

Author's comment (13.01.2009):

The headline of this paper should be read: "Checklist of the species of the genus *Lactarius* (incertae sedis, Agaricomycetes) in Estonia". The same change – 'incertae sedis' instead of 'Phallomycetidae' should be made also in **Abstract** and **Kokkuvõte**.

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Checklist of the species of the genus *Lactarius* (Phallomycetidae, Agaricomycetes) in Estonia

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Abstract: 62 species of genus *Lactarius* of Phallomycetidae (Agaricomycetes) from the family *Russulaceae* (Russulales) have been recorded in Estonia. A checklist of these species with ecological, phenological and distribution data is presented.

Kokkuvõte: Riisika (*Lactarius*) perekonna (Phallomycetidae, Agaricomycetes) perekonna liikide kriitiline nimestik Eestis.

Esitatakse kriitiline nimestik koos ökoloogiliste, fenoloogiliste ja levikuliste andmetega riisika (*Lactarius*) perekonda kuuluva 62 liigi kohta Eestis.

INTRODUCTION

The following eight scientific papers have been contained the precise data on the *Lactarius* species in Estonia: Kalamees, 1962, 1971, 1978, 1979a, 2000; Järva & Parmasto, 1980; Järva, Parmasto & Vaasma, 1998; Urbonas, Kalamees & Lukin, 1986.

The present checklist contains 62 *Lactarius* species recorded in Estonia. Most species included have been proved by relevant exsiccata in the mycological herbarium TAA(M) of the Institute of Agricultural and Environmental Sciences of the Estonian University of Life Sciences. The following taxa, *Lactarius circellatus* Fr. 1838, *L. umbrinus* (Paulet) Fr. 1838, *L. subdulcis* ss. Kalamees, 1979a, *L. serifluus* (DC: Fr.) Fr. 1838 (?=*L. cremor* ss. auct. Est.), *L. tabidus* ss. Kalamees, 1978, 1979a, 1980 (?=*L. omphaliformis* Romagn. 1974) and *L. aspideus* var. *flavidus* (Boud.) Neuhoff 1956 (?=*L. acris* ss. Leisner 1962) (see Kalamees, 1978, 1979a; Järva & Parmasto, 1980; Urbonas, Kalamees & Lukin, 1986; Järva, Parmasto & Vaasma, 1998) are omitted in checklist: there are no specimens of these in TAA(M) supporting their presence in Estonia.

This is not only a taxonomic list of the species of *Lactarius*, it also provides data on the ecology, phenology and occurrence of these species in Estonia (see also Kalamees 1979b, 1980, 1982, 2001). The following data are given on each taxon: (1) the Latin name with a reference to the initial source; (2) most important synonyms; (3) reference to most important and representative pictures (iconography) in the

mycological literature used in identifying Estonian species; (4) data on the ecology, phenology and distribution; (5) references to herbarium specimens available in Estonia, using the internationally accepted abbreviation of the fungal collection, TAA (M); (6) comments.

Checklist principally following the Index Fungorum. By 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:

- Basso – Basso, 1999
- CD – Courtecuisse & Duhem, 2000
- Cetto1 – Cetto, 1979a
- Cetto2 – Cetto, 1979b
- Cetto3 – Cetto, 1979c
- D – Dähncke, 2001
- HVV – Heilmann-Clausen, Verbeke & Vesterholt, 1998
- KL – Kalamees & Liiv, 2005
- KM – Konrad & Maublanc, 1928
- Korh – Korhonen, 1984
- Kriegl – Krieglsteiner, 2000
- K – Kränzlin, 2005
- Lge – Lange, 1940
- March6 – Marchand, 1980
- MH – Michael & Hennig, 1970
- N – Neuhoff, 1956

Phil – Phillips, 1981
Rick – Ricken, 1915

LIST OF SPECIES

LACTARIUS Pers., Tent. disp. meth. Fung.: 63. 1797.

L. ACERRIMUS Britzelm., Bot. Zbl. 54 (4): 98. 1893

Syn.: *L. zonarius* ss. auct. p.p.; *L. insulsus* ss. auct. pl.

Icon.: Basso p.335; CD 1527; HVV p.125; K 1; Kriegl p.384; Lge 173F-F1, as *L. insulsus*; March6, 515; MH 20; N 16; Phil p.80.

Ecol. & Distr.: In eutrophic boreo-nemoral deciduous forests and wooded meadows, particularly in broadleaved forests, mainly in West Estonia and on islands, under *Quercus robur*, July to September, rather rare, often in large groups; ectomycorrhizal with *Q. robur*; calciphilous.

Voucher specimens studied: TAA(M) 121668, 141445, 177257.

L. AQUIZONATUS Kytöv., Karstenia 24 (2): 60. 1984

Icon.: Basso p.415; CD 1519; HVV p.119; KL 324; Korh pp.97–100.

Ecol. & Distr.: In coniferous, deciduous and mixed forests, also on paludifying ground, August and September, frequent; ectomycorrhizal with deciduous and coniferous trees.

Voucher specimens studied: TAA(M) 70653, 76557, 144750.

L. ASPIDEUS (Fr.: Fr.) Fr., Epicr. syst. mycol. (Upsaliae): 336. 1838

Icon.: Basso p.225; CD 1562; HVV p.97; Korh p.124; Lge 170F; MH 14; N 12.

Ecol. & Distr.: In paludifying forests and brushwoods, under *Salix* spp., August to October, rather rare; ectomycorrhizal with *Salix* spp.

Voucher specimens studied: TAA(M) 123643, 142667, 176121.

L. AURANTIACUS (Pers.) Gray, Nat. Arr. Brit. Pl. (London) 1: 624. 1821

Syn.: *L. mitissimus* (Fr.: Fr.) Fr., Epicr. syst. mycol. (Upsaliae): 345. 1838; *L. aurantiofulvus* J. Blum ex Bon, Docums Mycol. 16 (no. 61): 16. 1985.

Icon.: Basso pp.543, 559, as *L. mitissimus*; CD 1576, as *L. aurantiofulvus*; D pp. 978, as *L.*

mitissimus, 980, as *L. aurantiacus*; HVV p.179; K 5; KL 350, as *L. mitissimus*; KM 338; Korh p.186, as *L. mitissimus*; Kriegl p.406; Lge 173A, as *L. aurantiacus* var. *mitissimus*, 173D; March 6, 558; N 55–56, as *L. mitissimus*; Phil p.89, as *L. mitissimus*.

Ecol. & Distr.: In coniferous, deciduous and mixed forests, more often in spruce and spruce-mixed forests, also on oligotrophic paludifying ground, especially in *Vaccinium myrtillus* boreal, *Oxalis* boreal, *Aegopodium* boreo-nemoral and drained peatland site types, July to November; rather frequent; ectomycorrhizal with coniferous and deciduous trees.

Voucher specimens studied: TAA(M) 70645, 71814, 185646.

L. AURIOLLA Kytöv., Karstenia 24 (2): 54. 1984

Icon.: Basso p.419; HVV p.113; Korh p.81.

Ecol. & Distr.: In eutrophic boreo-nemoral spruce forests, on wet ground, especially in *Aegopodium* site type, September, very rare; ectomycorrhizal with *Picea abies*; calciphilous; in Estonia only two localities: Saare Co., Saaremaa Island, Viidumägi Nature Reserve, Viidumägi, 23 Sept 2006 (V. Liiv) and Järva Co., Endla Nature Reserve, Kirikumäe, 4 Sept 2005 (M. Vaasma).

Voucher specimens studied: TAA(M) 177694, 183039.

L. AZONITES (Bull.) Fr., Epicr. syst. mycol. (Upsaliae): 343. 1838, f. **AZONITES**

Syn.: *L. fuliginosus* var. *albipes* (J.E. Lange) Bon, Docums Mycol. 10 (nos 37–38): 92. 1980 [1979]; *L. fuliginosus* ss. auct. p.p.

Icon.: Basso pp.647, 798; CD 1602; D p.948; HVV pp.239, 241; K 6; KL 352; Korh p.183; Kriegl p.378; March6, 566, as *L. albipes*; N 43; Phil p.87.

Ecol. & Distr.: In broadleaved forests and wooded meadows, especially under *Quercus robur*, in West Estonia, July to September, rare; ectomycorrhizal with deciduous trees; calciphilous.

Voucher specimens studied: TAA(M) 123606, 123776, 143870.

L. BADIOANGUINEUS Kühner & Romagn., Bull. trimest. Soc. mycol. Fr. 69: 361. 1954 [1953]

Syn.: *L. hepaticus* ss. Kalamees; auct. p.p.

Icon.: Basso p.499; CD 1596; D p.989; K 7; HVV p.185; Korh pp.198, 199; March6, 581; N 60.

Ecol. & Distr.: In moist and paludifying

coniferous and mixed forests, especially in ombrotrophic and mixotrophic bog and drained peatland pine forests, among *Sphagnum* spp., September and October, rather frequent; ectomycorrhizal with coniferous trees.

Voucher specimens studied: TAA(M) 122615, 142265, 144418.

L. BERTILLONII (Neuhoff ex Z. Schaef.) Bon, Docums Mycol. 10 (nos 37–38): 92. 1980 [1979]

Syn.: *L. vellereus* var. *bertillonii* Neuhoff ex Z. Schaef., Česká Mykol. 33: 9. 1979; *L. vellereus* ss. auct. p.p.

Icon.: Basso p.711; CD 1515; HVV p.255; K 8; KL 319; Korh p.71

Ecol. & Distr.: In deciduous, coniferous and mixed forests and brushwoods, especially in the vicinity of *Quercus robur* and *Corylus avellana*, August and September, rather frequent; ectomycorrhizal with deciduous, probably also on coniferous trees.

Voucher specimens studied: TAA(M) 72595, 123668.

L. CAMPHORATUS (Bull.: Fr.) Fr., Epicr. syst. mycol. (Upsaliae): 346. 1838

Syn.: *Agaricus subdulcis-camphoratus* Bull.: Fr., Syst. mycol. (Lundae) 1: 70. 1821.

Icon.: Basso p.591; CD 1586; HVV p.215; K 12; KL 356; Korh p.188; Kriegl p.407; March6, 572; N 63.

Ecol. & Distr.: In spruce and spruce-mixed forests, also on oligotrophic paludifying ground, particularly in *Vaccinium myrtillus* boreal, *Oxalis* boreal, *Aegopodium* boreo-nemoral and drained peatland site types, July to September, very frequent; a most common Estonian *Lactarius* species; ectomycorrhizal with *Picea abies*.

Voucher specimens studied: TAA(M) 70417, 73035, 142316.

L. CHRYSORRHEUS Fr., Epicr. syst. mycol. (Upsaliae): 342. 1838

Syn.: *Lactarius theiogalus* (Bull.) Gray, Nat. Arr. Brit. Pl. (London) 1: 624. 1821, ss. orig., non auct.

Icon.: Basso p.319; CD 1579; Cetto2, 623; HVV p.123; K 13; KL 345; Korh p.172; Kriegl p.390; Lge 172A; March6, 552; MH 12; N 20.

Ecol. & Distr.: In oak and oak-mixed forests, in sandy and alvar pine forests with oak underwood, on Saaremaa Island only, August to October, rare (four localities); ectomycorrhizal with *Quercus robur*; calciphilous.

In the Red Data Book of Estonia: rare (categ. 3); protected by law (categ. II) (Kalamees & Vaasma, 1998; Järva et al., 1999).

Voucher specimens studied: TAA(M) 142202, 144036, 171945, 189601.

L. CITRIOLENS Pouzar, Česká Mykol. 22: 20. 1968

Syn.: *L. cilicioides* ss. auct. p.p.; *L. resimus* ss. auct. p.p.

Icon.: Basso p.423; CD 1518; HVV p.121; KL 327; Korh pp.95, 96; MH 6, as *L. cilicioides*; March6, 512; N 9, as *L. cilicioides*.

Ecol. & Distr.: In deciduous and mixed forests and wooded meadows, especially in eutrophic boreo-nemoral and eutrophic alvar forests in the vicinity of broadleaved trees, particularly *Quercus robur*, July to September, rather frequent, especially in West and North Estonia; ectomycorrhizal with deciduous trees.

Voucher specimens studied: TAA(M) 70667, 77005, 113231.

Comments: In earlier Estonian mycological literature, *L. citriolens* and *L. resimus* are treated together under the latter name. Thus, the real distribution of *L. citriolens* in Estonia requires further investigation.

L. CONTROVERSUS (Pers.: Fr.) Pers., Observ. mycol. (Lipsiae) 1: 39. 1800 [1799]

Icon.: Basso pp.339, 780; CD 1512; HVV p.137; K 15; KL 321; Korh p.102; Kriegl p.391; Lge 169C; March6, 504; MH 4; N 4; Phil p.77.

Ecol. & Distr.: in aspen and aspen-mixed forests and wooded meadows, July to September, rare; ectomycorrhizal with *Populus tremula*; in Estonia 5 localities in Pärnu, Lääne, Tartu and Viljandi counties.

In the Red Data Book of Estonia: rare (categ.3); protected by law (categ. II) (Kalamees & Vaasma, 1998; Järva et al., 1999).

Voucher specimens studied: TAA(M) 142051, 143864, 175647.

Comments: The spores of the specimens found in Estonia are subglobose to globose and specific to small, thus, different from larger ellipsoid spores referred to in literature (cf. Heilmann-Clausen, 1998; Basso, 1999).

L. CYATHULIFORMIS Bon, Docums Mycol. 8 (nos 30–31): 69. 1978

Syn.: *L. obscuratus* ss. auct. pl.

Icon.: Basso pp.615, 797; HVV p.211.

Ecol. & Distr.: In eutrophic paludifying,

minerotrophic mobile water swamp and floodplain alder and alder-mixed forests, only under *Alnus* spp., August and September, rather frequent; ectomycorrhizal with *Alnus incana*, *A. glutinosa*.

Voucher specimens studied: TAA(M) 80538, 114822, 171590.

L. DELICIOSUS (L.: Fr.) Gray, Nat. Arr. Brit. Pl. (London) 1: 624. 1821.

Syn.: ? *L. deliciosus* f. *rubescens* J. Aug. Schmitt, Z. Pilzk. 39: 238. 1974 [1973].

Icon.: CD 1552.

Ecol. & Distr.: In pine and pine-mixed forests, particularly in dune pine forests, very frequent, in North and West Estonia, especially in sandy forests on the seashore, August to November; ectomycorrhizal with *Pinus sylvestris*.

Voucher specimens studied: TAA(M) 50294, 113402, 141869.

Comment: Only *L. deliciosus* f. *rubescens* with milk turning reddish has been recorded in Estonia up to the present time.

L. DETERRIMUS Gröger, Westfälische Pilzbriefe 7: 10. 1968

Syn.: *L. deliciosus* var. *piceus* Smotl., Atlas hub jedlých a nejedlých: 218–219. 1947; *L. deliciosus* ss. auct. mult.; *L. semisanguifluus* ss. auct. p.p.

Icon.: Basso p.265; CD 1556; D p.954; HVV pp.151–153; K 18; KL 332; Korh pp. 110, 111; Kriegl p.353; Lge 177A-A1, as *L. semisanguifluus*; March6, 524; N 22, as *L. semisanguifluus*.

Ecol. & Distr.: In spruce and spruce-mixed forests, especially in eutrophic paludifying and minerotrophic mobile water swamp forests, in spots abundant, August to October; ectomycorrhizal with *Picea abies*; a most common Estonian *Lactarius* species.

Voucher specimens studied: TAA(M) 113282, 124451, 142468.

L. EVOSMUS Kühner & Romagn., Bull. trimest. Soc. mycol. Fr. 69: 361. 1954 [1953]

Syn.: *L. zonarius* ss. auct. p.p.

Icon.: Basso p.343; CD 1528; HVV pp.127, 129; K 20; KL 329; Korh p.101, as *L. zonarius*; March6, 516; N 15, as *L. zonarius*.

Ecol. & Distr.: In eutrophic boreo-nemoral and paludifying forests and wooded meadows, under *Populus tremula* and *Quercus robur*, August to October, very frequent, especially in

West Estonia; ectomycorrhizal with deciduous trees.

Voucher specimens studied: TAA(M) 114623, 146395, 177693.

Comments: In earlier Estonian mycological literature, *L. evosmus* was treated together with *L. zonarius* using the latter name. Also outside Estonia, these species have also been regarded as synonyms. A more thorough investigation has proved that these are two different, good taxonomic species. In northern countries (see Korhonen, 1984) and at least in West Estonia and on the Saaremaa Island, *L. evosmus* is a very frequent species (see Kalamees, 2000; Kalamees & Liiv, 2005).

L. FENNOSCANDICUS Verbeken & Vesterh., Cryptog. Mycol. 19 (1–2): 87. 1998

Syn.: *L. deterrimus* ss. Korhonen (in part), Suomen rouskut (Keuruu): 103–104. 1984.

Icon.: Basso p.268; HVV p.155; Korh pp.108 (lower left), 109, as *L. deterrimus*.

Ecol. & Distr.: In spruce and spruce-mixed forests, July and August, rare; ectomycorrhizal with *Picea abies*.

Voucher specimens studied: TAA(M) 145833, 147970, 172818.

Comments: The real distribution of *L. fennoscandicus*, that in Estonia has been treated together with *L. deterrimus*, requires further investigation. The species is probably frequent in our territory.

L. FLEXUOSUS (Pers.: Fr.) Gray, Nat. Arr. Brit. Pl. (London) 1: 624. 1821

Misapplied: *L. circellatus* (Kalamees & Liiv, 2005).

Icon.: Basso p.93; K 22; KL 338, as *L. circellatus*; Korh pp.151–154; MH 36; N 32.

Ecol. & Distr.: In coniferous, deciduous and mixed forests, rare, July to October, predominantly ectomycorrhizal with coniferous trees, but also related to deciduous trees (see Neuhoff, 1956; Michael & Hennig, 1970).

Voucher specimens studied: TAA(M) 73130, 74589, 185650.

L. FULIGINOSUS (Fr.: Fr.) Fr., Epicr. syst. mycol. (Upsaliae): 348. 1838

Syn.: *L. azonites* ss. auct. p.p.

Icon.: Basso p.655; CD 1601; HVV p.245; K 23; KL 353; KM 324; Korh p.182; Kriegl p.182.

Ecol. & Distr.: In deciduous and mixed forests, especially in *Vaccinium myrtillus* boreal,

Aegopodium boreo-nemoral and *Dryopteris* paludifying site types, July to October, rather rare; ectomycorrhizal with deciduous trees. Voucher specimens studied: TAA(M) 74661, 74949, 176313.

L. FULVISSIMUS Romagn., Bull. trimest. Soc. mycol. Fr. 69: 362. 1954 [1953]

Icon.: Basso pp.550, 551; HVV p.197; K 24; KL 351; Kriegl p.409; March6: 561.

Ecol. & Distr.: In broadleaved forests, parks, September and October, very rare; ectomycorrhizal with deciduous trees; calciphilous; in Estonia only one locality: Hiiu Co., Hiiumaa Island, Suuremõisa, in park, in years 2001 and 2004 (K. Kalamees and V. Liiv).

Voucher specimens studied: TAA(M) 172915, 185851.

L. GLAUDESCENS Crossl., Naturalist: 5. 1900

Syn.: *L. piperatus* var. *glaucescens* (Crossl.) Hesler & A.H. Sm., North American Species of *Lactarius* (Ann Arbor): 186. 1979; *L. piperatus* ss. auct. p.p.; *L. pe(a)rgamenus* ss. auct. mult. Icon.: Basso pp.727, 804; CD 1510, as *L. pergamenus*, 1511; HVV p.251; K 25; Korh pp.68–69, as *L. pargamenus*; March6, 502, as *L. pergamenus*, 503; MH 2, as *L. piperatus*; N 2.

Ecol. & Distr.: In deciduous and mixed forests, in eutrophic boreo-nemoral broadleaved forests, September, rare; ectomycorrhizal with deciduous trees.

Voucher specimens studied: TAA(M) 121655, 124189.

L. GLYCIOSMUS (Fr.: Fr.) Fr., Epicr. syst. mycol. (Upsaliae): 348. 1838

Icon.: Basso p.467; CD 1573; HVV p.171; K 26, KL 346; Korh p.168; Lge 171A, A1; N 42.

Ecol. & Distr.: In coniferous, deciduous and mixed forests, particularly in *Vaccinium vitis-idaea* and *V. myrtillus* oligo-mesotrophic boreal, *Oxalis* mesotrophic boreal, *Aegopodium* and *Hepatica* eutrophic boreo-nemoral, *Corylus* boreo-nemoral hillock, *Dryopteris* eutrophic paludifying and in drained peatland forest site types; July to October, very frequent; ectomycorrhizal with *Betula pendula* and *B. pubescens*.

Voucher specimens studied: TAA(M) 70457, 73031, 77232.

L. HELVUS (Fr.: Fr.) Fr., Epicr. syst. mycol. (Upsaliae): 347. 1838

Syn.: *L. aquifluus* Peck, Rep. N.Y. St. Mus. nat. Hist. 28: 50. 1876.

Icon.: Basso p.471; Cetto3, 1049; HVV p.175; K 27; KL 341; Phil p.86.

Ecol. & Distr.: In moist and oligotrophic paludifying coniferous and mixed forests, mixotrophic and ombrotrophic pine forests, wooded oligotrophic bogs, heaths, oligotrophic boreal heath pine forests, July to October, very frequent, in spots abundant; ectomycorrhizal with coniferous trees, especially *Pinus sylvestris*; a most common *Lactarius* in Estonia.

Voucher specimens studied: TAA(M) 50965, 70513, 71312.

L. HYSGINUS (Fr.: Fr.) Fr., Epicr. syst. mycol. (Upsaliae): 337. 1838

Syn.: *L. curtus* ss. auct. eur.

Icon.: Basso pp.141, 771; CD 1537, as *L. curtus*; HVV p.81; K 29; Korh pp.138–140; Kriegl p.395; Lge 175B; MH 28; N 37.

Ecol. & Distr.: In spruce and spruce-mixed forests, in September, very rare; ectomycorrhizal with coniferous trees, especially *Picea abies*; in Estonia only one locality: Valga Co., Lüllemäe, 9 Sept 1986 (K. Kalamees).

Voucher specimen studied: TAA(M) 143300.

L. LACUNARUM Romagn. ex Hora, Trans. Br. mycol. Soc. 43: 444. 1960

Syn.: *L. decipiens* QuéL., Comptes rendu Assoc. Franc. Avanc. Sci. 14: 448. 1885; *L. decipiens* var. *lacunarum* Romagn., Bull. trimest. Soc. mycol. Fr. 54: 223. 1938 (nom. nud.).

Icon.: Basso p.531; CD 1595; HVV p.199; K 32; KL 357; Korh pp.196, 197; Lge 174E; March6, 580.

Ecol. & Distr.: In eutrophic paludifying, peatland and drained peatland forests, in eutrophic boreo-nemoral and minerotrophic swamp forests, especially in swamp holes under *Alnus* spp., June to November, very frequent, in spots abundant; ectomycorrhizal with deciduous trees; a most common *Lactarius* in paludifying forests of Estonia.

Voucher specimens studied: TAA(M) 122486, 143288, 185655.

L. LEONIS Kytöv., Karstenia 24 (2): 46. 1984

Icon.: Basso p.435; HVV p.109; K 33; KL 328; Korh p.88.

Ecol. & Distr.: In spruce and spruce-mixed forests, in eutrophic alvar site type, also on wet ground, August and September, rare, in West and North Estonia, on Saaremaa and Hiiumaa

islands; ectomycorrhizal with *Picea abies*; calciphilous.

Voucher specimens studied: TAA(M) 113403, 182932, 185702, 185833.

L. LIGNYOTUS Fr., Nuovi Ann. Sci. Nat.: 25. 1857
Icon.: Basso pp.659, 799; CD 1605; Cetto2, 627;
HVV p.227; K 35; KM 326; Korh pp.181, 182;
Kriegl p.379; MH 62; N 47.

Ecol. & Distr.: In spruce and spruce-mixed forests, especially in *Oxalis* mesotrophic boreal site type, rather rare, August and September; ectomycorrhizal with *Picea abies*.

Voucher specimens studied: TAA(M) 74855, 176879, 180136.

L. LILACINUS (Lasch) Fr., Epicr. syst. mycol. (Upsaliae): 348. 1838

Icon.: Basso p.479; CD 1574; K 36; HVV p.169; KL 342; Korh p.169; March6, 550; N 39.

Ecol. & Distr.: In moist and wet alder (*Alnus* spp.) and deciduous forests with alder undergrowth, brushwoods, September and October, very frequent, in spots abundant; ectomycorrhizal with *Alnus incana* and *A. glutinosa*.

Voucher specimens studied: TAA(M) 71844, 113351, 183282.

L. LURIDUS (Pers.: Fr.) Gray, Nat. Arr. Brit. Pl. (London) 1: 625. 1821

Icon.: Basso p.196; K 37; HVV p.85.

Ecol. & Distr.: In wet deciduous forests, especially in eutrophic paludifying site type, August, very rare; ectomycorrhizae on deciduous trees; in Estonia only one locality: Lääne Co., Matsalu National Park, Meelva, 27 Aug 2005 (K. Kalamees).

Voucher specimen studied: TAA(M) 177202.

Comments: The real distribution of *L. luridus*, that in Estonia has been treated together with *L. uvidus*, requires further investigation. The species is probably more frequent in our territory.

L. MAIREI Malençon, Bull. trimest. Soc. mycol. Fr. 55: 34. 1939

Syn.: *L. mairei* var. *mairei*; *L. mairei* var. *zonatus* A. Pearson, Naturalist: 102. 1950; *L. pearsonii* Z. Schaeff., Česká Mykol. 22: 19. 1966.

Icon.: Basso p.375; CD 1526; HVV p.165; MH 8, 9.

Ecol. & Distr.: In oak and oak-mixed forests, in eutrophic boreo-nemoral site type, September, rare; ectomycorrhizal with *Quercus robur*;

calciphilous; in Estonia three localities in Saare, Lääne and Tartu counties.

In the Red Data Book of Estonia: rare (categ. 3); protected by law (categ.II) (Kalamees & Vaasma, 1998; Järva et al., 1999).

Voucher specimens studied: TAA (M) 113454, 121569, 171613.

L. MAMMOSUS Fr., Epicr. syst. mycol. (Upsaliae): 347. 1838

Syn.: *L. fuscus* Rolland, Bull. Soc. mycol. Fr. 15: 76. 1899; *L. confusus* S. Lundell, Fungi Exsiccati Suecici: 8. 1939.

Icon.: Basso p.486; HVV p.173; K 39; KL 347; Korh p.167; Kriegl p.416; March6, 548, as *L. fuscus*; MH 40; N 41.

Ecol. & Distr.: In coniferous and mixed forests, especially in sandy pine forests, in forest rides, ditch banks, forest roads and paths, in sandy ground, August to October, rather frequent; ectomycorrhizal with coniferous and deciduous trees.

Voucher specimens studied: TAA(M) 84507, 114629, 128282.

L. MUSTEUS Fr., Epicr. syst. mycol. (Upsaliae): 337. 1838

Icon.: Basso pp.172; HVV p.77; K 40; KL 337; Korh p.136; MH 25; N 25.

Ecol. & Distr.: In sandy pine and pine-mixed forests, especially in *Cladina* oligotrophic boreal heath site type, ombrotrophic drained bogs, August and September, rather rare; ectomycorrhizal with *Pinus sylvestris*.

Selected material studied: TAA(M) 114588, 121501, 185879.

L. NECATOR (Bull.: Fr.) Pers., Observ. mycol. (Lipsiae) 2: 42. 1800

Syn.: *L. turpis* (Weinm.) Fr., Epicr. syst. mycol. (Upsaliae): 335. 1838. *L. plumbeus* ss. auct. pl., nec ss. orig. (=nom. dub.).

Icon.: Basso p.69, as *L. turpis*; CD 1541; Cetto1, 181; HVV p.43, as *L. plumbeus*; K 75, as *L. turpis*; KL 340; KM 318, as *L. plumbeus*; Korh p.136; Kriegl p.375, as *L. turpis*; March6, 538; N 30. as *L. turpis*.

Ecol. & Distr.: In deciduous, coniferous and mixed forests, especially in birch (*Betula* spp.) and spruce (*Picea abies*) forests, particularly in *Vaccinium vitis-idaea* and *V. myrtillus* oligo-mesotrophic boreal, *Oxalis* mesotrophic boreal, *Aegopodium* eutrophic boreo-nemoral, *Dryopteris* eutrophic paludifying and drained

peatland site types, also on oligotrophic bog ground, July to October, very frequent, in spots abundant; ectomycorrhizal with deciduous and coniferous trees; a most common *Lactarius* species in Estonia.

Voucher specimens studied: TAA(M) 51001, 70160, 70356.

Comments: *L. necator* has been neotypified by Noordeloos & Kuyper (1999); according to these authors, this name has priority over *L. turpis*, and *L. plumbeus* is a name not applicable for this species.

L. OBSCURATUS (Lasch) Fr., Epicr. syst. mycol. (Upsaliae): 346. 1838

Syn.: *L. obscuratus* var. *obscuratus*; *L. obscuratus* var. *radiatus* (J.E. Lange) Romagn., Bull. trimest. Soc. mycol. Fr. 90: 145. 1974; *L. obnubilus* (Lasch) Fr., Hymenomyc. eur. (Upsaliae): 438. 1874.

Icon.: Basso pp.619, 622, 788; CD 1607; HVV p.207, 209; K 42; Korh p.201; Kriegl p.417; Lge 176C-C1, as *L. obnubilus*; March6, 583; MH 65; N 66.

Ecol. & Distr.: In eutrophic paludifying, minerotrophic swamp and floodplain alder and alder-mixed forests, July to October, rather frequent; ectomycorrhizal with *Alnus incana* and *A. glutinosa*.

Voucher specimens studied: TAA(M) 177267, 185595, 185596.

L. OLIVINUS Kytöv., Karstenia 24 (2): 49. 1984

Icon.: Basso p.439; HVV p.111; KL 326; Korh p.85.

Ecol. & Distr.: In spruce and spruce-mixed forests, mainly in alvar site type, August and September, rather frequent, in West Estonia and Saaremaa Island; ectomycorrhizal with *Picea abies*; calciphilous.

Voucher specimens studied: TAA(M) 75588, 76281, 177695.

L. PIPERATUS (L.: Fr.) Pers., Tent. disp. meth. Fung.: 64. 1797.

Syn.: *L. pergamenus* ss. auct. mult.

Icon.: Basso pp.731, 805; Cetto2, 637, as *L. pergamenus*; CD 1509; HVV p.249; K 46; KL 320; Korh pp. 67, 70; March6, 501; MH 1, as *L. pergamenus*; N 1; Phil p.77.

Ecol. & Distr.: In deciduous forests, especially in eutrophic boreo-nemoral broadleaved and alvar forests, under *Quercus robur*, mainly in North and West Estonia, July to September, rather

rare; ectomycorrhizal with deciduous trees; probably calciphilous.

Voucher specimens studied: TAA(M) 124190, 141814.

L. PUBESCENS (Fr.) Fr., Epicr. syst. mycol. (Upsaliae): 335. 1838

Syn.: *L. cilicioides* (Fr.: Fr.) Fr., Epicr. syst. mycol. (Upsaliae): 334. 1838, ss. auct.; *L. albus* J. Blum, Les Lactaires. Etudes Mycologiques (Paris): 115. 1976; *L. blumii* Bon, Docums Mycol. 9 (no. 35): 39. 1979.

Icon.: Basso p.383; CD 1523; D p.943; HVV p.161; K 50; KL 323; Korh pp.70, 72, 73; Kriegl p.370; March6, 509, as *L. blumii*; Phil p.78.

Ecol. & Distr.: In birch and birch-mixed forests, brushwoods, wooded meadows, parks, in mineral as well as paludifying ground, August to October, very frequent, in spots abundant; ectomycorrhizal with *Betula pendula* and *B. pubescens*; a most common *Lactarius* in Estonia.

Voucher specimens studied: TAA(M) 121539, 143910, 146340, 175491.

L. PYROGALUS (Bull.: Fr.) Fr., Epicr. syst. mycol. (Upsaliae): 339. 1838

Syn.: *L. hortensis* Velen., České houby 1: 163. 1920; ?*L. umbrinus* (Paulet) Fr., Epicr. syst. mycol. (Upsaliae): 339. 1838; *L. circellatus* ss. auct. p.p.

Icon.: Basso p.811; CD 1532; HVV p.53; K 51; KL 339; Korh p.133, as *L. hortensis*; Lge 174A; March6, 532; N 33.

Ecol. & Distr.: In deciduous, coniferous and mixed forests with *Corylus avellana* undergrowth, especially in *Oxalis* and *Corylus* site types, in parks, *Corylus*-brushwoods, August to October, very frequent; ectomycorrhizal with *Corylus avellana*; a most common *Lactarius* in Estonia.

Voucher specimens studied: TAA(M) 70823, 73442, 95617.

L. QUIETUS (Fr.: Fr.) Fr., Epicr. syst. mycol. (Upsaliae): 343 1838

Icon.: Basso pp.503; CD 1581; HVV p.193; K 53; KL 343; Korh pp.170, 171; Kriegl p.419; Lge 176E; March6, 556; MH 38; N 64; Phil p.88.

Ecol. & Distr.: In oak and oak-mixed forests, August to October, rather frequent; ectomycorrhizal with *Quercus robur*.

Voucher specimens studied: TAA(M) 74736, 177222, 185861.

L. REPRÆSENTANEUS Britzelm., Ber. naturw. Augsburg 28: 136. 1885

Icon.: Basso p.240; CD 1558; HVV p.105; K 54; Korh pp.121, 122–123; Kriegl p.365; March6, 525; MH 13; N 11.

Ecol. & Distr.: In spruce and spruce-mixed forests, September, rather rare; ectomycorrhizal with *Picea abies*.

Voucher specimens studied: TAA(M) 26386, 74830, 122520.

L. RESIMUS (Fr.: Fr.) Fr., Epicr. syst. mycol. (Upsaliae): 336. 1838

Icon.: Basso p.443; CD 1517; HVV p.117; K 55; Korh p.96, 97; Lge 170E; March6, 511; MH 10.

Ecol. & Distr.: In deciduous and mixed forests, especially near *Betula* spp., also in coniferous forests with birches, on acid ground, August and September, very rare; ectomycorrhizal with deciduous trees; in Estonia only two localities: Pärnu Co., Pölenmaa, Kivinina, 23 Aug 1966 and Lääne-Viru Co., Muraka Nature Reserve, Mustassaare (K. Kalamees).

Voucher specimens studied: TAA 74628, 76216.

Comments: Three different species – *L. resimus*, *L. aquizonatus* and *L. citriolens* – were treated together under the name *L. resimus* in earlier Estonian mycological literature. Most of these finds actually belong to the species *L. citriolens* or *L. aquizonatus*, the true *L. resimus* is very rare in Estonia.

L. ROSEOZONATUS (H. Post) Britzelm., Ber. naturw. Augsburg 30: 29. 1890

Syn.: *L. flexuosus* var. *roseozonatus* H. Post in Fr., Monogr. Hymenomyc. Suec. (Upsaliae) 2: 163. 1863.

Icon.: KL 336; Korh p.154.

Ecol. & Distr.: In aspen and aspen-mixed forests, also on oligotrophic paludifying ground, July to October, rather frequent; ectomycorrhizal with *Populus tremula*.

Voucher specimens studied: TAA(M) 74838, 123590, 182883.

L. RUFUS (Scop.: Fr.) Fr., Epicr. syst. mycol. (Upsaliae): 347. 1838

Icon.: Basso p 491; CD 1569; Cetto1, 180; HVV p.177; K 58; KL 349; Korh p.166; Kriegl p.422; Lge 176A; March6, 545; N 65; Phil p.86.

Ecol. & Distr.: In pine and pine-mixed forests, on sandy ground, in ombrotrophic bog and

wooded bog pine forests, especially in oligo- to mesotrophic boreal, oligotrophic bog and drained peatland site types, July to November, very frequent, in spots abundant; ectomycorrhizal with *Pinus sylvestris*; a most common and well-known *Lactarius* in Estonia.

Voucher specimens studied: TAA(M) 70298, 141943, 146156a.

LACTARIUS SANGUIFLUUS (Paulet) Fr., Epicr. syst. mycol. (Upsaliae): 341. 1838

Icon.: Basso p.305; CD 1549; D p.952; HVV p.147; K 62; KM 323; N 24.

Ecol. & Distr.: In coniferous forests, preferably in eutrophic alvar pine, rarer in spruce forests, August to October, rather rare, only in North and West Estonia; ectomycorrhizal with coniferous trees, especially *Pinus sylvestris*; calciphilous.

Voucher specimens studied: TAA(M) 50654, 123327, 182538.

L. SCOTICUS Berk. & Broome, Ann. Mag. nat. Hist., Ser. 5, 3: 208. 1879

Syn.: *L. torminosus* var. *gracillimus* J.E. Lange, Dansk bot. Ark. 9 (no 6): 98. 1938; *L. favrei* H. Jahn, Int. J. Mycol. Lichenol. 1 (1): 98. 1982; *L. pubescens* var. *scoticus* (Berk. & Broome) Krieglst., Beitr. Kenntn. Pilze Mitteleur. 7: 69. 1991; *L. pubescens* ss. auct. p.p.

Icon.: Basso p.387; HVV p.163; K 63; Korh p.72; Lge 169E, as *L. torminosus* var. *gracillimus*; March6, 508, as *L. pubescens*.

Ecol. & Distr.: In eutrophic paludifying and minerotrophic stagnant water swamp to mixotrophic bog birch and birch-mixed forests, brushwoods, wooded meadows, especially in mixotrophic bog site type, also in drained peatland forests, only on paludifying ground, August and September, frequent; ectomycorrhizal with *Betula pubescens*.

Voucher specimens studied: 143893, 177624, 185817.

L. SCROBICULATUS (Scop.: Fr.) Fr., Epicr. syst. mycol. (Upsaliae): 334. 1838

Icon.: Basso p.410, 446; CD 1520; Cetto1, 183; HVV p.107; K 64; KL 325; Korh pp.86–87; Kriegl p.373; March6, 513; N 10.

Ecol. & Distr.: In coniferous and mixed forests, especially in eutrophic boreo-nemoral, eutrophic paludifying and minerotrophic swamp to mixotrophic bog spruce and spruce-mixed forests, in *Calla* swamp site type, August to

November, very frequent, in spots abundant; ectomycorrhizal with *Picea abies*.

Voucher specimens studied: TAA(M) 114626.

L. SEMISANGUIFLUUS R. Heim & Leclair, Revue Mycol., Paris 15; 79. 1950

Icon.: Basso p.289; Cetto 1 172; CD 1555; HVV p.149; K 65; Kriegl p.358; March 6, 523.

Ecol. & Distr.: In pine and pine-mixed forests, especially in oligotrophic boreal heath, oligo-mesotrophic boreal and eutrophic alvar forests, August to October, rather rare; ectomycorrhizal with *Pinus sylvestris*.

Voucher specimens studied: TAA(M) 120687, 124463, 143395.

L. SPHAGNETI (Fr.) Neuhoff, Pilze Mitteleuropas (Stuttgart): 181. 1956

Icon.: Basso p.507; D p.991; HVV p.187; Korh pp.199, 200; March 6, 554; N 61.

Ecol. & Distr.: In oligotrophic paludifying and drained peatland coniferous forests, among *Sphagnum* spp., September, very rare; ectomycorrhizal with coniferous trees; in Estonia only two localities in Jõgeva Co.: near Mõisamaa, 4 Sept 1960 (K. Kalamees) and Endla Nature Reserve, Tooma, 3 Sept 2005 (M. Vaasma).

Voucher specimens studied: TAA(M) 71730, 183024.

L. SPINOSULUS Quél. & Le Bret., Bull. Soc. Amis Sci. Nat. Rouen, Série II 2 (15): 168. 1879

Icon.: Basso p.394; D p.970; HVV p.167; K 68; Korh p.172; March 6: 551, MH 45; N 7.

Ecol. & Distr.: In coniferous, deciduous and mixed forests, parks, July to September, rather rare, usually in large groups; ectomycorrhizal with *Picea abies* and *Betula pendula*.

Voucher specimens studied: TAA(M) 73133, 73225, 124521.

L. SUBUMBONATUS Lindgr., Bot. Notiser: 200. 1845

Syn.: *L. serifluus* ss. auct. pl.; *L. cimicarius* ss. auct.

Icon.: Basso p.606; CD 1591; HVV p.225; Lge 173B, as *L. cimicarius*; March 6, 576.

Ecol. & Distr.: In broadleaved forests, especially eutrophic alvar site type, September, very rare; ectomycorrhizal with *Quercus robur*; calciphilous; in Estonia only one locality: Hiiu Co., Hiiumaa Island, Sarve Peninsula, Sarve Nature Reserv, 14 Sept 2001 (V. Liiv).

Voucher specimen studied: TAA 172914.

L. SYRINGINUS Z. Schaef., Česká Mykol. 10: 171. 1956

Icon.: HVV p.61

Ecol. & Distr.: In deciduous and mixed forests, mainly in eutrophic boreo-nemoral site type, August, very rare; ectomycorrhizal with *Betula* spp.; in Estonia only one locality: Lääne Co., Matsalu National Park, Matsalu, 26 Aug 2005 (K. Kalamees).

Voucher specimen studied: TAA(M) 177189.

Comments: Further studies must demonstrate, is this species not an extreme variety of *L. vietus*.

L. TABIDUS Fr., Epicr. syst. mycol. (Upsaliae): 346. 1838

Syn.: *L. thei(j)ogalus* ss. auct. pl.; *L. subdulcis* ss. auct. p.p.

Icon.: Basso p.635; CD 1594, as *L. theiogalus*; HVV p.201; K 71; KL 355, as *L. theiogalus*; Korh pp.195–196, as *L. theiogalus*; N 57, as *L. theiogalus*.

Ecol. & Distr.: In moist and paludifying coniferous, deciduous and mixed forests, June to October, very frequent, in spots abundant; ectomycorrhizal with deciduous and coniferous trees, prefers *Betula* spp.; a most common *Lactarius* in Estonia.

Voucher specimens studied: TAA(M) 71611, 73132, 185579.

L. TORMINOSUS (Schaeff.: Fr.) Gray, Nat. Arr. Brit. Pl. (London) 1: 623. 1821

Icon.: Basso pp.402, 403, 784; D p.942; K 72, KL 322; Korh pp.71, 74; Kriegl p.373; Lge 169A; MH 5; N 6; Phil p.78;

Ecol. & Distr.: In birch and birch-mixed forests, mainly on mineral ground but also on oligotrophic bog ground, especially in *Vaccinium vitis-idaea* and *V. myrtillus* oligo-mesotrophic boreal, *Oxalis* mesotrophic boreal, *Aegopodium* eutrophic boreo-nemoral, *Corylus* meso-eutrophic boreo-nemoral and *Dryopteris* eutrophic paludifying site types; July to November; very frequent; predominantly ectomycorrhizal with *Betula pendula*; a most common *Lactarius* in Estonia. Voucher specimens studied: TAA(M) 70350, 121574, 142440, 177160.

L. TRIVIALIS (Fr.: Fr.) Fr., Epicr. syst. mycol. (Upsaliae): 337. 1838

Icon.: Basso p.153; CD 1547; KL 334; Korh pp.157, 158; Kriegl p.401; March 6, 544; N 35.

Ecol. & Distr.: In coniferous, deciduous and

mixed forests, in all forest site types, also in eutrophic paludifying and ombrotrophic forests, July to November; very frequent; ectomycorrhizal with coniferous and deciduous trees; a most common *Lactarius* species in Estonia.

Voucher specimens studied: TAA(M) 70338, 70418.

L. UTILIS (Weinm.) Fr., Monogr. Hymenomyc. Suec. (Upsaliae) 2 (2): 159. 1863

Icon.: Basso p.184; HVV p.73; KL 335; Korh p.156.

Ecol. & Distr.: In coniferous, deciduous and mixed forests, in all forest types, also in oligotrophic bog and eutrophic paludifying forests, July to October, very frequent; ectomycorrhizal with coniferous and deciduous trees; a most common *Lactarius* species in Estonia.

Voucher specimen studied: TAA(M) 71860.

L. UVIDUS (Fr.: Fr.) Fr., Epicr. syst. mycol. (Upsaliae): 338. 1838

Icon.: Basso p. 213; CD 1566; HVV p.83; K 76; KL 344; Kriegl p. 366; March6, 530; N 13, 13a.

Ecol. & Distr.: In moist and paludifying deciduous, coniferous and mixed forests, in peatland forests, mainly in *Vaccinium myrtillus* oligo-mesotrophic, *Oxalis* mesotrophic boreal, *Aegopodium* eutrophic boreo-nemoral, *Dryopteris* eutrophic paludifying, minerotrophic swamp and drained peatland forests, August to October, very frequent; ectomycorrhizal with deciduous and coniferous trees.

Voucher specimens studied: TAA(M) 70574, 71017, 71825.

L. VELLEREUS (Fr.: Fr.) Fr., Epicr. syst. mycol. (Upsaliae): 340. 1838, **VAR. VELLEREUS**

Syn.: *L. vellereus* var. *velutinus* (Bertill.) Bataille, Hist. Lich. Sticta: 35. 1908.

Icon.: Basso pp.715, 827; CD 1513; D p.934; HVV p.253; K 77; Kriegl p.361; Lge 170B; March6, 505; N 3; Phil p.76.

Ecol. & Distr.: In deciduous forests, August, very rare; ectomycorrhizal with deciduous trees; in Estonia only one locality: Valga Co., Karula National Park, Rebase, under *Populus tremula*, 23 Aug 1984 (S. Veldre).

Voucher specimen studied: TAA(M) 141465.

Comments. In earlier Estonian mycological literature, *L. vellereus* is described as a typical species in Estonia, it was not separated from *L. bertillonii*. The latter species is actually

a common fungus in our territory, while *L. vellereus* altogether is a rare species.

L. VIETUS (Fr.: Fr.) Fr., Epicr. syst. mycol. (Upsaliae): 344 1838

Icon.: Basso p.129; CD 1542; HVV p.59; K 78; KL 348; Korh p.135; Kriegl p.402; Lge 177D; March6, 539; N 34; Phil p.86.

Ecol. & Distr.: In deciduous and mixed forests, especially in birch and birch-pine forests, also on oligotrophic bog ground, in all forest types, in spots abundant, July to October, very frequent; ectomycorrhizal with *Betula* spp.

Voucher specimens studied: TAA(M) 71500, 73186, 176132.

L. VIOLASCENS (J. Otto: Fr.) Fr., Epicr. syst. mycol. (Upsaliae): 342 1838

Syn.: *L. luridus* ss. auct. p.p.

Icon.: Basso pp.217, 816; CD 1564; HVV p.87; K 79; Kriegl p. 367; Lge 173C; March6, 528; MH 15: N 14.

Ecol. & Distr.: In deciduous, coniferous and mixed forests, mainly in broadleaved forests, August and September, rare; ectomycorrhizal with deciduous trees.

Voucher specimens studied: TAA(M) 76387, 144334, 146402.

L. VOLEMUS (Fr.: Fr.) Fr., Epicr. syst. mycol. (Upsaliae): 344. 1838.

Icon.: Basso p.703; CD 1583; Cetto1, 176; HVV p.247; K 80; Korh pp.184, 185; Kriegl p.429; Lge 176G; MH 54; Phil p.88.

Ecol. & Distr.: In deciduous, especially broadleaved forests, August and September, rare; ectomycorrhizal with deciduous trees.

Voucher specimens studied: TAA(M) 76920, 114576, 182733.

L. ZONARIOIDES Kühner & Romagn., Fl. Analyt. Champ. Super. (Paris): 474. 1953

Syn.: *L. bresadol(i)anus* ss. auct.; *L. insulsus* ss. auct.

Icon.: Basso p.359; CD 1531, as *L. bresadolanus*; HVV p.133; K 81; Korh pp.101–102, as *L. bresadolianus*; Kriegl p.389, as *L. bresadolanus*; March6, 519; N 18.

Ecol. & Distr.: In coniferous forests, September, very rare; ectomycorrhizal with *Picea abies*; in Estonia only one locality: Lääne-Viru Co., Uhtna, 23 Sept 1992 (K. Kalamees, M. Vaasma & A. Jakobson).

Voucher specimen studied: TAA(M) 145561

L. ZONARIUS (Bull.) Fr., Epicr. syst. mycol. (Upsaliae): 336. 1838

Syn.: *L. evosmus* ss. auct. p.p.; *L. insulsus* ss. auct. pl.

Icon.: Basso p.367; CD 1529; HVV p.131; K 82; KL 330; Kriegl p.403; March6, 517; N 17, as *L. insulsus*.

Ecol. & Distr.: In deciduous forests, wooded meadows, under *Quercus robur* and *Populus tremula*, September, rather rare; ectomycorrhizal with deciduous trees.

Voucher specimens studied: TAA(M) 121667, 145945, 177272.

Comments: In earlier Estonian mycological literature, the species *L. zonarius* is considered as a frequent species in Estonia. Unfortunately, it was then not differentiated from the species *L. evosmus*. According to the most recent data available, *L. evosmus* is frequent and *L. zonarius* is rare in Estonia. The true distribution of *L. zonarius* and its mycorrhizal relation to tree species requires further investigation.

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