

A new species of *Navicella* from Costa Rica

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Navicella costaricensis sp. nov., isolated from plant debris in the rain forest of Costa Rica, is described and illustrated. The species is characterized by cylindrical ostioles and dark brown, long-ellipsoid, distoseptate ascospores with hyaline end cells that are separated by dark septa from the other cells. The ascospores have lenticular lumina.

Key Word: *Navicella*, Costa Rica, culture, plant debris, rain forest.

The genus *Navicella* accommodates saprobic ascomycetes, which often grow on bark in both temperate and tropical regions. It is most reminiscent of the genera in the family Lophiostomataceae, by its combination of globose, closed ascomata and often a slit-like ostiole, but the ascospores are distoseptate with thickened septa and lenticular lumina, and the asci have a wide endotunica and thin ring around the ocular chamber (Eriksson, 1981). This circumscription has been accepted by Holm & Holm (1988) who placed the genus in the family Lophiostomataceae (Pleosporales). Barr (1990) moved the genus to Massariaceae (Melanommatales) on the basis that the ascomata and hamathecium are melanommataceous rather than pleosporaceous, and on the basis of the structure of the asci and the distoseptate ascospores. Recent molecular work (Liew *et al.*, 2000) has shown that neither the family Lophiostomataceae nor the orders Melanommatales and Pleosporales are monophyletic.

At present, the genus *Navicella* comprises five species; *N. elegans* Fabre, *N. pileata* (Tode: Fries) Fabre (Barr, 1990), *N. xinjiangensis* Yuan (Yuan and Zhao, 1994), *N. pallida* Aptroot (Aptroot & van Iperen, 1998) and *N. diabolus* Aptroot (Aptroot, 2003). The main characteristics of our fungus do perfectly match the genus, but not

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any of the known species of the genus and it is therefore described here as a species new to science.

***Navicella costaricensis* Elshafie & Aptroot sp. nov. – Fig. 1.**

Etymology. – after Costa Rica, Central America.

Latin diagnosis: *Navicella* ostiolis cylindricis, ascosporis vulgo octoseptatis, luminibus lenticularibus, luminibus apicalibus hyalinibus.

Holotypus. – Costa Rica, rain forest, on plant debris, Feb. 2003, Dr. A.E. Elshafie, Herbarium CBS (ex culture 116747).

Ascomata scattered and sometimes in groups of 3–4, partially immersed to erumpent, conical, black, 250–500 μm diam., up to 0.65 μm high, with strong, elongated cylindrical neck, 100–225 μm in length, 75–125 μm wide, apex not compressed (ostiolate). Hamathecium consisting of numerous anastomosing paraphysoids of up to 1 μm wide. – Asci 8-spored, bitunicate, clavate, with a short basal stalk, 200–275 $\times$ 65–100 μm (Fig. 1B,C). – Ascospores biserial, long-ellipsoid, with 6–11 (mostly 8) transverse distosepta, not constricted at septa, wall smooth, terminal cells hyaline to very light brown separated by thick dark septa, remaining locules deep brown with lenticular lumina, (80–)91–104(–112) μm in length, (19–)22–28 (–30) μm in width (Figs. 1A). Ascospores germinating from both poles.

Habitat. – On plant debris containing broad leaves in rain forest, Braulio Carrillo National Park (Zurquí Sector) alt. c.1440 m.

Navicella costaricensis is characterized by having long transverse distoseptate ascospores where the terminal cells are hyaline and separated by thick dark septa. It is easily distinguished from *N. elegans*, *N. pileata*, *N. xinjiangensis* and *N. diabolica* by its much longer and wider ascospores (Table 1) and the presence of dark thick septa that separate the hyaline terminal cells from the other cells (Fig. 1A). It is close to *N. pallida* and the ascospore measurements and septa are in the range of *N. pallida* (Table 1). Unlike *N. pallida*, it has 8 ascospores per ascus while *N. pallida* is bisporous. The ascospores of this fungus are ellipsoid, dark brown, distoseptate with dark thick brown septa separating hyaline end cells from the other brown cells while those of *N. pallida* are fusiform, hyaline with eusepta as well as distosepta and are constricted at the median septa.

N. costaricensis has been isolated as a single spore from plant debris and was cultured on corn meal agar, potato dextrose agar, and water agar. Ascomata developed within 2–3 weeks of incubation at room temperature ($24 \pm 1^\circ\text{C}$). The fungus is homothallic. The ascoma is conical with a long neck, and the ostiole is not compressed (Fig. 1D). All the species of *Navicella* so far described are globose with compressed ostiole and crestlike neck. The shape of the ostiole

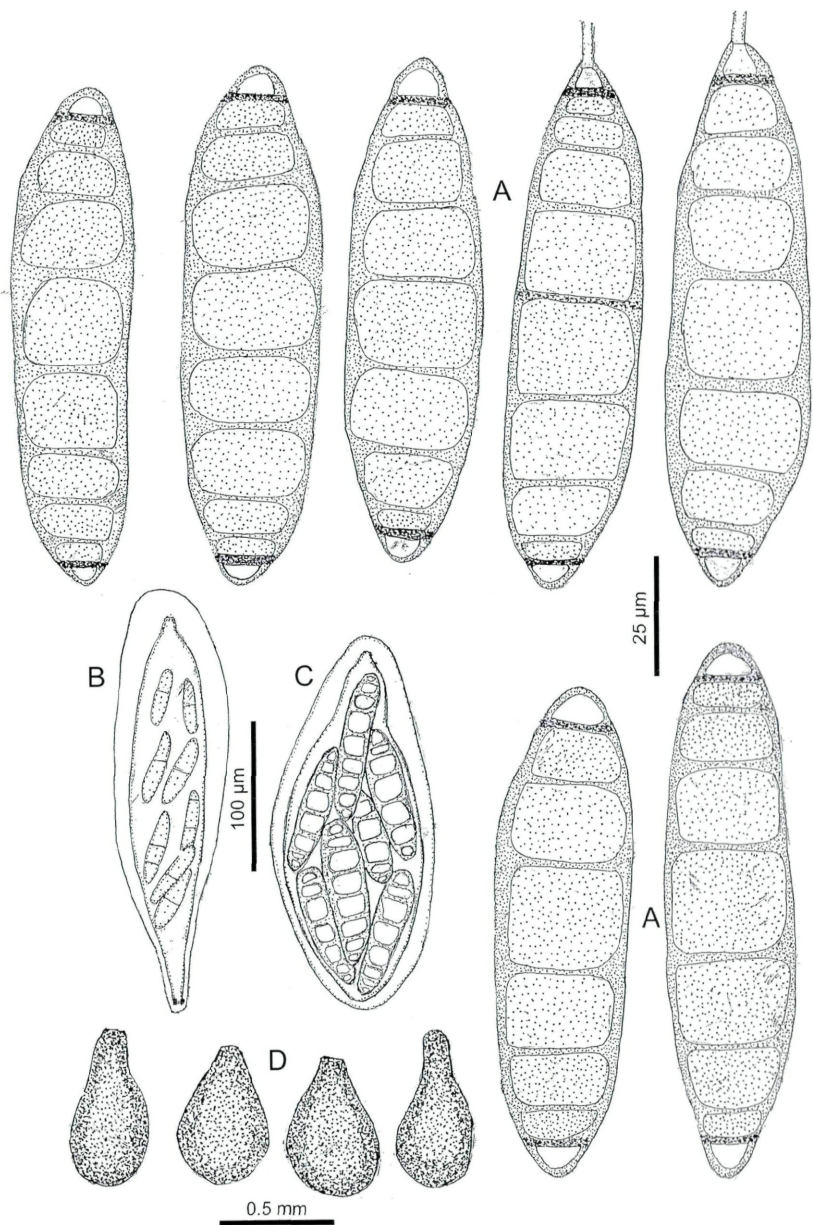


Fig. 1. *N. costaricensis*. – A. Ascospores. – B. Young ascus. – C. Mature ascus. – D. Ascomata.

and the crestlike neck is no doubt an adaptation to the hard substrate (hard wood) facilitating the emergence of the ascomata (Holm & Holm, 1988). This fungus has not been observed on woody plants but its ascospores were cultured in agar medium (a soft substrate) and hence the ostiole is not compressed. A table with key characters of all known species (Table 1) and a key to the species are provided.

Key to the species of *Navicella*

- | | |
|--|-------------------------|
| 1. Ascospores bisporous, hyaline, constricted at median septum | <i>N. pallida</i> |
| 1*. Ascospores 8 per ascus, brown, not constricted at median
septum | 2 |
| 2. Ascospores more than 80 µm long, end cells separated by dark
septa. | <i>N. costaricensis</i> |
| 2*. Ascospores less than 80 µm long, end cells not separated by dark
septa | 3 |
| 3. Ascospores always with 3 septa, a supramedian euseptum and
2 distosepta | <i>N. diabolica</i> |
| 3*. Ascospores having more than 3 septa | 4 |
| 4. Asci more than 18 µm in width and less than 300 µm in length . .
. | <i>N. pileata</i> |
| 4*. Asci less than 18 µm in width and more than 300 µm in
length. | 5 |
| 5. Ascospores length more than 47 µm | <i>N. xinjiangensis</i> |
| 5*. Ascospores length less than 47 µm | <i>N. elegans</i> |

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