

Hypnodontopsis confertus comb. nov. from Baltic amber

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Abstract: The first record of a sporophyte of *Muscites confertus* Goeppert & Berendt described as fossil species from Baltic amber revealed that this species can be attributed to the genus *Hypnodontopsis*. It is very similar to the extant *H. mexicana* known from only two collections in Mexico and Uganda, but seems to differ in the absence of pluripapillose laminal cells. Therefore *Muscites confertus* is combined as new to the genus *Hypnodontopsis*.

Forty-five species of mosses are known from Baltic and Saxonian amber (Frahm 2001). Nineteen species belong to extinct species, either described in form genera or described as fossil species of extant genera. Four species have been attributed to extant species by authors in the 19. century, but their identity is dubious and the types are mostly lost and cannot be revised. Recent studies by the author revealed in a large number of taxa, which could be attributed to fourteen extant genera and even eight extant species. All taxa so far reported from Baltic and Saxonian amber are listed in the appendix.

One of the dubious taxa from Baltic and Saxonian amber is *Muscites confertus* described by Goeppert & Berendt (1845) and reported by Goeppert 1853 and Caspary (1907). Goeppert synonymized this species with *Hymnostomum microstomum* (*Weissia microstoma*). This seems, however, to be unlikely, because *Weissia* is characterized by incurved margins in the upper

part of the leaf, which is not the fact in *Muscites confertus*.

Muscites confertus can always easily be identified. The fossils usually consist of comal tufts with a few leaves, which apparently serve for vegetative propagation and are therefore blown on the liquid raisin of the conifers of the "amber forest". The leaves are narrow linear and have a relatively strong percurrent costa. Conspicuous are the laminal cells, which rounded-quadrate and arranged in 5-6 distinct rows at each side of the costa. According to the illustrations of this conspicuous character, also part of the syntypes of *Dicranites casparyi* seem to be identical with *Muscites confertus*. Therefore *Dicranites casparyi* has been lectotypified (Frahm 2001).

Muscites confertus is one of the most common fossil mosses in Baltic and Saxonian amber. Klebs in Caspary (1907) called it "the most common moss in amber". It was later reported

by Frahm (1999, 2000b, 2001). Nevertheless its identity was not known, especially because all fossil specimens were sterile.

By the courtesy of Dr. Wichard, entomologist at the university of Cologne, specialist of insects in amber and co-author of a magnificent book on the flora and fauna of the Baltic amber (Weitschat & Wichard 1998), I received three specimens of amber with fossil mosses. *Muscites confertus* was imbedded in two of them. The first specimen (#20, fig. 2) has a small piece of bark of 1 cm length, on which several rosettes of small plants with few leaves of different size are attached. These plants resemble exactly the isolated specimens of *Muscites confertus* or in part *Dicranites casparyi* reported and illustrated so far. They show nicely that the isolated plants preserved in amber serve as means for vegetative propagation. The second specimen (#1594, fig. 1) shows a large plant, 5 mm long, with numerous linear leaves, but with a single complete sporophyte. The sporophyte raises from sheathing perichaetial leaves, the seta is 1.5-2 mm long, twisted and cygneous. The capsule is shortly oval and has 16 longitudinal ribs. The capsule is open and shows a peristome of which the teeth are united in 8 pairs. Details of the peristome structure are not visible.

The discovery of sporophytes of *Muscites confertus* allows for the first time to identify these plants as species of *Hypnodontopsis* (Rhachytheciaceae). The family is characterized by small plants similar to certain Orthotrichaceae, but with sheathing perichaetial leaves, curved and twisted short setae and single peristomes, characters perfectly visible in this specimen, which is 45-58 mio years old.

The Rhachitheciaceae include several small genera, such as *Rhachithecium*, *Jonesiobryum*, *Rhachitheciopsis*, *Tisserantiella* and *Hypnodontopsis*. *Hypnodontopsis* is separated from all other genera of this family by its curved setae (Noguchi 1989) as in the fossil specimen. The genus *Hypnodontopsis* consists of three species, two extant (Goffinet 1997) and two fossil species: the type species *H. apiculata* Iwas. & Nog., endemic to Japan, and *H. mexicana* (Thér.) Robins. known the type locality in Mexico (Sharp et al. 1994) and recently reported from Uganda (Hodgetts & Goffinet 1998). The fossil species

has been described from Baltic amber as *H. fossilis* J.-P. Frahm (Frahm 2000a). *Hypnodontopsis fossilis* has similar leaves but a cylindrical capsule with eight striae, although the capsule shape can be quite different in young and old capsules (as illustrated for *H. mexicana* in Sharp et al. 1994) and the number of striae can be variable. *Hypnodontopsis fossilis* has, however, a shorter seta (0.5 mm as compared to 1.5-2 mm in the present specimen). *Hypnodontopsis apiculata* can be excluded because of its ligulate, not linear leaves. *Hypnodontopsis mexicana* is quite similar to the fossil specimen especially with regard to the shape of the leaves and the conspicuous few rows of laminal cells at every side of the costa. It has, however, pluripapillose laminal cells, a character, which cannot be confirmed from the fossil specimens of *Hypnodontopsis fossilis* or *Muscites confertus*, but also not disproved. Therefore *Muscites confertus* is combined as new to the genus *Hypnodontopsis*:

Hypnodontopsis confertus (Goeppert & Berendt) J.-P. Frahm comb. nov.

Muscites confertus Goeppert & Berendt. Bernst. Org. Rest. Vorwelt 1(1):112, 1845

non *Hymenostomum microstomum* (Hedw.) R. Brown fide Goeppert, Jahresber. Schles. Ges. Vaterl. Cult. 31: 69, 1854

Because of the state of preservation of the fossil material, it can not be fully excluded that *H. confertus* is finally be identical with *H. mexicana*. In this case *H. confertus* would have the priority and an extant species would get the name of a species described as fossil. The possible old age of *H. mexicana* is expressed by the rarity of the species (two records world-wide) and the disjunct occurrence in Mexico and Uganda, which can be interpreted as relict from a former larger range. There are more examples of species known from Baltic and Saxonian amber, which are confined to small regions today and are apparently much declining in frequency (*Merillioobryum* cf. *fabonioides*, *Boulaya mittenii*, *Symphyodon* spec.). Such species have passed the peak of their frequency and seem to be examples of species which are getting extinct.

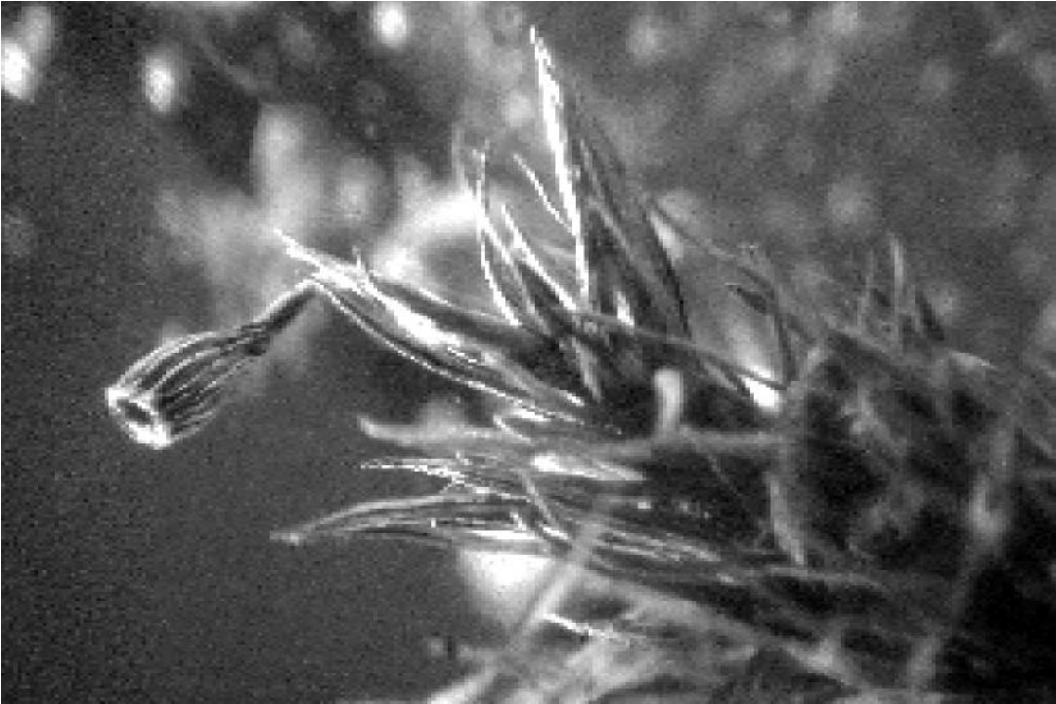


Fig. 1: *Hypnodontopsis confertus* (#1594)



Fig. 2: *Hypnodontopsis confertus* (#20)

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Appendix:

Mosses from Baltic and Saxonian amber (for references see Frahm 2001)

1. Species described in form genera (= identity and systematic relationships not known) (8)

Dicranites casparyi
 Dicranites grollei
 Dicranites obtusifolius
 Dicranites subflagellare

Muscites convolutus
 Muscites dubius
 Muscites elegans
 Muscites pilifer

2. Fossil species (12)

Dicranum simplex
 Dicranum subpellucidum
 Dicranum subscoparium
 Barbula subcanescens
 Trichostomum substrictum
 Grimmia subelongata
 Trachycystis obtusus
 Hypnodontopsis confertus
 Hypnodontopsis fossilis
 Polytrichum subseptentrionale
 Polytrichum subundulatum
 Polytrichum suburnigerum

2. Extant species (11)

a. older, dubious records
 Dicranum fuscescens
 Phascum cuspidatum
 Rhytidiadelphus squarrosus

b. recent verified records

Trachycystis flagellaris
 Trachycystis microphylla
 Campylopododiella cf. himalayana
 Fabronia cf. ciliaris
 Merillioibryum cf. fabronioides
 Boulaya mittenii
 Haplocladium angustifolium
 ?Ctenidium capillifolium

3. Extant genera (14)

Campylopododiella spec.
 Campylopus spec.
 Trachycystis spec.
 Calomnion spec.
 Rhizogonium spec.
 Bartramia spec.
 Barbella spec.
 Fabronia spec.
 Symphyodon spec.
 Brotherella spec.
 Mastopoma spec.
 Hypnum spec. 1
 Hypnum spec. 2