

On-line Suppl. Tab. 1. Collection data and geographical location of selected *Glaucium* specimens in Iran.

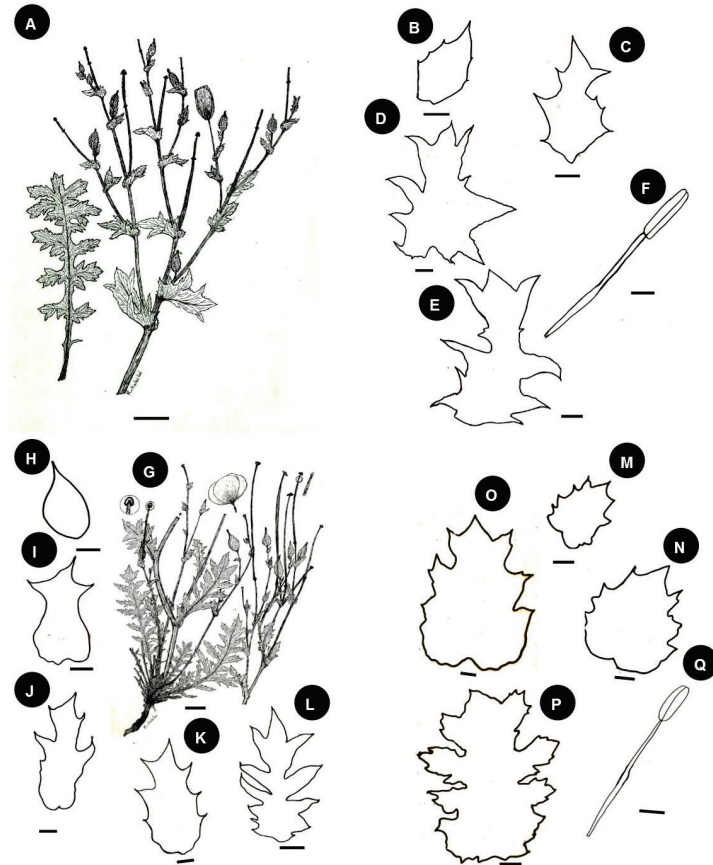
Taxa	Locality
<i>G. corniculatum</i> var. <i>corniculatum</i>	Azerbaijan: Arasbaran protected area, N. W. of Veinagh, 38° 54' 28.283"N, 46° 51' 54.732"E, 1300–1400 m a. s. l., 26 May 1977, Assadi & Vousughi 2466 (TARI); Tehran: Qazvin, Barajin mountains, 36° 19' 41.628"N, 50° 3' 16.95"E, 1300 m a. s. l., 2 April 1995, Hamdullahzadeh 5691 (FAR).
<i>G. corniculatum</i> var. <i>flaviflorum</i>	Golestan: Golestan forest, below Almehr, 36° 44' 1.02"N, 54° 2' 3.897"E, 1600 m a. s. l., 28 July 1974, Wendelbo & Kobham 14233 (TARI); Azerbaijan: Salmas towards Urumieh, Akhteh-Khaneh Mount., 38° 12' 7.708"N, 44° 46' 13.983"E, 1300–1600 m a. s. l., 16 June 1970, Terme 31824 (IRAN) (20223-E); Khorassan: Neyshabur, Rud village, 36° 12' 50.711"N, 58° 47' 45.925"E, 1460 m a. s. l., 2 May 1999, Heidary 34638 (FAR); Tehran: Karaj, Hesarak, Kharazmi University, 35° 50' 5.224"N, 50° 56' 17.271"E, 1300–1400 m a. s. l., 25 May 1989, Arabi & Lory 6353 (FAR).
<i>G. grandiflorum</i> subsp. <i>grandiflorum</i> var. <i>grandiflorum</i>	Gilan: between Qazvin and Rudbar, Kuhin, 36° 22' 17.768"N, 49° 39' 35.303"E, 1600 m a. s. l., 27 May 1978, Wendelbo & Assadi 27658 (TARI); Kordestan: Bijar, Kuh-e Hamzeh–Arab, 35° 52' 24.864"N, 47° 35' 55.632"E, 2000 m a. s. l., 10 July 1971, Terme 31843 (IRAN); Khorassan: from Torbat-e Heydarie to Mashhad, ca. 5 km to Kameh Sofla,, 35° 16' 47.435"N, 59° 12' 58.121"E, 1800 m a. s. l., 20 May 2003, Assadi & Amirabadi 84841 (TARI).
<i>G. grandiflorum</i> subsp. <i>grandiflorum</i> var. <i>iranicum</i>	Azerbaijan: Zanjan towards Bijar, 70 km. Zanjan, 36° 40' 58.816"N, 48° 30' 31.395"E, 1700 m a. s. l., 30 June 1971, Terme 31835 (IRAN); Fars: Shiraz, Bajgah, on pass, Bamu protected area, 29° 43' 8.266"N, 52° 34' 57.786"E, 1820 m a. s. l., 30 June 1975, Wendelbo & Foroughi 17811 (TARI); Khorassan: Neyshabur, Kharv-e Olia, Binaloud, 36° 12' 50.711"N, 58° 47' 45.929"E, 1300–1500 m a. s. l., Terme & Tehrani 31840 (IRAN); Tehran: Oshan, 35° 48' 17.248"N, 51° 29' 48.205"E, 1870 m a. s. l., 29 May 1991, Kharazi 5676 (FAR).
<i>G. grandiflorum</i> subsp. <i>refractum</i>	Kermanshah: Ghasr-e Shirin, 34° 30' 57.251"N, 45° 34' 39.669"E, 8 May 1950, Farahbakhsh 31829–IRAN (5956–E)–Tehran; Qazvin, 7–10 km. after Takestan towards Zanjan, 36° 4' 19.554"N, 49° 42' 4.854"E, 1300 m a. s. l., 23 June 1993, Nourian & Zehzad 6379 (FAR).
<i>G. calycinum</i> subsp. <i>calycinum</i>	Gilan: Manjil, Aliabad, 37° 1' 59.614"N, 50° 25' 23.031"E, 550 m a. s. l., 25 August 1973, Sabeti 18223 (TARI); Esfahan: Kolah Ghazi, wild life park, 30–50 km. south Esfahan, 32° 19' 38.067"N, 51° 54' 56.517"E, 1700 m a. s. l., 29 May 1974, Iranshahr 5796 (IRAN); Tehran: Alamut, Rajaeedast, 36° 29' 3.184"N, 50° 23' 22.148"E, 1000 m a. s. l., 20 May 2010, Tavakkoli 54241 (FAR).
<i>G. calycinum</i> subsp. <i>aserbaidshanicum</i>	Gilan: on the road of Qazvin to Rasht, 50 km. after Qazvin, 36° 48' 50.278"N, 49° 25' 17.647"E, 880 m a. s. l., 27 June 2013, Tavakkoli 54330 (FAR); Azerbaijan: Zanjan, on the road of Zanjan to Mianeh, Shour-e Gheshlagh, 36° 37' 48.514"N, 48° 56' 5.163"E, 1000 m a. s. l., Sabeti 14876 (TARI); Tehran: near Ghom lake, 34° 31' 25.954"N, 51° 53' 40.381"E, 900 m a. s. l., 2 May 1978, Amin & Rajamand 32866 (TARI).
<i>G. mathiolifolium</i>	Fars: Kazerun, 25 km. Bushehr road, 29° 37' 37.644"N, 51° 39' 6.538"E, 950 m, 23 April 1972, Foroughi 5736 (TARI); between Kazerun and Dalaki, 5 km Konartakhteh, 29° 32' 3.518"N, 51° 23' 39.192"E, 900 m a. s. l., 25 March 2009, Tavakkoli 6402 (FAR).
<i>G. yazdianum</i>	Yazd: Yazd to Taft and Shirkuh, 36° 44' 23.54"N, 54° 19' 27.32"E, 1200 m a. s. l., 23 April 1996, Mozaffarian 77379 (TARI); Abarkuh, Hossein abad village, 31° 7' 49.453"N, 53° 15' 1.344"E, 1400–1600 m a. s. l., 17 June 2015, Zeraatkar 59935 (FAR).
<i>G. contortuplicatum</i> var. <i>contortuplicatum</i>	Gilan: between Manjil and Rudbar, 36° 44' 23.54"N, 49° 24' 39.686"E, 260 m a. s. l., 27 June 2012, Tavakkoli 59912 (FAR); Azerbaijan: Mianeh, 15 km Ardebil road, near Ghezel Ozan rivers, 37° 16' 34.37"N, 48° 21' 18.222"E, 1100 m a. s. l., 22 July 1974, Foroughi & Assadi 13719 (TARI); Tehran: Ghom: Venarch, Manganese mine, 34° 26' 5.429"N, 50° 45' 51.792"E, 1240 m a. s. l., 25 July 2010, Tavakkoli 6361 (FAR).
<i>G. contortuplicatum</i> var. <i>hirsutum</i>	Gilan: near Rudbar, 36° 48' 34.957"N, 49° 24' 57.978"E, 280 m a. s. l., 21 October 1974, Wendelbo & Shirdelpur 14860 (TARI); Azerbaijan: Zanjan to Mianeh, 37° 29' 5.268"N, 47° 49' 32.99"E, 110 km after Zanjan, 1150–1200 m a. s. l., 9 August 1991, Jamzad et al. 70340 (TARI); Tehran: Ghom, Manganese mine, 34° 26' 5.429"N, 50° 45' 51.792"E, 1240 m a. s. l., 25 June 2010, Tavakkoli 6366 (FAR).
<i>G. elegans</i> var. <i>elegans</i>	Golestan: Golestan forest, Almehr, 36° 44' 1.02"N, 54° 2' 3.897"E, 1680 m a. s. l., 18 May 1972, Foroughi 5728 (TARI); Azerbaijan: 62 km from Ahar on the road to Tabriz, 38° 29' 21.95"N, 47° 4' 6.087"E, 1400 m a. s. l., 12 June 1976, Assadi & Maassoumi 20570 (TARI); Hormozgan: 200 km Bandar Abbas, 27° 10' 59.598"N, 56° 15' 59.923"E 600 m a. s. l., 23 April 1972, Babakhanlou 23010 (TARI); Semnan: 20 km Damghan road, 35° 13' 32.011"N, 54° 26' 3.169"E, 1620 m a. s. l., 25 June 1972, Riazi 5730 (TARI).
<i>G. elegans</i> var. <i>bornmulleri</i>	Golestan: Azadshahr towards Bojnurd, 79 km Azadshahr, 37° 5' 2.026"N, 55° 10' 14.517"E, 950 m a. s. l., 6 June 1975, Terme 5745 (IRAN); Semnan, Shahroud, Chehel Dokhtar, Malek–Aran, Tang-e Olang, 36° 24' 22.407"N, 55° 0' 58.568"E, 30 July 1972, Iranshahr & Zargani 57561 (IRAN) (34120–E); Tehran: 22 km from Tehran on the Garmsar road, Khatun–Abad, 35° 12' 11.144"N, 52° 19' 45.879"E, 1010 m. s. l., 4 June 1972, Mousavi & Amin 14862 (IRAN).
<i>G. oxylobum</i> var. <i>oxylobum</i>	Mazandaran: Pol-e sefid, beginning of the road Sangdeh, 36° 7' 0.01"N, 53° 3' 19.07"E, 670 m a. s. l., 2 April 1986, Assadi & Massoumi 55286 (TARI); Gilan: Rudbar, 36° 48' 34.957"N, 49° 24' 57.978"E, 280 m a. s. l., 27 March 2012, Tavakkoli 59917 (FAR); Khorassan: Bojnurd, Badranlou, 37° 31' 57.852"N, 57° 5' 34.309"E, 940 m a. s. l., 8 July 2015, Tavakkoli 59933 (FAR); Tehran: Firuzkuh road, 85 km of Tehran, 35° 47' 17.95"N, 52° 46' 20.479"E, 1700–2100 m a. s. l., 3 June 2012, Tavakkoli 59916 (FAR).

On-line Suppl. Tab. 1. Continued

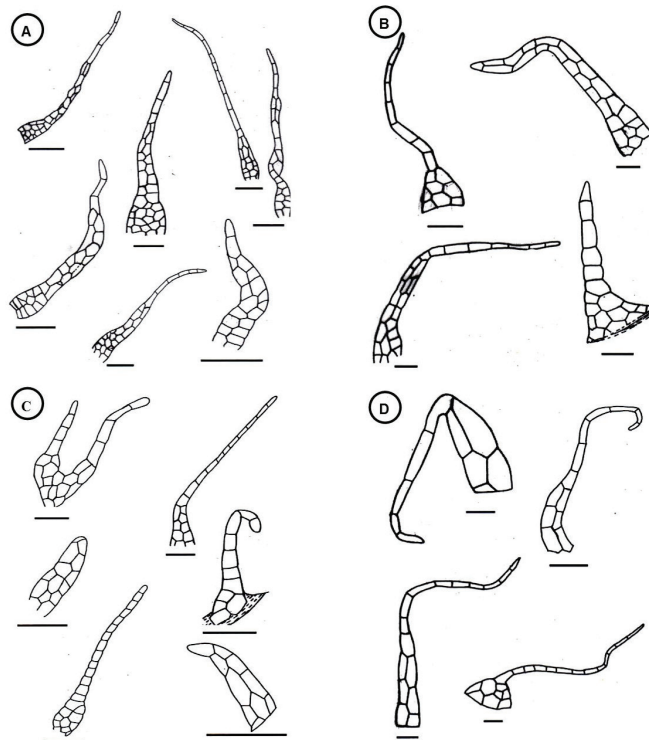
Taxa	Locality
<i>G. oxylobum</i> var. <i>paucilobum</i>	Gilan: Rudbar, 36° 48' 34.957"N, 49° 24' 57.978"E, 280 m a. s. l., 27 March 2012, Tavakkoli 59918 (FAR); Azerbaijan: 50–60 km to Zanjan from Mianeh, 37° 29' 5.268"N, 47° 49' 32.99"E, 1200 m a. s. l., 10 June 1976, Wendelbo & Assadi 28040 (TARI); Khorassan: Bojnurd, Badranlou, 37° 31' 57.852"N, 57° 5' 34.309"E, 940 m a. s. l., 8 July 2015, Tavakkoli 59932 (FAR).
<i>G. flavum</i> var. <i>flavum</i>	Mazandaran: Rineh, 35° 52' 52.472"N, 52° 10' 7.21"E, 2050 m a. s. l., 25 June 2008, Tavakkoli 54335 (FAR); Tehran: Peykanshahr, Research institute of Forests and Rangelands, 35° 43' 54.322"N, 51° 11' 2.51"E, 1300 m a. s. l., 21 June 2008, Tavakkoli 54272 (FAR).
<i>G. flavum</i> var. <i>serpieri</i>	Mazandaran: Rineh, 35° 52' 52.472"N, 52° 10' 7.21"E, 2050 m a. s. l., 25 June 2008, Tavakkoli 33882 (FAR); Tehran: on Firuzkuh road, Sied abad protected, 35° 38' 34.35"N, 52° 22' 18.69"E, 2250–2550 m a. s. l., 4 June 1972, Dini & Arazm 14839 (TARI); 5 km Rudehen, Pardis, 35° 43' 50.384"N, 51° 54' 37.481"E, 1800–1830 m a. s. l., 28 May 2011, Tavakkoli 54235 (FAR).
<i>G. vitellinum</i> var. <i>vitellinum</i>	Yazd: Harat, 30° 2' 58.434"N, 54° 22' 26.573"E, 1650 m a. s. l., 18 June 1997, Mozaffarian 77790–B (TARI); Fars: on Arsenjan road to Niriz, 45 km Abad-e Tashk, 29° 55' 10.87"N, 53° 17' 55.99"E, 1680 m a. s. l., 12 May 2014, Tavakkoli 59914 (FAR); Kerman: between Haji abad and Jiroft, Esfandagheh village, 28° 40' 30.405"N, 57° 44' 13.764"E, 1700 m a. s. l., 12 June 1977, Assadi & Miller 25297 (TARI);
<i>G. vitellinum</i> var. <i>pilosum</i>	Yazd: Harat, 30° 2' 58.434"N, 54° 22' 26.573"E, 1650 m a. s. l., 18 June 1997, Mozaffarian 77790–A (TARI); Fars: Niriz, 30 km Ghatroud, 29° 11' 21.517"N, 54° 18' 50.139"E, 2080 m a. s. l., 12 May 2014, Tavakkoli 59911 (FAR); Fars: 30 km on the road from Firoozabad to Gheer, 28° 21' 21.261"N, 52° 57' 35.877"E, 1260 m a. s. l., 23 April 2005, Safavi 87623 (TARI!); Hormozgan: Bandar Abbas, S. of side Kuh-e Genu, 27° 26' 59"N, 56° 14' 35.999"E, 1600 m a. s. l., 4 April 1975, Wendelbo & Foroughi 15506 (TARI).

On-line Suppl. Tab. 2. Diagnostic morphological characters of *Glaucium yazdianum*, *G. calycinum*, *G. vitellinum* var. *pilosum*, *G. oxylobum* and *G. flavum*. Trichomes are mostly multicellular and terminally uniseriate or one celled.

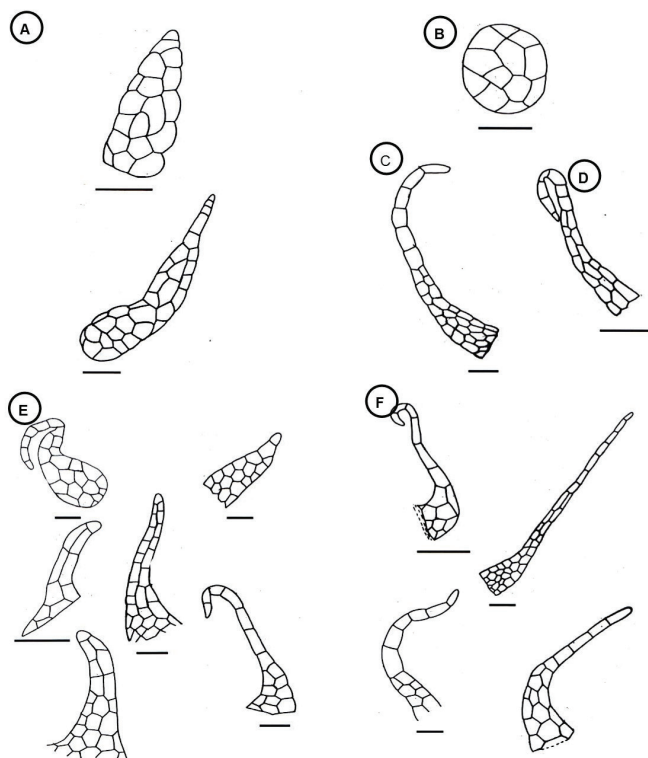
Characters	<i>G. yazdianum</i>	<i>G. calycinum</i>	<i>G. vitellinum</i> var. <i>pilosum</i>	<i>G. oxylobum</i>	<i>G. flavum</i>
Young siliqua trichomes	0.48–2.58 mm long; narrow oblong and ovate, with polygonal cells in two or more rows.	0.27–2.1 mm long; elliptic, narrow ovate and conical with polygonal cells in two or more rows.	0.37–1.04 mm long, conical ovate with oblong and polygonal cells arranged in two or more rows.	Tuberculate or not. Trichomes 0.57–0.97 mm long; oblong, ovate with polygonal cells in two or more rows.	Tuberculate and composed of polygonal cells.
Bud length	1.5–2.5 cm	1.5–4 cm	1.5–5 cm	1–3.5 cm	0.8–3 cm
Sepal trichomes	0.57–3.5 mm long; narrow oblong and ovate, with polygonal cells in two or more rows.	1.2–3.49 mm long; narrow oblong, ovate or broad ovate with polygonal cells in two or more rows.	1.38–4.3 mm long; conical, ovate or narrow ovate with elongated polygonal and polygonal cells in two or more rows.	Mostly hairless	2–3.27 mm long; oblong to conical with polygonal to elongated polygonal cells in two or more rows.
Anther length	3–5.2 mm	2–3.5 mm	2–4 mm	1–4 mm	1–3 mm
Filament shape	Monotonic at the upper half, broadened at the middle and gradually towards the base.	Gradually narrowed at the apex and base; broadened at the middle	Broadened at the apex (sometimes at lower part) gradually narrowed towards the base.	Broadened at the apex and middle, gradually narrowed towards the middle and the base.	Monotonic, gradually narrowed towards the base
Peduncle length	2–6 cm	1.5–10.5 cm	1–10 cm	1–6 cm	1–5 cm
Silique length	10–13 cm	10–20 cm	8–24 cm	8–28 cm	8–19 cm
Stem leaf shape	Ovate, broadly oblong, entire, dentate, pinnatifid or pinnatisect; the size of segments decreasing gradually towards the leaf base.	Cordate, broadly ovate or oblong, pinnatifid, pinnatisect	Cordate, ovate, broadly oblong, entire, dentate or pinnatisect; mostly lower segments pairs smaller than the upper segments pair.	Narrow oblong, oblong, dentate, pinnatifid.	Oblong, broad oblong, Pinnatifid to pinnatisect.



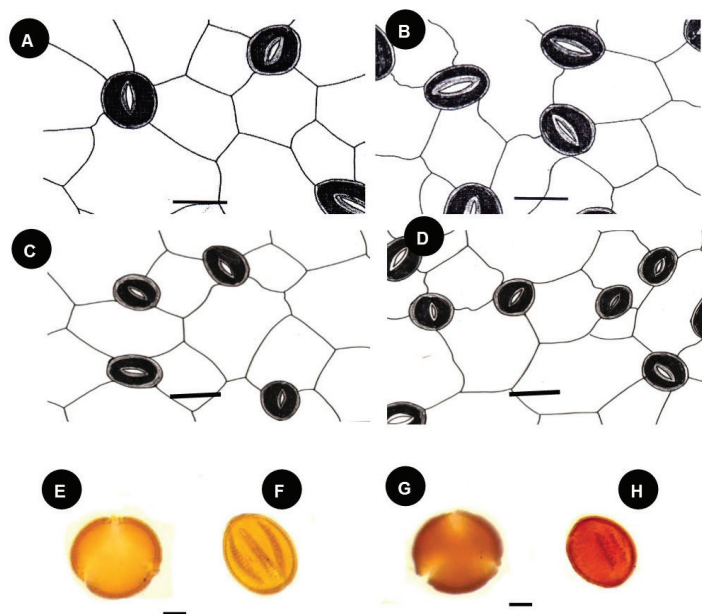
On-line Suppl. Fig. 1. Drawing of leaf and stamen in (A–F) *G. yazdianum* (Holotype), (A) habit, (B)–(E) stem leaves and (F) stamen; (G–L) *G. vitellinum* var. *pilosum* (Holotype), (G) habit, (H)–(L) stem leaves; (M)–(P) *G. calycinum*: (M)–(P) stem leaves and (Q) stamen. Scale bars: (A) = 5 cm, (G) = 4 cm, (B)–(E), (M)–(P) = 5 mm; (F) = 3 mm; (H)–(K) = 10 mm; (L), (Q) = 20 mm.



On-line Suppl. Fig. 2. Drawing of trichomes in (A)–(B) *G. yazdianum*, (C)–(D) *G. calycinum*. (A), (C) young fruit trichomes (B), (D) bud trichomes. Scale bars = 0.3 mm.



On-line Suppl. Fig. 3. Drawing of trichomes in (A) *G. oxylobum*, (B)–(D) *G. flavum*, (E)–(F) *G. vitellinum* var. *pilosum*. (A), (B), (E) young fruit trichomes, (C), (D), (F) bud trichomes. Scale bars: (A), (E) = 0.2 mm, (B) = 0.1 mm, (C), (D), (F) = 0.5 mm.



On-line Suppl. Fig. 4. Photo micrographs of leaf epidermis and pollen grains in (A–B), (E–F) *G. yazdianum*, (C–D), (G–H) *G. calycinum*. (A), (C) adaxial surface, (B), (D) abaxial surface; (E), (G) polar axis; (F), (H) equatorial axis. Scale bars: (A–D) = 50 μ m; (E–H) = 10 μ m.