A contribution to the lichen-forming and lichenicolous fungi flora of Armenia

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Abstract


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Twenty-one lichen-forming and two lichenicolous fungi species are reported as new to Armenia. Four of these, Arthopyrenia cerasi, Chaenothecopsis treicheliana, Melaspilea ochrothalamia and Punctelia jeckeri, are new for the whole of SW Asia. One genus, Bacidina, is also new for Armenia. Short discussions are added for Anaptychia roemeri, Arthopyrenia cerasi, Bacidia polychroa, Caloplaca polycarpoides, Candelariella antennaria, C. lutella, Chaenothecopsis treicheliana, Cladonia rei, Lecanora impudens, Melaspilea ochrothalamia, Pertusaria constricta, Punctelia jeckeri and Stigmidium congestum. The lichenicolous fungus Chaenothecopsis treicheliana, earlier considered as a synonym of C. hospitans, is confirmed to be a separate species.

Additional key words: new records, Ascomycetes, SW Asia

Introduction

Until now 441 taxa of lichenized fungi (Harutyunyan & al. 2011; Gasparyan & Sipman 2013) and only one species of lichenicolous fungi, Cercidospora melanophthalmae Nav.-Ros. & al. (Calatayud & al. 2013) have been reported for Armenia. During a recent lichenological survey in the temperate deciduous forests of Arzakan-Meghradzor State Sanctuary (Kotayk Province), Gyulagarak State Sanctuary (Lori Province), Dilijan National Park (Tavush Province) and in the xerophytic open forests of Vayots Dzor Province, the first author collected several additional lichens and lichenicolous fungi. Of these, we report here 21 species of lichenized fungi as well as two lichenicolous fungi.

Material and methods

The specimens were all collected by A. Gasparyan from April to September 2013. The morphological and anatomical characters were examined with a stereomicroscope (Wild Heerbrugg M3A, Switzerland) and a compound microscope (Zeiss Axioskop, Germany). The standard spot tests (K, C, KC, P) and the UV-light fluorescence test were used. The lichen substances were analysed by thin-layer chromatography (TLC) with solvents A, B' and C following Orange & al. (2010). The specimens are kept in B and in the private herbarium of W. von Brackel (“herb. IVL.”).

Results and Discussion

The newly reported species are treated below in alphabetical order. The specimens are listed and occasional comments on characteristics, ecology, distribution and TLC results are added.

List of species

Anaptychia roemeri Poelt

This species was collected in the arid region of Vayots
Dzor Province. Anaptychia roemeri resembles A. desertorum (Rupr.) Poelt by its prostrate thallus without soralia but differs by its narrower lobes (0.4–0.6 mm) and raised, furcate lobe tips with hyaline apical spines (Urbanavichus 2008). The species was first reported from Afghanistan (Poelt & Wirth 1968) and is also known from Iran (Seaward & al. 2004; Moniry & al. 2005), Kyrgyzstan, Mongolia and Tajikistan (Urbanavichus 2008).

Specimen examined — ARmenIA: vayots Dzor Province: old road to the city Jermuk, 39°45’N, 45°36’E, 1414 m, on bark of Pyrus sp., 14 Jul 2013, V-13-7 (B); road to the Noravank Monastery, 39°42’N, 45°12’E, 1227 m, on bark of Pyrus caucasica Fed., 14 Jul 2013, V-13-4 (B) [filed as Candelariella antennaria].

Candelariella antennaria Räsänen
Candelariella antennaria has been mistaken in the past for C. aurella (Hoffm.) Zahlbr., from which it can be separated most easily by being exclusively corticolous (Westberg & Sohrabi 2012). It was found in Armenia mostly in arid, temperate regions on the bark of trunks and twigs of deciduous broad-leaved trees (see also Caloplaca polycarpoides). The species has a wide distribution and is known from North and South America, SW Asia, Australia as well as Europe (Westberg 2007a; Westberg & Sohrabi 2012).

Specimen examined — ARmenIA: vayots Dzor Province: road to the village Herher, 39°42’n, 45°31’e, 1220 m, on twig, 25 Aug 2013, D-13-4 (B).

Bacidia chloroticula (Nyl.) Vězda & Poelt
Bacidia chloroticula is the first species of the genus Bacidia reported from Armenia.

Specimen examined — ARmenIA: tAvush Province: Dilijan National Park, village Aghavnavank, 40°43’N, 44°34’E, 1754 m, on twig, 28 Apr 2013, H-13-15 (B).

Candelariella lutella (Vainio) Räsänen
This widespread species was found in the C and N regions of Armenia. It has also been reported from Turkey (Breuss & John 2004), Iran (Westberg & Sohrabi 2012) and the Russian Caucasus (Urbanavichus 2010). The related polysporous species Candelariella xanthostigma (Pers. ex Ach.) Lettau is also widely distributed in the temperate deciduous forests in Armenia, but it is easy to distinguish from C. lutella by its continuous granular thallus (Westberg 2007b). The identification was confirmed by M. Westberg (Sweden) from a photograph.

Specimens examined — ARmenIA: tAvush Province: Dilijan National Park, road to the city Dilijan, 40°41’n, 45°06’e, 1720 m, on twig, 28 Apr 2013, H-13-15 (B).

Chae nothecopsis treicheliana (Stein) Kalb
Parasitic or parasymbiotic on Lecanora sp. on bark.
Apothecia scattered or in small groups, on the thallus and rarely on the apothecia of the host, short-stalked, 120–200 µm high. Capitulum black, epruinose, lenticular to hemispherical, 100–200 µm in diam. Epithectium indistinct. Hypothecium brown. Excipulum brown, composed of intertwined hyphae. Stalk short, 40–60 µm wide, 50–100 µm high, black above and pale yellow in the lower part, epruinose, in section brownish, paler towards the base. Ascii 40–50 × 3–4 µm, cylindrical with a thickened apex penetrated by a blunt canal, widened in mature ascii. Ascospores uniseriately arranged in the ascus, obliquely orientated. Ascospores non-septate, greyish brown when young, medium to dark brown when mature, narrowly ellipsoid, minutely verruculose, (4.5–)5.3–6.9–7.5) × (2.5–)2.6–3.1–3.5 µm, length/width = (1.5–)1.8–2.5–3 (no. = 50). All parts of the ascomata K-.

The specimen corresponds well to the protologue given by Stein (Hellwig 1885), who described *Chaenothecopsis treichelia* as small, capitulum lenticular, up to 200 µm wide, matt black, the stalk whitish, ascospores non-septate, “rauchgrau” (smoky grey), 5–9 × 2–4 µm.

Tibell & Ryman (1995) did not recognize *Chaenothecopsis treichelia* as a distinct species and presumed it might be a synonym of *C. hospitans* (Th. Fr.) Tibell. However, *C. hospitans* shows a faint K+ reaction of the ascomata, and its stalk and ascospores are distinctively bigger (7.8–9.6 × 3.9–5 µm).

*Chaenothecopsis treichelia* was known so far from Poland (Hellwig 1885) and Austria (Kalb 1982; Breuss 1989); it is new to SW Asia.

**Lecania naegelii** (Hepp) Diederich & Van den Boom

*Specimens examined* — **ARMENIA**: **TAVUSH PROVINCE**: Dilijan National Park, road to the city Dilijan, 40°41’N, 44°51’E, 1618 m, on bark of tree, 25 Aug 2013, *D-13-11a* (B); Dilijan National Park, road to Lake Parz, 40°45’N, 44°55’E, 1278 m, on bark of tree, 25 Aug 2013, *D-13-1-9, D-13-1-11 & D-13-1-16* (B).

**Lecanora compallens** Herk & Aptroot

*Specimen examined* — **ARMENIA**: **TAVUSH PROVINCE**: Dilijan National Park, road to Lake Parz, 40°45’N, 44°55’E, 1278 m, on bark of tree, 25 Aug 2013, *D-13-1-20* (B).

**Lecanora impudens** Degel.

*Lecanora impudens* is very close to *L. allophana* (Ach.) Nyl. and differs by its well-defined, rounded soralia and granular soredia (Ryan & al. 2001). The identification of our specimen is provisional because it lacks ascocarps, but its thallus cortex is K+ yellow. The species has been recorded from Turkey (Güvenç & al. 2006).

*Specimen examined* — **ARMENIA**: **KOTAYK PROVINCE**: Arzakan-Meghradzor State Sanctuary, village Arzakan, 40°29’N, 44°36’E, 1667 m, on bark of tree, 3 Aug 2013, *H-13-4-3* (B).

**Lecanora thyssanophora** R. C. Harris

*Specimens examined* — **ARMENIA**: **TAVUSH PROVINCE**: Dilijan National Park, road to the Haghartsin Monastery, 40°48’N, 44°52’E, 1487 m, on bark of tree, 25 Aug 2013, *D-13-6-2* (B); Dilijan National Park, village Haghartsin, 40°44’N, 44°57’E, 1335 m, on bark of tree, 25 Aug 2013, *D-13-4* (B).

**Melanelixia glabratula** (Lamy) Sandler & Arup


**Melanelixia subaurifera** (Nyl.) O. Blanco & al.

*Specimens examined* — **ARMENIA**: **TAVUSH PROVINCE**: Dilijan National Park, village Haghartsin, 40°44’N, 44°57’E, 1343 m, on bark of tree, 25 Aug 2013, *D-13-2-8* (B) [filed as *Melanelixia glabratula*]. — **KOTAYK**
**Melaspilea ochrothalamia** Nyl.

_Melaspilea ochrothalamia_ was collected only in the forests of Dilijan National Park. The species was previously known from Europe (Etayo & al. 1993; Van den Boom & Masselink 1999) and it is new for SW Asia.

**Specimens examined** — **ARMENIA**: TAVUSH PROVINCE: Dilijan National Park, road to the Haghartsin Monastery, 40°48'N, 44°52'E, 1487 m, on bark of tree, 25 Aug 2013, _D-13-6-1_ (B); Dilijan National Park, road to Lake Parz, 40°45'N, 44°56'E, 1057 m, on bark of tree, 25 Aug 2013, _D-13-03-06_ (B).

**Peltigera pononjensis** Gyeln.

**Specimen examined** — **ARMENIA**: LORI PROVINCE: Gyulagarak State Sanctuary, road to the village Gargar, 40°55'N, 44°26'E, 1831 m, on soil and stone, 15 Aug 2013, _P-13-03_ (B).

**Pertusaria constricta** Erichsen

This species has a restricted range, being found mainly in the European Alps, with a range extension into Turkey and the Caucasus mountains.

**Specimen examined** — **ARMENIA**: TAVUSH PROVINCE: Dilijan National Park, village Haghartsin, 40°44'N, 44°57'E, 1343 m, on bark of tree, 25 Aug 2013, _D-13-2-14_ (B).

**Punctelia jeckeri** (Roum.) Kalb

TLC: atranorin and lecanoric acids present. _Punctelia jeckeri_ is new to SW Asia. It has been reported from the Russian Caucasus (Urbanavichus 2010).

**Specimen examined** — **ARMENIA**: TAVUSH PROVINCE: Dilijan National Park, road to the Haghartsin Monastery, 40°48'N, 44°52'E, 1487 m, on bark of tree, 25 Aug 2013, _D-13-06-09a_ (B).

**Stigmidium congestum** (Körb.) Triebel

_Stigmidium congestum_ is a widespread species (Europe, Africa, New Zealand); in Asia it was known until now only from Turkey (Roux & Triebel 1994) and S Siberia (Urbanavichus 2010).

**Specimen examined** — **ARMENIA**: KOTAYK PROVINCE: Arzakan-Meghradzor State Sanctuary, village Arzakan, 40°29'N, 44°36'E, 1667 m, on _Lecanora chlorotera_ Nyl., 3 Aug 2013, _H-13-4-4_ (B).

**Usnea articulata** (L.) Hoffm.

TLC: protocetraric acid present.

**Specimen examined** — **ARMENIA**: TAVUSH PROVINCE: Dilijan National Park, road to the Haghartsin Monastery, 40°48'N, 44°52'E, 1509 m, on bark of tree, 25 Aug 2013, _D-13-7_ (B).

**Variolaria trachythallina** (Erichsen) Lendemer & al.

**Specimen examined** — **ARMENIA**: TAVUSH PROVINCE: Dilijan National Park, road to the Haghartsin Monastery, 40°48'N, 44°52'E, 1487 m, on bark of tree, 25 Aug 2013, _D-13-6-5_ (B).

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