

Ophiognomonía acadensis



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Ophiognomonia acadensis A.K. Walker, Hirooka, D.M. Walker, *sp. nov.*

Etymology. Named after the region where it was collected, the Acadian forest of coastal New Brunswick, Canada.

Perithecia known only from culture, black, globose to subglobose, 1–4 necks per base, (240–)257–326(–372) μm high \times (190–)198–324(–390) μm diam (av. = 294 \times 263, S.D. 31, 49, n1 = 30, n2 = 30). **Necks** central, curved to sinuous, 532–996(–1170) μm long \times 52–105 μm wide (av. = 690 \times 66, S.D. 150, 14, n1 = 40, n2 = 35). **Asci** fusiform, apex rounded, stipe long tapering, apical ring conspicuous, (17–)21–32 \times (6.5–)7–10 μm (av. = 26 \times 8, S.D. 4.6, 1.1, n1 = 42, n2 = 42), ascospores arranged parallel. **Ascospores** hyaline, fusiform, ends bluntly rounded, straight to slightly curved, 1-septate, slight constriction at septum, 10–13 \times 1.5–3 μm (av. = 11 \times 2, S.D. 0.7, 0.5, n1 = 50, n2 = 50) whip-like ephemeral polar appendages, 16–29 \times 0.5–1 μm .

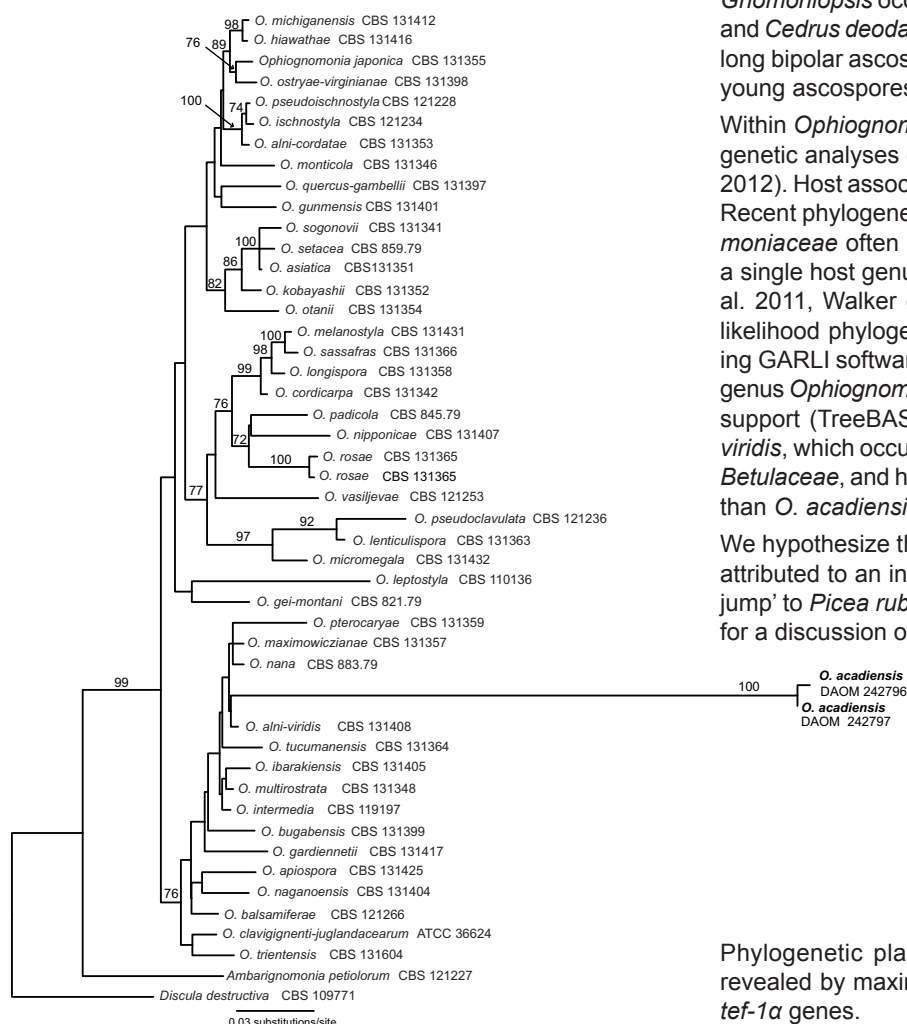
Culture characteristics — Colonies reaching 25 mm diam on 2 % malt extract agar (Difco) after 1 wk at 17 °C in the dark; margins regular; colonies hyaline, producing immature perithecia after 1 wk and mature perithecia after 1 mo incubation at 17 °C in the dark.

Typus. CANADA, New Brunswick, Charlotte County, Lepreau, Basin Road, N45°8'15.576" W66°27'2.052". Dried perithecia from culture obtained from surface sterilised green needles collected from living branches of *Picea rubens*, 6 Aug. 2013, A.K. Walker & J. Walker (holotype DAOM 242791, ex-type culture AW 548 = DAOM 242797; ITS, LSU, *tef-1 α* and MS204 sequences GenBank KJ412998–KJ413001, MycoBank MB807724).

Notes — Nine species of *Ophiognomonia* have been reported from Canada, all from angiosperm hosts (Walker et al. 2012). This is the first record of a species of *Ophiognomonia* isolated from a conifer; however the asexual species *Sirococcus conigenus*, *S. piceicola* and *S. tsugae* in the related genus *Gnomoniopsis* occur as pathogens and saprobes of *Picea* spp. and *Cedrus deodara*. The combination of long perithecial necks, long bipolar ascospore appendages and gelatinous sheaths in young ascospores is unique to this species.

Within *Ophiognomonia* species are delimited based on phylogenetic analyses of variable molecular markers (Walker et al. 2012). Host association is also useful for species identification. Recent phylogenetic studies have shown that species of *Gnomoniaceae* often have a narrow host range, associating with a single host genus or species (Sogonov et al. 2008, Mejía et al. 2011, Walker et al. 2010, 2012). A three-gene maximum likelihood phylogenetic analysis (ITS, MS204 and *tef-1 α*) using GARLI software revealed *O. acadensis* belongs within the genus *Ophiognomonia* with 99 % maximum likelihood bootstrap support (TreeBASE ID 15333) with its closest sister *O. alni-viridis*, which occurs on *Alnus* spp. and *Betula papyrifera* in the *Betulaceae*, and has larger asci and more elongate ascospores than *O. acadensis*.

We hypothesize that the long branch of *O. acadensis* may be attributed to an increase in evolutionary rate following a 'host jump' to *Picea rubens* in the *Pinaceae* (see Walker et al. 2014 for a discussion of this topic in *Ophiognomonia*).



Phylogenetic placement of *Ophiognomonia acadensis* as revealed by maximum likelihood analysis of ITS, MS204 and *tef-1 α* genes.

Colour illustrations. Background photo of coastal *Picea rubens* forest near the collection site courtesy David Malloch. Morphological photos by Y. Hirooka & A.K. Walker. Scale bars of perithecia = 300 μm . Scale bar of perithecium in median cross section = 100 μm . Scale bars of asci and ascospores = 10 μm .

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