

Checklist of the species of the genera *Amanita* and *Limacella* (Agaricomycetes) in Estonia

Mall Vaasma

Institute of Agricultural and Environmental Sciences, Estonian University of Life Sciences, 181 Riia St., 51014, Tartu, Estonia. Natural History Museum, University of Tartu, 46 Vanemuise St., 51014, Tartu, Estonia.
E-mail: mall.vaasma@emu.ee

Abstract: 19 species, 2 varieties and 1 form of genus *Amanita* and 3 species of genus *Limacella* (Agaricomycetes) have been recorded in Estonia. A checklist of these species with habitat, phenology and occurrence data are presented.

Kokkuvõte: Kärbseseene (*Amanita*) ja limalooriku (*Limacella*) perekonna (Agaricomycetes) liikide kriitiline nimestik Eestis

Eestis on kärbseseene perekonnas 19 liiki, 2 teisendit ja 1 vorm, limalooriku perekonnas on 3 liiki. Igale liigile on antud andmed tema kasvukoha, fenologia ja esinemissageduse kohta.

The present checklist contains 19 *Amanita* species, 2 varieties and 1 form and 3 *Limacella* species recorded in Estonia. All the species included have been proved by relevant exsiccata in the mycological herbarium TAAM of the Institute of Agricultural and Environmental Sciences of the Estonian University of Life Sciences and in the mycological herbarium TU of the Natural History Museum of the University of Tartu. According to literary sources (Urbonas a.o. 1986) *Limacella delicata* (Fr.) Earle has also been recorded in Estonia, but the exsiccata available do not enable to prove that firmly.

The following data are given on each taxon: the Latin name with a reference to the initial source, important synonyms, reference to important and representative pictures (iconography) in the mycological literature used in identifying Estonian species, habitat, phenology and occurrence, references to herbarium specimens available in Estonia. In the characterization of fungal sites, the publication of Paal (1997) is used.

The frequency of the occurrence of taxa is estimated according to a 6-point scale: very rare – 1–2 localities, rare – 3–5 localities, rather rare – 6–10 localities, rather frequent – 11–20 localities, frequent – 21–50 localities, very frequent – 51 or more localities.

Abbreviations of iconography are following:

BK – Breitenbach & Kränzlin, 1995

Cetto – Cetto, 1979

Däh – Dähncke, 2008

FE – Neville, Poumarat, Fungi Europaei, 2004

Galli – Galli, 2001

GBW – Kriegelsteiner, 2003

KL – Kalamees & Liiv, 2005

Korh – Korhonen, 2007

Lud – Ludwig, 2000

Phil – Phillips, 2006

RH – Ryman & Holmåsén, 2006

RM – Rivista di Micologia, 2008

SNS – Salo, Niemelä & Salo, 2006

AMANITA Pers., Tent. disp. meth. fung. (Lipsiae): 65. 1797

AMANITA BATTARRAE (Boud.) Bon, Doc. Mycol. 16 (61): 16. 1985

Syn.: *A. umbrinolutea* (Secr. ex Gillet) Bertill., Bull. Soc. mycol. Fr. 26: 139. 1910

Icon.: Däh: 462; GBW 4: 19; KL: 191; SNS: 89.

Ecol.: In coniferous and mixed forests, particularly in eutrophic boreo-nemoral forests of *Aegopodium* and *Hepatica* site types and in meso-eutrophic boreo-nemoral hillock forests of *Corylus* site type, August to September, rather frequent.

Voucher specimens studied: TAAM73072, 172718; TU106051.

AMANITA CITRINA (Schaeff.) Pers., Tent. disp. meth. fung. (Lipsiae): 70. 1797, f. citrina

Syn.: *A. mappa* (Batsch: Fr.) Bertill., Essai Crypt. Exot. (Paris) 3: 500. 1866.

Icon.: BK: 147; FE: 928, phot. 87A; Galli: 205; KL: 185; Korh: 189; Phil: 147d.

Ecol.: In mixed and in coniferous forests, mainly in oligotrophic boreal heath *Pinus sylvestris* forests, in oligo-mesotrophic boreal forests of *Vaccinium vitis-idea* site type and in drained peatland forests of *Vaccinium myrtillus* site type, and in eutrophic boreo-nemoral forests of *Aegopodium* site type, August to October, very frequent.

Voucher specimens studied: TAAM172740, 172873, 182501.

AMANITA CITRINA f. alba (Pers.) Quél., Compt. Rend. Assoc. Franç. Avancem. Sci. (Marseille, 1891), 20 (2): 467. 1892

Icon.: BK: 147; Däh: 475; FE: 930, phot. 88; Galli: 207; Phil: 147e.

Ecol.: In mixed forests, especially in meso-eutrophic boreo-nemoral hilllock forests of *Corylus* site type, September, rather rare.

Voucher specimens studied: TAA74832, 76434.

AMANITA CROCEA (Quél.) Singer, Lilloa 22: 386. 1951 (1949)

Icon.: Däh: 460; GBW 4: 21; Phil: 152a; RH: 395; SNS: 90.

Ecol.: In mixed forests and in parks, mainly in eutrophic and mesotrophic boreo-nemoral forests, especially under *Betula* spp., June to September, frequent.

Voucher specimens studied: TAA172775, 183012; TU106038.

AMANITA ELIAE Quél., Mém. Soc. Émul. Mont-béliard, Sér. 2 (5): 230. 1872

Icon.: BK: 149; Cetto: 389; FE: 863, phot. 28A; Galli: 128; GBW 4: 12.

Ecol.: In wooded meadow, August, very rare; in Estonia only one locality: Saare Co., Viidumäe Nature Reserve, 14 Aug 2004 (V. Liiv).

Voucher specimen studied: TU106001.

A. EXCELSA (Fr.: Fr.) Bertill., Essai Crypt. Exot. (Paris) 3: 499. 1866

Syn.: *A. spissa* (Fr.) P. Kumm., Führ. Pilzk. (Zwickau): 114. 1871

Icon.: BK: 149; FE: 917, phot. 77A (as *A. excelsa* var. *spissa*); Galli: 141–142 (as *A. spissa*); GBW 4: 35; Phil: 142a (as *A. excelsa* var. *spissa*); SNS: 96 (as *A. spissa*).

Ecol.: In mixed forests and in wooded meadows under *Picea abies*, June to September, rather rare.

Voucher specimens studied: TAA80655, 80716, 114627.

AMANITA FRIABILIS (P. Karst.) Bas, Bull. Mens. Soc. Linn. Lyon 43: 18. 1974

Icon.: BK: 141; Galli: 95; SNS: 91.

Ecol.: In mixed forests and in wooded meadows under *Alnus incana*, August to October, rather rare.

In the Red List of Estonia (categ. NT); protected by law (categ. II) (Eesti Punane nimestik 2008. 2009; Järva et al., 1999; I ja II kaitsekategooriana ...).

Voucher specimens studied: TAA141418, 185695; TU101408.

AMANITA FULVA (Schaeff.: Fr.) Fr., Observ. Mycol. (Havniae) 1: 2. 1815

Icon.: BK: 143; GBW 4: 23; KL: 191; Korh: 193; Phil: 151d; SNS: 91.

Ecol.: In deciduous and mixed forests, mainly in eutrophic boreo-nemoral forests of *Hepatica* and of *Aegopodium* site types, in eutrophic paludifying forests of *Vaccinium uliginosum* site type and in oligotrophic boreal heath forests, especially under *Betula* spp., August to October, very frequent.

Voucher specimens studied: TAA172728, 182502; TU101018.

Misapplied: *Amanita vaginata* var. *badia* s. auct. Est.

AMANITA GEMMATA (Fr.) Bertill., Essai Crypt. Exot. (Paris) 3: 496. 1866

Syn.: *A. junquillea* Quél., Bull. Soc. Bot. Fr. 23: 324. 1876

Icon.: BK: 151; Däh: 467; GBW 4: 13.

Ecol.: In coniferous and mixed forests, especially in oligo-mesotrophic boreal forests of *Vaccinium myrtillus* site type and in eutrophic boreo-nemoral forests of *Aegopodium* site type, under *Pinus sylvestris* or *Picea abies*, July to September, very rare.

Voucher specimens studied: TAA144191, 174973.

AMANITA MUSCARIA (L.: Fr.) Lam., Encycl. Méth. Bot. (Paris) 1: 111. 1783

Icon.: BK: 151; Däh: 464; FE: 852, phot. 18B; GBW 4: 15; KL: 189; Phil: 140ab; RH: 397.

Ecol.: In deciduous, coniferous and mixed forests, mainly in eutrophic boreo-nemoral forests, in mesotrophic boreal forests of *Oxalis* site type and in oligo-mesotrophic boreal forests of *Vaccinium myrtillus* site type, June to October, very frequent.

Voucher specimens studied: TAA75953, 176320; TU106056.

AMANITA OLIVACEOGRISEA Kalamees in Urbonas, Kalamees & Lukin, *Conspectus florum agaricalium fungorum (Agaricales s.l.) Lithuaniae, Latviae et Estoniae (materies 1778–1984 anorum)* Vilnius: 45. 1986

Icon.: SNS: 93.

Ecol.: In deciduous and mixed forests, mainly in eutrophic boreo-nemoral and paludifying forests, especially on damp soil under *Alnus* and *Betula*, August to October, rather rare.

Voucher specimens studied: TAA122517 (holotype), 182918; TU106508.

Misapplied: *Amanita friabilis* s. Kalamees, 2006.

AMANITA PANTHERINA (DC.: Fr.) Krombh., *Naturgetr. Abbild. Beschr. Schwämme* (Prague): 29. 1846

Icon.: BK: 151; Däh: 466; FE: 867–868, phot. 34A,B; GBW 4: 17; KL: 187; RH: 398.

Ecol.: In deciduous, mixed and coniferous forests, parks, wooded meadows, particularly in mesotrophic boreal forests of *Oxalis* site type, in oligo-mesotrophic boreal forests of *Vaccinium myrtillus* site type and in meso-eutrophic boreo-nemoral hilllock forests of *Corylus* site type, July to September, rather frequent.

Voucher specimens studied: TAAM145844, 182860; TU106036.

AMANITA PHALLOIDES (Vaill.: Fr.) Link, *Handbuck zur Erkennung der Nutzbarsten und am Häufigsten Vorkommenden Gewächse* 3: 272. 1833, var. *phalloides*

Icon.: BK: 153; FE: 891–892, phot. 55A,B,C; Galli: 191–194; KL: 185; Korh: 186; Phil: 144a; RM: 195.

Ecol.: In deciduous forests, wooded meadows and parks, especially in eutrophic alvar mixed forests and in meso-eutrophic boreo-nemoral hilllock forests of *Corylus* site type, under broad-leaved trees, especially under *Quercus robur*, July to October, rather rare.

Voucher specimens studied: TAAM114916, 120866, 182930.

AMANITA PHALLOIDES var. ALBA Costatin & L. M. Dufour, *Nouv. Fl. Champ.*, Edn 2 (Paris): 256. 1895

Icon.: FE: 894–895, phot. 56A,C; Galli: 194–195; RM: 197.

Ecol.: In deciduous forests and parks, under broad-leaved trees, August to September, very rare, two localities are known: Valga Co, Lüllemäe, 30 Aug 1984 (S. Veldre) and Saare Co, Loode Oak Forest, 2006 (V. Liiv, pers. comm.).

Voucher specimen studied: TAAM141469.

AMANITA PORPHYRIA Alb. & Schwein.: Fr., *Syst Mycol.* (Lundae) 1: 14. 1821

Icon.: Däh: 473; FE: 932–933, phot. 92A,B,C; Galli: 209; KL: 187; Phil: 146a; RH: 400.

Ecol.: In mixed and coniferous forests, mainly in mesotrophic boreal forests, in eutrophic boreo-nemoral forests of *Aegopodium* site type and in paludifying *Pinus sylvestris* forests of *Vaccinium myrtillus* site type, August to September, very frequent.

Voucher specimens studied: TAAM142355, 172729; TU106040.

AMANITA REGALIS (Fr.: Fr.) Michael, *Führ. Pilzk.* (Zwickau) 1: 56. 1896

Syn.: *Amanita muscaria* (L.: Fr.) Lam. var. *regalis* (Fr.: Fr.) Bertill., *Essai Crypt. Exot.* (Paris) 3: 498. 1866

Icon.: Däh: 465; FE: 862, phot. 27A; KL: 189; Korh: 191; RH: 398; SNS: 95.

Ecol.: In coniferous and mixed forests, particularly in oligotrophic paludifying forests of *Polytrichum* site type and in oligo-mesotrophic boreal forests of *Vaccinium myrtillus* site type, August to September, rather rare.

Voucher specimens studied: TAAM71692, 182861, 185633.

AMANITA RUBESCENS Pers., *Tent. disp. meth. fung.* (Lipsiae): 71. 1797

Icon.: BK: 155; FE: 925, phot. 83A; Galli: 137–139; KL: 187; Korh: 189.

Ecol.: In mixed and coniferous forests, mainly in mesotrophic boreal forests, in oligo-mesotrophic boreal forests of *Vaccinium myrtillus* site type and in eutrophic boreo-nemoral forests of *Hepatica* site type, July to October, rather frequent.

Voucher specimens studied: TAAM142359, 183368; TU101059.

AMANITA STROBILIFORMIS (Paulet ex Vittad.) Bertill., *Essai Crypt. Exot.* (Paris) 3: 499. 1866

Icon.: BK: 155; FE: 882–883, phot. 49A,B,C & 984–986, pl. 52–53; Galli: 163–165; GBW 4: 46; Phil: 146c.

Ecol.: In deciduous forests, especially in eutrophic alvar forests on calcareous soil, September, rare.

In the Red List of Estonia (categ. EN); (Eesti Punane nimestik 2008. 2009; Järva et al., 1999). **Voucher specimens studied:** TAAM95609; TU106002, 106292.

AMANITA SUBMEMBRANACEA (Bon) Gröger, Boletus 3 (2): 27. 1979

Icon.: BK: 145; Galli: 99–101; GBW 4: 30.

Ecol.: In mixed and coniferous forests, mainly in oligo-mesotrophic boreal forests of *Vaccinium myrtillus* and of *Vaccinium vitis-idaea* site types and in eutrophic paludifying forests of *Filipendula* site type, September to October, rare.

Voucher specimens studied: TAA183090, 197140; TU106487.

AMANITA VAGINATA (Bull.: Fr.) Lam., Encycl. Méth. Bot. (Paris) 1: 109. 1783, var. *vaginata*

Icon.: BK: 145; Galli: 79, 81; GBW 4: 31; KL: 191.

Ecol.: In deciduous, mixed and coniferous forests, particularly in eutrophic boreo-nemoral *Picea abies* forests of *Aegopodium* and *Hepatica* site types, in drained peatland *Picea abies* forests of *Vaccinium myrtillus* site type and in oligo-mesotrophic bog forests, July to October, frequent.

Voucher specimens studied: TAAM73253, 183032; TU106284.

AMANITA VAGINATA var. ALBA Gillet, Les Hyméno-mycètes ou description de tous les champignons (fungi) qui croissent en France (Alençon): 51. 1874

Icon.: Galli: 80; GBW 4: 31; KL: 191.

Ecol.: In deciduous, mixed and coniferous forests, mainly in eutrophic boreo-nemoral forests, in meso-eutrophic boreo-nemoral hilllock forests of *Corylus* site type and in floodplain swamp forests, August to September, rather rare.

Voucher specimens studied: TAAM81281, 172698, 183261.

AMANITA VIROSA (Fr.) Bertill., Essai Crypt. Exot. (Paris) 3: 497. 1866

Icon.: BK: 157; FE: 898–899, phot. 60A,B,C; Galli: 198–199; KL: 185; Korh: 184; Phil: 148c, 149d; RH: 399.

Ecol.: In deciduous, mixed and coniferous forests, especially in oligo-mesotrophic boreal forests of *Vaccinium vitis-idaea* and *Vaccinium myrtillus* site types, in eutrophic boreo-nemoral forests of *Aegopodium* site type, in oligotrophic paludifying forests, in meso-eutrophic to eutrophic swamp forests and in drained peatland forests of *Vaccinium myrtillus* site type, August to September, frequent.

Voucher specimens studied: TAAM172809, 172841, 183054.

LIMACELLA Earle, Bulletin of the New York Botanical Garden 5: 447. 1909

LIMACELLA GLIODERMA (Fr.) Maire, Bull. trimest. Soc. mycol. Fr. 40, 4: 294. 1924

Syn.: *Limacella delicata* (Fr.) Earle, Bulletin of the New York Botanical Garden 5: 447. 1909 [1906] var. *glioderma* (Fr.) Gminder, Z. Mykol. 60 (2): 386. 1994

Icon.: BK: 157; Däh: 483; GBW 4: 115 (as *L. delicata* var. *glioderma*); KL: 193; Lud: 84, fig. 43.3A,B; RH: 403.

Ecol.: In mixed and coniferous forests, especially in eutrophic alvar forests, in meso-eutrophic boreo-nemoral hilllock forests of *Corylus* site type and in eutrophic boreo-nemoral forests of *Hepatica* site type, August to October, rather frequent.

Voucher specimens studied: TAAM114576; TU101415, 106134.

LIMACELLA GUTTATA (Pers.: Fr.) Konrad & Maubl., Encyclop. Mycol. 14: 70. 1949 [1948]

Syn.: *Limacella lenticularis* (Lasch) Maire, Bull. trimest. Soc. mycol. Fr. 40: 294 (1924)

Icon.: BK: 157; Däh: 482; GBW 4: 118; KL: 193; Lud: 83, fig. 43.1A,B; Phil: 153d; RH: 403.

Ecol.: In deciduous, mixed and coniferous forests, especially in eutrophic boreo-nemoral forests and in meso-eutrophic boreo-nemoral hilllock forests, September to October, frequent.

Voucher specimens studied: TAAM172997; TU106193, 106363.

LIMACELLA ILLINITA (Fr.: Fr.) Murrill, North American Flora 10: 40. 1914

Icon.: BK: 159; Däh: 481; KL: 193; Lud: 85, fig. 43.7A; Phil: 153f.

Ecol.: In mixed and coniferous forests, particularly in oligotrophic boreal heath forests of *Cladina* site type and in oligotrophic paludifying forests of *Polytrichum* site type, August to October, rather frequent.

Voucher specimens studied: TAAM185611, 185809; TU106190.

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