# *Boudiera dennisii*, *Discinella boudieri* and *Rutstroemia microsperma* found in Austria*

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**Abstract:** *Boudiera dennisii*, *Discinella boudieri* and *Rutstroemia microsperma* are described in detail and illustrated macro- and microscopically. *Rutstroemia microsperma* is new for Europe, the other two are new for Austria.

**Zusammenfassung:** *Boudiera dennisii*, *Discinella boudieri* und *Rutstroemia microsperma* werden im Detail beschrieben und makro- und mikroskopisch illustriert. *Rutstroemia microsperma* ist neu für Europa, die beiden anderen Arten sind neu für Österreich.

Out of the species list published in the first part of this study (MEDARDI 2006 a) further three remarkable species are described in detail. Notes on the area of collection, material and methods, and the complete list of species can also be found in this previous paper.

*Boudiera dennisii* was collected in the almost flat plain near Gerlospaß, on swampy soil; trees and shrubs are absent (conifers, *Salix*, and *Alnus* are present only around the plane), but several herbs, grasses and mosses are present, mainly *Bryum*, *Carex*, *Equisetum*, *Juncus* and *Sphagnum*. *Discinella boudieri* was found in the same locality too, but in a narrow valley at lower altitude, characterised by steep, stony flanks. The collection site is very humid due to a small stream, and shady because of an overhanging mixed wood, mostly of *Picea*, *Salix* and *Alnus*. We collected *D. boudieri* also near Stubachtal (in the Hohe Tauern), in a plane rather similar to that of Gerlospaß, less humid and richer in turfs. *Rutstroemia microsperma* grew on fallen leaves of *Salix*, in a humid location near a track in Kaprunertal, on a very shady mountainside.

## Descriptions

***Boudiera dennisii* DISSING & SIVERTSEN**, Kew Bull. **31 (9)**: 755, 1977

**Macroscopical characters:** apothecia up to 8 mm in diam., pulvinate, subglobose, rarely turbinate, sometimes quite flattened, sessile. Hymenium smooth or slightly ve-

* Non-fimicolous Arctic-alpine Ascomycetes collected in Austria 2. For first part see MEDARDI (2006 a).

nous, brown with some reddish reflexes, translucent when very humid; outside concolorous, smooth. Margin indistinct. Flesh waxy, fragile, brownish (Fig. 1 a).

**Microscopical characters:** spores (Fig. 1 b) globose or subglobose, 22-25 µm in diam. (excl. ornamentation), ornamented with conical-truncate spines up to 3 µm high, hyaline to pale brownish, often with internal oil drops, irregularly 1-2 seriate in the ascus. Asci clavate, 420-460 × 30-40(-50) µm, almost entirely amyloid, operculate, 8-spored. Paraphyses cylindrical, apically enlarged up to 12-13 µm. Ectal excipulum of textura prismatica, outermost cells more elongated, 30-40 × 15-18 µm; medullary excipulum of textura intricata, with 4-5 µm wide hyphae.

**Habitat:** normally in groups composed by several clustered individuals, rarely single, on very humid or flooded sandy soil, often near streams or lakes, near shallow stagnant water. Summer-autumn.

**Distribution:** No other record known from Austria up to now. Reported from Iceland, Norway, Sweden (AHTI & al. 2000); Norway (DISSING & SCHUMACHER 1979); Greenland, Norway (SCHUMACHER & JENSSEN 1992) and from England (DENNIS 1981).

**Notes:** The genus *Boudiera* COOKE belongs to the *Pezizaceae*, and is close to *Plicaria* FUCKEL because of globose or subglobose spores in amyloid asci. *Plicaria* is mainly separable by the ectal excipulum, made up by globose cells mixed with some wide hyphae, by its on average larger (up to 80 mm in diam.) darker apothecia, and occurrence on burnt ground. *Boudiera* comprises species with reticulate or spinulose-reticulate spores and others with aculeate spores only.

*Boudiera dennisii* is characterised by pulvinate or subglobose apothecia up to 8 mm in diam., entirely brown and flushed reddish, globose or subglobose spores, 22-25 µm in diam. with conical-truncate spines up to 3 µm long, and by the ectal excipulum with elongated, prismatic cells, 30-40 × 15-18 µm.

*Boudiera purpurea* ECKBLAD is rather similar, differing only in having "... apothecia 1-2 mm broad and sparsely developed excipulum." (AHTI & al. 2000).

*Boudiera acanthospora* DISSING & T. SCHUMACH. has instead violet-brown hymenium and greyish outside, spores 18.5-22.8 µm, with pointed or blunt, straight or curved aculei, up to 3.5 µm high.

*Boudiera tracheia* (REHM ex GAMUNDÍ) DISSING & T. SCHUMACHER has a violet-brown hymenium and greyish outside, like *B. acanthospora*, but forms wider spores, 19-28 µm in diam., with 4-6.5 µm long spines. All dimensions of the spores are given exclusive of ornamentation.

All this species live on more or less sandy soil, in very humid and often shady places, where a consistent quantity of water is present.

**Collection examined:** Salzburg, Gerlos, Gerlospaß (MTB 8738/4), ca. 1500 m s. m., G. F. MEDARDI (K 138528).

***Discinella boudieri* (QUÉL.) BOUD.**, Icones Mycologicae: 256 (Pl. 445), 1907
Basionym: *Phialea boudieri* QUÉL., Bull. Soc. Bot. Fr. **23**: 353, 1877
≡ *Humaria boudieri* (QUEL.) SACC., Syll. Fung. **8**: 146, 1889

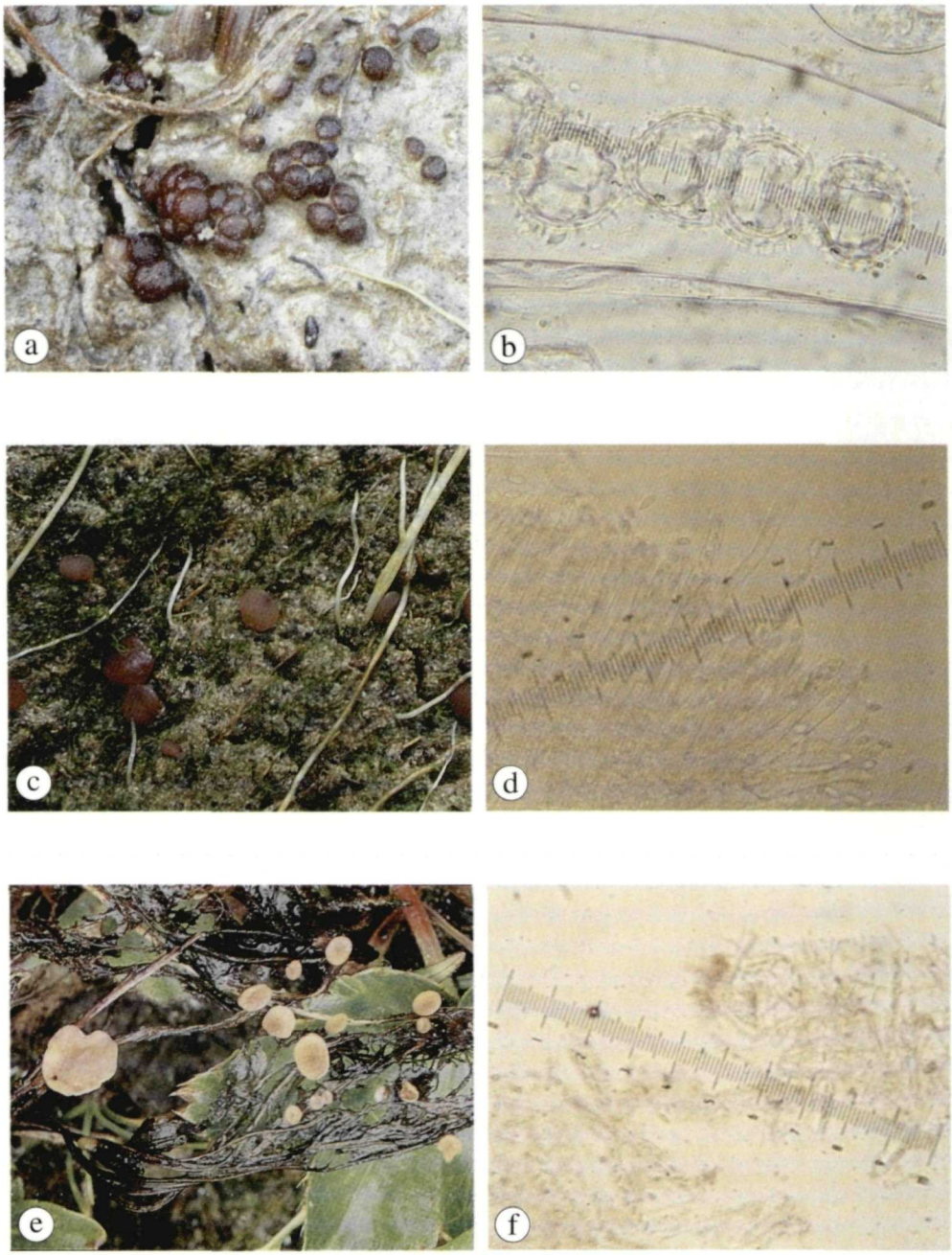


Fig. 1. *a*, *b. Boudiera dennisii*. *a* habit, *b* spores in Cotton Blue (× 1500, oil immersion), note the aculei; *c*, *d. Discinella boudieri*. *c* habit, *d* spores in water (× 600); *e*, *f. Rutstroemia microsperma*. *e* habit, *f* spores in water (× 600). – Phot. G. MEDARDI.

**Macroscopical characters:** apothecia up to 8 mm in diam., shallow cup-shaped, more or less flattened, sometimes almost disc-shaped, sessile. Hymenium smooth, brown with purple-violet reflexes; outside concolorous, weakly furfuraceous, often extended in a rudimentary peduncle. Margin more or less regular, raised, sometimes denticulate or faintly pruinose. Flesh waxy, fragile, brownish (Fig. 1 c).

**Microscopical characters:** spores (Fig. 1 d) fusiform or ovoid-fusiform, 12-13 × 4-5 µm, smooth, hyaline, without oil drops, irregularly arranged in the ascus. Asci cylindrical-club shaped, 110-115 × 10-11 µm, inamyloid, inoperculate, 8-spored. Paraphyses cylindrical, apically slightly enlarged up to 3-4 µm, with a small number of septa, often with small oil drops. Excipulum made up of a single layer of textura intricata, with septate hyphae 8-9 µm wide.

**Habitat:** single or in groups of few individuals, on humid sandy soil. Summer-autumn.

**Distribution:** No other record known from Austria up to now. Reported from Denmark, Norway (AHTI & al. 2000, SOPPHERBARIET 2005, LÆSSØE & PETERSEN 2007), England (DENNIS 1956, 1981; CHECKLIST OF CUMBRIAN SPECIES 2007), France (BOUDIER 1885), Germany (SCHILLING & DOBBITSCH 2006), The Netherlands (NEDERLANDS SOORTENREGISTER 2007), and Spain (SOCIEDAD MICOLÓGICA BARAKALDO 2003).

**Notes:** The amyloidy of the asci in this genus is contentious. AHTI & al. (2000) clearly declare a positive reaction, while MOSER (1963) and DENNIS (1981) report an only weak reaction. In BOUDIER (1905-1910) tables 445-448 show inamyloid apical rings, and, according to our personal experience, asci of *Discinella* BOUD. are inamyloid.

BOUDIER (1905-1910) reports two other species with more or less deep purple-fawn colours: *Discinella lividopurpurea* BOUD. and *D. badicolor* BOUD.: the first is smaller (2-4 mm in diam.), irregularly flattened, undulate, often depressed in the middle, has pale flesh and spores 10-15 × 4-5 µm. *Discinella badicolor* is still smaller (1-3 mm in diam.), convex with slightly depressed centre, has violaceous flesh and spores 6-9 × 3.5-5 µm.

*Discinella boudieri* var. *spadicea* BOUD. (BOUDIER 1905-1910) is separable from var. *boudieri* only by paler colours, fawn without purple reflexes, and by glabrous outside. Also *Discinella purpurascens* (PERS.) BOUD. and *D. exidiiformis* (BERK. & BROOME) BOUD. have more or less intense livid purple tinges. The first is initially deeply cup-shaped, then more expanded, and forms fusiform spores, 20-22 × 7-8 µm; the second is variously lobed (*Exidia*-like), and has spores up to 17 × 10 µm (ELLIS & ELLIS 1988).

*Discinella margarita* W. D. BUCKLEY has whitish to cream-coloured apothecia, with fringed margin (marginal processes made up by septate hyphae), and cylindrical-ellipsoid spores, 9-14 × 3-5 µm. *Discinella menziesii* (BOUD.) BOUD. ex A. L. SM. & RAMSB. has instead pale pink apothecia and strictly ellipsoid spores, 15-17 × 4-5 µm. All these species grow on soil.

**Collections examined:** Salzburg, Gerlos, Gerlospaß (MTB 8738/4), ca. 1200 m s. m., 17. 8. 2005, G. F. MEDARDI (C-F-74728); - Uttendorf, Stubachtal (MTB 8841/2), ca. 1350 m s. m., 18. 8. 2005, G. F. MEDARDI (K 138527).

***Rutstroemia microsperma* (SPEG.) GAMUNDÍ,** Darwiniana **12 (3)**: 405, 1962
Basionym: *Helotium microspermum* SPEG. – Boletín de la Academia Nacional de Ciencias de Córdoba **11 (2)**: 264, 1888

**Macroscopical characters:** apothecia up to 5 mm in diam., rather shallow cup-shaped, concave, funnel-shaped, stalked. Hymenium smooth or fairly undulate, brownish-ochraceous with weak orange reflexes; outside concolorous or slightly darker, smooth or delicately scaled, tending to blackish-brown towards the bottom. Margin regular, evident, glabrous, even or slightly undulate. Stalk cylindrical, enlarged in the upper part towards the apothecium, up to 5-6 mm high and 1 mm in diam., almost brown-black, smooth or pruinose, with base arising from a blackened patch of stromatised tissue. Flesh rather elastic, pale brownish (Fig. 1 e).

**Microscopical characters:** spores (Fig. 1 f) ellipsoid, 4.5-5.8 × 2.5-2.8 µm, the most part with two internal oil drops placed towards the extremities, without septa, smooth, hyaline, 1-2 seriate in the ascus. Asci clavate or cylindrical-clavate, 50-65(-80) × 5-6.5 µm, apical ring amyloid, inoperculate, 8-spored. Paraphyses cylindrical, very thin, apically only 1.5 µm wide, containing granules. Excipulum ectale made up of textura porrecta, with more or less parallel brownish hyphae, up to 5 µm wide; excipulum medullare the same structure, but with 2.5 µm large hyphae, more or less radially arranged.

**Habitat:** in groups of several gregarious ascocarps, on rotten stromatised leaves of *Salix*, especially near the ribs. Summer-autumn. On decayed wood of *Nothofagus* (GAMUNDÍ 1962).

**Distribution:** No other record known from Austria up to now. Reported from Argentina (GAMUNDÍ 1962).

**Notes:** The Austrian specimens differ from the description by GAMUNDÍ (1962) in having less orange apothecia and in growing on rotten *Salix* leaves instead of degraded *Nothofagus* wood.

*Rutstroemia lindaviana* (KIRSCHST.) DENNIS, probably the closest species, lives on decayed leaves of grasses (*Carex* or *Glyceria*). It has yellowish-brown apothecia with greyish tinges, up to 2 mm in diam., and a little bit smaller spores, 4-5 × 1.5-2 µm, without oil drops. *Rutstroemia luteovirescens* (ROBERGE in DESM.) W. L. WHITE, on dead leaves of *Acer,* has olivaceous yellow-brown apothecia and broader spores (12-14 × 6-7 µm), while *R. sydowiana* (REHM) W. L. WHITE, on fallen leaves of *Quercus,* has reddish-brown apothecia and spores 14-15 × 6 µm.

*Rutstroemia bolaris* (BATSCH: FR.) REHM, on old wood of *Alnus* and *Carpinus*, is at first sight similar to *R. microsperma* because of yellow-brown colours with orange reflexes. It has ellipsoid spores, 17-19 × 6 µm, up to 3-septate when mature, often with secondary spores on the extremities. *Rutstroemia firma* (PERS.: FR.) P. KARST., living on degraded deciduous wood, has reddish-brown apothecia and cylindrical-allantoid spores, 15-18 × 5-6 µm (MEDARDI 2006 b; BREITENBACH & KRÄNZLIN 1984: 13-17 × 3-4 µm), provided with 2-3 transverse septa and with secondary spores when completely mature.

Finally, *Rutstroemia elatina* (ALB. & SCHWEIN.: FR.) REHM, on old wood or leaves (needles) of *Abies alba* lives in late winter and has entirely olivaceous-brown apothe-

cia, with spores 16-19 × 5-6 µm (MEDARDI 2006 b; BREITENBACH & KRÄNZLIN 1984: 12-17 × 5-6 µm), occasionally 1-septate.

**Collection examined:** Salzburg, Kaprun, Kaprunertal (MTB 8742/3), ca. 1100 m s. m., 13. 8. 2005, G. F. MEDARDI (K 138548).

## References


AHTI, T., DISSING, H., ECKBLAD, F. E., GJÆRUM, H., GRANMO, A., KERS, L., KNUDSEN, H., LÆSSØE, T., LANGE, M., LUNDQVIST, N., OHENOJA, E., RYMAN, S., RYVARDEN, L., SCHUMACHER, T., VESTERHOLT, J., WHALLEY, A. J. S., 2000: Nordic Macromycetes 1, *Ascomycetes*. – Copenhagen: Nordsvamp.

BOUDIER, E., 1885: Nouvelle classification naturelle des Discomycètes charnus. – Bull. Soc. Mycol. France **1**: 91-120.

— 1905-1910: Icones Mycologicae. – Paris: L´homme.

BREITENBACH, J., KRÄNZLIN, F., 1984: Champignons de Suisse I. *Ascomycetes*. – Luzern: Mykologia.

CHECKLIST OF CUMBRIAN SPECIES 2007: Cumbria Biological Data Network. – http://www.lakelandwildlife.co.uk.

DENNIS, R. G. W., 1956: A revision of the British *Helotiaceae* in the herbarium of the Royal Botanic Gardens, Kew, with notes on related European species. – Mycol. Papers **62**: 1-216.

— 1981: British *Ascomycetes*. – Vaduz: Cramer.

DISSING, H., SCHUMACHER, T., 1979: Preliminary studies in the genus *Boudiera*, taxonomy and ecology. – Norw. J. Bot. **26**: 99-109.

ELLIS, M. B., ELLIS, J. P., 1988: Microfungi on miscellaneous substrates. – London, Sidney: Croom Helm.

GAMUNDÍ, I. J., 1962: *Discomycetes* Inoperculados del Parque Nacional Nahuel Huapi (Argentina). – Darwiniana **12**: 385-463.

LÆSSØE, T., PETERSEN, J. H., 2007: MycoKey. – http://www.mycokey.com.

MEDARDI, G., 2006 a: Non fimicolous Arctic-alpine *Ascomycetes* collected in Austria 1. – Österr. Z. Pilzk. **15**: 21-29.

— 2006 b: Atlante fotografico degli Ascomiceti d'Italia. – Vicenza: AMB Fondazione Centro Studi Micologici.

MOSER, M., 1963: Ascomyceten. – Stuttgart: G. Fischer.

NEDERLANDS SOORTENREGISTER, 2007: Overzicht van de Nederlandse biodiversiteit. – http://www.nederlandsesoorten.nl.

SCHILLING, A., DOBBITSCH P., 2006: Pilzkartierung 2000 Online, Februar 2004-Februar 2006. – http://brd.pilzkartierung.de/.

SCHUMACHER, T., JENSSEN, K. M., 1992: Arctic and Alpine Fungi **4**. – Oslo: Soppkonsulenten A/S.

SOCIEDAD MICOLÓGICA BARAKALDO, 2003: Citas breves de los fondos recogidos en la Micoteca de la Sociedad Micológica Barakaldo. – http://www.micologica-barakaldo.org/pdffiles/muskaria2003.pdf.

SOPPHERBARIET, 2005: The mycological herbarium. – http://www.nhm.uio.no/botanisk/sopp/index.html.