EDINBURGH JOURNAL OF BOTANY 63 (2&3): 263–267 (2006)
doi:10.1017/S0960428606000527
Issued 30 November 2006

CAUDELLA BIPOLARIS SP. NOV. (*MICROTHYRIACEAE*) ON *BREDEMEYERA FLORIBUNDA* (*POLYGALACEAE*) FROM THE BRAZILIAN CERRADO

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Caudella bipolaris sp. nov. (*Microthyriaceae*), found on leaves of the liana *Bredemeyera floribunda* Willd. (*Polygalaceae*) from the Brazilian cerrado, is described and illustrated. This is the fourth known *Caudella* species and the first reported on a member of the family *Polygalaceae*. Unique within the genus are the species' bipolar ascospore appendages.

Keywords. *Ascomycota*, *Dothideomycetidae*, foliicolous fungi, *Microthyriales*, tropical fungi.

INTRODUCTION

Bredemeyera floribunda Willd. (local Brazilian names: *botica-inteira*, *guiné-do-campo*) is a neotropical liana in the *Polygalaceae*, characteristic of the Brazilian cerrado (Mendonça *et al*., 1998). It is used in Brazilian popular medicine as a potent diuretic, especially in the treatment of hypertension and nephrolithiasis (Bevevino *et al*., 1994) and reputedly in anti-snake bite medicines (Silva *et al*., 1999).

During a botanical survey in Estação Ambiental de Volta Grande, a protected area of the Brazilian cerrado in Minas Gerais State, Brazil, samples of *B. floribunda* hosting a foliicolous fungus were collected. Later observations have shown that the associated fungus belongs to an undescribed, distinct species of *Caudella* Syd. & P.Syd., described here as *Caudella bipolaris*.

MATERIAL AND METHODS

Samples of infected leaves of *Bredemeyera floribunda* were selected and dried in a plant press. Microscope slides were prepared with fresh, hand-sectioned material or removed from leaves with a scalpel and mounted in lactophenol. Measurements and photographs were taken with an Olympus BX 50 light microscope.

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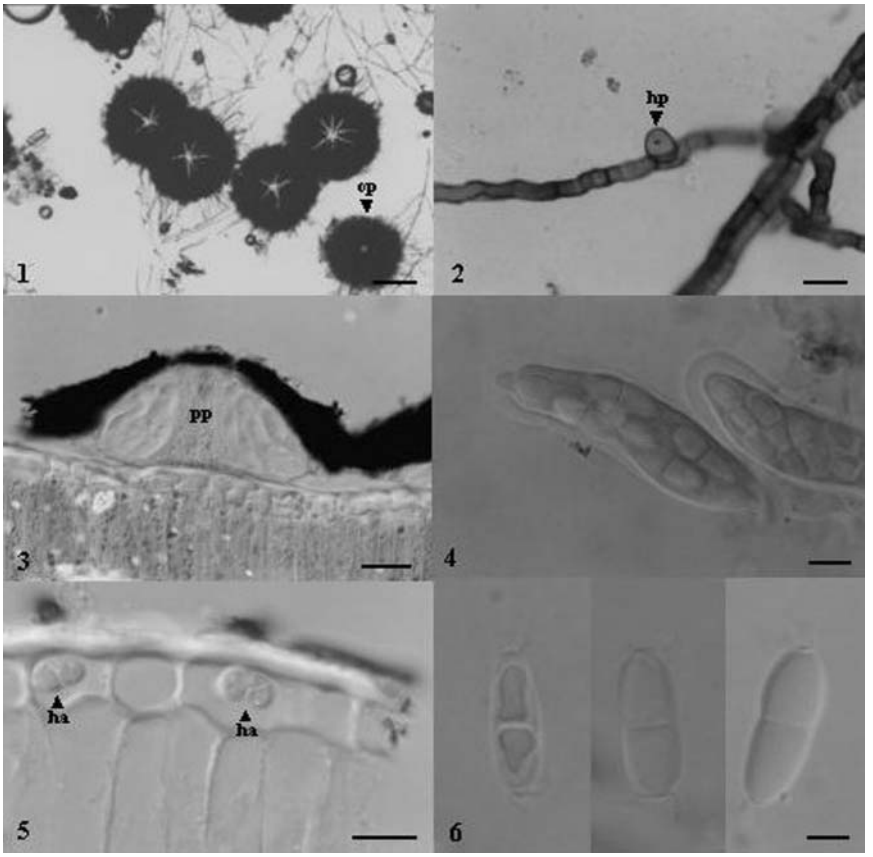
Taxonomy

Caudella bipolaris O.L.Pereira, **sp. nov. Figs 1–7.**

Coloniae nigrae, epiphyllae, tenues. Mycelium ex hyphis atrobrunneis, 3.5–4 μm latis, ramosis, hyphopodiatis. Hyphopodia sparsa, unicellularia, brunnea, lateralia, globosa, laevia, usque 6.5–8.5 μm lata. Thyrothecia nigra, epigena, superficialia, laxe irregulariter dispersa, orbicularia, superficie superiore radiata, dehiscentia ostiolata, 180–215 μm diametro, 30–50 μm alta. Hypostromata absentia. Haustoria vesicularia, laevia, hyalina, 1-septata, 8.5–10 × 5–6 μm. Pseudoparaphyses septatae, 1–2 μm crassae, laeves, hyalinae. Asci brevipedicellati, saccati, cylindrici, bitunicati,



Figs 1–6. *Caudella bipolaris* O.L.Pereira (VIC 29371). Fig. 1: Orbicular thyriothecia showing ostiolar pore (op) (arrowhead), becoming stellate with age (others). Scale bar = 100 μm. Fig. 2: Dark brown superficial hyphae with lateral hyphopodia (hp) (arrowhead). Scale bar = 10 μm. Fig. 3: Detail of ascoma in vertical transverse section showing the central prosenchyma of paraphyses-like filaments (pp) in the thyriothecia. Scale bar = 30 μm. Fig. 4: Bitunicate 8-spored asci. Scale bar = 10 μm. Fig. 5: Vesicular hyaline haustoria (ha) in epidermal cells (arrowhead). Scale bar = 10 μm. Fig. 6: Ovate-ellipsoid, 1-septate, hyaline ascospores. Scale bar = 5 μm.

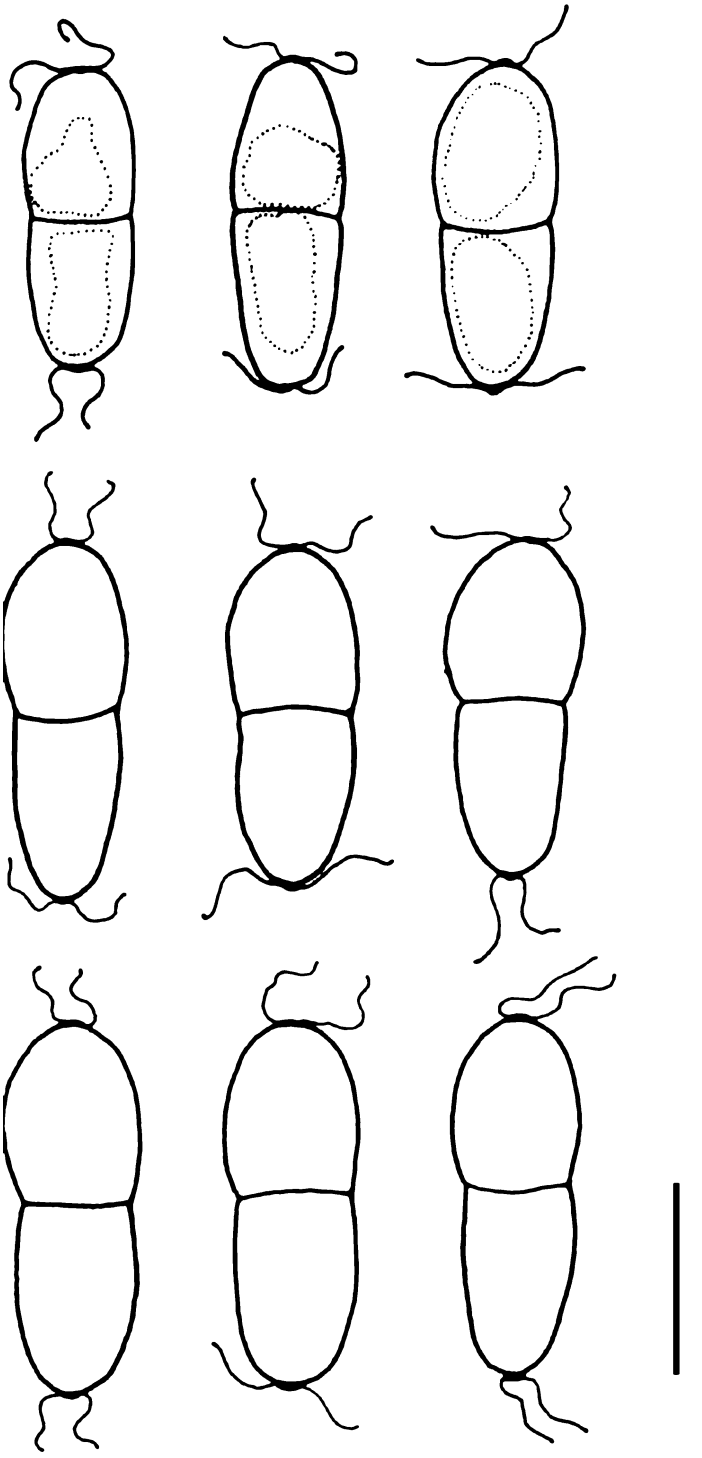


FIG. 7. Ascospores of *Caudella bipolaris* showing filiform, flexuous, bipolar, bifurcate appendages. Scale bar = 10 μm.

octospori, 53–71 × 18–21 μm. Ascosporae ad medium uniseptatae et constrictae, hyalinae, laeves, 16–20 × 6–7 μm, appendicibus bipolaribus bifurcatisque, 2.5–4 μm. – Type: Brazil, Minas Gerais, Estação Ambiental de Volta Grande, Conceição das Alagoas, on leaves of *Bredemeyera floribunda* Willd., 7 v 2004, *O.L. Pereira & F.L.R. Filardi* 29371 (holo VIC).

Colonies black, epigenous, thin. *Mycelium* composed of dark brown, branched, hyphopodiate hyphae, 3.5–4 μm. *Hyphopodia* few, unicellular, brown, lateral, globose, smooth, sometimes irregularly lobed, up to 6.5–8.5 μm wide. *Thyriothecia* black, epigenous, superficial, loosely and irregularly scattered, orbicular, upper surface radiate, opening by an ostiole, becoming stellate from centre with age, 180–215 μm in diameter, 30–50 μm high. *Hypostromata* absent. *Haustoria* vesicular, smooth, hyaline, septate, many-celled, 8.5–10 × 5–6 μm. *Interascal tissue* composed of cellular pseudoparaphyses 1–2 μm in diameter, septate, hyaline, thin-walled, rounded or clavate at the tips, sometimes branched, branches arising at an acute angle from the middle. *Asci* short-stalked, bitunicate, saccate cylindrical, 8-spored, 53–71 × 18–21 μm, arranged in a ring around a central prosenchyma of paraphyses-like filaments in the thyriothecia. *Ascospores* ovate-ellipsoid, 1-septate, septum median, upper cell slightly larger when mature, constricted, hyaline, smooth, 16–20 × 6–7 μm, with slight protuberances at both ascospore poles, bearing bipolar bifurcate appendages on fresh material, rarely observed on dried material. *Appendages* filiform, flexuous, hyaline, 2.5–4 μm.

Etymology. Caudate on both ascospore poles.

MycoBank MB 500510.

Discussion

The genus *Caudella* was proposed by H. Sydow & P. Sydow based on the type species *Caudella oligotricha* Syd. collected in the Brazilian Amazon on an unidentified *Flacourtiaceae* species (Sydow & Sydow, 1916). Since then, there have been no additional reports of the genus from Brazil. *Caudella* is a foliicolous, plant-parasitic genus belonging to the family *Microthyriaceae* (*Microthyriales*, *Ascomycota*). It is characterized mainly by the presence of caudate, hyaline ascospores, vesicular haustoria, superficial hyphae with lateral hyphopodia and the absence of a hypostromata (Müller & von Arx, 1962; von Arx & Müller, 1975). Later, two other *Caudella* species were described: *Caudella psidii* R.W.Ryan on *Psidium guajava* L. (*Myrtaceae*) in Puerto Rico (Ryan, 1924) and *Caudella gordoniae* Hosag. & Goos on *Gordonia obtusa* Wall. ex Wight & Arn. (*Theaceae*) in India (Hosagoudar & Goos, 1996). *Caudella bipolaris* represents the first report of a *Caudella* species occurring on a member of the *Polygalaceae*. It is distinct from all other *Caudella* species by the length of its ascospores (Table 1), the presence of slight protuberances on both ascospore poles and especially by its filiform, flexuous, bipolar, bifurcate appendages on both ascospore poles (Fig. 7).

TABLE 1. Characteristics of the known *Caudella* species: ascospore size, host and locality

Species	Ascospores (μm)*	Host	Locality	Reference
C. oligotricha	25–34 × 6–7	Unidentified *Flacourtiaceae*	Brazil	Sydow & Sydow (1916)
C. psidii	36–48 × 12–14	*Psidium guajava*	Puerto Rico	Ryan (1924)
C. gordoniae	21–25 × 5–7	*Gordonia obtusa*	India	Hosagoudar & Goos (1996)
C. bipolaris	16–20 × 6–7	*Bredemeyera floribunda*	Brazil	This publication

*Length × width.

ACKNOWLEDGEMENTS

We are grateful to Companhia Energética de Minas Gerais (CEMIG) for their financial support of the work and the use of facilities at Estação Ambiental de Volta Grande. We are also grateful to Mr Carlos M.S. Paixão for assistance during field work and to the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) for a graduate fellowship to O. L. Pereira.

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Received 24 February 2006; accepted for publication 7 August 2006