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Notes on *Curreya* (Ascomycetes, Dothideales)

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The genus *Curreya* was described by SACCARDO (1883) for *Homostegia conorum* FUCKEL, a fungus growing on cone scales of *Pinus sylvestris* in Germany. Several more species were added which were later excluded by THEISSEN & SYDOW (1915) and other authors. THEISSEN & SYDOW classified the genus in the Dothideales. *Curreya conorum* (FUCKEL) SACC. was collected again by G. MOESZ in Hungary and this specimen was described in detail by PETRAK (1940). He classified the fungus as *Cucurbitaria conorum* (FUCKEL) PETRAK because of the pycnidial anamorph, known as *Coniothyrium glomerulatum* SACC. According to him, other *Cucurbitaria* species should also include *Coniothyrium* anamorphs.

Von ARX & MULLER (1975) reintroduced the genus Curreya for C. conorum and C. pithyophila (FR.) v. ARX & MULLER (= Cucurbidothis pithyophila (FR.) PETRAK, both parasitic on conifers Abies, Picea, Pinus. The genus Cucurbitaria S. F. GRAY was restricted to species growing on broad leaved plants, having botryose, ostiolate ascomata and Camarosporium or Diplodia anamorphs. BARR (1981) transferred C. conorum to Pleospora and retained the genus Cucurbidothis for C. pithyophila.

The following description is based on the type specimen, maintained in S.

Curreya conorum (FUCKEL) SACC. - Fig. 1: 1-4

Homostegia conorum FUCKEL – Jahrb. Nassau. Ver. Naturk. 29/30: 25. 1875. Curreya conorum (FUCKEL) SACC. – Syll. Fung. 2: 651. 1883.

Cucurbitaria conorum (FUCKEL) PETRAK – Annls Mycol. 38: 216. 1940.

Pleospora conorum (FUCKEL) BARR – Mycologia 73: 601. 1981.

Anamorph: Coniothyrium glomerulatum SACC.

Stromata immersed in the host tissue, sclerotium-like, irregular, often conical, becoming erumpent with the upper part, usually containing a single locule, occasionally multilocular, $300-500 \ \mu\text{m}$ diam, $210-350 \ \mu\text{m}$ high, composed mainly of a scleroplectenchyma of hyaline or subhyaline, angular, thick-walled cells, $6-15 \ \mu\text{m}$ in diam, surrounded by a $9-14 \ \mu\text{m}$ thick wall of thick-walled, dark brown, often rather indistinct cells, $3-6 \ \mu\text{m}$ in diam; loculi spherical or conical, $200-260 \ \mu\text{m}$ in diam, without preformed ostiolum,

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surrounded with hyaline, flattened cells; a sci developing from the base of the loculi synchronously with paraphyses, cylindrical-clavate, apically rounded, with a short stalk at base, bitunicate, thick-walled in the apical part (wall at the apex 5–7 $\mu \rm m$ thick), 8-spored, 90–140×22–28 $\mu \rm m$; ascospores ellipsoidal-fusiform, 1-septate when young, soon becoming 3-septate, with 5–7 transverse and 1–3 longitudinal or oblique septa when mature, slightly constricted at the 3 primary septa, deep chocolate brown, smooth-walled, 23–30×10–14 $\mu \rm m$; paraphyses filiform, often branched apically, hyaline, indistinctly septate, 1.5–2.5 $\mu \rm m$ broad, with evanescent walls.

The type specimen contained only loculi of the teleomorph. At the apex the loculi are usually slightly conical, but no apical ostiolar pore is present. The erumpent part of the stromata apparently is disrupted at maturity by internal pressure.

Both the teleomorph and the *Coniothyrium* anamorph were observed on a collection on cones of *Pinus sylvestris* from Egerkingen, Switzerland in 1969 (herb. von ARX). This collection agrees in all respects with the description given by PETRAK (1940). The stromata contain loculi of both teleomorph and anamorph or only of the anamorph.

Curreya conorum without doubt is not congeneric with Pleospora herbarum (PERS.) RABENH., the type species of the genus Pleospora, as was proposed by BARR (1981). P. herbarum is a very common fungus on herbaceous stems. The spherical or conical, distinctly ostiolate ascomata have a thick wall composed of a pseudoparenchyma of distinct, angular, pigmented cells. The young ascomata are filled with a plectenchyma of elongate cells arranged in vertical rows, between which the asci develop. The asci are cylindrical, have relatively thin but persistent walls and the ascospores are ochraceous or golden yellow. Pleospora herbarum is the teleomorph of Stemphylium botryosum WALLR., a dematiaceous hyphomycete with many-celled, pigmented porconidia.

The genus *Pleospora* in its present delimitation includes about 200 species and without doubt is heterogeneous. Numerous species will have to be transferred to other genera, e.g. Strickeria KORBER and Montagnula BERLESE (von ARX & Müller, 1975). Closely related to *Pleospora* are genera with similar ascomatal structures and with similar anamorphs, e. g. Comoclathris CLEM. (anamorph: Alternaria or Stemphylium), Buergenerula Syd. (anamorph unnamed), Cochliobolus Drechsler (anamorph: Curvularia Boedijn or Bipolaris SHOEMAKER). Setosphaeria LEONARD 8z Suggs (anamorph: Exserohilum LEONARD & SUGGS) and Pyrenophora FR. (anamorph: Drechslera Ito).

Curreya on the other hand is similar to other ascomycete genera which include species with Coniothurium or Aposphaeria anamorphs (Aposphaeria auct. is Coniothyrium like, but stromatic and the conidia often remain hyaline or subhyaline). The following genera include species with such anamorphs: Melanomma NITS. ex FUCKEL, Didymosphaeria FUCKEL, Paraphaeosphaeria O. ERIKSSON and Massarina SACC. These genera have been excluded from the Pleosporaceae s. str. by Müller (1979). BARR (1979) and ERIKSSON (1981) classified them in separate families, viz. Melanommataceae, Didymosphaeriaceae, Massarinaceae and Phaeosphaeriaceae, in Pleosporales and Melanommatales. A single family Melanommataceae of the Dothideales sensu von ARX & MÜLLER (1975) would be more appropriate. Melanomma for example is closely related to Curreya, but has ostiolate ascomata (?) and the ascospores have only transverse septa (as they have in Curreya pithyophila var. cembrae (REHM) v. ARX. comb. nov [= Cucurbidothis pithuophila var. cembrae (REHM) HOLM = Cucurbitaria pithyophila var. cembrae REHM – Ber. Naturhist. Ver. Augsburg 26: 38. 1881]). The inclusion of Cucurbidothis in Curreya or its maintenance as a separate genus is debatable. In our opinion, Curreya conorum is only a cone-inhabiting relative of *C. pithyophila* with slightly larger ascospores and smaller stromata. In the latter species, the anamorph is also often absent (HOLM, 1967; CASAGRANDE, 1969).

The Melanommataceae WINTER (including Didymosphaeriaceae MUNK, Massarinaceae MUNK, Phaeosphaeriaceae BARR and Cucurbitariaceae WINTER) can be characterized as follows:

Ascomata or stromata immersed in the host tissue, often becoming erumpent, surrounded by a dark wall of small, angular or flattened, often indistinct cells, inner part often scleroplectenchymatic and hyaline; loculi spherical, ovate or conical, ostiolate or non-ostiolate, with a wall of flattened, hyaline cells; asci developing synchronously with the paraphyses, cylindrical-clavate, bitunicate, rather thick-walled, especially in the apical part; paraphyses numerous, filamentous, often branched and anastomozing, with evanescent walls or embedded in a mucoid mass, surrounding the asci and filling the ostiolar pore or the apical opening; as cospores elongate, often with attenuated ends, 2-celled when young, remaining so or becoming many-celled, hvaline or more often pigmented; anamorph pycnidial, stromatic; conidial cavities spherical, ovate or conical, usually ostiolate; conidia formed successively (basipetally) at the apex of short conidiogenous cells, 1-celled or septate, hyaline or more often pigmented, extruded in a mucoid mass.

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Fig. 1. *Curreya conorum*. 1. ascomata. – 2. ascus and paraphyses. – 3. ascospores. – 4. part of the stroma and the ascomatal wall (from the type, S).

Representative genera:

teleomorph	anamorph(s)	
Melanomma	Coniothyrium, Aposphaeria	
Didymosphaeria	Coniothyrium	
Paraphaeosphaeria	Coniothyrium	
Curreya	Coniothyrium	
Massarina	Coniothyrium (Microsphaeropsis)	
Phaeosphaeria	Stagonospora, Hendersonia	
Herpotrichia	Pyrenochaeta, Phoma, Coniothyrium	
Cucurbitaria	Camarosporium, Phoma	
Related genera		
teleomorph	anamorph(s)	
Didymella	Ascochyta, Phoma	
Keissleriella	Ascochyta, Phoma	
Gilletiella	Ascochuta-like	

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