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Authors: Söderström, Lars, Hassel, Kristian, Long, David G., Forrest, Laura L., and Séneca, Ana

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Studies on *Aneura* (Marchantiophyta, Aneuraceae): typification of *Riccardia fuscovirens* Lindb.

Lars Söderström, Kristian Hassel, David G. Long, Laura L. Forrest and Ana Séneca

L. Söderström (https://orcid.org/0000-0002-9315-4978) ✉ (lars.soderstrom@ntnu.no) and A. Séneca (https://orcid.org/0000-0002-1737-8670), Dept of Biology, Norwegian Univ. of Science and Technology, Trondheim, Norway. – K. Hassel (https://orcid.org/0000-0002-1906-8166), Univ. Museum, Norwegian Univ. of Science and Technology, Trondheim, Norway. – D. G. Long (https://orcid.org/0000-0003-0816-0124) and L. L. Forrest (https://orcid.org/0000-0002-0235-9506), Royal Botanic Garden Edinburgh, Inverleith Row, Edinburgh, UK. AS also at: Dept of Biology, FCUP, Rua Campo Alegre, Porto, Portugal.

Riccardia fuscovirens Lindb. is lectotypified and the lectotype is described. It is morphologically very similar to *Aneura pinguis* and provisionally regarded as synonym to it.

Keywords: *Aneura*, *Aneura fuscovirens*, lectotype

Genetic studies of the *Aneura* species in Europe have shown that the common and widespread *Aneura pinguis* can be separated genetically into several (semi-)cryptic species. The study by Forrest et al. (unpubl.) shows that at least 11 such species can be separated genetically in Europe. Some of them, e.g. *Aneura mirabilis*, are also morphologically distinct, but most of the others are still morphologically difficult (or impossible) to separate from each other. The name *Aneura pinguis* (*Riccardia pinguis*) is used for specimens found almost all over the world, and many names were synonymized with it in the past, especially many subspecific names. Long et al. (unpubl.) lectotypified and epitypified the name *Jungermannia pinguis* L. to get the name fixed to a sequenced genotype.

Taxonomic treatement

At species level there are only two names usually connected with *Aneura pinguis* described from Europe, *Riccardia fuscovirens* Lindb. and *Trichostomum affine* Corda. The former is here lectotypified and described.

Riccardia fuscovirens Lindb., Musc. Scand.: 5, 1879 (Lindberg 1879). Type: S[weden] F[inland] L[apponia]

≡ *Aneura fuscovirens* (Lindb.) Steph., Hedwigia 32(3): 137, 1893 (Stephani 1893).

≡ *Aneura pinguis* var. *fuscovirens* (Lindb.) C.E.O.Jensen, Danmarks Mosser: 63, 1915 (Jensen 1915).

Lectotype (here designated)

Riccardia fuscovirens Lindb. Finland, Nylandia 'Helsingfors, Fredriksberg, in ericeto aprico humidiusculo arenoso', 60°10′N, 24°55′E, 2 May 1878, S.O. Lindberg H-SOL 2728017 (<https://id.luomus.fi/HA.H-SOL2728017>).

Original description

Fere semper fusco-viridis, dense et divergenter, saepissime substellari-ramosa, crassa, marginibus undulatis quoque a pluribus (3–2) stratis cellularum; bractae perichaetii majores; calyptra oblongo- vel subcylindrico-clavata, matura vulgo optime desquamans; elateres flavi, medio duplo crassiores, fere stricti, spiram latissimam parum contortam, ut volvulos 5–7 solos facientem et fere in ipsis apicibus elateris distinctam, gerentes; spori flavo brunnei, sat pellucidi et dense papillulosi.

Description based on the lectotype

Plant thallose, prostrate in irregular rosettes, firmly attached to substrate. Thalli opaque, dark green, sparingly branched. Branches mostly 0.5–1.0 cm long, 0.5 up to 2.5 mm wide, planoconvex, ca 15 cells high in the middle. Dorsal surface plane in the middle, towards margin undulate and shallowly lobed, margins mainly 2-stratose (some times thicker). Epidermal cells 53–77 × 39–51 µm, thin-walled. Fungal hyphae present in rhizoid-bearing parts of lower thallus. Rhizoids numerous in the middle of ventral surface.

Dioicious, abundantly fertile. Male plants not observed. Calyptra elongate. Capsule oblong, 1.8–2.0 mm long, valves

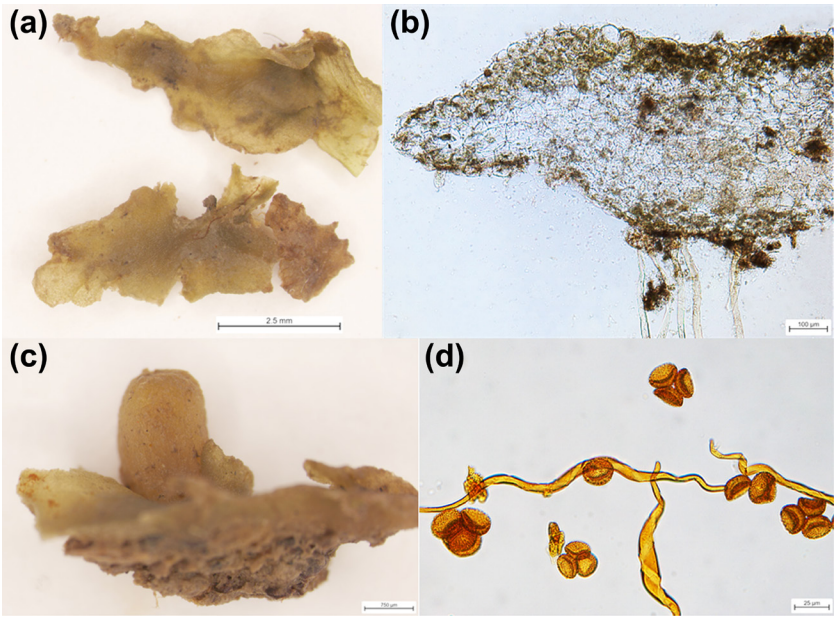

Figure 1. *Aneura fuscovirens*. (A) Habit of gametophyte (scale bar 2.5 mm), (B) young sporophyte (scale bar 750 µm), (C) tranverse section of thallus with fungal hyphae present in cells near rhizoids (scale bar 100 µm). (D) spores and elaters (scale bar 25 µm). All images from the lectotype.

when dehisced ca 1.8 × 0.7 mm. Spores 21.5–30 µm diameter, finely papillose. Elaters 125–250 µm long, unispiral.

Habitat

Growing tightly on the ground on sandy soil '*in ericeto aprico humidiusculo arenoso*'.

The type locality is now in the centre of Helsinki city and it has not been possible to find any specimen there. A search for a possible epitype in October 2021 at a few localities outside the city centre was unsuccessful.

Discussion

Müller (1908) seems to be the first to doubt the value of Lindberg's *Riccardia fuscovirens* and placed it under *Aneura pinguis* stating that he had not seen any original material. Jensen (1915) reduced *Riccardia fuscovirens* to a variety of *Riccardia pinguis* and ever since Arnell (1928) it has been regarded as a synonym of *Aneura pinguis* s.str.

Based on the morphology which closely resembles the epitype of *Aneura pinguis* (Long et al. unpubl.) and the habitat in which it was found, we think this is most likely to be *Aneura pinguis* s.str. and will treat it as such until DNA sequencing of a new epitype can demonstrate its identity with one of the known segregates.

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