

New records of *Carex* (Cyperaceae) for the flora of Armenia

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Abstract

The hybrid *Carex diluta* × *C. distans* has been found new for Armenia. This is the first *Carex* hybrid mentioned for Armenia. For *Carex hartmanii* and *Carex muricata* subsp. *ashokae* additional localities are reported. Both formerly overlooked species are widely distributed in Armenia. The occurrence of *Carex cilicica* has been confirmed.

Key Words: Flora of Armenia, new taxa, Cyperaceae, *Carex*, *C. diluta* × *C. distans*, *C. hartmanii*, *C. muricata* subsp. *ashokae*, *C. cilicica*.

Zusammenfassung

Die Hybride *Carex diluta* × *C. distans* wurde in Armenien gefunden – das ist die erste aus Armenien berichtete *Carex*-Hybride. Für *Carex hartmanii* und *Carex muricata* subsp. *ashokae* werden zusätzliche Fundorte mitgeteilt. Diese beiden früher übersehenen Arten sind in Armenien weit verbreitet. Das Vorkommen von *Carex cilicica* konnte bestätigt werden.

Introduction

Since 2002 the Departments of Botany of the National Academy of Science in Yerevan [ERE (THIERS 2015)] and the Natural History Museum Vienna [W] have conducted intensive collecting efforts in Armenia (VITEK et al. 2015).

In July 2014 the first two authors visited the herbarium of the Natural History Museum in Vienna [W], and reviewed a part of the *Carex* specimens of these field trips. The other part was sent on loan and determined. As a first result a short communication about *Carex hartmanii* CAJANDER has been published (KOOPMAN et al. 2015). During a visit to the herbarium W in 2015, supported by SYNTHESYS, some more material from the Caucasus area has been checked and as a consequence there was high interest to see these species in the field. Subsequently joint fieldwork was carried out in Armenia

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in July 2015. The aim of the visits and the fieldwork was to get a better picture of the Caucasian *Carex* flora in general and of Armenia in particular.

Material and methods

Carex specimens collected by all authors together in 2015, as well as the material of earlier excursions was checked, determined, and compared with existing published records of Armenia. At the beginning of July 2015 the Botanical Institute in Yerevan was visited and all *Carex* specimens of Armenia have been reviewed respectively determined. The complete set of specimens will be made accessible in Virtual Herbaria (RAINER 2015).

Results and discussion

In the treatment of KHANDJIAN (2001) the *Carex* flora of Armenia counts 65 taxa, including 4 subspecies. Most of them, about 70 %, have a wide European-Asian distribution, while the remaining taxa are in Europe more or less restricted to the Caucasus. KOOPMAN et al. (2015) added *Carex hartmanii*, a widespread European-Central Asian species, to the total number.

During the common excursion *Carex* species have been seen in the field, their characters and ecological niches analysed in preparation of *Carex* Europaea (KOOPMAN 2015, KOOPMAN in prep.). The hybrid *Carex diluta* × *C. distans* has been found new for Armenia. For the earlier recorded *Carex hartmanii* and *C. muricata* subsp. *ashokae* additional localities have been found, the presence of the rare *Carex cilicica* BOISS. has been confirmed.

Carex diluta M. BIEB. × *C. distans* L. new for Armenia

Carex diluta as well as *C. distans* can be found in Armenia along small rivulets. There they grow mixed together. As the two species are rather similar and probably closely related, one may look out for the hybrid. During fieldwork in July 2015 several plants were found with characters intermediate to *C. diluta* and *C. distans*. As the material carried also sterile utricles, it is believed we have to deal here with the hybrid of both species. The colour of the material was strikingly yellowish-green, whereas *C. diluta* is more bluish-green and *C. distans* brownish-green. KOOPMAN (2011) mentions this hybrid for Russia and Asia, which seems to be often overlooked.

Specimen: Armenia, Geghark'unik' mars, NE-side of lake Sevan, gorge NE of Pambak, 2045 m s.m., 40°23'20"N 45°32'19"E, 2015-07-04, G. Fayvush, M. Oganessian, J. Koopman, H. Więclaw, A. Aleksanyan & E. Vitek 15-0246 [ERE, W 2015-0017814].

Additional information about previously known *Carex* taxa

Carex cilicica BOISS.

The record of this species in Flora Armenii (KHANDJIAN 2001) is based on a few specimens in ERE. The six specimens in total have two different label texts, all are "between Khachik and Gnishik", 4 are without date and give "10 km from Khachik, 2400–2600 m", 2 have

the date "20. 08. 1965", and give 2400–2500 m as altitude. Possibly all belong to one single collection and the duplicates have been labelled later with a slightly different text. The exact locality cannot be determined. Most probably this locality is near the access road from Khachik to the pass leading to Gnishik. At the moment this road is in a very bad state and could only be used by off-road vehicles. Anyway, the authors managed to find one population of this species at the mountain side of Gnishik along a wet seepage place along a small rivulet, and therefore to confirm its existence in Armenia.

Specimens: Vayots' Dzor mars, c. 14 km S of Yeghegnadzor, c. 3 km SE Gnishik, former road to Khachik, 2300 m s.m., 39°38'08"N 45°19'19"E, 2015-07-08, G. Fayvush, M. Oganessian, J. Koopman, H. Więclaw, A. Aleksanyan & E. Vitek 15-0434 [ERE 0001897, W 2015-0017810]; – Азизбековский р-н, между сс. Хачик и Гнишик, 10 км к востоку от с. Хачик, горный луг, сев. склон, 2400–2600 м. [Azizbekov distr., between Khachik and Gnishik villages, 10 km to E from Khachik village], s.dat., A.M. Barsegyan [ERE-arm 0001522]; – Азизбековский р-н, между сс. Хачик и Гнишик, 10 км к востоку от с. Хачик, горный луг, сев. склон, 2400–2600 м. [Azizbekov distr., between Khachik and Gnishik villages, 10 km to E from Khachik village], s.dat., A.M. Barsegyan [ERE-arm 0001521]; – Азизбековский р-н, между сс. Хачик и Гнишик, 10 км к востоку от с. Хачик, горный луг, сев. склон, 2400–2600 м. [Azizbekov distr., between Khachik and Gnishik villages, 10 km to E from Khachik village], s.dat., A.M. Barsegyan [ERE-arm 0001518]; – Азизбековский р-н, между сс. Хачик и Гнишик, 10 км к востоку от с. Хачик, горный луг, сев. склон, 2400–2600 м. [Azizbekov distr., between Khachik and Gnishik villages, 10 km to E from Khachik village], s.dat., A.M. Barsegyan [ERE-arm 0001519]; – Азизбековский р-н, сс. Хачик х Гнишик, заболоченный горный луг, 2400–2500 м. [Azizbekov distr., between Khachik and Gnishik villages, marsh mountain meadow], 1965-08-20, A.M. Barsegyan [ERE-arm 0001523]; – Азизбековский р-н, сс. Хачик х Гнишик, заболоченный горный луг, 2400–2500 м. [Azizbekov distr., between Khachik and Gnishik villages], 1965-08-20, A.M. Barsegyan [ERE-arm 0001520].

Carex hartmanii CAJANDER

EGOROVA (1999) indicated *Carex hartmanii* for the southern Caucasus and in the Caucasian Flora Conspectus (EGOROVA 2006) the record from Lori was cited. KOOPMAN et al. (2015) specified the occurrence of *C. hartmanii* in Armenia, a species which was not treated by KHANDJIAN (2001). One older record, from 1957, was presented as well as two more recent records, from 2006 and 2007. All three sites are situated in the northern part of the country. However, in the herbarium ERE there proved to be four more specimens of *C. hartmanii* from the areas of Hrazdan and Sevan. Finally, during fieldwork in July 2015 a new site was discovered with a vast population in a meadow along the river Argichi. This shows that this formerly overlooked species is not restricted to the northern part of the Armenia.

Specimens: Степанаванский район, с. Геташен, осоково-ситниковые болота., 1957-07-06, A. Barsegian [ERE-arm 0001481 (this specimen is the basis for the citation in EGOROVA (2006)); – Разданский район, Памбакский хребет, ущелье реки Такярлу, между с. Такярлу х г. Керогли, мезофильный лес., 1985-06-24, N. Chandjian [ERE-arm 0002082]; – Разданский район, Памбакский хребет, верховье реки Такярлу, ближе к горе Кероглы., 1983-08-13, N. Chandjian [ERE-arm 0002081]; – Разданский район, Памбакский хребет, ущелье реки Такярлу, между с. Такярлу х г. Керогли, мезофильный лес., 1985-06-24, N. Chandjian [ERE-arm 0002083]; – Национальный парк Севан, Севан х Ахтамар., 1987-06-25, P. Gambarian [ERE-arm 0002084]; – Geghark'unik' mars, c. 12 km SSW of Martuni, SW of small village, c. 0.25 km W of road to Selim pass, 2260 m s.m., 40°02'07"N 45°14'33"E, 2015-07-07, G. Fayvush, M. Oganessian, J. Koopman, H. Więclaw, A. Aleksanyan & E. Vitek 15-0374 [ERE-arm 0002085, W 2015-0017811]; – Aragatsotn province, area N of Aparan, valley c. 2.4 km E of Melikyugh; 2230 m s.m.; 40°39'34"N/44°23'4"E, 2006-06-04, E. Vitek 06-1060 [ERE, W 2010-0010344, NY].

***Carex muricata* L. subsp. *ashokae* MOLINA GONZ., ACEDO & LLAMAS**

Carex muricata subspecies *ashokae* has been described recently (MOLINA et al. 2008), representing *Carex muricata* in the Caucasus area. The authors cited three specimens from Armenia (two wrongly under Georgia): from distr. Hrazdan, Mt. Aragats and the Gegham mountains. *Carex muricata* is not included in KHANDJIAN (2001) at all; therefore it seems to be an overlooked species. According to the number of records this taxon is rather common in most regions of Armenia.

Specimens: Geghark'unik' mars, NE-side of lake Sevan, gorge NE of Pambak, 2070 m s.m., 40°23'28"N 45°32'29"E; 2015-07-04, G. Fayvush, M. Oganessian, J. Koopman, H. Więclaw, A. Aleksanyan & E. Vitek 15-0248 [ERE-arm 0002565, W 2015-0017813]; – Бассейн оз. Севан, около с. Аташхан, 1952-07-09, R. Karapetian [ERE 0002557]; – Агарцин, буковый лес, северный склон, 1966-06-14, Y.I. Mulkidjanian [ERE 0002558]; – Aragatsotn mars, S flank of Mt. Aragats, mountain slopes c. 3.7 km NNW of Hamberd, 2615 m s.m., 40°24'49"N 44°12'04"E, 2015-07-03, G. Fayvush, M. Oganessian, J. Koopman, H. Więclaw & E. Vitek 15-0213 [ERE-arm 0002564, W 2015-0017815]; – Lorri mars, road Vanadsor – Stepanavan, between road turns 3.7 km S Gargar, 1735 m s.m., 40°55'26"N 44°26'23"E, 2015-07-05, G. Fayvush, M. Oganessian, J. Koopman, H. Więclaw, A. Aleksanyan & E. Vitek 15-0303 [ERE-arm 0002566, W 2015-0017812]; – Kotayk province, area ESE Charentsavan, SE of Fantan, 1960 m s.m., 40°22'26"N/44°42'07"E 2006-06-06, E. Vitek 06-1299 [W 2010-0010296, ERE, NY]; – Kotayk province, Hrazdan district, c. 2 km W of Tsaghkadzor, SW basal lift station, 2000 m s.m., 44°41'55"N 40°32'01"E, 2004-06-05, G. Fayvush et al. 04-0194 [W 2006-0004667, ERE]; – Vayots' Dzor province, area c. 18.5 km ENE of Vayk, c. 6.5 km S of Jermuk, road Gndevaz – Vorotan pass, near small waterfall, 2060–2100 m s.m., 39°44'47-49"N/45°39'53-57", 2009-06-17, M. Oganessian et al. 09-1252 [W 2010-0005576, ERE, BP, M, NY]; – Tavush province, Sevan pass, besides parking place at northern entrance of tunnel, 1915 m s.m., 40°40'24"N/44°52'57"E, 2009-06-06, G. Fayvush et al. 09-0795 [W 2010-0006249, ERE, BP, NY]; – Кафанский район, Шишкерт х гора Хуступ, заболоченный участок у реки Цав, 1986-06-22, N.S. Chandzhian [ERE 0002560]; – Кафанский район, Каджаран, ущелье реки Вохчи, в 2 км в сторону г. Капутджух, заболоченный участок или скалы, 1986-06-23, N.S. Chandzhian [ERE 0002561]; – Кафанский район, Мегринский перевал, увлажненная ложбинка справа от дороги в сторону Кафана, 2500 м над ур. м., 1987-06-28, N.S. Chandzhian & V.E. Avetisyan [ERE 0002562]; – Варденинский район, окр. с. Памбак, ущелье на Арегунийском хребте, 2050 м., 1996-06-26, E.Tz. Gabrielian et al. [ERE 0002563]; – Мегринский район, окр. Бугакара, отроги Зангезурского хребта, юго-восточный склон, 1982-06-07, N.S. Chandzhian [ERE 0002559].

Additional observations (without collected specimen): Aragatsotn mars, S flank of Mt. Aragats, mountain slopes c. 4.2 km NNW of Hamberd, 2670 m s.m., 40°25'06"N 44°12'01"E, 2015-07-03, G. Fayvush, M. Oganessian, J. Koopman, H. Więclaw & E. Vitek; – Vayots' Dzor mars, c. 10 km SSW of Yeghegnadzor, road to Gnishik, 2 km NNE Gnishik, slope above small sanctuary, 2160 m s.m., 39°40'28"N 45°18'21"E, 2015-07-08, G. Fayvush, M. Oganessian, J. Koopman, H. Więclaw, A. Aleksanyan & E. Vitek.

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