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Some reallocations of *Stenella* species to *Zasmidium*

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Abstract: Braun, U., Crous, P.W., Schubert, K. & Shin, H.-D. 2010: Some reallocations of *Stenella* species to *Zasmidium*. Schlechtendalia **20**: 99–104.

Based on phylogenetic as well as phenotypic characters, *Zasmidium* proved to be the oldest genus name for *Stenella*-like anamorphs belonging to the Mycosphaerellaceae. *Stenella* s. str. with *S. araguata* as type species is phylogenetically part of the Teratosphaeriaceae. Furthermore, the two genera are also morphologically somewhat distinct by differences in the structure of the conidiogenous loci, being planate in *Zasmidium*, and more pileate in *Stenella*. Due to the new generic nomenclature and taxonomy within this complex of hyphomycetes, some new reallocations of former *Stenella* species to *Zasmidium* are necessary.

Zusammenfassung: Braun, U., Crous, P.W., Schubert, K. & Shin, H.-D. 2010: Einige neue Zuordnungen von *Stenella*-Arten zu *Zasmidium*. Schlechtendalia **20**: 99–104.

Auf Grundlage phylogenetischer und phänotypischer Merkmale konnte gezeigt werden, dass *Zasmidium* der älteste Gattungsname für *Stenella*-artige Anamorphen der Mycosphaerellaceen ist. *Stenella* s. str., mit *S. araguata* als Typusart, gehört phylogenetisch zu den Teratosphaeriaceen. Darüber hinaus sind die beiden Gattungen auch morphologisch in der Struktur der konidienbildenden Loci etwas verschieden, abgeflacht in *Zasmidium* und mehr pileat in *Stenella*. Aufgrund der neuen Gattungsnomenklatur und -Taxonomie innerhalb dieses Komplexes von Hyphomyzeten sind einige Umkombinationen von früheren *Stenella*-Arten in *Zasmidium* notwendig.

Key words: Cercosporoid hyphomycetes, nomenclature.

The anamorph genus *Stenella* Syd. has traditionally been linked to teleomorphs accommodated in *Mycosphaerella* Johanson (Crous & Braun 2003, Crous et al. 2004, 2006). However, recent phylogenetic studies have shown that *Mycosphaerella* is polyphyletic (Crous et al. 2007), and that many of these anamorph lineages represent distinct genera with *Mycosphaerella*-like teleomorphs, clustering in different families in the Capnodiales (Crous et al. 2009a–c). *Stenella* is a cercosporoid hyphomycete genus for species characterised by having superficial, verruculose hyphae with solitary to aggregated conidiophores, conidiogenous cells with conspicuous conidiogenous loci (thickened, darkened and refractive), and conidia formed singly or in chains, with thickened, darkened and refractive hila (Crous & Braun 2003). Recently some species with similar conidia, but lacking superficial mycelium have also been placed in *Stenella* (Braun & Crous 2005, Shivas et al. 2009). Such species were previously placed in *Stenellopsis* B. Huguenin, but this genus was reduced to synonymy with *Stenella* by Braun & Crous (2005), a conclusion supported by results of molecular sequence analyses (see Shivas et al. 2009). In a subsequent

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study, *Zasmidium* Fr. proved to be the oldest names for *Stenella*-like hyphomycetes within the Mycosphaerellaceae (Arzanlou et al. 2007). However, the type species of *Stenella*, *S. araguata* Syd., clusters within the Teratosphaeriaceae, and differs in having pileate conidiogenous loci (versus planate, cercosporoid loci in *Zasmidium*). Although taxa with a *Zasmidium*-like morphology appear to be paraphyletic within the Mycosphaerellaceae (Crous et al. 2009a, b), these taxa should be separated from *Stenella*, which have a different scar structure and belong to the Teratosphaeriaceae. We therefore prefer to maintain two morphologically and phylogenetically separate genera, i.e. *Stenella,* currently confined to the type species in the Teratosphaeriaceae, and *Zasmidium*, for the type species *Z. cellare* (Pers.) Fr. and similar anamorphs with cercosporoid loci within the Mycosphaerellaceae.

Zasmidium annonaceae (Henn.) U. Braun **comb. nov.** (MycoBank, MB 516563)
Bas.: *Cercospora annonaceae* Henn., Hedwigia 48: 18, 1909.
≡ *Stenella annonaceae* (Henn.) U. Braun, Mikol. Fitopatol. 30(1): 3, 1996.

Zasmidium alpiniae (Syd. & P. Syd.) U. Braun **comb. nov.** (MycoBank, MB 516564)
Bas.: *Cercospora alpiniae* Syd. & P. Syd., Ann. Mycol. 12(2): 202, 1914.
≡ *Stenella alpiniae* (Syd. & P. Syd.) U. Braun, Fungal Diversity 8: 68, 2001.

Zasmidium araliae (Sawada ex K. Schub. & U. Braun) K. Schub. & U. Braun **comb. nov.** (MycoBank, MB 516565)
Bas.: *Stenella araliae* Sawada ex K. Schub. & U. Braun, Nova Hedwigia 84(1–2): 202, 2007.
≡ *Stenella araliae* Sawada, Rep. Gov. Res. Inst. Formosa 85: 91, 1943, nom. inval.

Zasmidium aspiliae (J.M. Yen & Gilles) U. Braun **comb. nov.** (MycoBank, MB 516566)
Bas.: *Cercospora aspiliae* J.M. Yen & Gilles, Bull. Soc. Mycol. France 91: 89, 1975.
≡ *Stenella aspiliae* (J.M. Yen & Gilles) U. Braun, Fungal Diversity 8: 69, 2001.

Zasmidium cercestidis (J.M. Yen & Gilles) U. Braun **comb. nov.** (MycoBank, MB 516567)
Bas.: *Cercospora cercestidis* J.M. Yen & Gilles, Bull. Soc. Mycol. France 91: 92, 1975.
≡ *Stenella cercestidis* **(**J.M. Yen & Gilles) Deighton, Mycol. Pap. 144: 53, 1979.

Zasmidium deightonianum (U. Braun) U. Braun **comb. nov.** (MycoBank, MB 516568)
Bas.: *Stenella deightoniana* U. Braun, Mycotaxon 92: 404, 2005.
≡ *Cladosporium cercestidis* Deighton, Mycol. Res. 94(4): 570, 1990, non *Zasmidium cercestidis* (J.M. Yen & Gilles) U. Braun, 2010.
≡ *Stenella cercestidis* (Deighton) U. Braun, Schlechtendalia 5: 54, 2000, non *Stenella cercestidis* **(**J.M. Yen & Gilles) Deighton, 1979.

Zasmidium cestri (U. Braun, Crous & N. Pons) U. Braun & Crous **comb. nov.** (MycoBank, MB 516569)
Bas.: *Stenella cestri* U. Braun, Crous & N. Pons, in Crous & Braun, *Mycosphaerella* and its anamorphs: 1. Names published in *Cercospora* and *Passalora*, CBS Biodiversity Series No. 1: 117, 2003.
≡ *Cercospora cestri* Chupp & A.S. Mull., Bol. Soc. Venez. Ci. Nat. 8(52): 40, 1942, nom. inval.

Zasmidium dianthi (H.D. Shin & U. Braun) H.D. Shin & U. Braun **comb. nov.** (MycoBank, MB 516570)
Bas.: *Stenella dianthi* H.D. Shin & U. Braun, Mycotaxon 49: 359, 1993.

Zasmidium dichanthii (S.A. Khan & Kamal) U. Braun & Crous **comb. nov.** (MycoBank, MB 516571)

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Bas.: *Cercospora dichanthii* S.A. Khan & Kamal, Mycopathol. Mycol. Appl. 39(3–4): 200, 1969.
≡ *Stenella dichanthii* (S.A. Khan & Kamal) U. Braun & Crous (Crous & Braun 2003: 159).

Zasmidium diospyri (Thüm.) U. Braun **comb. nov.** (MycoBank, MB 516572)
Bas.: *Cercospora diospyri* Thüm., Mycoth. Univ., No. 1273, 1874.
≡ *Stenella diospyri* (Thüm.) U. Braun, Mycotaxon 55: 239, 1995.

Zasmidium dracaenae (Hansf.) U. Braun & Crous **comb. nov.** (MycoBank, MB 516573)
Bas.: *Cercospora dracaenae* Hansf., Proc. Linn. Soc. London 155: 56, 1943.
≡ *Stenella dracaenae* (Hansf.) U. Braun & Crous (Crous & Braun 2003: 166).

Zasmidium eriolobi (Thaung) K. Schub. & U. Braun **comb. nov.** (MycoBank, MB 516574)
Bas.: *Cladosporium eriolobi* Thaung, Trans. Brit. Mycol. Soc. 63(3): 620, 1974.
≡ *Stenella eriolobi* (Thaung) K. Schub. & U. Braun, Nova Hedwigia 84(1–2): 203, 2007.

Zasmidium eucalypti (Crous & Carnegie) Crous & U. Braun **comb. nov.** (MycoBank, MB 516575)
Bas.: *Stenella eucalypti* Crous & Carnegie, Fungal Diversity 26: 177, 2007.

Zasmidium extremorum (Syd. & P. Syd.) U. Braun **comb. nov.** (MycoBank, MB 516576)
Bas.: *Cercospora extremorum* Syd. & P. Syd., Ann. Mycol. 15(3–4): 264, 1917.
≡ *Stenella extremorum* (Syd. & P. Syd.) U. Braun, Nova Hedwigia 74: 434, 2001.

Zasmidium haematiticum (U. Braun & Crous) U. Braun & Crous **comb. nov.** (MycoBank, MB 516577)
Bas.: *Stenella haematitica* U. Braun & Crous, Mycol. Progr. 2(3): 206, 2003.

Zasmidium holophaeum (Syd.) U. Braun & Crous **comb. nov.** (MycoBank, MB 516578)
Bas.: *Cercospora holophaea* Syd., Ann. Mycol. 37: 492, 1939.
≡ *Stenella holophaea* (Syd.) U. Braun & Crous (Crous & Braun 2003: 219).

Zasmidium hymenocallidis (U. Braun & Crous) U. Braun & Crous **comb. nov.** (MycoBank, MB 516579)
Bas.: *Stenella hymenocallidis* U. Braun & Crous, Mycotaxon 92: 403, 2005.

Zasmidium ipomoeae-stoloniferae (J.M. Yen & Gilles) U. Braun **comb. nov.** (MycoBank, MB 516581)
Bas.: *Cercospora ipomoeae-stoloniferae* J.M. Yen & Gilles, Cah. Maboké 8(2): 79, 1970.
≡ *Stenella ipomoeae-stoloniferae* (J.M. Yen & Gilles) U. Braun, Fungal Diversity 8: 50, 2001.

Zasmidium kansense (Syd. & P. Syd.) U. Braun **comb. nov.** (MycoBank, MB 516582)
Bas.: *Cercospora kansensis* Syd. & P. Syd., Ann. Mycol. 5: 340, 1907.
≡ *Stenella kansensis* (Syd. & P. Syd.) U. Braun, Mikol. Fitopatol. 30(3): 7, 1996.

Zasmidium leucothoës (U. Braun) U. Braun **comb. nov.** (MycoBank, MB 516583)
Bas.: *Stenella leucothoës* U. Braun, Fungal Diversity 26: 66, 2007.

Zasmidium litseae-glutinosae (Syd. & P. Syd.) U. Braun **comb. nov.** (MycoBank, MB 516584)
Bas.: *Cercospora litseae-glutinosae* Syd. & P. Syd., Philipp. J. Sci., Sect. C, Botany 8: 283, 1913.
≡ *Stenella litseae-glutinosae* (Syd. & P. Syd.) U. Braun, Mycotaxon 55: 239, 1995.

Zasmidium maesae (Crous & U. Braun) Crous & U. Braun **comb. nov.** (MycoBank, MB 516585)
Bas.: *Stenella maesae* Crous & U. Braun, Sydowia 46(2): 210, 1994.

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Zasmidium marasasii (Crous & M.J. Wingf.) Crous & U. Braun **comb. nov.** (MycoBank, MB 516586)
Bas.: *Pseudocercospora marasasii* Crous & M.J. Wingf., Mycol. Res. 95(9): 1108, 1991.
≡ *Stenella marasasii* (Crous & M.J. Wingf.) B. Sutton & Crous, Mycol. Res. 101(2): 219, 1997.

Zasmidium musae (Arzanlou & Crous) Crous & U. Braun **comb. nov.** (MycoBank, MB 516587)
Bas.: *Stenella musae* Arzanlou & Crous, Persoonia 20: 31, 2008.

Zasmidium musicola (Arzanlou & Crous) Crous & U. Braun **comb. nov.** (MycoBank, MB 516588)
Bas.: *Stenella musicola* Arzanlou & Crous, Persoonia 20: 33, 2008.

Zasmidium mitellae (Peck) U. Braun **comb. nov.** (MycoBank, MB 516589)
Bas.: *Ramularia mitellae* Peck, Rep. (Annual) New York State Mus. Nat. Hist. 33: 30, 1880.
≡ *Stenella mitellae* (Peck) U. Braun, Nova Hedwigia 56: 430, 1993.

Zasmidium oliganthis (R.E.D. Baker & W.T. Dale) U. Braun & Crous **comb. nov.** (MycoBank, MB 516590)
Bas.: *Cercospora oliganthis* R.E.D. Baker & W.T. Dale, Mycol. Pap. 33: 104, 1951.
≡ *Stenella oliganthis* (R.E.D. Baker & W.T. Dale) U. Braun & Crous (Crous & Braun 2003: 297).

Zasmidium oligoneuri (H.C. Greene) U. Braun & Crous **comb. nov.** (MycoBank, MB 516591)
Bas.: *Cercospora oligoneuri* H.C. Greene, Trans. Wis. Acad. Sci. 46: 158, 1958.
≡ *Stenella oligoneuri* (H.C. Greene) U. Braun & Crous (Crous & Braun 2003: 297).

Zasmidium orchidacearum (U. Braun & Sivap.) U. Braun **comb. nov.** (MycoBank, MB 516592)
Bas.: *Stenella orchidacearum* U. Braun & Sivap., Fungal Diversity 3: 23, 1999.

Zasmidium oxycocci (Shear) K. Schub. & U. Braun **comb. nov.** (MycoBank, MB 516593)
Bas.: *Cladosporium oxycocci* Shear, Bull. Torrey Bot. Club. 34: 306, 1907.
≡ *Stenella oxycocci* (Shear) K. Schub. & U. Braun, Nova Hedwigia 84(1–2): 205, 2007.

Zasmidium parkii (Crous & Alfenas) Crous & U. Braun **comb. nov.** (MycoBank, MB 516594)
Bas.: *Stenella parkii* Crous & Alfenas, Mycologia 87(1): 121, 1995.

Zasmidium paulliniae (Deighton) K. Schub. & U. Braun **comb. nov.** (MycoBank, MB 516595)
Bas.: *Cladosporium paulliniae* Deighton, Mycol. Pap. 144: 54, 1979.
≡ *Stenella paulliniae* (Deighton) K. Schub. & U. Braun, Mycol. Progr. 4(2): 107, 2005.

Zasmidium pittospori (U. Braun) U. Braun **comb. nov.** (MycoBank, MB 516596)
Bas.: *Stenella pittospori* U. Braun, Fungal Diversity 26: 68, 2007.

Zasmidium pseudoparkii (Crous & M.J. Wingf.) Crous & U. Braun **comb. nov.** (MycoBank, MB 516597)
Bas.: *Stenella pseudoparkii* Crous & M.J. Wingf., Stud. Mycol. 55: 128, 2006.

Zasmidium praelongum (Syd.) U. Braun **comb. nov.** (MycoBank, MB 516598)
Bas.: *Cercospora praelonga* Syd., Ann. Mycol. 23: 426, 1925.
≡ *Stenella praelonga* (Syd.) U. Braun, Cryptog. Mycol. 20(3): 175, 1999.

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Zasmidium prosopidis (Heald & F.A. Wolf) U. Braun & Crous **comb. nov.** (MycoBank, MB 516599)
Bas.: *Cercospora prosopidis* Heald & F.A. Wolf, Mycologia 3(1): 20, 1911.
≡ *Stenella prosopidis* (Heald & F.A. Wolf) U. Braun & Crous, Fungal Diversity 26: 69, 2007.

Zasmidium psychotriae (Chupp & Viégas) Crous & U. Braun **comb. nov.** (MycoBank, MB 516600)
Bas.: *Stenella psychotriae* Chupp & Viégas, Bol. Soc. Brasil. Agron. 8: 45, 1945.
≡ *Stenella psychotriae* (Chupp & Viégas) Crous & U. Braun, Mycotaxon 57: 302, 1996.

Zasmidium pterocarpigenum (U. Braun & Hosag.) U. Braun **comb. nov.** (MycoBank, MB 516601)
Bas.: *Stenella pterocarpigena* U. Braun & Hosag., Biblioth. Lichenol. 86: 84, 2003.

Zasmidium quitense (Syd.) K. Schub. & U. Braun **comb. nov.** (MycoBank, MB 516602)
Bas.: *Cladosporium quitense* Syd., Ann. Mycol. 37: 420, 1939.
≡ *Stenella quitensis* (Syd.) K. Schub. & U. Braun, Mycol. Progr. 4(2): 108, 2005.

Zasmidium queenslandicum (Arzanlou & Crous) Crous & U. Braun **comb. nov.** (MycoBank, MB 516603)
Bas.: *Stenella queenslandica* Arzanlou & Crous, Persoonia 20: 34, 2008.

Zasmidium sardoum (Sacc. & Traverso) U. Braun **comb. nov.** (MycoBank, MB 516604)
Bas.: *Ramularia sardoa* Sacc. & Traverso, Ann. Mycol. 1: 443, 1903.
≡ *Stenella sardoa* (Sacc. & Traverso) U. Braun, Mycotaxon 48: 297, 1993.

Zasmidium schefflerae (Boedijn) U. Braun **comb. nov.** (MycoBank, MB 516605)
Bas.: *Cercospora schefflerae* Boedijn, Nova Hedwigia 3(4): 413, 1961.
≡ *Stenella schefflerae* (Boedijn) U. Braun, Nova Hedwigia 73: 429, 2001.

Zasmidium solidaginis (Chupp & H.C. Greene) Crous & U. Braun **comb. nov.** (MycoBank, MB 516606)
Bas.: *Cercospora solidaginis* Chupp & H.C. Greene, Trans. Wis. Acad. Sci. 36: 267, 1944.
≡ *Stenella solidaginis* (Chupp & H.C. Greene) Crous & U. Braun, Mycotaxon 78: 342, 2001.

Zasmidium stipae (H.C. Greene) K. Schub. & U. Braun **comb. nov.** (MycoBank, MB 516607)
Bas.: *Cladosporium stipae* H.C. Greene, Trans. Wis. Acad. Sci. 41: 127, 1952.
≡ *Stenella stipae* (H.C. Greene) K. Schub. & U. Braun, Mycotaxon 92: 71, 2005.

Zasmidium subsanguineum (Ellis & Everh.) U. Braun **comb. nov.** (MycoBank, MB 516608)
Bas.: *Cercospora subsanguinea* Ellis & Everh., J. Mycol. 4(1): 4, 1888.
≡ *Stenella subsanguinea* (Ellis & Everh.) U. Braun, Cryptog. Bot. 3: 242, 1993.

Zasmidium tephrosiae (G.F. Atk.) U. Braun & Crous **comb. nov.** (MycoBank, MB 516609)
Bas.: *Cercospora tephrosiae* G.F. Atk., J. Elisha Mitchell Sci. Soc. 8(2): 44, 1892.
≡ *Stenella tephrosiae* (G.F. Atk.) U. Braun & Crous (Crous & Braun 2003: 399).

Zasmidium vexans (Crous) Crous & U. Braun **comb. nov.** (MycoBank, MB 516610)
Bas.: *Stenella vexans* Crous, Mycol. Res. 103(5): 611, 1999.

Zasmidium xenoparkii (Crous & M.J. Wingf.) Crous & U. Braun **comb. nov.** (MycoBank, MB 516611)
Bas.: *Stenella xenoparkii* Crous & M.J. Wingf., Stud. Mycol. 55: 129, 2006.

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Crous, P.W., Summerell, B.A., Carnegie, A.J., Wingfield, M.J., Hunter, G.C., Burgess, T.I., Andjic, V., Barber, P.A. & Groenewald, J.Z. 2009c: Unravelling *Mycosphaerella*: do you believe in genera? Persoonia **23**: 99–118.

Crous, P.W., Wingfield, M.J., Mansilla, J.P., Alfenas, A.C. & Groenewald, J.Z. 2006: Phylogenetic reassessment of *Mycosphaerella* spp. and their anamorphs occurring on *Eucalyptus*. II. Studies in Mycology **55**: 99–131.

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