

(MASS). OKLAHOMA: Lake Carl Blackwell, Payne Co., 11 Aug 1979, *Morus*, M. E. Barr 6630, 6675 (MASS). PENNSYLVANIA: Alan Seeger St. Park, Huntington Co., 7 Aug 1982, *Morus*, M. E. Barr 6916 (MASS).

## 6. *Navicella* Fabre, Ann. Sci. Nat. Bot. Sér. 6, 9: 96. 1879 (1878)

*Lophiostoma* subgenus *Navicella* (Fabre) Saccardo, Syll. Fung. 2: 700. 1883.

*Ascomata* immersed erumpent, medium to large sized, globose; apex short or elongate, somewhat widely compressed or rarely rounded, often with broad flanges on either side of slit, at times papilla eroded and apex appearing pertuse, ostiole periphysate; peridium relatively wide, firm, composed of small compressed cells, pigment encrusted on walls, dark brown. *Asci* peripheral or basal, clavate or cylindrical, apex with wide ocular chamber, at times surrounded by refractive ring. Trabeculae in gel matrix. *Ascospores* reddish to dark brown, end cells often pale, ellipsoid fusoid, ends tapered, acute or obtuse, several septate, A1 septum euseptate, A2 and A3 septa distoseptate, lumina lenticular; wall smooth or verruculose, at times surrounded by narrow gel coating; obliquely uniseriate or biseriate in the ascus.

Anamorphs not known.

Saprobic in decorticated wood or periderm.

Type species: *N. julii* Fabre = *N. pileata* (Tode: Fries) Fabre.

The name *Navicella* has been little used since the genus was described, except by Kuntze (1898). He believed that the genus should be emended to include *Rostrella* Fabre and *Lophiostoma* Cesati & de Notaris, and consequently proposed a large number of combinations in *Navicella*. The genus usually has been submerged under *Lophiostoma* (e.g., Chesters & Bell, 1970). Eriksson (1981) remarked on the differences between *Navicella* and other taxa in the Lophiostomataceae; beyond those of ascospores, he described the wide endotunica and thin ring around the ocular chamber of the ascus, contrasting with thin endotunica and no ring in *Lophiostoma*. Holm and K. Holm (1988) accepted *Navicella* according to Eriksson's description. They suggested that *Navicella* may be more closely allied to *Trematosphaeria* than to *Lophiostoma*. I agree: the ascomata and hamathecium are melanommataceous rather than pleosporaceous; the structure of asci and the distoseptate ascospores determined my placing *Navicella* in the Massariaceae.

Fabre (1879) designated *N. julii* as type species of *Navicella*. He accepted *N. balsamiana* and *N. pileata* as separate species and added four more newly described taxa. According to Chesters and Bell (1970) and Holm and K. Holm (1988), only one species, *N. pileata*, is recognizable. Included in this taxon are several synonymous names, to which I add *N. julii*. The ascospores are ellipsoid fusoid, usually seven to eleven distoseptate and large: (35-)40-60(-67) × 12-30 μm according to Chesters and Bell, 50-80 × 12-20 μm according to Holm and K. Holm. The collections available

to me show disparity in sizes, some falling within the ranges in the literature, but others smaller, (22-)25-38 × 7.5-10(-12) μm, and tending to be only five to seven distoseptate. *Ascomata* and *asci* in these collections also tend to be somewhat smaller. I thought at one time that *N. pileata* could encompass the smaller-spored collections, and that *N. excipuliforme* would designate the larger-spored species. However, the proposed neotype of *N. pileata* is large-spored (Holm & K. Holm, 1988), and this name has been used for a long time in the literature for the larger-spored taxon. *Navicella elegans* is an available name and is utilized for the smaller-spored species, as the ascospores in the type collections measure 27-33 × 8-9(-10) μm and are typically (three) five distoseptate.

### Key to North American Species of *Navicella*

1. Ascospores (22-)25-38 × 7.5-10(-12) μm, (3-)  
5-7-septate ..... *N. elegans*.
1. Ascospores (30-)45-81 × (10-)12-18 μm, (5-)7-  
11-septate ..... *N. pileata*.

### *Navicella elegans* Fabre,

Ann. Sci. Nat. Bot. Sér. 6, 9: 97. 1879

Fig. 7c-e

Type: *Juglans*, Orange, France, Oct 1877, Fabre; *Morus alba*, Orange, Mar 1878, Fabre L'Harmas! (paratypes).

*Navicella ulmi* Fabre, Ann. Sci. Nat. Bot. Sér. 6, 9: 98. 1879. Type: *Ulmus campestris*, Orange, France, Jan 1878, Fabre L'Harmas! (holotype).  
*Requienella alaterni* Fabre, Ann. Sci. Nat. Bot. Sér. 6,

15: 56. 1883. Type: *Rhamnus alaternus*, Serignan, France, Oct 1881, Fabre L'Harmas! (holotype). *Trematosphaeria alaterni* (Fabre) Saccardo, Syll. Fung. Addit 2: LX. 1883.

*Ascomata* immersed, becoming partially erumpent, globose, 440–700(–1000)  $\mu\text{m}$  diam.; apex wide and high, compressed; peridium to 100  $\mu\text{m}$  wide above, 26–32  $\mu\text{m}$  wide below. *Asci* 100–200  $\times$  (10–)16–20(–25)  $\mu\text{m}$ . *Ascospores* (22–)25–38  $\times$  7.5–10(–12)  $\mu\text{m}$ , reddish brown to dark brown, (3–)5–7-distoseptate; wall irregularly verruculose or smooth, remnants of gel coating present.

DISTRIBUTION: In wood or periderm, north temperate zone.

ADDITIONAL MATERIAL EXAMINED: NORTH AMERICA. IOWA: Campus, Iowa State Univ., Ames, Boone Co., 30 Jun 1983, *Ulmus*, M. E. Barr 6927 (MASS). MASSACHUSETTS: Conway State Forest, Franklin Co., 25 Aug 1983, *Populus*, M. E. Barr 6943 (MASS). NEW YORK: Alcove, Tompkins Co., Mar 1893, May 1893, *Acer saccharinum*, C. L. Shear, New York Fungi 151 as *Lophiostoma macrostomum* (MASS).

*Navicella pileata* (Tode: Fries) Fabre, Ann. Sci. Nat. Bot. Sér. 6, 9: 97. 1879

Fig. 7a, b

*Sphaeria pileata* Tode: Fries, Syst. Mycol. 2: 468. 1823. Type: *Rehm*, *Ascom.* 238 UPS (neotype prop. Holm & K. Holm 1988) (not seen).

*Lophiostoma pileatum* (Tode: Fries) Fuckel, Jahrb. Nassauischen Vereins Naturk. 23–24: 158. 1870.

*Sphaeria excipuliforme* Fries, Syst. Mycol. 1: 469. 1823. Type: *Fries*, *Scler. Suec.* 88 UPS! (lectotype).

*Lophiostoma excipuliforme* (Fries) Cesati & de Notaris, Comment. Soc. Crittog. Ital. 1: 221. 1863.

*Navicella excipuliforme* (Fries) Kuntze, Rev. Gen. Pl. 3: 500. 1898.

*Sphaeria balsamiana* de Notaris, Mem. Reale Accad. Sci. Torino Ser. 2, 13: 112. 1854. Type: *Populus pyramidalis*, *Ulmus*, pr. Milano, Italy, Oct 1838 (not seen).

*Lophiostoma balsamianum* (de Notaris) Cesati & de Notaris, Comm. Soc. Critt. Ital. 1: 219. 1863.

*Navicella balsamiana* (de Notaris) Fabre, Ann. Sci. Nat. Bot. Sér. 6, 9: 97. 1879.

*Navicella julii* Fabre, Ann. Sci. Nat. Bot. Sér. 6, 9: 97. 1879. Type: *Morus alba*, Orange, France, Feb 1878, Fabre L'Harmas! (holotype).

*Lophiostoma excipuliforme* var. *abietis* Ellis & Everhart, J. Mycol. 4: 64. 1888. Type: *Abies*, Cazenovia, Madison Co., New York, Oct 1887, L. M. Underwood & O. F. Cook 179 NY! (holotype).

*Ascomata* separate or gregarious, sometimes connected at sides, often widely erumpent, globose or bases somewhat applanate, (440–)550–1200  $\mu\text{m}$  diam.; apex compressed, at times triangular, at times dehiscing to leave pertuse opening; peridium wide, 90–200  $\mu\text{m}$  above, 40–65  $\mu\text{m}$  toward base. *Asci* (95–)150–265(–300)  $\times$  (16–)20–30(–40)  $\mu\text{m}$ . *Ascospores* (30–)45–81  $\times$  (10–)12–18  $\mu\text{m}$ , brown, (5–)7–11-septate, not constricted at septa; wall smooth.

DISTRIBUTION: In periderm or decorticated, weathered wood, north temperate zone.

ADDITIONAL MATERIAL EXAMINED: ASIA. PAKISTAN: 5 Dec 1961, S. Ahmad (IMI 1090764).

EUROPE. ENGLAND: Helmsbury woods, S. Devon, 27 Aug 1976, *Quercus*, D. L. Hawksworth (IMI 206367). SWITZERLAND: *Quercus*, Schaerer, Lich. Helv. exs. 105 as *Verrucaria alba* Schrad. (MASS).

NORTH AMERICA. CANADA. ONTARIO: S. Bell's Corners, Carleton Co., 26 Nov 1960, *Acer saccharum*, G. D. Darker 7843 (IMI 108171). QUEBEC: Mont Yamaska, Rouville Co., 6 Sep 1956, F. Fabius 7226 (MASS).

USA. GEORGIA: Univ. Georgia Bot. Garden, Athens, Clarke Co., 25 Aug 1978, *Quercus*, M. E. Barr 6513 (MASS). MAINE: Abol Field, Baxter State Park, Piscataquis Co., 1 Aug 1962, M. E. Barr 3533; Flagstaff Lake road, near Carrabassett, Franklin Co., 18 Aug 1971, *Thuja occidentalis*, Barr 5820c (both MASS). MICHIGAN: Univ. Michigan Biological Station, Gorge, Cheboygan Co., 22 Jul 1953, *Acer*, M. E. Barr 1288 (MASS).

## 7. *Decaisnella* Fabre, Ann. Sci. Nat. Bot. Sér. 6, 9: 112. 1879

*Ascomata* immersed in wood or periderm or erumpent and becoming superficial with bases embedded, gregarious or separate, under a slight or well-developed clypeus or lacking clypeus, medium to large sized, globose or elongate, with well-developed wide papilla or low ridge to surface, pore rounded or slitlike, ostiole periphysate; surface smooth or roughened, with brown hyphae extending into substrate; peridium relatively narrow or wide, vinaceous brown, composed of compressed rows of cells, at times thickened in upper regions by closely adhering clypeus, internally of compressed rows of pallid cells. *Asci* peripheral or at times basal, cylindrical or clavate, 1-, 2-, 4- or 8-spored, ocular chamber rather wide, at times surrounded by refractive ring. Trabeculae in gel matrix. *Ascospores* yellowish brown or dark reddish brown, ends pale at times, oblong or ellipsoid fusoid, symmetric, straight or inequilateral, ends rounded or obtuse to acute, septation as distosepta

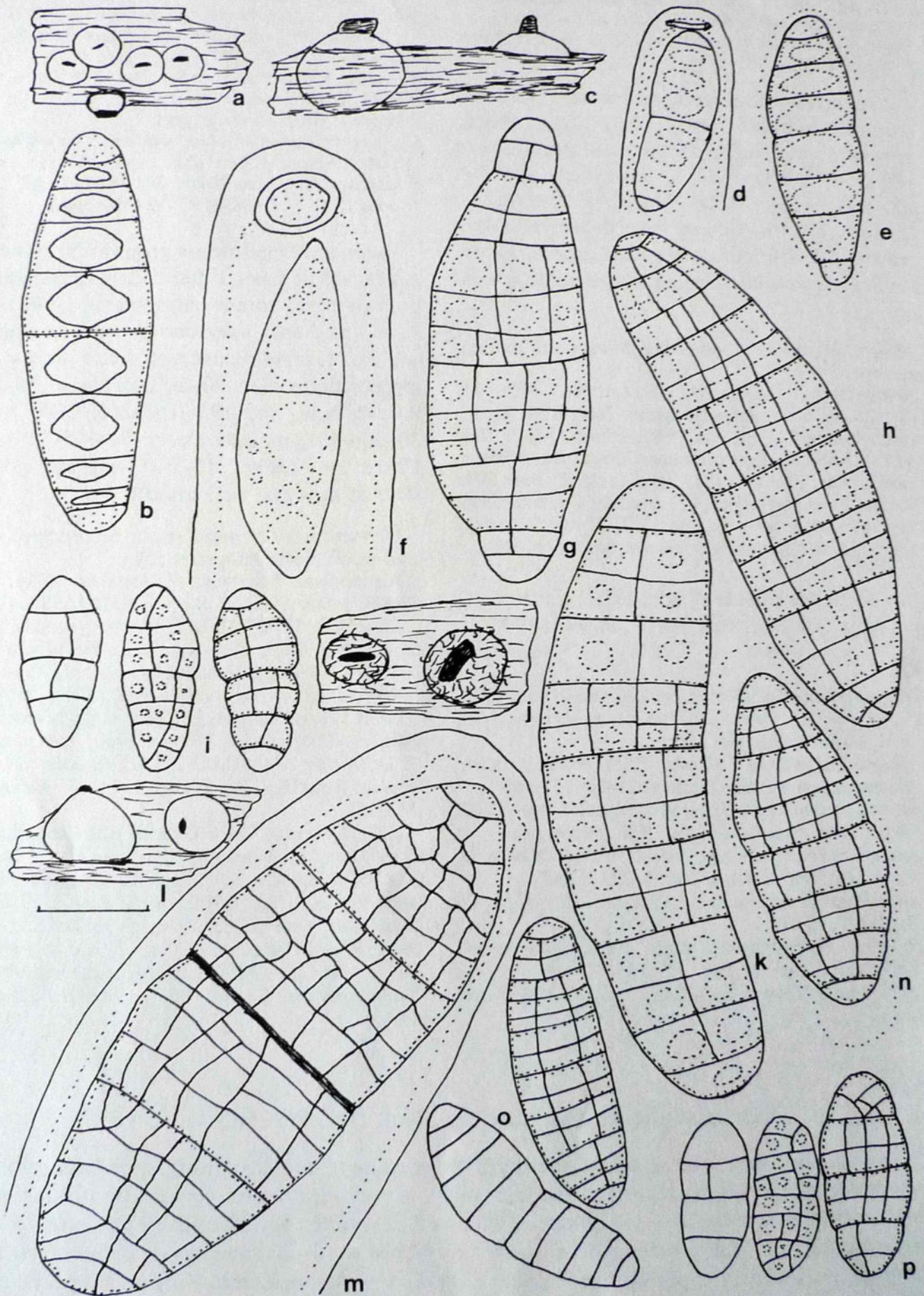


Fig. 7. Massariaceae: a, b. *Navicella pileata*: a, habit, b, ascospore. c-e. *N elegans*: c, habit, d, ascus apex with immature ascospore, e, ascospore. f, g. *Aigialus parvus*: f, tilted ascus apex with immature ascospore, g, ascospore, face view. h. *Decaisnella americana*, ascospore. i. *D. confluens*, ascospores. j, k. *D. macrospora*: j, habit, k, ascospore. l, m. *D. peniophora*: l, habit, m, ascus apex with ascospore. n. *D. mesascium*, ascospore. o.