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***Anhelia verruco-scopiformans* sp. nov. (Myriangiales)  
associated to scaby brooms of *Croton migrans* in Brazil**

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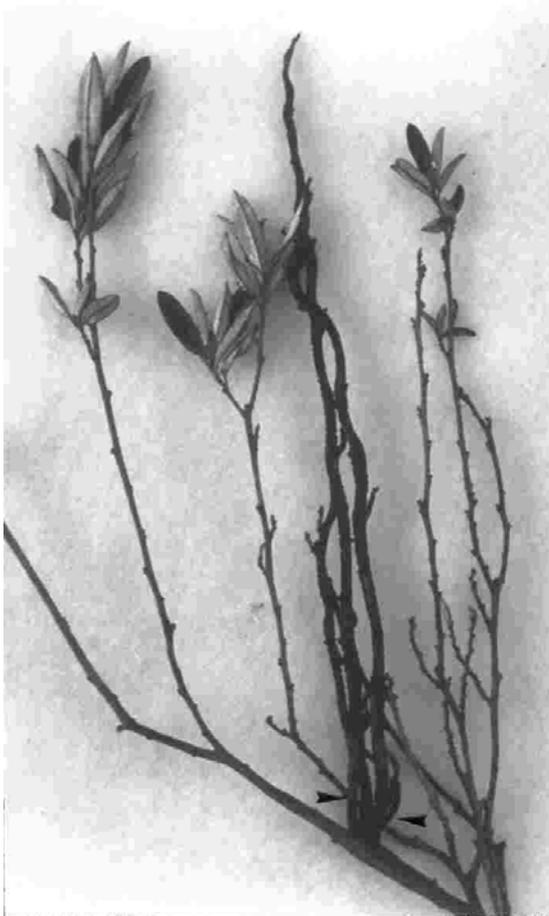
Pereira, O.L. and Barreto, R.W. (2003). *Anhelia verruco-scopiformans* sp. nov. (Myriangiales) associated to scaby brooms of *Croton migrans* in Brazil. Fungal Diversity 12: 155-159.The new fungal species of *Anhelia*, *Anhelia verruco-scopiformans* associated with scaby brooms of *Croton migrans* from a montane grassland site in Brazil, is described and illustrated.**Key words:** Ascomycota, biodiversity, *Euphorbiaceae*, taxonomy, tropical fungi.**Introduction**

The genus *Anhelia* (Myriangiales, Ascomycota) was proposed by Raciborski (1900) based on *Anhelia tristis* Rac. Later, other taxa described in the genera *Agostaea*, *Ramosiella* and *Whetzelomyces* were transferred to *Anhelia* (Arx, 1963). *Anhelia* is a plant parasitic genus often causing leaf spots and scab on stems. It is characterized by its dark ascomata, bearing many-celled ascospores inside bitunicate asci, borne at different levels in a pseudoparenchima connected with the host by an erumpent pulvinate or discoid hypostroma (Arx and Müller, 1975). The genus, comprises seven, mainly tropical, species. Two species, *A. lantanae* (Henn.) Arx and *A. niger* (Viégas) Arx were described from Brazil (Viégas, 1945; Arx, 1963). The latter is responsible for a damaging disease of *Chromolaena odorata*, a very important pantropical weed. Barreto and Evans (1994) regarded this fungus as a having a high potential as a biocontrol agent for this weed.

We report herein a previously undescribed species of *Anhelia*, parasiting leaves and stems of *Croton migrans* (*Euphorbiaceae*) collected in the nature reserve of Caraça, Catas Altas, state of Minas Gerais, Brazil. *Croton migrans* is a common species in the montane grasslands of Minas Gerais and is also found in the State of Rio de Janeiro (Müller, 1874). The mycota of this particular ecosystem (Brazilian montane grasslands) is underexplored and with the exception of the lichens, there are no examples of systematical studies of other groups of fungi in this kind of habitat.

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**Fig. 1.** *Anhellia verruco-scopiformans*. Symptoms on infected stems of *Croton migrans* showing the proliferation of vegetative axillary's branching (arrowheads).

## Materials and methods

Samples of infected stems and leaves of *C. migrans* showing unusual disease symptoms were collected, photographed and dried in a plant press. The fungal structures were later examined, measured and illustrated with a light microscope fitted with a camera lucida. All measurements were made in lactophenol.

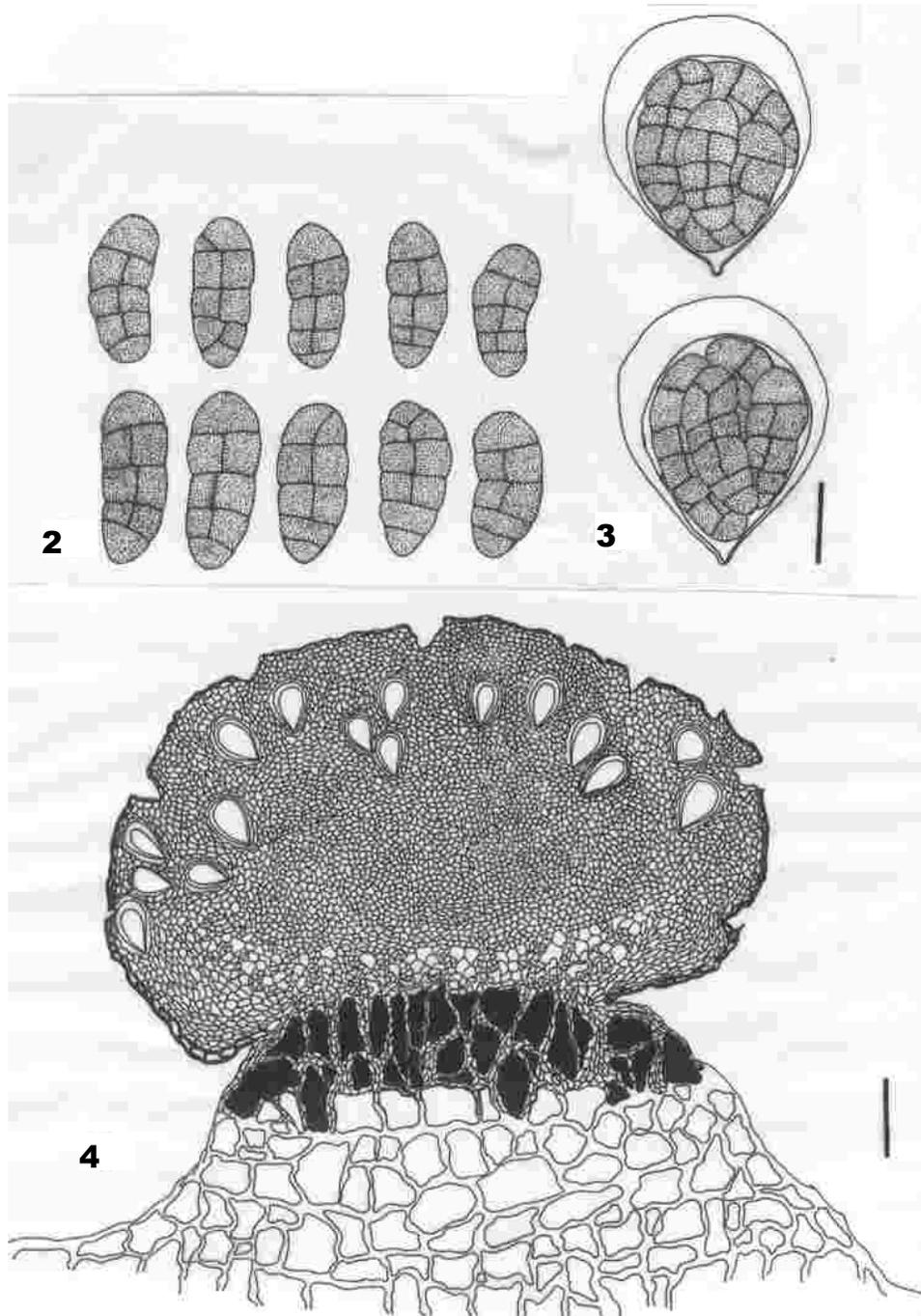
## Taxonomy

*Anhellia verruco-scopiformans* O.L. Pereira & R.W. Barreto, **sp. nov.**

(Figs. 1-4)

*Etymology*: referring to the verrucose brooms formed on infected plants.

*Ascomata* erumpentia, 217-267  $\mu\text{m}$  alta, 267-663  $\mu\text{m}$  lata, subepidermalia, hemispherica, carbonacea, nigra, solitaria vel gregaria. *Asci* globosis-saccati, octospori, bitunicati, 27-35  $\times$  24-27  $\mu\text{m}$ . *Ascosporae* muriformiae, 17-24  $\times$  7-9  $\mu\text{m}$ , constrictae ad septa, 1-5-transseptatae, 0-4-longiseptatae, flavo-brunneae. *Anamorphosis* non visa.



**Figs. 2-4.** *Anhellia verruco-scopiformans*. **2.** Muriform ascospores. **3.** Globose-saccate bitunicate asci. **4.** Ascomata connected with *Croton migrans* stem tissue by an erumpent pulvinate hypostroma. Bars: 2, 3 = 10  $\mu\text{m}$ ; 4 = 50  $\mu\text{m}$ .

**Table 1.** Morphological characteristics of *Anhellia verruco-scopiformans* and other species in the genus *Anhellia*.

Species	Ascomata ( $\mu\text{m}$ )	Asci ( $\mu\text{m}$ )	Ascospores ( $\mu\text{m}$ )	Host	Reference
<i>A. tristis</i> Rac.	600-1300 × 270-360	35-48 × 25-32	19-25 × 7-10 Hyaline	<i>Vaccinium</i> <i>teysmannianum</i> ( <i>Ericaceae</i> )	Arx, 1963
<i>A. lantanae</i> (Henn.) Arx	150-185	24-30 × 19-23	12-15 × 5-6 Hyaline or reddish- brown	<i>Lantana</i> sp. ( <i>Verbenaceae</i> )	Arx, 1963
<i>A. niger</i> (Viégas) Arx	250-400	-	11-16 × 5-6 Hyaline or reddish	<i>Eupatorium</i> sp. ( <i>Asteraceae</i> )	Arx, 1963
<i>A. purpurascens</i> (Rehm) Arx	200-320 × 180	24-30 × 20-26	13-17 × 7-8 Hyaline or yellowish	<i>Mimosa</i> spp. ( <i>Fabaceae</i> )	Arx, 1963
<i>A. tetracerae</i> (Hansf.) Arx	500-150	30-38 × 20-30	20-24 × 7-9 Hyaline	<i>Tetracera</i> <i>alnifolia</i> ( <i>Dilleniaceae</i> )	Arx, 1963
<i>A. calami</i> (Rac.) Arx	250-300 × 100-150	26-32 × 17-19	10-12 × 4-5 Yellowish	<i>Calamus</i> spp. ( <i>Areaceae</i> )	Arx, 1963
<i>A. escharoides</i> (Syd.) Arx	400-1000	35-55 × 30-42	16-28 × 8-12 Brownish	<i>Geissanthus</i> sp. ( <i>Myrsinaceae</i> )	Arx, 1963
<i>A. verruco-scopiformans</i>	267-663 × 217-267	27-35 × 24-27	17-24 × 7-9 Yellowish- brown	<i>Croton migrans</i> ( <i>Euphorbiaceae</i> )	Present report

*Lesions* on stems, occasionally on leaves; fructifications isolated or coalescing, forming dark scab covering almost all of the stem surface; brooms composed of bare, darkened, sinuose, axillary branches may be formed. *Internal mycelium* intracellular, 2-3  $\mu\text{m}$  diam., branched, septate, brown. *External mycelium* absent. *Ascomata* erumpent, 217-267  $\mu\text{m}$  high, 267-663  $\mu\text{m}$  diam., subepidermal, hemispherical, carbonaceous, black, solitary or gregarious, connected with the host by an erumpent pulvinate hypostroma. *Asci* globose-saccate, 8-spored, bitunicate, 27-35 × 24-27  $\mu\text{m}$ , embedded singly and irregularly in the fertile pseudoparenchyma; dehiscence indistinct. *Interthelial filaments* absent. *Ascospores* 17-24 × 7-9  $\mu\text{m}$ , muriform, constricted at the septa, with 1-5 transverse septa and 0-4 longitudinal septa, yellowish-brown. *Anamorph* not observed.

*Material examined:* BRAZIL, Catas Altas/Minas Gerais, on leaves and stems of *Croton migrans*, 20 October 2001, R.W. Barreto (VIC 22230, **holotype designated here**).

*Notes:* *Anhellia verruco-scopiformans* is the first *Anhellia* species reported parasiting a member of *Euphorbiaceae*. The species resembles *Anhellia tetracerae* (Hansf.) Arx and the generic type, *A. tristis* Rac. It differs from *A. tristis* taxa in having darker (yellowish-brown) ascospores and smaller asci than and *A. tetracerae* in having larger ascomata (Table 1).

*Anhellia verruco-scopiformans* causes leaf spots and scab on stems as the others species in *Anhellia*, however *A. verruco-scopiformans* is unique in promoting the emission and proliferation of defoliated, warted and sinuose vegetative axillary branches on its hosts. These symptoms are named scaby witche's broom (Fig. 1), and have not previously been reported for *Anhellia*.

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