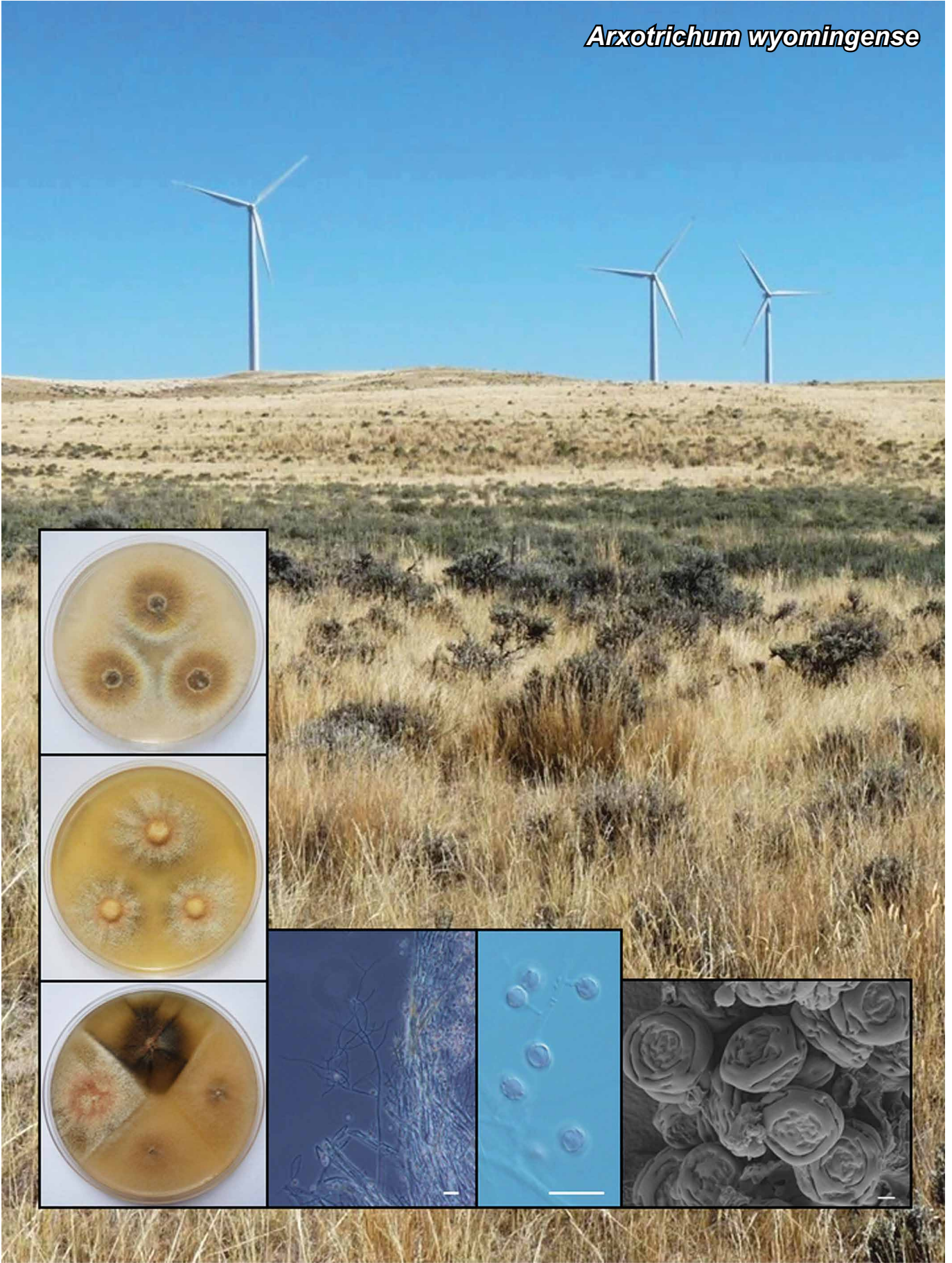


*Arxotrichum wyomingense*



Fungal Planet 718 – 13 July 2018

***Arxotrichum* A. Nováková & M. Kolařík, gen. nov.**

*Etymology.* Named after Josef Adolf von Arx (1922–1988), honouring his work on the genus *Chaetomium* and according to the morphological similarity with the genus *Staphylotrichum*.

Classification — *Chaetomiaceae*, *Sordariales*, *Sordariomycetes*.

*Mycelium* sterile or producing conidiophores. *Conidiophores* septate, stipe with basal part yellowish brown, upper part colourless, ramified, branches racemose. *Conidiogenous cells* borne on the ends of branches, hyaline. *Conidia* solitary, aseptate, subglobose, rough-walled to rugose. *Ascomata* absent or pale ochraceous to olivaceous grey, superficial, spherical to ovate,

140–240 µm with distinct ostiolar opening, wall angular or irregular; ascomatal hairs numerous, flexuous, undulate or spirally coiled, verrucose or finally echinulate, septate, pale ochraceous or brown. *Asci* obovate-clavate, with short stalks, 34–45 × 16–20 µm, 8-spored, evanescent; *ascospores* ellipsoidal-fusoid, at both ends attenuated and rounded, brown, 12–17 × 6–8.5 µm, with distinct apical germ pore (Von Arx et al. 1986). Good growth to 37 °C, limited at 40 °C (2–3 mm diam in 7 d), no growth at 42 °C. Phylogenetically distinct from related genera of *Chaetomium* and *Myceliophthora*.

*Type species.* *Arxotrichum wyomingense* A. Nováková & M. Kolařík. MycoBank MB824080.

***Arxotrichum wyomingense* A. Nováková & M. Kolařík, sp. nov.**

*Etymology.* Latin 'wyomingense' = relating to the state Wyoming, USA, referring to the type locality.

On MEA. *Conidiophores* septate, 250–400 µm long, stipe with basal part yellowish brown, smooth to finely rough, 3 µm wide, upper part colourless, smooth, 2.5 µm wide, ramified, branches racemose. *Conidiogenous cells* borne on the ends of branches, hyaline. *Conidia* solitary, aseptate, 5(–7) µm diam, hyaline to pinkish coloured, subglobose, rough-walled to rugose, flattened from side view with distinct spiral (bands) and visible scars. *Ascomata* not observed.

Culture characteristics — (in the dark, 25 °C after 7 d): Colonies on MEA 56–60 mm diam, plane, with scanty aerial mycelium, radial sporulation yellowish white (ISCC–NBS no. 92; Anon. 1964) to pale yellowish pink (no. 31), but moderate yellowish pink (no. 29) in colony centre, colourless exudate, no soluble pigment, reverse colourless with black (no. 267) colony centre. Colonies on V8 agar 55–60 mm diam, plane, with scanty aerial mycelium, sporulation yellowish white (no. 92) to pale yellowish pink (no. 31) with light orange (no. 52) to light yellowish brown (no. 76) in colony centre, colourless exudate, no soluble pigment, reverse colourless to pale orange yellow (no. 73), colony centre light yellowish brown to brownish black (no. 65).

*Typus.* USA, Wyoming, Converse Country, Powder River Basin, Glenrock-Rolling Hills Wind Plant (former Dave Johnson Coal Mine), site without a reclamation and plant seedlings (natural plant succession – shortgrass sagebrush prairie), N 42.856372, W 105.862719, isolated from soil using keratin bait technique, 2010, A. Nováková (holotype PRM 945788, culture ex-type CCF 5691, ITS, *tub2*, *tef1-α* and LSU sequences GenBank LT968153, LT971393, LT971395 and LT968143, MycoBank MB824081).

*Additional material examined.* USA, Wyoming, Converse Country, Powder River Basin, Glenrock-Rolling Hills Wind Plant (former Dave Johnson Coal Mine), site without a reclamation and plant seedlings (natural plant succession – shortgrass sagebrush prairie), isolated in 2010 from soil using the cellulose bait technique, CCF 5688 = PRM 945789, ITS sequence GenBank LT968155, and CCF 5689, ITS sequence GenBank LT968157, and using the dilution plate method, CCF 5690, ITS sequence GenBank LT968159.

*Colour illustrations.* USA, Wyoming, Rolling Hills Wind Plant, shortgrass sagebrush prairie; 7-d-old colonies of *Arxotrichum wyomingense* (CCF 5691) on V8 agar and MEA and colonies of all studied strains growing together on MEA; conidiophores and conidia on MEA. Scale bars = 20 µm (conidiophores), 10 µm (conidia), 1 µm (SEM).

***Arxotrichum succineum* (L.M. Ames), A. Nováková & M. Kolařík, comb. nov.** — MycoBank 824082

*Basionym.* *Chaetomium succineum* L.M. Ames, Mycologia 41: 645. 1950 '1949'.

Notes — *Arxotrichum wyomingense* is typified by well-defined conidiophores with pigmented bases and a branched hyaline apical part bearing whorls of ornamented conidia. No sexual morph was observed in culture. Crossing of all possible combinations of four strains did not result in the sexual morph, and therefore this species is assumed to be asexual. These characters are not presented in the set of related genera such as *Chaetomium* or *Myceliophthora*, but fit the characteristics of the genus *Staphylotrichum*. Phylogenetically, the type of *Staphylotrichum*, *S. coccorum*, is unrelated to *Arxotrichum*. *Arxotrichum wyomingense* resembles *Staphylotrichum subramaniani* isolated from hare dung in Chile (Udagawa 1997), from which it differs by its smaller conidia, absence of ellipsoidal or pyriform conidia and rather different conidial ornamentation. The living culture of *S. subramanii* does not exist (S. Udagawa, in let.), and the herbarium voucher deposited in the Natural History Museum and Institute, Chiba (CBM) is unavailable for molecular study, and therefore its generic status remains uncertain. *Arxotrichum wyomingense* clusters with *Chaetomium succineum* (ITS rDNA similarity 99 %, 412/418 bp), which is a sexual species lacking an asexual morph (Doveri 2013). Thus, the two species included here in *Arxotrichum* have a few shared phenotypic characters, and the genus as a whole is delimited based on phylogeny only.

The genus *Chaetomium* is a large and polyphyletic taxon (De Hoog et al. 2013, Wang et al. 2016). Based on the current concept of narrow, monophyletic genera, *Chaetomium* was split into several distinct genera (Van den Brink et al. 2012, Marin-Felix et al. 2015). Following this concept, *A. wyomingense* cannot be attributed to any known genus, and thus a new genus is herewith introduced to accommodate it.

Legend and tree added to MycoBank.

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