

Bryophyte flora of the Iğdır province (Turkey)

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Abstract. As a result of bryological explorations in the Iğdır province (Turkey), a total of 184 bryophytes belonging to 76 genera and 35 families were identified from 174 different localities. Of these, eight taxa are liverworts and 176 taxa are mosses. Among them, *Crossidium crassinerve* is recorded for the second time in Turkey. Furthermore, all taxa are new to the Iğdır province. Localities are presented where the taxa and substrata were collected.

Key words: Bryophytes, Iğdır province, Eastern Anatolia, Turkey

Introduction

In recent years, there has been a substantial increase in the number of bryological papers on Turkey, since the bryophyte flora is still poorly known (Canlı & Çetin 2012; Kırmacı & al. 2012; Ören & al. 2012; Özdemir & al. 2012; Ursavaş & Çetin 2012). Only one bryophyte

(*Conardia compacta*) has so far been reported from Iğdır, which is a province in the far northeast of Turkey (Özdemir & al. 2012). The Iğdır province is situated in the Euro-Siberian floristic region. It is surrounded by Kars and Armenia, bordering on river Aras in the north, Armenia, Nakhichevan and Iran in the east, Ağrı in the south, and Kars and Ağrı in the west.

The present study contributes further information to the knowledge of bryophyte flora of Turkey and provides the first substantial checklist of bryophytes for the Iğdır province. The aim of this study was to contribute to the exploration of the bryophyte flora of Turkey and to facilitate the future studies. The Iğdır province, one of the least forested areas in Turkey, is a well-lit, very high, windswept, open



Fig. 1. Map of the study area.

treeless area, with gently sloping terrains with streams, grass and rocks, mostly dominated by the steppes. Rich grassy plants cover the surface of the province.

Mountains, such as Zor, Tekaltı, Ziyaret, and Oyuklu, form a strongly lit and windswept area, with gently sloping terrains dominated by grass, rocks, and streams. Mt Ağrı is also strongly lit and windswept, with a gently sloping terrain of grass and volcanic calcareous rocks, and streams with scattered coniferous and deciduous trees. *Juniperus communis* L., *Populus tremula* L., *Betula* sp., and *Crataegus pseudoheterophylla* Pojark, *Salix* sp. occur occasionally at altitudes from 1700 m to 2100 m (Baytop & Denizci 1963).

Prunus sp., *Pyrus* sp., *Populus* sp., *Salix* sp., and *Elaeagnus* sp. are occasionally encountered along the streams in many places (Baytop & Denizci 1963), as well as many calcareous and siliceous rocks, in many villages mostly in the south of the Iğdır region.

The climate of the Iğdır province is characterized by hot dry summers and cold snowy winters. The mean annual temperature is 11.6°C, average humidity is 63%, and the mean annual rainfall is about 257.6 mm. Summers are notable for moderate precipitation and winters are generally marked with high precipitation (Akman 1999).

Material and methods

The bryophyte samples were collected from 174 different localities in Iğdır, between 28th March 2010 and 29th July 2011 (Fig. 1). Air-dried samples were examined with Carl Zeiss Stemi 2000-C stereomicroscope and Carl Zeiss Axio Imager A2 light microscope. Identifications were verified by consulting keys (Lewinsky 1993; Smith 2004; Paton 1999; Pedrotti 2001, 2006; Greven 2003; Heyn & Herrnstadt 2004; Frey & al. 2006; Guerra & al 2006; Guerra & Cros 2007; Kürschner & Erdağ 2005; Kürschner & Frey 2011).

For each taxon, localities and substrate were given to avoid repetition in the floristic list, but the same plants collected from different localities were indicated accordingly (Loc. 1, 2, 3, ... etc.). The taxon recorded from Turkey for the second time is marked with (*) in the bryofloristic list. The nomenclature of the species follows Grolle & Long (2000), Goffinet & Shaw (2009) for liverworts, and Hill & al. (2006) for mosses. Vouchers are deposited at the Biology Department, Faculty of Science, Karadeniz Technical University, Turkey (KTUB).

Locations of the collected bryophyte specimens

1. Iğdır, Korhan Plateau, roadside (hillside of Mt Ağrı), 39°47'52.74"N, 44°10'30.56"E, 1690 m, 28.03.2010.
2. Iğdır, Korhan Plateau, roadside (hillside of Mt Ağrı), 39°47'46.07"N, 44°14'10.72"E, 2072 m, 28.03.2010.
3. Iğdır, between Iğdır and Doğubeyazıt, roadside of the highway, 39°49'44.38"N, 44°05'55.99"E, 870 m, 28.03.2010.
4. Iğdır, between Iğdır and Doğubeyazıt, roadside of the highway (22–23 km to Iğdır), 39°47'48.86"N, 44°09'13.84"E, 1528 m, 28.03.2010.
5. Iğdır, between Iğdır and Doğubeyazıt, roadside of the highway (12 km to Iğdır), 39°50'43.69"N, 44°04'43.70"E, 914 m, 28.03.2010.
6. Iğdır, 10 km to western Iğdır, from the crossroads of Yukarıçarıklı village 16 km inland, Kızılcabir district of Hoşhaber village, roadside, 39°51'56.08"N, 43°56'52.60"E, 1181 m, 29.03.2010.
7. Iğdır, between Alibeyköy and Aliküçük villages, 39°48'50.92"N, 43°55'57.88"E, 1765–1850 m, 29.03.2010.
8. Iğdır, 10 km to western Iğdır, from the crossroads of Yukarıçarıklı Village 9 km inland, roadside, 39°53'14.88"N, 43°56'55.48"E, 1113 m, 29.03.2010.
9. Iğdır, south of Halfeli town, 39°52'32.84"N, 43°57'28.53"E, 1028 m, 29.03.2010.
10. Iğdır, Obaköy village, 39°57'15.48"N, 43°59'50.40"E, 867 m, 31.03.2010.
11. Iğdır, Kasımcı district, 39°57'59.92"N, 43°59'23.07"E, 868 m, 31.03.2010.
12. Iğdır, Küllük district, 39°59'06.67"N, 43°55'07.42"E, 886 m, 31.03.2010.
13. Iğdır, Mt Zor, 39°45'49.05"N, 43°53'20.13"E, 2400 m, 13.06.2010.
14. Iğdır, Asma village, 39°47'49.70"N, 43°48'35.53"E, 1868 m, 13.07.2010.
15. Iğdır, Taşlıca village, 39°50'00.37"N, 43°47'48.56"E, 1704 m, 13.07.2010.
16. Iğdır, Pınarbaşı village, 39°49'08.37"N, 43°47'08.97"E, 1843 m, 13.07.2010.
17. Iğdır, Nişankaya village, 39°48'33.33"N, 43°51'39.60"E, 2008 m, 13.07.2010.
18. Iğdır, 3 km to Güngörmez village, roadside, 39°48'45.97"N, 43°45'47.30"E, 2011 m, 13.07.2010.
19. Iğdır, Harmandöğen village, 39°48'23.39"N, 43°50'05.03"E, 1857 m, 13.07.2010.
20. Iğdır, Örüsmüş village, 39°47'36.03"N,

- 43°58'16.84"E, 1945 m, 16.07.2010.
21. İğdır, Gülpınar village, 39°47'17.30"N, 44°00'41.35"E, 1609 m, 16.07.2010.
22. İğdır, Bendemurat village, 39°47'16.06"N, 43°57'30.14"E, 2121 m, 16.07.2010.
23. İğdır, Karaçomak village, 39°46'29.30"N, 43°55'45.39"E, 2110 m, 16.07.2010.
24. İğdır, Suveren village, 39°48'12.38"N, 44°03'48.02"E, 1210 m, 08.07.2011.
25. İğdır, 4 km to Çilli Pass, 39°44'52.52"N, 44°01'25.51"E, 1954 m, 08.07.2011.
26. İğdır, Kavaktepe village, 39°45'09.36"N, 44°08'29.88"E, 1628 m, 08.07.2011.
27. İğdır, Aşağı Erhacı village, 39°52'59.71"N, 44°05'19.91"E, 853 m, 09.07.2011.
28. İğdır, Yukarı Erhacı village, 39°52'15.49"N, 44°04'31.04"E, 853 m, 09.07.2011.
29. İğdır, Karakuyu village, 39°51'53.90"N, 44°02'03.15"E, 859 m, 09.07.2011.
30. İğdır, Mezrea village, 39°48'29.81"N, 43°53'52.64"E, 1983 m, 09.07.2011.
31. İğdır, Yüzbaşılar district, 40°00'15.93"N, 44°03'35.20"E, 861 m, 19.07.2011.
32. İğdır, Kazancı village, 40°00'14.36"N, 44°01'35.52"E, 863 m, 19.07.2011.
33. İğdır, Sarıçoban village, 40°01'00.55"N, 44°01'17.12"E, 867 m, 19.07.2011.
34. İğdır, Akyumak village, 39°58'01.38"N, 44°03'21.00"E, 859 m, 19.07.2011.
35. İğdır, Evcı village, 39°59'38.10"N, 44°04'52.63"E, 858 m, 19.07.2011.
36. İğdır, Tacirli village, 39°59'20.30"N, 40°06'27.22"E, 855 m, 20.07.2011.
37. İğdır, Çakırtaş village, 40°01'01.55"N, 44°04'51.61"E, 857 m, 20.07.2011.
38. İğdır, Necefali village, 40°01'28.89"N, 44°04'55.97"E, 856 m, 20.07.2011.
39. İğdır, Hakseyis village, 39°56'24.66"N, 44°01'18.43"E, 864 m, 27.07.2011.
40. İğdır, Enginalan village, 39°57'51.52"N, 44°01'51.32"E, 865 m, 27.07.2011.
41. İğdır, Hakmehmet village, 40°00'11.85"N, 43°58'44.57"E, 873 m, 27.07.2011.
42. İğdır, Kuzugüden village, 39°59'14.25"N, 43°58'19.57"E, 875 m, 27.07.2011.
43. İğdır, Yukarı Çarıkcı village, 39°57'44.65"N, 43°56'15.39"E, 876 m, 28.07.2011.
44. İğdır, Aşağı Çarıkcı village, 39°56'26.33"N, 43°56'42.79"E, 881 m, 28.07.2011.
45. İğdır, Yayıcı village, 39°56'54.35"N, 43°58'06.54"E, 868 m, 28.07.2011.
46. İğdır, Çalpala village, 40°01'26.77"N, 43°52'32.43"E, 900 m, 28.07.2011.
47. İğdır, Bayraktutan village, 40°00'27.66"N, 43°55'06.91"E, 890 m, 28.07.2011.
48. İğdır, Aralık: between Karakoyunlu and Melekli villages, 200–250 off the main road, 39°57'30.50"N, 44°08'58.02"E, 860 m, 30.03.2010.
49. İğdır, Aralık: Hasanhan village, 39°57'26.83"N, 44°20'41.93"E, 825 m, 30.03.2010.
50. İğdır, Aralık: Babacan village, 39°58'51.89"N, 44°18'05.06"E, 831 m, 30.03.2010.
51. İğdır, Aralık: Aşağı Topraklı village, 39°54'41.10"N, 44°27'02.77"E, 819 m,
52. İğdır, Aralık: Aşağı Çamurlu village, 39°55'19.62"N, 44°25'43.81"E, 819 m, 01.04.2010.
53. İğdır, Aralık: Saraçlı village, 39°54'40.41"N, 44°28'17.85"E, 818 m, 01.04.2010.
54. İğdır, Aralık: Hıdırlı village, 39°54'23.02"N, 44°19'15.85"E, 834 m, 14.06.2011.
55. İğdır, Aralık: Kırçiçeği village, 39°55'37.43"N, 44°18'53.66"E, 828 m, 14.06.2011.
56. İğdır, Aralık: Yukarı Topraklı village, 39°54'23.85"N, 44°26'11.58"E, 823 m, 14.06.2011.
57. İğdır, Aralık: Kulukent village, 39°54'15.79"N, 44°21'03.66"E, 825 m, 14.06.2011.
58. İğdır, Aralık: Karahacılı village, 39°54'36.18"N, 44°22'51.29"E, 827 m, 14.06.2011.
59. İğdır, Aralık: Tarlabası village, 39°47'44.22"N, 44°24'17.25"E, 1421 m, 14.06.2011.
60. İğdır, Aralık: Yenidoğan village, 39°46'33.27"N, 44°22'37.44"E, 1715 m, 14.06.2011.
61. İğdır, Aralık: Bilican village, 39°41'12.81"N, 44°24'16.11"E, 2320 m, 14.06.2011.
62. İğdır, Aralık: Gömük village, 39°42'17.36"N, 44°24'13.63"E, 2198 m, 14.06.2011.
63. İğdır, Aralık: Yukarı Çamurlu village, 39°57'12.02"N, 44°23'19.24"E, 824 m, 15.06.2011.
64. İğdır, Aralık: Tazeköy village, 39°55'03.80"N, 44°30'49.00"E, 821 m, 15.06.2011.
65. İğdır, Aralık: Hacıağa village, 39°56'11.52"N, 44°29'21.01"E, 824 m, 15.06.2011.
66. İğdır, Aralık: Yukarı Çiftlik village, 39°51'51.79"N, 44°33'55.04"E, 817 m, 15.06.2011.
67. İğdır, Aralık: Aşağı Çiftlik village, 39°51'06.64"N, 44°35'18.76"E, 816 m, 15.06.2011.
68. İğdır, Aralık: Yukarı Aratan village, 39°50'21.09"N, 44°32'46.18"E, 813 m, 15.06.2011.

69. Iğdır, Aralık: Aşağı Aratan village, 39°49'48.35"N, 44°33'14.66"E, 812 m, 15.06.2011.
70. Iğdır, Aralık: Ortaköy village, 39°50'45.65"N, 44°32'06.39"E, 814 m, 15.06.2011.
71. Iğdır, Aralık: Gödekli village, 39°49'10.02"N, 44°35'42.66"E, 812 m, 15.06.2011.
72. Iğdır, Aralık: Emince village, 39°49'07.96"N, 44°34'27.28"E, 810 m, 15.06.2011.
73. Iğdır, Karakoyunlu: Gökçeli villagevillage, 39°59'51.91"N, 44°10'51.69"E, 842 m, 30.03.2010.
74. Iğdır, Karakoyunlu: Cennetabat village, 39°59'55.92"N, 44°16'26.53"E, 835 m, 30.03.2010.
75. Iğdır, Karakoyunlu: Taşburun, centre, 39°58'51.82"N, 44°14'48.82"E, 838 m, 30.03.2010.
76. Iğdır, Karakoyunlu: Taşburun district, 300 m off the main road, 39°58'01.68"N, 44°14'08.40"E, 860 m, 30.03.2010.
77. Iğdır, Karakoyunlu: Bayatdoğanşalı village, 39°59'46.52"N, 44°11'33.53"E, 843 m, 30.03.2010.
78. Iğdır, Karakoyunlu: Korhan Plateau (hillside of Mt Ağrı), 39°52'00.65"N, 44°12'06.62"E, 2005 m, 17.06.2010.
79. Iğdır, Karakoyunlu: Korhan Plateau (environs of the Gendarmerie Headquarters), 39°47'11.09"N, 44°16'06.73"E, 1904 m, 17.06.2010.
80. Iğdır, Karakoyunlu: Bulakbaşı village, 39°56'13.89"N, 44°15'30.49"E, 832 m, 14.06.2011.
81. Iğdır, Karakoyunlu: Yazlık village, 39°54'38.48"N, 44°16'53.91"E, 830 m, 14.06.2011.
82. Iğdır, Karakoyunlu: Aktaş village, 39°55'09.12"N, 44°16'04.34"E, 828 m, 14.06.2011.
83. Iğdır, Karakoyunlu: İslamköy village, 39°54'34.12"N, 44°18'01.55"E, 824 m, 14.06.2011.
84. Iğdır, Karakoyunlu: Adetli village, 39°53'49.65"N, 44°20'41.78"E, 825 m, 14.06.2011.
85. Iğdır, Karakoyunlu: Zülfikar village, 39°59'39.31"N, 44°08'41.10"E, 850 m, 06.07.2011.
86. Iğdır, Karakoyunlu: Şıracı district, 40°00'07.24"N, 44°10'39.50"E, 846 m, 06.07.2011.
87. Iğdır, Karakoyunlu: Mürşitali village, 40°01'25.68"N, 44°08'17.85"E, 849 m, 06.07.2011.
88. Iğdır, Karakoyunlu: Ortaalican village, 40°01'48.87"N, 44°12'47.70"E, 841 m, 06.07.2011.
89. Iğdır, Karakoyunlu: Aşağı Alican village, 40°00'17.23"N, 44°13'04.29"E, 842 m, 06.07.2011.
90. Iğdır, Karakoyunlu: Yukarı Aliacan village, 40°00'57.36"N, 44°09'46.29"E, 847 m, 06.07.2011.
91. Iğdır, Karakoyunlu: Koçardoğanşalı village, 40°00'10.90"N, 44°13'08.52"E, 842 m, 06.07.2011.
92. Iğdır, Karakoyunlu: Bekirhanlı village, 40°01'35.44"N, 44°17'31.52"E, 837 m, 06.07.2011.
93. Iğdır, Karakoyunlu: Koçkiran village, 40°02'07.95"N, 44°17'35.55"E, 837 m, 06.07.2011.
94. Iğdır, Karakoyunlu: Mt Ağrı village, 39°45'18.86"N, 44°16'12.52"E, 3191 m, 29.07.2011.
95. Iğdır, Tuzluca: Centre, roadside of the highway, 40°03'09.53"N, 43°39'16.15"E, 1074 m, 31.03.2010.
96. Iğdır, Tuzluca: Köprübaşı village, 40°03'02.63"N, 43°43'33.74"E, 1030 m, 31.03.2010.
97. Iğdır, Tuzluca: Sürmeli village, 40°03'59.48"N, 43°47'11.38"E, 944 m, 31.03.2010.
98. Iğdır, Tuzluca: between Tuzluca and Iğdır, 6 km to Tuzluca, roadside of ther highway, 40°02'42.25"N, 43°41'41.00"E, 1060 m, 31.03.2010.
99. Iğdır, Tuzluca: border of Tuzluca and Kağızman, Aşağı Aktaş village, at the turning, roadside of the highway, 40°06'27.27"N, 43°30'16.05"E, 1055 m, 31.03.2010.
100. Iğdır, Tuzluca, 15 km off the border of Tuzluca and Kağızman, roadside of the highway, 40°06'40.16"N, 43°34'17.01"E, 1010 m, 31.03.2010.
101. Iğdır, Tuzluca, Karacaören village, 39°53'09.75"N, 43°30'37.56"E, 2013 m, 14.06.2010.
102. Iğdır, Tuzluca, Kayaören village, 39°52'13.85"N, 43°30'51.32"E, 2048 m, 14.06.2010.
103. Iğdır, Tuzluca, Nahırkiran village, 39°53'21.19"N, 43°29'10.37"E, 2273 m, 14.06.2010.
104. Iğdır, Tuzluca, Hamurkesen village, 39°54'48.98"N, 43°36'14.04" E, 1830 m, 14.06.2010.
105. Iğdır, Tuzluca, Üçkaya village, 39°58'13.11"N, 43°39'44.08" E, 1456 m, 14.06.2010.
106. Iğdır, Tuzluca, Ünlendi village, 39°53'49.48"N, 43°33'38.86"E, 1949 m, 14.06.2010.
107. Iğdır, Tuzluca, between Taşköprü and Karacaören villages, 39°52'07.40"N, 43°28'50.94"E, 2134 m, 14.06.2010.
108. Iğdır, Tuzluca, Taşköprü village, 3 km to Kandilli village, roadside, 39°51'25.16"N, 43°27'33.13"E, 2240 m, 14.06.2010.
109. Iğdır: Tuzluca: Kamışlı village, 40°00'13.90"N, 43°42'03.78"E, 1298 m, 14.06.2010.
110. Iğdır, Tuzluca, Güllüce village, 39°53'29.26"N, 43°39'33.47"E, 1769 m, 15.06.2010.
111. Iğdır, Tuzluca, Gedikli village, 39°51'39.28"N, 43°40'54.57"E, 1897 m, 15.06.2010.

112. Iğdır, Tuzluca, Arslanlı village, 39°48'58.26"N, 43°40'55.73"E, 2136 m, 15.06.2010.
113. Iğdır, Tuzluca, Abbasgöl village, 39°49'37.04"N, 43°36'28.57"E, 2080 m, 15.06.2010.
114. Iğdır, Tuzluca, Uğurca village, 39°59'55.46"N, 43°28'04.08"E, 1955 m, 16.06.2010.
115. Iğdır, Tuzluca, Güzeldere village, 39°59'25.74"N, 43°30'35.32"E, 1693 m, 16.06.2010.
116. Iğdır, Tuzluca, Akdeğirmen village, 39°58'43.82"N, 43°29'58.47"E, 1767 m, 16.06.2010.
117. Iğdır, Tuzluca, 2 km to Candeviş Village, roadside, 39°56'23.67"N, 43°30'09.63"E, 2189 m, 16.06.2010.
118. Iğdır, Tuzluca, between Uğurca-Yukarı Civanlı villages, 40°00'03.72"N, 43°26'25.80"E, 2056 m, 16.06.2010.
119. Iğdır, Tuzluca, between Yukarı Civanlı- Aşağı Civanlı villages, 40°00'31.57"N, 43°32'526.37"E, 1882 m, 16.06.2010.
120. Iğdır, Tuzluca, north of Kalaca village, 39°57'12.67"N, 43°29'50.77"E, 2003 m, 16.06.2010.
121. B10: Iğdır, Tuzluca, Göктаş village, roadside, 39°59'52.55"N, 43°33'55.78"E, 1489 m, 16.06.2010.
122. Iğdır, Tuzluca, Karataş village, 39°59'42.14"N, 43°30'15.96"E, 1733 m, 16.06.2010.
123. Iğdır, Tuzluca, Taşucan village, 39°51'26.61"N, 43°35'41.06"E, 3168 m, 02.07.2010.
124. Iğdır, Tuzluca, Karakoyun Villvillageage, 39°52'10.06"N, 43°37'44.79"E, 1926 m, 02.07.2010.
125. Iğdır, Tuzluca, between Ağaçlı and Bağlan villages, roadside, 39°54'51.67"N, 43°39'07.05"E, 1727 m, 02.07.2010.
126. Iğdır, Tuzluca, İnceköy village, 39°53'17.06"N, 43°38'09.44"E, 1777 m, 02.07.2010.
127. Iğdır, Tuzluca, Aliköse village, 39°52'59.25"N, 43°36'52.31"E, 1883 m, 02.07.2010.
128. Iğdır, Tuzluca, Gaziler district, 40°05'02.40"N, 43°26'55.40"E, 1116 m, 03.07.2010.
129. Iğdır, Tuzluca, 1 km to Çıraklı village, roadside, 40°04'16.92"N, 43°29'29.13"E, 40°03'53.89"N, 43°29'32.98"E, 1428–1571 m, 03.07.2010.
130. Iğdır, Tuzluca, Mt Tekaltı , 40°01'57.22"N, 43°33'12.89"E, 2257 m, 04.07.2010.
131. Iğdır, Tuzluca, Aşağı Aktaş village, 40°04'45.42"N, 43°31'34.61"E, 1538 m, 05.07.2010.
132. Iğdır, Tuzluca, Kula village, roadside, 40°51'4.25"N, 43°25'53.48"E, 1175 m, 12.07.2010.
133. Iğdır, Tuzluca, Bahçelimeydan village, 40°03'50.07"N, 43°27'01.70"E, 1328 m, 12.07.2010.
134. Iğdır, Tuzluca, Bahçecik village, roadside, 40°04'05.63"N, 43°25'35.47"E, 40°04'27.27"N, 43°25'06.12"E, 1693, 1754 m, 12.07.2010.
135. Iğdır, Tuzluca, Mt Oyuklu, 39°55'42.76"N, 43°45'10.89"E, 1530 m, 16.06.2011.
136. Iğdır, Tuzluca, Osmanköy village, 40°01'59.12"N, 43°25'45.90"E, 1898 m, 24.06.2011.
137. Iğdır, Tuzluca, Karturan village, 40°04'26.70"N, 43°23'34.81"E, 1702 m, 24.06.2011.
138. Iğdır, Tuzluca, Mt Ziyaret village, 40°02'51.06"N, 43°24'33.22"E, 2101 m, 24.06.2011.
139. Iğdır, Tuzluca, Mt Kaşukhan village, 40°03'51.71"N, 43°22'50.41"E, 2063 m, 24.06.2011.
140. Iğdır, Tuzluca, Aşağı Katırlı village, 39°52'31.17"N, 43°42'09.33"E, 1801 m, 25.06.2011.
141. Iğdır, Tuzluca, Yağlı village, 39°50'10.41"N, 43°44'3178"E, 2147 m, 25.06.2011.
142. Iğdır, Tuzluca, Yassıbulak village, 39°49'57.64"N, 43°42'01.90"E, 2201 m, 25.06.2011.
143. Iğdır, Tuzluca, Bican Hill, 39°47'51.94"N, 43°40'49.56"E, 2298 m, 25.06.2011.
144. Iğdır, Tuzluca, Ağabey village, 40°06'39.85"N, 43°31'06.07"E, 1027 m, 25.06.2011.
145. Iğdır, Tuzluca, Alhanlı village, 40°03'22.32"N, 43°32'16.56"E, 1642 m, 26.06.2011.
146. Iğdır, Tuzluca, Kılıçlı village, 40°03'49.82"N, 43°32'18.95"E, 1707 m, 26.06.2011.
147. Iğdır, Tuzluca, Söğütlü village, 39°56'06.00"N, 43°42'57.08"E, 1539 m, 26.06.2011.
148. Iğdır, Tuzluca, Küçükova village, 39°57'03.52"N, 43°41'25.44"E, 1533 m, 26.06.2011.
149. Iğdır, Tuzluca, Karabulak village, 39°58'53.96"N, 43°43'19.43"E, 1349 m, 26.06.2011.
150. Iğdır: Tuzluca: Doğanyurt village, 39°54'09.75"N, 43°45'45.56"E, 1430 m, 26.06.2011.
151. Iğdır, Tuzluca, Turabi village, 40°04'29.60"N, 43°45'24.47"E, 967 m, 05.07.2011.
152. Iğdır, Tuzluca, Pirdemir village, 40°01'05.90"N, 43°34'54.35"E, 1776 m, 05.07.2011.
153. Iğdır, Tuzluca, Akoluk village, 40°01'34.10"N, 43°33'10.38"E, 2206 m, 05.07.2011.
154. Iğdır, Tuzluca, Beyoğlu village, 40°01'15.62"N, 43°29'15.34"E, 2296 m, 05.07.2011.

155. Iğdır, Tuzluca, Kozkoparan district, 40°01'03.96"N, 43°26'17.50"E, 1826 m, 07.07.2011.
156. Iğdır, Tuzluca, Yukarı aktaş village, 40°02'04.85"N, 43°27'30.33"E, 1917 m, 07.07.2011.
157. Iğdır, Tuzluca, Badıllı village, 40°00'25.17"N, 43°24'17.88"E, 2002 m, 07.07.2011.
158. Iğdır, Tuzluca, Laleli village, 39°55'27.74"N, 43°28'58.18"E, 2267 m, 07.07.2011.
159. Iğdır, Tuzluca, Tezekçi village, 40°07'08.18"N, 43°24'14.92"E, 1074 m, 21.07.2011.
160. Iğdır, Tuzluca, İncesu village, 40°06'54.63"N, 43°24'21.67"E, 1093 m, 21.07.2011.
161. Iğdır, Tuzluca, Aşağısutaşlı village, 39°55'39.66"N, 43°36'57.95"E, 1755 m, 22.07.2011.
162. Iğdır, Tuzluca, Kayakışlak village, 39°55'44.74"N, 43°38'30.33"E, 1673 m, 22.07.2011.
163. Iğdır, Tuzluca, Ortabucak village, 39°54'22.07"N, 43°37'13.92"E, 1784 m, 22.07.2011.
164. Iğdır, Tuzluca, Hadımlı village, 39°57'43.06"N, 43°37'00.27"E, 1743 m, 22.07.2011.
165. Iğdır, Tuzluca, Çiçekli village, 39°57'14.41"N, 43°34'35.78"E, 1871 m, 22.07.2011.
166. Iğdır, Tuzluca, Sarıabdallı village, 39°57'56.10"N, 43°35'32.89"E, 1647 m, 22.07.2011.
167. Iğdır, Tuzluca, Soğukbulak village, 39°55'30.31"N, 43°32'33.72"E, 2193 m, 22.07.2011.
168. Iğdır, Tuzluca, Bağlan village, 39°55'03.07"N, 43°39'01.45"E, 1684 m, 22.07.2011.
169. Iğdır, Tuzluca, Tutak village, 39°49'57.06"N, 43°27'51.27"E, 2218 m, 26.07.2011.
170. Iğdır, Tuzluca, Hasankent village, 39°57'01.49"N, 43°33'06.15"E, 1830 m, 26.07.2011.
171. Iğdır, Tuzluca, Kumbulak village, 39°57'40.83"N, 43°32'12.07"E, 2138 m, 26.07.2011.
172. Iğdır, Tuzluca, Akdiz village, 39°56'56.95"N, 43°32'04.85"E, 1983 m, 26.07.2011.
173. Iğdır, Tuzluca, Kırkbulak village, 39°57'38.76"N, 43°30'00.84"E, 1930 m, 26.07.2011.
174. Iğdır, Tuzluca, Elmalık village, 39°59'04.73" N, 43°33'53.33"E, 1834 m, 26.07.2011.

Results

In this study, the collected bryophytes were evaluated and 184 taxa (species, subspecies and varieties) belonging to 76 genera and 35 families were determined. Among them, *Crossidium crassinerve* was recorded for

the second time in Turkey. Furthermore, all taxa are new to the Iğdır province.

List of the species

Liverworts (Marchantiophyta)

- Barbilophozia barbata* (Schmid. ex Schreb.) Loeske – Loc. 13: on soil.
- Chiloscyphus pallescens* (Ehrh. ex Hoffm.) Dumort. – Loc. 118: on rock.
- Cephaloziella rubella* (Nees) Warnst. – Loc. 2, 13, 61, 62, 79, 94: on soil.
- Marchantia polymorpha* L. – Loc. 7, 106, 118, 119: near stream on soil.
- Mannia androgyna* (L.) A. Evans – Loc. 1, 62, 94: on soil, 2, 13, 61, 78, 79: on rock.
- Pellia endiviifolia* (Dicks.) Dumort. – Loc. 7: in water, 118, 119: near stream, on soil.
- Porella platyphylla* (L.) Pfeiff. – Loc. 13, 18, 94: on soil, Loc. 61, 79, 105: on rock.
- Southbya tophacea* (Spruce) Spruce – Loc. 7, 13, 79, 113: on wet soil.

Mosses (Bryophyta)

- Abietinella abietina* (Hedw.) M.Fleisch. *abietina* – Loc. 1, 2, 7, 61: on soil.
- A. abietina* var. *hystricosa* (Mitt.) Sakurai – Loc. 1, 2, 7, 61, 130, 138, 139: on soil.
- Amblystegium serpens* (Hedw.) Schimp. – Loc. 4, 5, 7, 8, 114, 115, 118: near stream, on wet soil.
- Anomobryum julaceum* (P. Gaertn., E. Mey. & Scherb.) Schimp. – Loc. 78, 79: on soil.
- Atrichum undulatum* (Hedw.) P.Beauv. – Loc.7: wet soil.
- Barbula convoluta* Hedw. – Loc. 1, 24, 48, 59, 62, 106, 113: on soil.
- B. unguiculata* Hedw. – Loc. 1, 4, 24, 48, 59, 61, 62, 106, 108, 113: on soil.
- Bartramia ithyphylla* Brid. – Loc. 1, 2, 13, 62, 106: on soil.
- B. pomiformis* Hedw. – Loc. 2, 13: on soil.
- Bryoerythrophyllum recurvirostrum* (Hedw.) P.C.Chen. – Loc. 13: on soil.
- Bryum alpinum* Huds. ex With. – Loc. 2, 13: on soil.
- B. archangelicum* Bruch & Schimp. – Loc. 2, 94: on soil.
- B. argenteum* Hedw. – Loc. 1, 13: on soil.
- B. caespiticium* Hedw. – Loc. 1, 3, 7, 83, 105, 138: on soil.
- B. creberrimum* Taylor. – Loc. 1, 2, 6, 62, 118: on soil.
- B. klinggraeffii* Schimp. – Loc. 13: on soil.

- B. kunzei* Hornsch. – Loc. 4, 15: on soil.
- B. mildeanum* Jur. – Loc. 1, 2, 4, 5, 6, 7, 8, 9, 14, 15, 16, 17, 19, 20, 21, 22, 18, 23, 104, 105, 138, 25, 26, 30, 48, 57, 61, 62, 75, 78, 79, 80, 83, 94, 98, 100, 107, 111, 116, 120, 121, 125, 126, 130, 131, 132, 133, 134, 147, 148, 149, 150, 153, 154, 155, 156, 169, 170, 171, 172, 173, 174, 102, 103: on soil.
- B. moravicum* Podp. – Loc. 6, 82, 81, 120, 128, 132: on soil.
- B. pallens* Sw. – Loc. 1, 2, 4, 5, 7, 8, 9, 14, 15, 16, 17, 19, 20, 21, 22, 18, 48, 57, 61, 62, 75, 78, 79, 80, 83, 94, 98, 100, 107, 121, 125, 126, 130, 130, 150, 153, 154, 155, 156, 104, 105, 138: on soil.
- B. pallescens* Schleich. ex Schwägr. – Loc. 25, 106, 119, 138: on soil.
- B. rubens* Mitt. – Loc. 5, 6, 13, 14, 15, 106, 113, 126, 130: on soil.
- B. schleicheri* DC. – Loc. 6, 20, 22, 18, 26, 61, 54, 57, 80, 99, 104, on wet rock, 105, 118, 138, 125, 128, 133, 134, near stream, on wet soil.
- B. turbinatum* (Hedw.) Turner. – Loc. 7, 118: near stream, on wet soil.
- B. uliginosum* (Brid.) Bruch & Schimp. – Loc. 105, 118: near stream, on wet soil.
- B. weigelii* Spreng. – Loc. 115, 118: near stream, on wet soil.
- Brachythecium rivulare* Schimp. – Loc. 7: on soil.
- B. rutabulum* (Hedw.) Schimp. – Loc. 6: on soil, Loc. 7, 105, 119: near stream, on soil, 116: on soil.
- B. salebrosum* (Hoffm. ex F. Weber & D. Mohr) Schimp. – Loc. 1, 6, 7, 13, 119: on soil.
- B. tommasinii* (Sendtn. ex Boulay) Ignatov & Huttunen. – Loc. 119: on soil.
- Calliergonella cuspidata* (Hedw.) Loeske. – Loc. 1, 7, 115, 118: near stream, on wet soil
- Campyliadelphus chrysophyllus* (Brid.) R.S. Chopra. – Loc. 7: near stream, on wet soil.
- Campylium stellatum* (Hedw.) Lange & C.E.O. Jensen. – Loc. 7, 115, 118: near stream, on wet soil, Loc. 118: in water.
- Ceratodon purpureus* (Hedw.) Brid. – Loc. 79: on soil.
- Cratoneuron filicinum* (Hedw.) Spruce. – Loc. 4, 5, 8, 7, 115, 118: near stream, on wet soil, Loc. 118: in water.
- **Crossidium crassinerve* (De Not.) Jur. – Loc. 48, 80: on soil and rock, Loc. 62, 54, 76, 82, 122: on soil, Loc. 57, 75, 81, 112, 127: on rock, Loc. 104: on calcareous rock.
- Crossidium squamiferum* (Viv.) Jur. – Loc. 5, 48, 79: on soil, 62: on rock.
- Ctenidium molluscum* (Hedw.) Mitt. – Loc. 62, 79, 82, 108, 118, 119: on soil.
- Dicranoweisia crispula* (Hedw.) Milde – Loc. 13, 62, 94, 130: on soil.
- Dicranum scoparium* Hedw. – Loc. 7: on soil.
- Didymodon acutus* (Brid.) K. Saito. – Loc. 2, 5, 22, 25, 57, 75, 78, 84, 103, 104, 105, 131, 142, 143, 161, 162: on calcareous rock, Loc. 20, 18, 24, 26, 48, 59, 60, 80, 81, 82, 120, 139, 146, 147, 150, 155, 156, 112, 114, 115, 122, 124, 138: on soil.
- D. cordatus* Jur. – Loc. 13, 61, 94: on soil.
- D. fallax* (Hedw.) R. H. Zander. – Loc. 6: on rock, Loc. 16, 76, 80: on soil.
- D. n. icmadophilus* (Schimp. ex Müll. Hal.) K. Saito – Loc. 13, 94: on soil.
- D. insulanus* (De Not.) M.O. Hill. – Loc. 79: on soil.
- D. rigidulus* Hedw. – Loc. 14, 80: on soil.
- D. tophaceus* (Brid.) Lisa – Loc. 1, 5, 18, 24, 60, 78, 80, 81, 82, 83, 139, 140, 150, 156, 104, 105, 114, 115: on soil.
- D. vinealis* (Brid.) R.H. Zander. – Loc. 2, 83, 105, 114: on soil.
- Distichium capillaceum* (Hedw.) Bruch & Schimp. – Loc. 1, 5, 18, 24, 59, 60, 78, 80, 81, 82, 83, 139, 140, 150, 156, 104, 105, 114, 115, 136, 137, 138, 163, 164, 165, 166, 167, 168, 169, 170, 171, 173, 174: on soil.
- D. inclinatum* (Hedw.) Bruch & Schimp. – Loc. 1, 18, 24, 78, 80, 81, 82, 83, 139, 150, 104, 105, 114, 138: on soil.
- Drepanocladus aduncus* (Hedw.) Warnst. – Loc. 7, 118, 115: in water.
- D. polygamus* (Schimp.) Hedenäs. – Loc. 7, 118, 115: near stream, on wet soil.
- Encalypta alpina* Sm. – Loc. 1, 2, 79: on soil.
- E. ciliata* Hedw. – Loc. 1, 2, 78, 79: on soil.
- E. microstoma* Bals. Criv. & De Not. – Loc. 13, 79, 106, 119: on soil.
- E. rhamnoides* Schwagr. – Loc. 1, 2, 5, 6, 9, 13, 17, 19, 20, 21, 22, 18, 23, 24, 25, 26, 29, 30, 61, 59, 78, 79, 80, 81, 82, 94, 106, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 139, 140, 141, 142, 150, 152, 153, 154, 155, 156: on soil.
- E. streptocarpa* Hedw. – Loc. 1, 2, 5, 6, 9, 13, 18, 59, 78, 79, 80, 81, 82, 94, 106, 116, 117, 118, 119: on soil.
- E. vulgaris* Hedw. – Loc. 1, 2, 13, 18, 78, 79, 94, 106, 116, 117, 118, 119: on soil.
- Entosthodon muhlenbergii* (Turner) Fife. – Turf; Loc. 61, 62: on soil.

- Epipterygium tozeri* (Grev.) Lindb. – Loc. 7, 106, 114: on soil.
- Eucladium verticillatum* (With.) Bruch & Schimp. – Loc. 13, 18, 78, 79, 106, 116, 117, 118, 119, on wet soil.
- Fissidens adianthoides* Hedw. – Loc. 7: on rock.
- Fontinalis antipyretica* Hedw. – Loc. 7, 106, 105, 114: in water.
- Funaria hygrometrica* Hedw. – Loc. 61, 62, 78, 79: on soil.
- Grimmia alpestris* (F. Weber & D. Mohr) Schleich. – Loc. 1, 4, 5, 18, 24, 29, 30, 6, 7, 8, 14, 21, 62, 54, 57, 76, 79, 80, 81, 82, 83, 84, 94, 111, 121, 126, 102, 103, 104, 112, 114, 115, 122, 124, 127, 136, 137, 131, 132, 128, 139, 140, 141, 142, 143, 145, 146, 147, 148, 150, 154, 156, 157, 158, 165, 167, 169, 170, 172, 173: on calcareous rock.
- G. anodon* Bruch & Schimp. – Loc. 7, 15, 48, 61, 94, 124, 127, 136, 100, 119, 123, 139, 140: on rock.
- G. crinita* Brid. – Loc. 20, 22, 48, 62, 75, 80, 81, 98, 111, 116, 123, 126, 128, 130, 131, 132, 134: on calcareous rock.
- G. decipiens* (Schultz) Lindb. – Loc. 1, 2, 4, 5, 6, 7, 8, 9, 13, 14, 15, 16, 17, 19, 20, 18, 23, 24, 25, 26, 30, 21, 22, 48, 57, 59, 60, 61, 62, 78, 79, 80, 81, 82, 84, 94, 98, 106, 107, 108, 113, 116, 102, 103, 109, 112, 115, 122, 124, 127, 138, 117, 118, 121, 123, 125, 126, 128, 129, 130, 133, 134, 140, 155, 169: on calcareous rock.
- G. donniana* Sm. – Loc. 1, 2, 3, 5, 6, 13, 16, 59, 81, 82, 119, 128, 129, 134: on siliceous rock.
- G. elatior* Bruch ex Bals. Criv. & De Not. – Loc. 1, 2, 3, 4, 5, 6, 7, 8, 9, 13, 14, 15, 16, 17, 19, 20, 21, 22, 18, 23, 24, 26, 29, 30, 48, 59, 61, 54, 57, 62, 75, 76, 78, 79, 80, 81, 82, 84, 94, 100, 110, 111, 113, 117, 118, 119, 121, 123, 125, 126, 128, 101, 103, 104, 105, 109, 112, 114, 115, 122, 124, 127, 136, 137, 138, 129, 130, 131, 132, 133, 134, 106, 107, 108, 139, 140, 141, 142, 143, 145, 146, 147, 149, 150, 152, 153, 154, 155, 156, 157, 158, 161, 162, 163, 164, 165, 167, 169, 170, 171, 172, 173, 174: on siliceous rock.
- G. elongata* Kaulf. – Loc. 3, 5, 7, 13, 14, 15, 20, 22, 48, 76, 84, 98, 100, 106, 107, 110, 119, 121, 125, 126, 128, 129, 130, 131, 133, 134, 139, 143, 165, 169: on siliceous rock.
- G. funalis* (Schwägr.) Bruch & Schimp. – Loc. 26, 94, 128, 130, 141, 142, 157, 158, 124, 136, 138, 163, 167, 154: on siliceous rock.
- G. hartmanii* Schimp. – Loc. 7, 13, 26, 30, 61, 60, 62, 81, 82, 94, 107, 108, 128, 130, 140, 143, 146, 147, 150, 156, 112, 122, 124, 127, 138, 162, 165, 169: on siliceous rock.
- G. laevigata* (Brid.) Brid. – Loc. 1, 5, 6, 25, 29, 7, 13, 14, 48, 61, 60, 69, 62, 79, 94, 101, 107, 108, 110, 119, 123, 131, 96, 114, 122, 134, 16, 166, 172, 174: on calcareous rock.
- G. longirostris* Hook. – Loc. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 48, 57, 58, 59, 60, 61, 62, 75, 79, 80, 81, 82, 83, 84, 94, 95, 106, 107, 108, 110, 111, 113, 117, 119, 121, 123, 126, 128, 97, 114, 115, 122, 124, 127, 138, 130, 133, 134, 161, 170: on siliceous rock.
- G. montana* Bruch & Schimp. – Loc. 48, 57, 59, 60, 76, 78, 79, 80, 81, 82, 83, 84, 85: on siliceous rock, Loc. 125, 132, 139, 140, 141, 142, 143, 146, 154, 155, 157, 158, 162, 167, 169, 170: on calcareous rock, Loc. 75: on soil.
- G. orbicularis* Bruch ex Wilson. – Loc. 1, 2, 4, 5, 6, 7, 13, 14, 15, 18, 23, 25, 26, 30, 57, 61, 59, 60, 62, 79, 82, 94, 107, 110, 119, 126, 130, 134, 139, 140, 141, 142, 143, 145, 146, 147, 149, 153, 156, 157, 158, 161, 162, 163, 164, 166, 167, 169, 170, 102, 103, 104, 112, 114, 115, 122, 124, 127, 136, 137, 138, 171, 172, 173, 174: on rock.
- G. ovalis* (Hedw.) Lindb. – Loc. 1, 2, 5, 6, 7, 8, 9, 13, 14, 18, 23, 24, 25, 26, 30, 15, 16, 19, 22, 61, 62, 54, 57, 60, 78, 79, 94, 98, 106, 107, 108, 110, 113, 117, 118, 123, 125, 126, 130, 131, 134, 139, 140, 141, 142, 143, 145, 146, 147, 154, 155, 158, 161, 162, 163, 165, 167, 102, 103, 104, 105, 112, 115, 122, 124, 127, 135, 136, 137, 138, 169, 170, 171: on siliceous rock.
- G. pulvinata* var. *pulvinata* (Hedw.) Sm. – Loc. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 23, 25, 26, 30, 17, 18, 19, 20, 21, 22, 61, 62, 60, 79, 80, 94, 99, 106, 107, 108, 110, 113, 117, 118, 119, 125, 126, 130, 133, 134, 139, 142, 143, 146, 155, 103, 104, 112, 115, 122, 124, 127, 136, 138, 158, 167, 169, 170: on siliceous rock.
- G. pulvinata* var. *longipila* Schimp. – Loc. 1, 15, 16, 61, 94, 100, 110, 111, 113, 131, 133, 142: on siliceous rock.
- G. tergestina* Tomm. ex Bruch & Schimp. – Loc. 1, 5, 6, 9, 21, 48, 75, 76, 98, 99, 100, 107, 110, 125, 126, 130, 131, 134: on siliceous rock.
- G. trichophylla* Grev. – Loc. 1, 6, 7, 13, 16, 17, 18, 23, 24, 25, 26, 30, 19, 20, 48, 61, 54, 57, 59, 62, 79, 80, 94, 107, 108, 110, 118, 119, 120, 123, 126, 128, 130, 131, 132, 133, 139, 140, 141, 142, 143, 145,

- 146, 149, 150, 154, 155, 102, 103, 104, 112, 115, 122, 124, 127, 135, 136, 138, 156, 157, 158, 163, 165, 167, 169, 170: on calcareous rock.
- Hedwigia ciliata* var. *ciliata* (Hedw.) P.Beauv. – Loc. 13, 7, 61, 62, 119: on rock.
- H. ciliata* var. *leucophaea* Bruch & Schimp. – Loc. 2, 3, 4, 13, 18, 61, 104, 112, 115, 118, 124, 127, 138, 119, 157: on rock.
- Homalothecium lutescens* (Hedw.) H.Rob. – Loc. 2, 3, 4, 5, 14, 15, 16, 19, 2018, 23, 24, 26, 30, 47, 21, 22, 59, 60, 67, 90, 76, 79, 80, 81, 82, 83, 84, 94, 98, 100, 106, 107, 108, 110, 111, 113, 117, 119, 125, 126, 128, 129, 130, 131, 132, 133, 139, 140, 141, 142, 143, 145, 146, 147, 148, 149, 150, 152, 154, 155, 156, 166, 167, 169, 170, 172, 97, 101, 103, 109, 114, 115, 122, 124, 126, 136, 137, 138, 173, 174: on rock, 8, 9, 161, 162, 163, 164, 165: on calcareous rock, 6, 13, 25, 48, 61, 62, 99, 118, 134, 157, 104, 127: on soil. 78: on the bark of *Populus tremula*.
- H. philippeanum* (Spruce) Schimp. – Loc. 5, 7, 13, 30, 48, 62, 94, 140, 103, 115, 136, 145, 153: on soil. 61, 79, 110, 119, 130, 139, 141, 142, 61, 112, 114, 122, 124, 127, 137, 138, 146, 148, 150, 154, 166: on rock.
- Homalothecium sericeum* (Hedw.) Schimp. – Loc. 1, 2, 4, 5, 6, 19, 99, 7, 8, 9, 13, 48, 119, 76, 81, 122, 126: on soil, 14, 15, 16, 17, 20, 18, 23, 75, 94, 107, 118: on siliceous rock, 21, 26, 22, 61, 78, 79, 82, 98, 106, 110, 117, 121, 125, 128, 130, 131, 103, 127, 136, 138, 133, 158, 163: on rock, 129, 134: on soil and rock.
- H. incurvatum* (Schr. ex Brid.) Loeske. – Loc. 5: on soil, Loc. 6: on rock, Loc. 7: on wet soil.
- Hygroamblystegium humile* (P.Beauv.) Vanderp., Goffinet & Hedenäs. – Loc. 4, 5, 6: on soil, 7: near stream, on soil, 115, 118: in water.
- H. tenax* (Hedw.) Jenn. – Loc. 4, 5, 6: on soil, Loc. 7: near stream, on soil, Loc. 115, 118: in water.
- H. varium* (Hedw.) Mönk. – Loc. 4, 5, 6, 7, 115: near stream, on soil, Loc. 118: in water.
- Hygrohypnum duriusculum* (De Not.) D.W.Jamieson. – Loc. 7: on rock, Loc. 118: near stream, on rock, Loc. 79: on wet rock.
- H. eugyrium* (Schimp.) Broth. – Loc. 7: on rock, Loc. 118: near stream, on rock.
- H. luridum* (Schimp.) Broth. – Loc. 5: on rock, Loc. 7: on wet rock, Loc. 13: near stream, on rock, Loc. 79, 94, 105, 114: on wet rock, Loc. 118: on calcareous rock, Loc. 115: near stream, on rock.
- H. smithii* (Sw.) Broth. – Loc. 79, 94: on wet rock, Loc. 118: near stream, on rock.
- Hylocomium splendens* (Hedw.) Schimp. – Loc. 7: on wet soil.
- Hypnum andoi* A.J.E.Sm. – Loc. 1, 7, 8, 62, 79: on soil.
- H. cupressiforme* var. *cupressiforme* Hedw. – Loc. 1, 4, 6, 7, 9, 13, 16, 18, 25, 26, 29, 30, 62, 80, 81, 82, 94, 99, 106, 107, 108, 110, 111, 113, 118, 119, 121, 102, 103, 104, 112, 122, 124, 127, 136, 138, 130, 132, 133, 134, 141, 142, 143, 146, 149, 150, 154, 158, 162, 163, 164, 169, 170, 171, 173: on rock, 98: on siliceous rock, 62, 78, on the bark of *Populus tremula*, 5, 8, 14, 15, 17, 24, 1, 79, 83, 117, 125, 126, 128, 139, 140, 145, 147, 155, 157, 165, 167, 172, 174: on soil.
- H. cupressiforme* var. *lacunosum* Brid. – Loc. 1, 4, 6, 7, 9, 13, 16, 62, 18, 80, 81, 82, 94, 99, 106, 107, 108, 110, 111, 118, 119, 121, 102, 103, 104, 112, 122, 136, 138, 130, 132, 133, 134, 141, 142, 143, 150: on rock, 113: on siliceous rock, 2, 5, 8, 14, 15, 17, 24, 61, 79, 83, 117, 125, 126, 128, 139, 140: on soil, 78: on the bark of *Populus tremula*.
- H. cupressiforme* var. *resupinatum* (Taylor) Schimp. – Loc. 1, 7, 9, 13, 18, 62, 94, 99, 106, 118, 119, 121, 102, 103, 104, 112, 122, 136, 138, 130, 142, 143, 150: on rock, Loc. 2, 6, 24, 61, 78, 79, 83, 117, 125, 126, 128, 139, 140: on soil, Loc. 113: on siliceous rock.
- H. imponens* Hedw. – Loc. 7, 13: on soil, Loc. 18: on rock.
- H. jutlandicum* Holmen & E.Warncke – Loc. 7, 61: on soil.
- H. revolutum* (Mitt.) Lindb. – Loc. 2, 13, 78, 79, 94, 100: on soil, Loc. 7: on wet soil, near stream.
- H. vaucheri* Lesq. – Loc. 6, 14, 20, 22, 82, 94, 108, 113, 116, 119, 120, 121, 125, 126, 128, 130, 132, 133, 155: on rock, Loc. 131: on soil, Loc. 7, 81: near stream on soil.
- Kindbergia praelonga* (Hedw.) Ochyra. – Loc. 7, 118: near stream on soil.
- Leptobryum pyriforme* (Hedw.) Wilson. – Loc. 1: on soil.
- Leucodon sciuroides* var. *morensis* (Schwägr.) De Not. – Loc. Common in the study area 2, 3, 6, 7, 1, 5, 9, 13, 19, 26, 24, 18, 23, 25, 21, 62, 60, 22, 61, 78, 94, 79, 80, 111, 112, 117, 106, 107, 108, 110, 118, 113, 119, 126, 128, 130, 138, 134, 112, 114, 115, 122, 136, 140, 141, 153, 154, 142, 143, 147, 150, 145, 146, 155, 157: on siliceous rock.

- Leucodon sciuroides* var. *sciuroides* (Hedw.) Schwägr. – Loc. 2, 3, 1, 5, 9, 13, 19, 22, 26, 24, 18, 23, 25, 21, 62, 60, 67, 61, 78, 94, 79, 80, 111, 112, 117, 106, 107, 108, 110, 118, 113, 119, 126, 128, 130, 138, 134, 112, 114, 115, 122, 124, 139, 127, 136, 140, 141, 153, 154, 142, 143, 147, 150, 145, 146, 155, 157, 169, 170, 171, 173, 174: on siliceous rock.
- Mnium hornum* Hedw. – Loc. 1: on soil.
- Myurella julacea* (Schwägr.) Schimp. – Loc. 1, 2: on soil.
- Orthotrichum affine* Schrad. ex Brid. – Loc. 1, 2, 3, 6, 7, 5, 9, 13, 19, 18, 23, 25, 26, 24, 21, 22, 61, 62, 60, 78, 79, 80, 94, 111, 112, 113, 117, 106, 107, 108, 110, 118, 119, 126, 128, 130, 112, 114, 115, 122, 124, 138, 134, 139, 127, 136, 140, 141, 142, 143, 147, 150, 153, 154, 145, 146, 155, 157, 169, 170, 171, 173, 174: on siliceous rock.
- O. anomalum* Hedw. – Loc. 1, 2, 3, 6, 7, 5, 9, 13, 14, 15, 16, 17, 19, 18, 23, 25, 26, 29, 30, 20, 24, 21, 22, 61, 62, 55, 57, 60, 78, 79, 80, 94, 111, 112, 113, 117, 106, 107, 108, 110, 118, 119, 126, 128, 130, 102, 103, 104, 123, 125, 112, 114, 115, 122, 124, 138, 134, 139, 127, 136, 140, 141, 142, 143, 147, 150, 153, 154, 145, 146, 155, 157, 169, 170, 171, 173, 174, 158, 163, 165, 167: on siliceous rock.
- O. cupulatum* Hoffm. ex Brid. – Loc. 1, 2, 3, 5, 6, 7, 9, 13, 14, 15, 16, 17, 19, 18, 23, 24, 25, 26, 29, 30, 20, 21, 22, , 61, 62, 55, 57, 60, 78, 79, , 80, 94, 106, 107, 108, 110, 111, 112, 113, 117, 118, 119, 123, 125, 126, 128, 130, 124, 103, 104, 112, 114, 115, 122, 124, 127, 136, 138, 134, 139, 140, 141, 142, 143, 145, 146, 147, 150, 153, 154, 155, 157, 158, 163, 165, 167, 169, 170, 171, 173, 174: on siliceous rock.
- O. pallens* Bruch ex Brid. – Loc. 1, 2, 3, 5, 6, 7, 9, 13, 14, 15, 16, 17, 19, 18, 23, 24, 25, 26, 29, 30, 20, 21, 22, 61, 62, 55, 57, 60, 78, 79, 80, 94, 106, 107, 108, 110, 111, 112, 113, 117, 118, 119, 123, 125, 126, 128, 130, 102, 103, 104, 112, 114, 115, 122, 124, 127, 136, 138, 134, 139, 140, 141, 142, 143, 145, 146, 147, 150, 153, 154, 155, 157, 158, 163, 165, 167, 169, 170, 171, 173, 174: on siliceous rock.
- O. rupestre* Schleich. ex Schwägr. – Loc. 1, 2, 3, 5, 6, 7, 9, 13, 14, 15, 16, 17, 19, 18, 23, 24, 25, 26, 29, 30, 20, 21, 22, 61, 62, 55, 57, 60, 78, 79, 80, 94, 106, 107, 108, 110, 111, 112, 113, 117, 16.06.2010, 118, 119, 123, 125, 126, 128, 130, 102, 103, 104, 112, 114, 115, 122, 124, 127, 136, 138, 134, 139, 140, 141, 142, 143, 145, 146, 147, 150, 153, 154, 155, 157, 158, 163, 165, 167, 169, 170, 171, 173, 174: on siliceous rock.
- O. striatum* Hedw. – Loc. 1, 2, 3, 5, 6, 7, 9, 13, 14, 15, 16, 17, 19, 18, 23, 24, 25, 26, 29, 30, 20, 21, 22, 61, 62, 55, 57, 60, 78, 79, 80, 94, 106, 107, 108, 110, 111, 112, 113, 117, 118, 119, 123, 125, 126, 128, 130, 102, 103, 104, 112, 114, 115, 122, 124, 142, 143, 145, 146, 147, 150, 153: on siliceous rock.
- Oxyrrhynchium hians* (Hedw.) Grout. – Loc. 7: near stream, on soil.
- Palamocladium euchloron* (Müll. Hal.) Wijk & Margad. – Loc. 7: on rock.
- Palustriella falcata* (Brid.) Hedenäs – Loc. 7, 118, 119, 106: near stream, on soil.
- Philonotis calcarea* (Bruch & Schimp.) Schimp. – Loc. 1, 7, 13, 118, 119: on wet soil.
- P. fontana* (Hedw.) Brid. var. *fontana* – Loc. 7, 13, 118: on wet soil.
- P. fontana* var. *pumila* (Turner) Bridel. – Loc. 7, 13, 118, 119: on wet soil.
- P. marchica* (Hedw.) Brid. – Loc. 1, 7, 13, 118, 119: on wet soil.
- P. seriata* Mitt. – Loc. 1, 7, 13, 118, 119: on wet soil.
- Plagiomnium affine* (Blandow ex Funck) T.J.Kop. – Loc. 1, 2, 7, 13: on soil.
- P. elatum* (Bruch & Schimp.) T.J.Kop. – Loc. 1, 2, 7, 13, 79: on soil.
- P. ellipticum* (Brid.) T. Kop. – Loc. 7, 13, 79, 94: on soil.
- P. medium* (Bruch & Schimp.) T.J.Kop. – Loc. 1, 13, 79, 48, 61, 62: on soil.
- P. rostratum* (Schrad.) T.J.Kop. – Loc. 13, 79, 94: on soil.
- Plagiothecium curvifolium* Schlieph. ex Limpr. – Loc. 7: on soil.
- Plasteurhynchium striatulum* (Spruce) M.Fleisch. – Loc. 7, 118, 119, 106: near stream, on soil.
- Platyhypnidium riparioides* (Hedw.) Dixon. – Loc. 1, 7, 13, 118, 119: on soil.
- Pleurochaete squarrosa* (Hook. & Taylor) A.J.E.Sm. – Loc. 1, 48, 61, 62, 60: on soil.
- Pohlia cruda* (Hedw.) Lindb. – Loc. 1, 2, 3, 5, 6, 7, 13, 24, 60, 61, 62, 78, 79, 94: on soil.
- P. elongata* Hedw. – Loc. 1, 2, 3, 5, 6, 7, 13, 24, 60, 61, 62, 78, 79, 94, 99, 106, 107, 116, 117, 118, 119, 121, 105: on soil.
- P. longicollis* (Hedw.) Lindb. – Loc. 13, 62, 79, 130, 13, 79, 94: on soil.
- P. nutans* (Hedw.) Lindb. – Loc. 13, 62, 79, 94, 62, 79, 94: on soil.

- P. prolifera* (Kindb.) Lindb. ex Broth. – Loc. 79, 94: on wet soil.
- P. wahlenbergii* (F. Weber & D. Mohr) A. L. Andrews – Loc. 7, 13, 79, 94: on soil.
- Pogonatum urnigerum* (Hedw.) P.Beauv. – Loc. 1, 2, 78, 79, 94: on soil.
- Polytrichastrum formosum* (Hedw.) G.L.Sm. – Loc. 13, 79, 94: on soil.
- Polytrichum commune* Hedw. – Loc. 13, 62, 79, 94, 130: on soil.
- P. juniperinum* Hedw. – Loc. 13, 62, 79, 94, 130: on soil.
- P. strictum* Menzies ex Brid.– Loc. 13, 62, 79, 94: on soil.
- Rhodobryum roseum* (Hedw.) Limpr. – Loc. 79: on soil.
- Rhynchostegium confertum* (Dicks.) Schimp. – Loc. 6, 3, 5, 7, 13: on soil.
- R. murale* (Hedw.) Schimp. – Loc. 4, 13, 18, 61, 79, 94, 113, 119: on soil.
- Saelania glaucescens* (Hedw.) Broth. – Loc. 7, 8, 3, 5, 13, 61, 62, 94, 119, 106: on soil.
- Schistidium apocarpum* (Hedw.) Bruch & Schimp. – Loc. 13, 108, 130: on siliceous rock, Loc. 94, 98, 106, 113, 116, 118: on calcareous rock.
- S. confertum* (Funck) Bruch & Schimp. – Loc. 79, 130: on siliceous rock.
- S. helveticum* (Schkuhr) Deguchi. – Loc. 59, 79, 108, 119, 121, 128, 134: on siliceous rock.
- S. flaccidum* H.H.Blom. – Loc. 2, 4, 7, 13, 24, 62, 78, 79, 94, 98, 106, 113: on rock.
153. *Schistidium platyphyllum* (Mitt.) H.Perss. – Loc. 1, 2, 4, 7, 13, 24, 62, 78, 79, 94, 98, 106, 113, 116, 119: on calcareous rock.
- Scorpidium revolvens* (Sw. ex anon.) Rubers. – Loc. 7: near stream on soil.
- Sciuro-hypnum populeum* (Hedw.) Ignatov & Huttunen. – Loc. 61, 62: on the bark of *Juniperus communis*, Loc. 94: on the bark of *Populus tremula*.
- Syntrichia calcicola* J. J. Amann. – Loc. 25, 61, 62: on soil.
- S. intermedia* Brid. – Loc. 7, 3, 5, 13, 8, 61, 62, 94, 119, 125, 121, 99, 98, 106: on soil.
- S. montana* Nees. – Loc. 7, 8, 3, 5, 13, 61, 62, 94, 119, 121, 125, 98, 99, 106: on soil.
- S. norvegica* F. Weber. – Loc. 7, 8, 3, 5, 13, 61, 62, 94: on soil.
- S. papillosissima* (Copp.) Loeske. – Loc. 3, 5, 7, 8: on soil.
- S. princeps* (De Not.) Mitt. – Loc. 3, 5, 7, 26, 19, 18, 13, 14, 15, 20, 22, 48, 76, 84, 119, 121, 125, 98, 99, 106, 107, 110, 126, 134, 139, 143, 165, 169: on soil.
- S. ruralis* var. *ruraliformis* (Besch.) Delogne. – Loc. 3, 5, 7, 13, 14, 15, 17, 23, 25, 26, 19, 18, 20, 22, 48, 76, 84, 98, 99, 106, 107, 110, 119, 121, 125, 126, 128, 129, 130, 131, 133, 134, 139, 143, 165, 169: on soil.
- S. ruralis* var. *ruralis* (Hedw.) F.Weber & D.Mohr – Loc. 3, 5, 7, 17, 23, 25, 26, 19, 18, 13, 14, 15, 20, 22, 48, 76, 84, 98, 99, 106, 107, 110, 119, 121, 125, 126, 128, 129, 130, 131, 133, 134, 139, 143, 165, 169: on soil.
- S. virescens* (De Not.) Ochyra. – Loc. 5, 9, 3, 17, 23, 25, 26, 19, 18, 30, 48, 54, 57, 143, 146, 147, 148, 99, 100, 139, 140, 141, 142, 149, 152, 153, 154, 155, 156, 166, 167, 169, 157, 158, 161, 162, 163, 165, 102, 103, 104, 105, 112, 115, 122, 135, 136, 137, 138, 170, 171, 124, 127, 174: on soil.
- Thuidium delicatulum* (Hedw.) Schimp. – Loc. 7, 13, 94, 106, 99, 118: on soil.
- T. recognitum* (Hedw.) Lindb. – Loc. 7, 9, 13, 99, 106, 118: on soil.
- Timmia austriaca* Hedw. – Loc. 1, 2, 3, 5, 7, 13, 94, 106, 118: on soil
- T. bavarica* Hessel. – Loc. 7, 13, 1, 2, 13, 94, 106, 118: on soil.
- T. norvegica* J.E.Zetterst. – Loc. 1, 7, 2, 13, 94, 118, 106: on soil.
- Tortella flavovirens* (Bruch) Broth. – Tuft; Loc. 7, 61, 62, 106, 119: on soil, 13: on rock.
- T. inclinata* var. *densa* (Lorentz & Molendo) Limpr. – Loc. 7, 13: on rock, 61, 62, 119: on soil.
- Tortula inermis* (Brid.) Mont. – Loc. 18, 30, 48, 75, 100, 103, 104, 124, 127, 128, 130, 137, 138, 139, 142, 143, 158, 169: on soil.
- Tortula muralis* Hedw. – Turf; Loc. 3, 5, 7, 13, 14, 15, 20, 22, 48, 76, 84, 98, 100, 106, 107, 110, 119, 121, 125, 126, 128, 129, 130, 131, 133, 134, 139, 143, 165, 169: on soil.
- T. obtusifolia* (Schwägr.) Mathieu. – Loc. 7, 13, 1, 2, 3, 5, 6, 13, 16, 81, 106, 119, 128, 129, 134: on soil, 59, 82: on siliceous rock and soil.
- T. subulata* Hedw. – Loc. 3, 5, 9, 17, 19, 18, 23, 25, 26, 30, 48, 54, 57, 99, 100, 139, 140, 141, 142, 143, 146, 147, 148, 149, 152, 153, 154, 155, 156, 157, 158, 161, 162, 163, 165, 166, 167, 169, 102, 103, 104, 105, 112, 115, 122, 124, 127, 135, 136, 137, 138, 170, 171, 174: on soil.
- T. truncata* (Hedw.) Mitt. – Loc. 1, 2, 5, 9: on soil.

Discussion

The bryophyte taxa were noticed to grow mostly on soil in the study area in the Iğdır province, but epiphytics were very few, because of the few trees in the research area. As regards temperature tolerance, most bryophytes seemed to prefer submontane to montane regions, which is in agreement with the climate and terrains in the study area. The most important habitats for bryophytes were rocks and soil. Most species favoured well-lit locations and some endured shade.

The most common bryophyte genera were: *Grimmia*, *Tortella*, *Tortula*, *Syntrichia*, *Crossidium*, *Schistidium*, *Homalothecium*, and *Bryum*.

Encalypta rhaptocarpa, *Grimmia alpestris*, *Grimmia decipiens*, *Grimmia elatior*, *Grimmia longirostris*, *Grimmia orbicularis*, *Grimmia ovalis*, *Grimmia pulvinata*, *Grimmia trichophylla*, *Distichium capillaceum*, *Homalothecium philippeanum*, *Syntrichia ruralis*, *Tortula subulata*, *Orthotrichum affine*, *Orthotrichum anomalum*, *Orthotrichum cupulatum*, *Orthotrichum pallens*, *Orthotrichum rupestre*, *Orthotrichum striatum*, *Bryum mildeanum*, *Bryum pallens*, *Homalothecium lutescens*, *Homalothecium sericeum*, *Hypnum cupressiforme* var. *cupressiforme*, *Hypnum cupressiforme* var. *lacunosum*, *Hypnum cupressiforme* var. *resupinatum*, *Leucodon sciuroides* var. *morensis*, *Leucodon sciuroides* var. *sciuroides* were the most common taxa in the study area.

No bryophyte species have been observed in the large area of northern and southeastern Iğdır, north-eastern Tuzluca and in the surroundings of Karakoyunlu and Aralık, with grassy plains and without trees. Bryophyte biodiversity is very poor, especially on the Iğdır Plateau, at villages along river Aras, at the northern hillsides of Mt Ağrı in Karakoyunlu and Aralık villages, and in the northeastern and eastern parts of Tuzluca.

Bryophyte taxa like *Dicranum scoparium*, *Platyhypnidium riparioides*, *Kindbergia praelonga*, *Thuidium delicatulum*, *Thuidium recognitum*, *Hygrohypnum eugyrium*, *Cratoneuron filicinum*, *Atrichum undulatum*, *Campyliadelphus chrysophyllus*, etc., growing on soil and rocks, were abundantly defined in the other locations, since the Mt Zor Valley stretching from Mt Zor to Alibeyköy was moderately humid.

The richest locations were Mt Zor, Alibeyköy village and Mt Ağrı (Korhan Plateau). The Iğdır region has no forested areas and is mostly dominated by the steppes. Thus, bryophytes were mostly observed on soil and rock.

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