanica* ATTAR & JOHARCHI, Iran. J. Bot. 12 (2): 195 (2006).

Ref.: ATTAR & al., 2006.

Khorassan: NE: SW Sarakhs, between Salehabad bifurcation and Baghbaghu, Southern Hills of Rahmatabad, 690–700 m, 2.6.2003, Joharchi & Zangooei 34573 [Holotype FUMH]; – Salehabad to Mashhad, km 70, between Natu and Baghbaghu, 675 m, 25.4.2007, Joharchi & Nasseh 38722 [FUMH]; – Mozduran to Sarakhs, km 14, 850 m, 21.5.1985, Ayatollahi & Joharchi 13215 [FUMH].

Distribution in Iran: E. – Endemic for Iran.

*Scrophularia tortusissima* ATTAR & JOHARCHI, Iran. J. Bot. 12 (2): 199 (2006).

Ref.: ATTAR & al. 2006.

Khorassan: NE: Mashhad to Sarakhs, between Bazangan bifurcation and Shurlogh, 650 m, 16.8.1994, Akhaneh & Zangooei 24521 [Holotype FUMH].

Distribution in Iran: E. – Endemic for Iran.

### Additional Note

#### Asteraceae

Ref.: DITTRICH & al. 1979.

*Cousinia argentea* MEHREGAN & ASSADI, Willdenowia 39: 268 (2009), nom. nov.

≡ *Jurinea pungens* BOISS., Fl. Orient. 3: 569 (1875).

Ref.: MEHREGAN & ASSADI 2009.

Khorassan NE: S Mashhad, Robat-Sefid, 1700 m, 10–11.7.1937, Rechinger 1539 [M,W]; – ibid., 1520 m, 7.5.1975, Rechinger 51337 [M,W]; – ibid., N Robat-Sefid, 1650 m, 25.9.1975, Wendelbo & Foroughi 18886 [TARI]; – ibid., 1700–2000 m, 29.5.1977, Runemark & Sardabi 23509 [TARI].

Distribution in Iran: E. – Endemic for Iran.

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