

Nomenclatural novelties : K. Liimatainen & T. Niskanen

*Thaxterogaster tremens* Kytov., Niskanen, Kekki & Liimat., sp. nov.

IF 900350

Holotype H 7018322

Diagnosis: Pileus 2–7.5 cm diam., at first low conical to hemispherical, then low convex to almost plain, sometimes with a low umbo, apricot-orange to reddish brown, sometimes with a faint greyish tint, hygrophanous, viscid to glutinous. Lamellae medium spaced, moderately wide, adnexed, pale cream. Stipe 4–15 cm long, 0.5–1.5 cm thick at the apex and up to 2 cm at the base, cylindrical to slightly clavate with a tapered, often somewhat radicating base, white, only somewhat glutinous. Context whitish. Taste very bitter (both the slime and the context) on the pileus and the stipe. Odour slightly raphanoid to sweetish. Basidiospores 7.0–8.0 × 4.5–5.0 μm (280 spores, 14 specimens), av.=7.5 × 4.6 μm, range of averages=7.3–7.6 × 4.5–4.8 μm, Q = 1.52–1.74, Qav. = 1.63, range of average Q-values = 1.54–1.66, amygdaloid to amygdaloid-fusoid to almost somewhat sigmoid, sometimes with a very shallow suprahilar depression, finely to fairly finely, often somewhat sharply, coarsely and unevenly verrucose. Almost without iodine reaction. Spore wall fairly thin, often slightly pellucid. Lamellar trama hyphae yellowish to yellow, smooth, often granulose in Melzer's reagent. ITS sequence (GenBank OQ594402, ex holotype) distinct from other members of *Thaxterogaster* sect. *Vibratiles*. Deviating from the closest known species *T. ochroamarus* by 3% (19 substitutions and indels). Ecology and distribution: In dry to mesic coniferous forests with *Picea* and *Pinus*. So far known from Europe: Finland, Norway, Sweden, UK (Scotland) and North America: Canada (British Columbia, Newfoundland) and USA (Oregon). Sequenced specimens examined: Canada. Newfoundland, West coast, Gros Morne National Park, S side of the Bonne Bay East Arm, Lomond River hiking trail, mesic to damp coniferous forest (*Abies balsamea*, *Picea*) with some *Betula*, on calcareous ground, 19 Sept. 2007, K. Liimatainen, T. Niskanen 07-228, 7000890 (H). GenBank OQ594403 W side of Lomond River, hiking trail to Stuckless Pond, mesic to damp coniferous forest (*Abies balsamea*, *Picea*) with some *Betula*, on calcareous ground, 19 Sept. 2010, K. Liimatainen, T. Niskanen 10-108 (K). Finland. Etela-Savo, Mantyharju, Juolasvesi, Hietaniemi, Sojonkangas, gently SW sloping, fairly rich *Picea* forest with abundant *Pinus* and *Betula*, 27 Sept. 1997, I. Kytovuori 97-1906 (H) Kittilan Lappi, Kolari, Korkealehdontie, mesic *Picea*-*Betula* forest, 18 Aug. 1998, I. Kytovuori 98-1076 (H). GenBank OQ594404 Sompion Lappi, Pelkosenniemi, Suvanto, calciferous *Pinus*-*Picea* forest at river bank, 4 Sept. 2021, T. Kekki 5357 (OULU). GenBank OQ594405. Norway. Hordaland, Ulvikkommune, Asen, Tranemys S., planted spruce forest (*Picea abies*) with some *Pinus sylvestris*, dense *Hylocomium* mats, low herb forest, on hill side, 24 Sept. 2005, T-E. Brandrud, T. Niskanen 05-210, 7018322 (K(M) isotype). GenBank OQ594402. Sweden. Torne Lappmark, Karesuando parish, Kuttainen, dry, reindeer grazed pine heath forest on sandy ground, 14 Aug. 1998, I. Kytovuori 98-811a (H). USA. Oregon, Tillamook County, Camp Magruder, near Rockaway Beach, stabilized sand dunes with Sitka spruce and Shore pine, 1 Nov. 2009, S. Trudell, T. Niskanen 09-177 (K). Other specimens examined: Norway. Hordaland, Ulvik, Asen, 24 Sept. 2005 Brandrud (Niskanen F05-210 (H), Brandrud (Niskanen 05-211, H). Nord-Trondelag, Flatanger, Dale, 4 Sept. 2009 Kytovuori 09-497 (H), Kytovuori 09-498 (H). Grong, Formofoss, 6 Sept. 2009 Kytovuori 09-648 (H), 09-649 (H), Leksvik, Vanvikan, 3 Sept. 2009 Kytovuori 09-443 (H). Steinkjer, Kvam, Noem NE, 09-392 (H). Troms, Storfjord, Skibotn, 17 Aug. 1992 Kytovuori 92-437 (H). Sweden. Angermanland, Graninge parish, Viksmon, 6 Sept. 1997 Kytovuori 97-814 (H). Jamtland, Berg parish, Svenstavik - Berg, 31 Aug. 2009

P. & I. Kytovuori 09-280 (H). Frostviken parish, Ankarvattnet, Koralgrottan, 8 Sept. 2009 P. & I. Kytovuori 09-801 (H), V 09-802 (H), 09-830 (H), 09-831 (H). Oviken parish, Borgen, 29 Aug. 2003 Niskanen 03-730 & Kytovuori (H), Handsjo, 31 Aug. 2003 Niskanen 03-729 & Kytovuori, Liimatainen (H). Undersaker parish, Valadalen, 24 Aug. 2006 Kytovuori 06-565 & Toivonen (N). Are parish, Stalltjarnstugan, 22 Aug. 2006 Kytovuori 06-468 & Toivonen (H). Norrbotten, Junosuando parish, Karhakkavuoma, 15 Aug. 1998 Kytovuori 98-881 (H), Junosuando, 16 Aug. 1998 (H). Pajala parish, Pajala, Aareavaara, 17 Aug. 1998 Kytovuori 98-1055 (H), Perajavaara, 16 Aug. 98-957 (H). Asele Lappmark, Asele parish, Halla, 7 Sept. 1997 Kytovuori 97-865 (H). Lule Lappmark, Gallivare parish, Muorjevaara, 14 Aug. 2001 Kytovuori 01-1300 (H), Kytovuori 01-1301 (H), Stenbronn, Kytovuori 01-1358 (H). Finland. Uusimaa, Helsinki, Haltiala, 22 Sept. 2013 Kytovuori (H). Hyvinkaa, Kalkkivuori, 10 Oct. 2014 Kytovuori 14-1280 (TUR). Nurmijarvi, Rajamaki, 3 Oct. 2014 (TUR). Kirkkonummi, Abramsby, 24 Sept. 2007 Kytovuori 07-1642 (H). Siuntio, Djupback, 27 Sept. 2007 Kytovuori 07-1708 (H). Espoo, Herukkapuro - Serena, 20 Sept. 2014 Kytovuori 14-759 (H). Vantaa, Askisto, 18 Sept. 2009 Kytovuori 09-083 (H). Satakunta, Ikaalinen, Seitsemien national park, Kovero, 7 Sept. 2005 (H), Pori, Ahlainen, Onnenkoski, 15 Sept. 2019 R. & K. Tamminen (H). Sastamala, Eko, 30 Jul. 2004 Kytovuori 04-0247 (H), Illo, 3 Aug. 2009 Kytovuori 09-032 (H). Etela-Hame, Asikkala, Rominoja, 7 Sept. 2021 Kytovuori & Tamminen (H). Hausjarvi, Erkyla, 7 Aug. 2020 Kytovuori & Tuovila (H). Juupajoki, Hyytiala, 18 Aug. 2004 Niskanen 04-076 & Kytovuori (H), Yla-Lyly, 19 Aug. 2004 Niskanen 04-107 & Kytovuori, (H). Kalvola, Kotkajarvi, 10 Aug. 1997 Kytovuori 97-198 (H). Kuru, Seitsemien National Park, 28 Jul. 2000 Kytovuori 00-0166 (H), 22 Aug. 2004 Niskanen 04-182 & Kytovuori, Liimatainen (H). Ruovesi, Helvetinjärvi National Park, 10 Sept. 2013 Kytovuori 13-0538 (H). Etela-Savo, Savonlinna, Pyorissalo, 30 Sept. 2020 Kytovuori & Tamminen (H). Laatokan Karjala, Parikkala, Oronmylly, 20 Sept. 2009 Kytovuori 09-1366 (H), Vaaranpera, 16 Sept. 2009 Kytovuori 9 Sept. 2009 (H). Pohjois-Hame, Tervonen 3567a (JYV). Saarijarvi, Pyhahakki National Park, 16 Sept. 2008 Kytovuori 08-1884 (H). Virrat, Hauhuu, 1 Aug. 2013 Kytovuori (H), 4 Sept. 2018 Kytovuori (H). Pohjois-Karjala, Juuka, Nunnanlahti, 9 Sept. 2001 Kytovuori 01-2030 (H). Kesalahti, Poiksilta, 21 Sept. 2009 Kytovuori 09-1399 (H). Keski-Pohjanmaa, Pulkkila, Lehtomaki, 14 Aug. 2007 Kytovuori 07-092 & Toivonen (H), Kainuu, Paltamo, Tololanmaki, 12 Sept. 2008 Kytovuori 08-1639 (H). Puolanka, 15 Sept. 1997 Kytovuori 97-1520 (H). Ristijarvi, Koljatinvaara, 7 Sept. 2008 Kytovuori 08-1196 (H). Oulun Pohjanmaa, Kiiminki, Keskikylya, 18 Aug. 2007 Kytovuori 07-282 (H). Pera-Pohjanmaa, Tervola, Raemaki, calciferous Pinus-Picea forest, 20 Sept. 2022, T. Kekki 5930 (OULU). Rovaniemi, Kaihuanvaara, 23 Aug. 1999 Kytovuori 99-565 (H). Ylitornio, Meltosjarvi, 21 Aug. 1999 Kytovuori 99-466 (H). Koillismaa, Kuusamo, Oulanka National Park, Korvasvaara, 29 Aug. 2007 Kytovuori & Toivonen (H), Mataraniemi, 26 Aug. 2007 Kytovuori 07-844 (H). Posio, Raistakka, 30 Aug. 2008 Kytovuori 08-0428 (H). Taivalkoski, Jurmu, 27 Aug. 1999 Kytovuori (H), Loukusa, 30 Aug. 2008 Kytovuori 08-0482 (H), Metsakyla, 8 Sept. 2013 Kytovuori 13-0372 (H). Kittilan Lappi, Kittila, Palkevaara, 10 Aug. 2001 Kytovuori 01-3304 & Tuovila, Toivonen (H). Muonio, Keimio, Laaksivaara, 11 Aug. 1001 Kytovuori 01-1138 (H). Sompion Lappi, Pelkosenniemi, Suvanto, 28 Aug. 2008 Kytovuori 08-0349 (H). Inarin Lappi, Inari, Keskikompsio, 14 Aug. 1995 Kytovuori 95-383 (H).

Etymology: Tremens (latin) = trembling, shaking. The species has a very bitter taste on the pileus that makes you tremble when tasting it.

Notes: The species grows in coniferous forests and can be distinguished from the other members of Thaxterogaster sect. Vibratiles found from similar habitats by a combination of apricot-orange to reddish-brown pileus, relatively hard, fleshy, thick stipe that is only somewhat glutinous and amygdaloid spores (7–8 × 4.5–5 µm). This is the species called *C. vibratilis* s. *Kytovuori & Niskanen* in Knudsen and Vesterholt (2012, *Funga Nordica*) and at least p.p. sensu Moser (1983, *Rohrlinge und Blatterpilze*). This name has been typified by Niskanen and Liimatainen (2021, *Index Fungorum* 487:

7) to another species, named as *C. vibratilis* s. Brandrud et al. (1998, *Cortinarius Flora Photographica*) in *Funga Nordica*.

*Thaxterogaster mitipes* Liimat., Kekki, Niskanen & Kytov., sp. nov.

IF 900351

Holotype H 6033528

Diagnosis: Pileus 2–4 cm diam., at first low conical to hemispherical then low convex to almost plain, often with a broad umbo, pale yellow to pale apricot, honey-coloured when wet, with a narrow white rim at the margin, hygrophanous, glutinous. Lamellae medium spaced, adnexed, about 3–5 mm wide, whitish when young, later very pale greyish brown. Stipe 2–7 cm long, 0.4–1.2 cm thick at the apex, 0.6–1.4 cm at the base, cylindrical to slightly clavate, sometimes with a tapered base, white, viscid. Universal veil very thin, white, easily vanishing, on the lower half of the stipe. Context watery whitish. Taste rather strongly bitter in the slime, bitter in the pileus context, only somewhat bitterish to almost mild in the context of the basal part of the stipe. Odour raphanoid. Exsiccate: pileus pale yellowish to straw-coloured to light brown. Basidiospores  $6.3\text{--}7.5 \times 4.0\text{--}4.8 \mu\text{m}$  (316 spores, 20 specimens),  $av. = 7.0 \times 4.5$ , range of averages =  $6.5\text{--}7.2 \times 4.3\text{--}4.6 \mu\text{m}$ ,  $Q = 1.41\text{--}1.71$ ,  $Q_{av} = 1.57$ , range of average Q-values =  $1.46\text{--}1.60$ , amygdaloid to amygdaloid-ellipsoid to ovoid-ellipsoid, faintly dextrinoid, finely to fairly finely, evenly, densely (sometimes somewhat coarsely) verrucose. Lamellar trama hyphae yellowish to pale yellow, smooth, somewhat granulose in Melzer's reagent. ITS sequence (GenBank OQ594406, ex holotype) distinct from other members of *Thaxterogaster* sect *Vibratiles*. Deviating from the closest known species *T. alboamarensis* by 5% (22 substitutions and indels).

Etymology: The name refers to the almost mild taste of the stipe.

Ecology and distribution: In dry to dryish pine heath forests. So far known from Europe: Finland, Norway, Russia, Sweden, UK (Scotland) and North America: Canada (British Columbia).

Specimens examined: Finland. Pera-Pohjanmaa, Rovaniemi, Mellavaara, xeric heath forest, 15 Sept. 2019, T. Kekki 4186 (OULU). GenBank OQ594407. Kainuu, Suomussalmi, Ammansaari, Karvola, Haaponiva, Alanteenjarvi, W-N of Polylahti, dry, reindeer grazed pine heath forest on sandy ground, young *Pinus*, 5 Sept. 2008, I. Kytovuori 08-1033, 6033528 (K(M) isotype). GenBank OQ594406. Kuusamo, Salla, Sarkela, 6.1 km towards Naruska from the crossing, Hierikkoselka, dry *Pinus sylvestris* heath forest on sandy soil, 1 Sept. 2002, K. Liimatainen, T. Niskanen 02-435, 6031451 (H). GenBank OQ594408. Sweden. Jamtland, Berg, approx. 11 km E of Ratan by the road 315, N of the Lake Handsjo, dry *Pinus sylvestris* heath forest with some *Picea* and *Betula* on sandy soil, 31 Aug. 2003, I. Kytovuori, K. Liimatainen, T. Niskanen 03-927, 7018095 (H). GenBank OQ594409. Other specimens examined. Norway. Nord-Trøndelag, Steinkjer, Kvam, Noem NE, 2 Sept. 2009 Kytovuori 09-395 (H). Troms, Storfjord, Skibotndalen, 13 Aug. 1998 Kytovuori 98-733 (H), Finnmark, Tana, Laevvajokgiedde, 18 Aug. 1995 Kytovuori 95-684 (H). Sweden. Medelpad, Haverö parish, Boflon O, 27 Aug. 2003 Niskanen 03-617 & Kytovuori (H). Norrbotten, Alvsby parish, Ov. Grundsel, Nackteberget N. R., 8 Sept. 1997 Kytovuori 97-991 (H). Pite Lappmark, Arvidsjaur parish, Arvidsjaur, 11 Sept 2009 P. & I. Kytovuori (H). Finland. Varsinais-Suomi, Lohja Kirkniemi, 28 Sept. 2014. Kytovuori 14-996 (TUR). Vihti, Salmi, 06 Oct. 2014 Kytovuori 14-1228 & Hyytiäinen (TUR). Uusimaa, Espoo, Kurkijärvi, 20 Sept. 2014. Kytovuori (TUR), Helsinki, Haltiala, 18 Sept. 2014. Kytovuori (TUR), Kirkkonummi, Meikotrasket, 27 Sept. 2007 Kytovuori (H), Raasepori, Hurskurnas, 5 Oct. 2004 Kytovuori (H). Laatokan Karjala, Parikkala, Vaaranpera, 17 Sept. 2009 Kytovuori 09-1246, 09-1207. Pohjois-Hame, Rautalampi, Hanhitaipale, 14 Sept. 2004 Rahko (Kytovuori, 04-1042, H), Aaneskoski, Konginkangas, 9 Sept. 2002 Kytovuori 02-1349 & Liimatainen (H). Pohjois-Karjala, Ilomantsi, Mekrijärvi, 18 Sept. 1997 Kytovuori 97-1595 (H). Kainuu. Kuhmo, 15 Sept. 2002 Kytovuori 02-1350 & Niskanen, Liimatainen (H). Suomussalmi, Hossa, 16 Sept. 2002 Niskanen 02-585 & Kytovuori,

Liimatainen (H), Niskanen 02-629 & Kytovuori, Liimatainen (H), Niskanen 02-744 & Kytovuori, Liimatainen (H), Karsamonsarkka, 16 Sept. 2002 Kytovuori 02-1351 & Niskanen, Liimatainen (H), Niskanen 02-666a & Kytovuori, Liimatainen (H), Niskanen 02-670 & Kytovuori, Liimatainen (H), Ammansaari, Aittokoski, 6 Sept. 2008 Kytovuori 08-1124 (H), Karvola, 5 Sept. 2008 Kytovuori 08-1032 (H), Kytovuori 08-1034 (H). Oulun Pohjanmaa, Pudasjarvi, Puhos, 12 Sept. 1997 Kytovuori 97-1265 (H). Koillismaa, Kuusamo, Oulanka National Park, Biological Station, 31 Sept. 2002 Niskanen 02-364 & Kytovuori, Liimatainen (H), Puukkorinne, 23 Sept. 2002 Niskanen 02-1111 & Kytovuori (H), Kiutakongas, 18 Sept. 2002 Niskanen 02-729 & Kytovuori (H), Sompsanpera, 21 Sept. 2002 Niskanen 02-1128 & Kytovuori (H). Posio, Jumisko, 29 Aug. 2008 Kytovuori 08-0397 (H). Salla, Naruska, 01 Sept. 2002, Niskanen 02-436a & Liimatainen (H). Taivalkoski, Loukusa, 30 Aug. 2008 Kytovuori 08-0485 (N). Kittilan Lappi, Kittila, Palkevaara, 10 Aug. 2001 Kytovuori 01-3304 & Tuovila, Toivonen (H). Muonio, Laaksivaara, 11 Aug. 2001 Kytovuori 01-1138 (H).

Notes: One of the species in *T. sect. Vibratiles* found from dry pine heath forests. It can be distinguished from the other members of the group with the same ecology by apricot to honey colours of the pileus that fade to buff-yellow and cream, the other species are more brownish orange (*T. causticus*, *T. microspermus*, *T. tremens*) or buff-coloured (*T. pluvius/pluviorum* group). Also, the pileus of *T. causticus* s. Melot (1998, *Cortinarius Flora Photographica*) is finely rugulose and the spores are relatively wider (6.0–7.3 × 4.0–5.0 μm) and more strongly verrucose, *T. microspermus* has only slightly viscid, soon drying, mild or rarely slightly bitter pileus, yellowish context and smaller spores (4.8–5.7 × 3.5–4.0 μm), *T. tremens* has larger basidiomata and mostly amygdaloid-fusoid spores (7.0–7.9 × 4.3–5.0 μm), and *T. pluvius/pluviorum* group often has an acute umbo, only slightly viscid pileus and ellipsoid to slightly ovoid, finely verrucose, more dextrinoid spores (6.0–7.3 × 4.0–4.8 μm or smaller).

*Calonarius largentii* (Ammirati & M.M. Moser) Ammirati, Niskanen & Liimat., comb. nov.

IF 900352

Basionym: *Cortinarius largentii* Ammirati & M.M. Moser, in Moser & Ammirati, *Sydowia* 49(1): 30 (1997).

*Phlegmacium magicum* (Eichhorn) Niskanen & Liimat., comb. nov.

IF 900353

Basionym: *Cortinarius magicum* Eichhorn, in Gams, *Kl. Krypt.-Fl.*, Edn 3 (Stuttgart) 2b/2: 295 (1967).