

A new species of *Dothiopeltis* from Norway

Alfred Granmo* & Geir Mathiassen

Department of Natural Sciences, Tromsø University Museum,
University of Tromsø, NO-9037 Tromsø, Norway

Granmo A. & Mathiassen G. (2013) A new species of *Dothiopeltis* from Norway. – *Sydowia* 65 (2): 343–348.

Dothiopeltis cicerbitae (Ascomycota, Leptopeltidaceae) is described from Norway as the second species known for the genus *Dothiopeltis*. The description is based on specimens from six different localities in the northernmost part of the country (North Norway), though only the holotype collection had mature asci and ascospores. All findings were from old stalks of *Cicerbita alpina* – preferably from such of the past year. Similarities and differences to the previously known species, *D. arunci* described in 1956 on *Aruncus sylvestris*, are compared and discussed. The possibility of finding the species in more localities on its host in Norway or else in Europe is judged as promising.

Keywords: Ascomycota, *Cicerbita alpina*, Leptopeltidaceae, North Norway, taxonomy.

This small ascomycete was discovered for the first time during a pilot project of a later and more comprehensive study on the ascomycetes of Finnmark county, North Norway, 2010–2011 (Mathiassen & Granmo 2012). The area in question, the valley Oksevågdaalen, includes the northernmost birch wood in the world, situated at lat. 70° 57' N, and long. 27° 30' E. It is in the north boreal zone close to the coast of the Barents Sea, and borders the south arctic zone to the north (Granmo 2008). The forest in this valley comprises several of the plant species belonging to the tall-fern and tall-herb woodland, among which also the tall herb *Cicerbita alpina*. The old stalks of this perennial were found to bear a species of *Dothiopeltis* E. Müll., which is described as new herein. Later on the species was also discovered on the same host somewhat further south in North Norway.

Materials and methods

Microscopic characters were measured in water mounts and sizes given as a maximum–minimum range with extreme values in parentheses. Mounting in other media than water, for example in lactic acid, will destroy the spores completely. The vouchers are located by names of county, municipal-

* e-mails: alfred.granmo@uit.no; geir.mathiassen@uit.no

ity and place, and are all deposited in the herbarium of Tromsø University Museum (TROM).

Taxonomy

Dothiopeltis cicerbitae Granmo & Math., sp. nov. – Figs. 1–6.

MycoBank no.: MB804972

Ascomata superficialia, gregaria, separata vel concretescentia, nigra, rotunda 130–200 μm diametro vel late ellipsoidea circiter $240 \times 170 \mu\text{m}$, 40–50 μm alta. Stratum tegens ascomatis circiter 10 μm crassum scutello similis, cellulis radiatis serialibus, rectangularibus, $6\text{--}7 \times 4\text{--}5,5 \mu\text{m}$. Stratum basale ascomatis 20–25 μm crassum, cellulis radiatis serialibus. Asci in ascomate unoquoque pauci, $50\text{--}65(70) \times (12)14\text{--}17 \mu\text{m}$, in medio $59 \times 14,8 \mu\text{m}$, oblongi vel claviformes, parietibus crassiusculis, stipitibus 6–8 μm longis, 8-spori, sporis partim biserialibus, liquore Lugoli non colorati. Ascosporae $13,3\text{--}17,2 \times 6\text{--}7,5 \mu\text{m}$, in medio $15,3 \times 6,6 \mu\text{m}$, hyalinae, irregulariter ellipsoideae interdum clavatae, transversaliter 3–4-septatae, septo longitudinali in uno vel duobus segmentis saepissime praesente. Habitat in caulibus putrescentibus *Cicerbitae alpinae*.

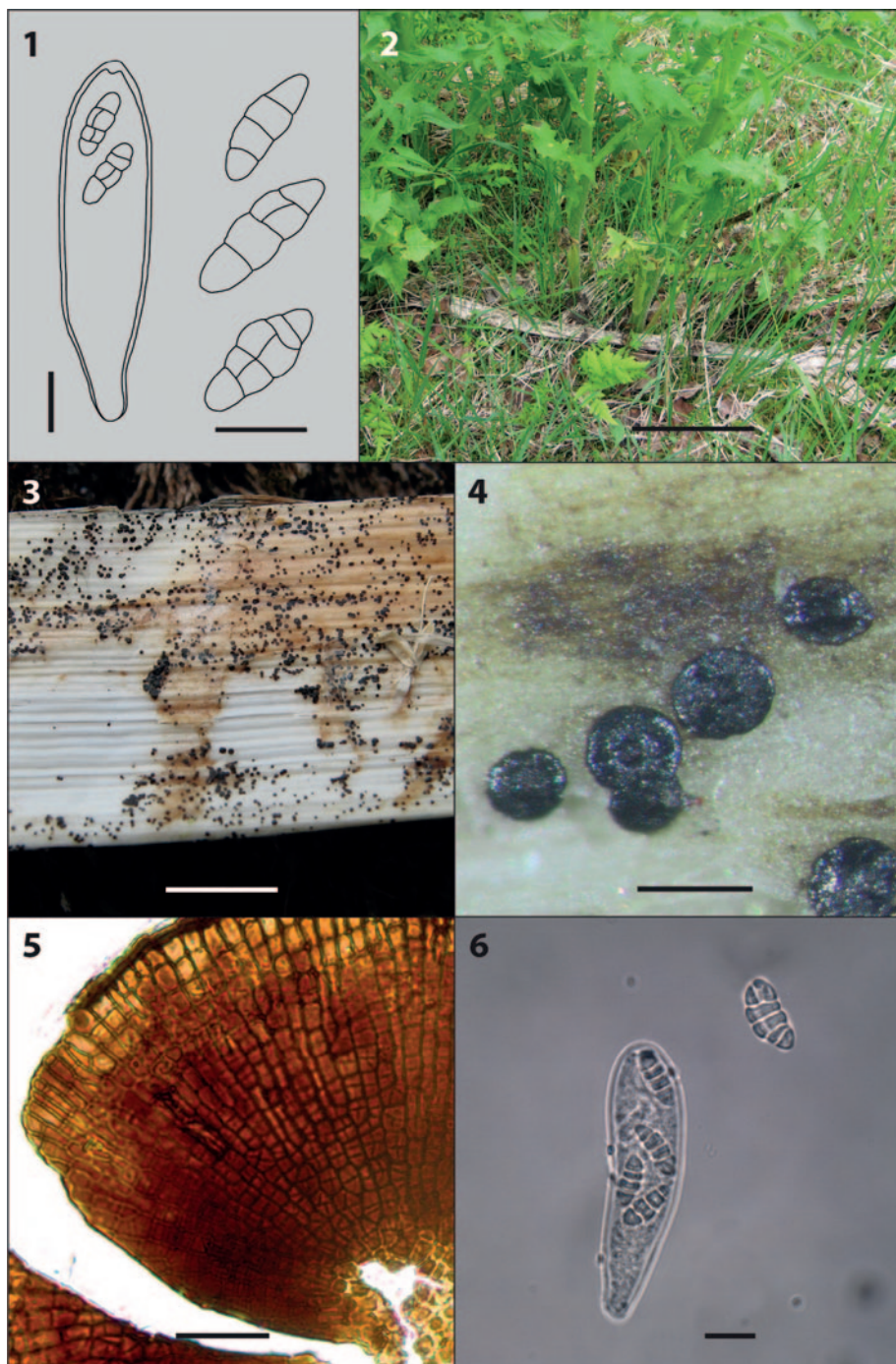
Holotypus. – In valle Oksevgdalen peninsulae Nordkyn in regione Finnmarkia Norvegiae borealis (lat. bor. $70^\circ 57'$, long. orien. $27^\circ 30'$), die 2 Julii anni 2008 sub numero AG 40/08 ab auctoribus lectus, siccus in Museo Tromsoensi depositus (TROM, F-25141).

Ascomata 130–200 μm in diam., or about $240 \times 170 \mu\text{m}$ when elliptical in outline, and 40–50 μm high; superficial, densely scattered, flattened, circular to broadly elliptical in surface view, sometimes confluent, shining black. Upper part shield-like, sometimes with a few (1–4) low, radiating crests and often with a tiny central buckle which may open by a porus 15–20 μm in diam., or a very short ostiole.

Shield about 10 μm thick, with strictly radiating rows of brown, quadratic to rectangular cells, $5.5\text{--}8.5 \times 4.5\text{--}5.5 \mu\text{m}$. Basal layer 20–25 μm thick, dark brown, with radiating cell rows similar to those of the shield. The plant tissue beneath the basal layer having a brownish yellow colour, but lacking any hypostroma.

Asci a few in each ascocarp, $50\text{--}65(70) \times (12)14\text{--}17 \mu\text{m}$ (stipe inclusive), mean $59 \times 14.8 \mu\text{m}$, oblong ellipsoid to clavate with stipe 6–8 μm long, quite thick-walled, and with a thickening in the apex, with 8 partly biserial spores. No coloration observed when treated with Lugol's solution. As-

Figs. 1–6. – *Dothiopeltis cicerbitae*. **1.** Holotype, ascus with two spores, and three mature ascospores to the right (bars = 10 μm). **2.** Young stand of *Cicerbitae alpina* with last year's stalk on the ground inhabiting the fungus (bar = 6 cm). **3.** Ascomata on last year's *Cicerbitae alpina* (bar = 5 mm). **4.** Ascomata magnified (bar = 200 μm). **5.** Part of the shield of an ascoma from centre to periphery seen from above (bar = 20 μm). **6.** Ascus with four immature spores, and one mature spore (bar = 10 μm). Photographs: 2, 3, 6 Granmo; 4, 5 Mathiassen.



cospores $13.3\text{--}17.2 \times 6\text{--}7.5$, mean 15.3×6.6 μm , ellipsoidal, hyaline, muriform with 3–4 transsepta with wall constrictions, and usually with 1 longiseptum in one or two central cells.

Etymology. – Named after the host genus *Cicerbita* Wallr. (Asteraceae).

Habitat. – Saprobe on stalks on the ground of last year's *Cicerbita alpina*.

Distribution. – As yet only known from Norway.

Material examined. – *Dothiopeltis cicerbitae*: NORWAY, Nordland: Evenes: Forra, Brenna, about 0.3 km E of the farmhouse, 140 m alt., 4 Jul 2009, *Cicerbita alpina*, leg. L. Mølster & A. Granmo AG 17/09. – Troms: Balsfjord: Fjellfrøsvatn, south side of river Tverrelva, 260 m alt., 26 Aug 2010, *C. alpina*, leg. A. Granmo & J. R. Hansen AG 300/10. Tromsø: Tromsdalen, at the northernmost path to Storsteinen, 180 m alt., 28 Jun 2009, *C. alpina*, leg. L. Mølster & A. Granmo AG 9/09; same area and host, 220 m alt., 31 Jul 2010, leg. A. Granmo AG 1/10. Krokeldalen, beside the path on the north side of the river, 190 m alt., 2 Jul 2009, *C. alpina*, leg. A. Granmo AG 13/09; same place and host, 12 Sep 2010, leg. A. Granmo AG 302/10 (1–4). – Finnmark: Alta: Eibydalen, Kløftan, 204–208 m alt., 17 Aug 2011, *C. alpina*, leg. G. Mathiassen & A. Granmo AG 19A/11 & AG 33A/11. Lebesby: Oksevågdaalen, at a cottage 0.5 km W of western end of lake Storvatnet, 20 m alt., 2 Jul 2008, *C. alpina*, leg. G. Mathiassen & A. Granmo AG 40/08 (holotype – TROM, F-25141); same place and host, at eastern end of lake Storvatnet, 6 Jul 2008, leg. A. Granmo & G. Mathiassen GM 11811G. Oksevågdaalen, north side of the valley at 250 m and at 350 m W of western end of lake Storvatnet, 25–35 m alt., 19 Aug 2010, *C. alpina*, leg. G. Mathiassen & A. Granmo AG 60/09 & 61/09.

Dothiopeltis arunci E. Müll.: SWITZERLAND, St. Gallen: Speergebiet, am Weg von Durchschlag (Amden) nach Alp, 25 Mai 1955, auf dürrer Stengeln von *Aruncus silvestris*, leg. E. Müller & H. Schüepp (ZT, Myc 3025).

Comments. – As the host of *D. cicerbitae*, *Cicerbita alpina* (or *Lactuca alpina* (L.) A. Gray, *Mulgedium alpinum* (L.) Less.), is common in virtually all Norway, the fungus was from the outset searched for in several places in North Norway. It turned out that although the species was often found on its host here, it was extremely difficult to find ascomata with asci and spores. Thus, the only ascomata with asci and spores so far are from the holotype collection.

For comparison a collection of *Dothiopeltis arunci* was examined. Though this latter material was not cited by Müller (1956) when describing *D. arunci*, it is collected in the same area and at the same date as the holotype of that species, and most possibly was a part of the original material at hand when the species was described. The specimen has previously been studied by Miss Putarak Chomnunti, Mae Fah Luang University, Thailand.

Cicerbita alpina is the only native species of its genus in Norway. As it formerly also has been disposed of in the genera *Lactuca* and *Mulgedium*, we wanted to check if our fungus possibly might occur on *Lactuca sibirica* (L.) Benth. ex Maxim. (*Mulgedium sibiricum* (L.) Cass. ex Less.) as well, which in Norway is known from the northernmost counties Troms and Finnmark. A search for *D. cicerbitae* in the herbarium collections (TROM) of *Lactuca sibirica* was performed, but there was no sign of the species in any of the old stalks of that material.

Discussion

When comparing our species with the only previously known species in the genus, *Dothiopeltis arunci*, several differences were observed. In *D. arunci* there is a well-developed central column of tissue between the basal layer and the shield in the ascocarps. This 'Mittelsäule' (Müller 1956) is easily seen, although not observed by L. Holm & Holm (1977). It is totally lacking in our species. At the shield margin of *D. arunci* an irregular hyphal web of angular to roundish cells continues out into the epidermis, causing the area in between and outside the ascocarps to appear dark. This mycelium is what Müller (1956) mentioned as a subcuticular 'Stromahäutchen', and is easily observed by inspection in a stereomicroscope. The new species does not show the slightest trace of such, and the margin of the shield is clearly demarcated, being a little thicker at the margin where the shield and the bottom layer unite than towards the middle, and there are no radiating hyphae at all. Neither has our species any hypostroma, contrary to *D. arunci*. Further, both shield and basal layer consist of radial cell rows in *D. cicerbitae*, while the bottom layer of *D. arunci* is irregular. All those differences may pose the question if the two species are really congeneric.

Unfortunately we could not find mature ascomata in our collections except for the holotype, and even there just a few with asci and spores. Thus our base for evaluating ascus structure is not extensive. Nevertheless we have seen asci with an apical thickening at some stage, similar to that described for *Leptopeltis nebulosa* by Holm & K. Holm (1977), but also asci with thick wall and a flat apex, similar to the drawing of *D. arunci* by Müller (1956). Remnants of interthecial tissue were also seen, but we cannot say anything certain about structure or type.

The shortage of ascomata with fruiting structures such as ascospores or asci is strange. All our searches for those, whether early in the spring – even still covered by the snow – or late in the autumn were in vain. Often we noticed a lot of fruiting bodies very similar to those of *D. cicerbitae*, which contained some type of innumerable hyaline, aseptate conidia, either bacilli-form ($5.5\text{--}7 \times 2 \mu\text{m}$) or sickle-shaped ($8\text{--}10 \times 1.5\text{--}2 \mu\text{m}$). The want of mature ascomata of *D. cicerbitae* is, true enough, well in accordance with that noticed for members of the family as a whole by L. Holm & Holm (1977: 220): "... they are seldom encountered in a well developed state.", but strikingly different from the studied collection of *D. arunci*, in which we found ascomata with spores and asci wherever sectioned.

The host of *D. cicerbitae*, *Cicerbita alpina*, is distributed in Fennoscandia and Central European mountains, especially in the Alps and the Carpathians. It is very rare in Scotland. It is preferably a subalpine-montane species. However, in Norway it is also a common species in the tall-fern and tall-herb woodland throughout the country. For the time being we have no further finds of *Dothiopeltis cicerbitae* outside North Norway, but we expect it to occur in several places in Norway. And a further search for it on its host

in Fennoscandia and Europe is much desirable, and is expected to provide more localities in the future.

Acknowledgements

We want to express our gratitude to the late Professor Lennart Holm, Uppsala, who made a preliminary study of the fungus and encouraged us to describe it, and to curator Reinhard Berndt, and V. Faust-Berndt (ZT) for loan of *D. arunci*. Per P. Aspaas, Tromsø is thanked for correcting the latin diagnosis, and Håkon Hovdenak, Bjarkøy for correcting the English. Ernst Høgtun and Teppo Rämä, Tromsø Museum, are thanked for technical assistance with the illustrations.

References

- Granmo A. (2008) Sopp i Okse vågdalen naturreservat. Naturkonsulenten, rapp. 2008-2. 35 pp. *Fylkesmannen i Finnmark, Miljøvernavdelingen, rapport nr. 2-2009*.
- Holm L., Holm K. (1977) A study of the Leptopeltidaceae. *Botaniska Notiser* **130**: 215–229.
- Mathiassen G., Granmo A. (2012) *Sluttrapport for Artsprosjektet Sekksporesopper i Finnmark 2010–2011*. Tromsø Museum, Universitetsmuseet 2012, ADB 56-09, Prosjekt 70184216. <http://www.artsdatabanken.no/artArticle.aspx?m=259&amid=7030>
- Müller E. (1956) Über die neue Ascomycetengattung *Dothiopeltis*. *Sydowia* **10**(1–4): 197–200.

(Manuscript accepted 2 August 2013; Corresponding Editor: I. Krisai-Greilhuber)

ZOBODAT - www.zobodat.at

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Sydowia](#)

Jahr/Year: 2013

Band/Volume: [65](#)

Autor(en)/Author(s): Granmo Alfred, Mathiassen Geir

Artikel/Article: [A new species of Dothiopeltis from Norway 343-348](#)