

KEY TO THE SPECIES OF *TRICHONECTRIA*

1. Ascomata with glassy, flattened, hyaline appendages around the ostiolar region; ascospores fusiform,  $9.5\text{--}12.5 \times 2\text{--}2.5 \mu\text{m}$ ; on overwintered leaves of *Carex*; Austria and Great Britain ..... *T. hyalocristata*
1. Ascomata with straight hairs, not on overwintered leaves of *Carex* ..... 2
2. Ascospores more than  $25 \mu\text{m}$  long ..... 3
2. Ascospores less than  $25 \mu\text{m}$  long ..... 4
3. Ascospores long fusiform to cylindrical, with broadly rounded ends,  $45\text{--}85 \times 5\text{--}8 \mu\text{m}$ , on old wood associated with granular lichen thalli; Europe ..... *T. hirta*
3. Ascospores broadly fusiform, tapering to the narrowly rounded ends,  $70\text{--}94 \times 12.5\text{--}16 \mu\text{m}$ ; on liverworts; Brazil ..... *T. pellucida*
4. On leaves of *Erythroxylum*; ascomatal hairs  $25\text{--}35 \mu\text{m}$  long; ascospores fusiform ( $12.5\text{--}13.5\text{--}16.5(-17) \times (2.5\text{--}3\text{--}3.5(-4) \mu\text{m}$ ; Brazil ..... *T. erythroxylifolii*
4. Fungicolous, on pyrenomycetes or inoperculate discomycetes ..... 5
5. On hymenium of inoperculate discomycetes; hairs  $30\text{--}60 \mu\text{m}$  long; ascospores narrowly ellipsoid to fusiform,  $(10\text{--})11.5\text{--}13.5(-14.5) \times 2\text{--}3 \mu\text{m}$ ; Venezuela ..... *T. albidopilosa*
5. On pyrenomycetes; hairs generally longer than  $60 \mu\text{m}$  ..... 6
6. Hairs  $75\text{--}150 \mu\text{m}$  long; ascospores fusiform,  $(12\text{--})14.5\text{--}18.5(-24.5) \times (2.5\text{--})3\text{--}4 \mu\text{m}$ ; on stromata of *Diatrype stigma*; North America ..... *T. rectipila*
6. Hairs  $50\text{--}80 \mu\text{m}$  long; ascospores fusiform to ellipsoid,  $(13\text{--})13.5\text{--}16(-18) \times (3\text{--})3.5\text{--}4.5(-5) \mu\text{m}$ ; on a sphaeriaceous pyrenomycete; New Zealand ..... *T. horrida*

ADDITIONAL SPECIES OF *TRICHONECTRIA*:

***Trichonectria albidopilosa*** (Rogerson & Samuels) Samuels, Mem. New York Bot. Gard. 48: 11. 1988.  
This species was described and illustrated in Rogerson & Samuels (1985, as *Nectria albidopilosa*).

***Trichonectria erythroxylifolii*** Samuels, Mem. New York Bot. Gard. 48: 11. 1988.  
This species was described and illustrated in Samuels (1988).

***Trichonectria horrida*** Samuels, Mem. New York Bot. Gard. 48: 11. 1988.  
This species was described and illustrated in Samuels (1988).

***Trichonectria hyalocristata*** Scheuer, Mycol Res. 93: 117. 1989.  
This species was described and illustrated in Scheuer (1988, 1989).

***Trichonectria pellucida*** Döbbeler, Mitt. Bot. Staatssamml. München 14: 119. 1978.  
This species was described from living leaves of a liverwort in Brazil by Döbbeler (1978).

***Trichonectria rectipila*** Samuels, Rogerson & M.E. Barr, Mem. New York Bot. Gard. 48: 11. 1988.  
This species was described and illustrated in Samuels (1988) and is known from the eastern United States,

**VALSONECTRIA** Speg., Anales Soc. Ci. Argent. 12: 211. 1881.

Type: *V. pulchella* Speg.

= *Endocreas* Samuels & Rogerson, Stud. Mycol. 31: 145. 1989. — Type: *E. lasiacidis* Samuels & Rogerson, recognized as *V. lasiacidis* (Samuels & Rogerson) Samuels & Rossman.

Stroma immersed in the substratum, becoming partially erumpent, pale yellow, pseudoparenchymatous. Ascospores immersed in the stroma, globose to subglobose, yellow, KOH-, ostiolate. Asci clavate to cylindrical. Ascospores narrowly ellipsoid, ellipsoid to fusiform, equally 1-septate, hyaline or yellow-brown, smooth or coarsely striate. Anamorph, where known, *Acremonium*-like. On living and dead woody substrata and bamboo-like grasses.

NOTES.— Spegazzini (1881) established *Valsonectria* for a species having *Nectria*-like ascospores immersed in

a valsoid stroma and lightly pigmented, one-septate ascospores. Petrak & Sydow (1936) examined the type specimen of *V. pulchella*, provided a detailed description, and concluded that the genus belonged in the *Hypocreales*. Müller & von Arx (1962) examined the type specimen and presented a description with illustrations that show the ascomata immersed at different depths in the stroma, although, based on our examination of the type specimen, the ascomata form a single layer in the substratum.

*Endocreas* Samuels & Rogerson was described as a hypocrealean genus similar to *Nectriella* (Samuels & Rogerson, 1989). In a recent publication Seifert & Samuels (1997) recognized the synonymy of *Endocreas* with *Valsonectria* and transferred the type species of *Endocreas* to *Valsonectria*. *Valsonectria* is distinguished from other genera in the *Bionectriaceae* by ascomata immersed in a well-developed stroma that is itself immersed in the substratum, and hyaline to yellow-brown, smooth or coarsely striate ascospores. At present, four species are included in *Valsonectria*.

***Valsonectria pulchella*** Speg., *Anales Soc. Ci. Argent.* 12: 211. 1881. — Plate 10, e.

Stromata evident as ellipsoid, brightly colored, slightly raised bumps on bark, about 1 mm long, forming a single layer in the substratum, hyphae loosely disposed, 2–3 µm wide, hyaline, thin-walled, branched, septate. Ascomata immersed in stromal periphery, globose, yellow, non-papillate, ostiolate. Asci cylindrical, 88.5–97.5 × 7.5 µm, apex simple, 8-spored, ascospores uniseriate. Ascospores ellipsoid to fusiform, 11–14 × 6–7 µm, equally 2-celled, yellow-brown, with wall up to 1 µm thick, coarsely striate, numerous, short, the striations resulting from accretion to the spore surface. ANAMORPH associated with mature ascomata, forming on the stromal surface. Phialides narrowly cylindrical, 7–15 × 1.5–2 µm, widest at the base, collarete not flared, periclinal thickening not visible. Conidia unicellular, hyaline, without a recognizable basal abscission scar, slightly curved.

HABITAT AND DISTRIBUTION.— Known only from the type specimen.

HOLOTYPE.— ARGENTINA. Flores: Buenos Aires, on decaying branches of *Melia azedarach*, Apr 1881, C. Spegazzini (LPS 1217).

NOTES.— The holotype specimen consists of a few, small woody twigs and most material is immature.

***Valsonectria lasiacidis*** (Samuels & Rogerson) Samuels & Rossman, *Mycologia* 89: 515. 1997.

≡ *Endocreas lasiacidis* Samuels & Rogerson, *Stud. Mycol.* 31: 145. 1989.

Stromata immersed, becoming partially erumpent and rupturing the epidermis, linear parallel to the long axis of the host culm, pale yellow, KOH–, pseudoparenchymatous, cells 6–10 µm diam, with *ca* 1 µm thick walls, arranged in files perpendicular to the surface of the host; each stroma enclosing several ascomata; stromal tissue lacking below ascomata, ascomata seated directly on host tissue; hyphae invading epidermal cells of host. Ascomata globose, 145–155 µm high × (132–)165–185 µm diam, non-papillate or with a short papilla, remaining immersed within the stroma, pale yellow, KOH–. Ascomatal wall 10–15 µm thick, of a single region of small, ellipsoid to flattened cells. Ascomatal apex formed of hyphal elements 1 µm or less wide, merging with the periphyses at the interior and with surrounding stromal cells at the exterior. Sterile filaments persisting or not among mature asci, 3–4 µm wide, constricted at the refractive septa. Asci clavate, (48–)53–66 × (8–)9–12(–13.5) µm, with simple apex; 8-spored, ascospores completely filling each ascus or up to 20 µm of the ascus base empty. Ascospores narrowly ellipsoid to fusiform, (13.5–)15–17.5(–20) × 2.5–3.5(–4.5) µm, equally 1-septate, not constricted at the septum, hyaline, smooth, becoming coarsely striate with age.

HABITAT.— On dead culms of *Lasiacis ligulata* (*Poaceae*).

DISTRIBUTION.— French Guiana.

TYPES.— FRENCH GUIANA. Saül, elev. 200 m, Feb 1986, G.J. Samuels 3785 (NY, holotype); Upper Marouini River, *ca* 3 h walk W of river, *ca* 1 km E of Roche Koutou, 02°55' N, 54°03' W, elev. 15–350 m, 18 Aug 1987, G.J. Samuels 5866 (NY, paratype). Culture CBS 179.88.

NOTES.— Although unique in many characteristics, the sparsely developed stroma, pallid, discrete ascomata, shape, septation, and striation of the ascospores, and the occurrence on dead herbaceous material suggest affinities with the genus *Bionectria*.

***Valsonectria boldoae*** Speg., *Revista Fac. Agron. Univ. Nac. La Plata*, Ser. 2, 6: 98. 1910. — Plate 10, d.

Ascomata immersed, caespitose in groups of up to 10 but not obviously stromatic, globose, about 375–400 µm diam, orange, KOH–, smooth, non-papillate, with a viscid ostiolar opening. Ascomatal wall 25–30 µm thick, of a single region of intertwined hyphal cells. Ascomatal surface of *textura epidermoidea*. Asci cylindrical, 28–40 × 6–7.5 µm, apex simple, 8-spored, as-

cospores biseriate. Ascospores narrowly ellipsoid to oblong,  $8\text{--}11 \times 2\text{--}3 \mu\text{m}$ , equally 1-septate, straight or slightly curved, hyaline, smooth-walled.

**HABITAT AND DISTRIBUTION.**— Known only from the type specimen.

**HOLOTYPE.**— CHILE. Talchano, on *Boldoa fragrans*, Jan 1909, C. Spegazzini (LPS 1754).

**NOTES.**— A large packet contains two smaller packets each with a handwritten label. One has a drawing of two perithecia, an ascus with allantoid ascospores, and some unicellular, allantoid ascospores, and is labelled '*Nectriovalsa boldoaea* Speg. (n.sp.) cum *Mattirolia (Diatrype) vitellina* (Montagne) Speg.' This specimen is regarded as the holotype. The second packet has a drawing of allantoid spores and is labelled '*Diatrype [enteracantha]* Berk. vii. p. 47.' No hypocreacean fungus was found in that packet.

***Valsonectria simpsonii*** Samuels & Seifert, *Mycologia* 89: 512. 1997. — Plate 15, b–g.

Stromata inconspicuous to 1 mm diam, white, subcortical, erumpent, ostiolar openings appearing as pale orange dots, stromata of hyphae  $5\text{--}6 \mu\text{m}$  wide, thick-walled, densely compacted especially at the surface, stroma lacking below the ascomata. Ascomata immersed in groups of 30–50, ca  $275 \mu\text{m}$  high  $\times$   $190 \mu\text{m}$  diam. Ascomatal wall ca  $15 \mu\text{m}$  thick, of a single region of ellipsoidal cells with  $1.5 \mu\text{m}$  thick walls. Asci cylindrical to narrowly clavate,  $50\text{--}73 \times 6\text{--}9 \mu\text{m}$ , apex thickened, 8-spored. Ascospores ellipsoidal to fusiform,  $(9.5\text{--})10.5\text{--}13\text{--}(14) \times 3.5\text{--}4.5 \mu\text{m}$ , equally 2-

celled with two guttules in each cell, becoming slightly constricted at the septum, yellow-brown, coarsely striate while in the asci.

**ANAMORPH.**— Synnemata in nature  $150\text{--}625 \mu\text{m}$  tall,  $30\text{--}160 \mu\text{m}$  wide, sometimes almost sessile, gregarious or caespitose, more or less cylindrical or clavate, unbranched, or often with several median to apical branches, white to straw-colored, with brownish bands. Conidiophore branching monoverticillate, occasionally with a basal dichotomous branch; metulae, when present,  $15\text{--}25 \times 1.2\text{--}2 \mu\text{m}$ ; phialides  $15\text{--}37 \times 0.5\text{--}1.5 \mu\text{m}$ , hyaline, cylindrical to slightly subulate, often curved, sinuous and uneven in outline, in whorls of 2–4, sometimes regenerating percurrently to produce a new conidiogenous aperture, conidiogenous aperture  $0.5\text{--}1 \mu\text{m}$  wide, periclinal thickening obvious with phase contrast, collarete inconspicuous, cylindrical, about  $1 \mu\text{m}$  long. Conidial mass slimy, in nature, sparse, pale salmon-colored, up to  $500 \mu\text{m}$  diam. Conidia ellipsoidal or ovate,  $3.5\text{--}6 \times 1.5\text{--}2.5 \mu\text{m}$ , sometimes slightly truncate at the base.

**HABITAT.**— On living branch of *Elaeagnus pungens* Thunb.

**DISTRIBUTION.**— France (Pyrénées Atlantiques), known only from the type locality.

**HOLOTYPE.**— FRANCE. Pyrénées Atlantiques: Île de Sauveterre, on *Elaeagnus pungens*, 31 Oct 1992, F. Candoussau 252 (BPI 802564; ex-type culture G.J.S. 93-9 = CBS 101602, also DAOM).

**NOTES.**— *Valsonectria simpsonii* can be distinguished from the other three species in the genus on the basis of the host, ascospore characters, and the white, smooth synnematus anamorph with branching monoverticillate conidiophores.

#### KEY TO THE SPECIES OF *VALSONECTRIA*

1. On bamboo-like grass; ascospores  $15\text{--}17.5 \times 2.5\text{--}3.5 \mu\text{m}$ , narrowly ellipsoid to fusiform, hyaline, coarsely striate; French Guiana ..... *V. lasiacidis*
1. On living or dead wood; ascospores less than  $15 \mu\text{m}$  long, hyaline or yellow-brown, smooth or coarsely striate ..... 2
2. Ascospores  $11\text{--}14 \times 6\text{--}7 \mu\text{m}$ , ellipsoid to fusiform, yellow-brown, coarsely striate; on dead wood; Argentina ..... *V. pulchella*
2. Ascospores less than  $6 \mu\text{m}$  wide ..... 3
3. On dead bark of *Boldoa*; ascospores  $8\text{--}11 \times 2\text{--}3 \mu\text{m}$ , narrowly ellipsoid to oblong, hyaline, smooth-walled; Chile ..... *V. boldoae*
3. On living branch of *Elaeagnus pungens*; ascospores  $10.5\text{--}13 \times 3.5\text{--}4.5 \mu\text{m}$ , ellipsoid to fusiform, yellow-brown, coarsely striate; southern France ..... *V. simpsonii*