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THE MYCOLOGICAL FLORA OF THE NATURE RESERVE "BOSCO ROCCONI"
(ITALY, SOUTHERN TUSCANY): A CONTRIBUTION, 8th part

Abstract

The list of the species belonging to order Russulales, found in the nature reserve "Bosco Rocconi", is here reported.

Riassunto

È riportata l'ottava parte della lista delle specie di Agaricomycetes trovate nella riserva naturale "Bosco Rocconi" (GR). Nel presente articolo è trattato l'ordine Russulales.

7th part: (CLERICUZIO, 2014).

RUSSULALES

I. Russulaceae

***Lactarius* Fr.**

A recent genetic study (see DE CROP ET AL., 2017, and references therein) has indicated the independence of sect. *Albati* and *Volemi*, which have been separated as a distinct genus, *Lactifluus* (Pers.) Roussel.

352. *Lactarius acerrimus* Britzelm.

Frequency: uncommon

Distribution: T

353. *Lactarius azonites* (Bull.) Fr. [= *L. fuliginosus* var. *albipes* (J.E. Lange) Bon]

Frequency: common

Distribution: T-M

354. *Lactarius chrysorrheus* Fr.

Frequency: rather common

Distribution: T-M

355. *Lactarius decipiens* Quél.

Frequency: occasional

Distribution: T

356. *Lactarius fulvissimus* Romagn.

Frequency: uncommon

Distribution: T

357. *Lactarius luridus* (Pers.) Gray

Frequency: uncommon

Distribution: M

Notes: this taxon has often incorrectly been reported as *L. uvidus* (Fr.) Fr., a species typical of boreal or north temperate vegetation, mainly associated to *Betula* sp., whereas *L. luridus* is a submediterranean species, typical of *Quercetalia pubescentis*. The morphological differences between the two taxa are discussed in BASSO (1999).

358. *Lactarius quietus* (Fr.) Fr.

Frequency: rather rare

Distribution: T

359. *Lactarius quieticolor* Romagn.

Frequency: 1 collection (Rocchette di Fazio)

Distribution: T

Notes: a small plantation of *Pinus* sp. at Semproniano (Rocchette di Fazio) hosts a limited number of pine-allied species, as this one, *Suillus collinitus* (Fr.) Kuntze, and few others.

360. *Lactarius subumbonatus* Lindgr.

Frequency: fairly frequent

Distribution: M

361. *Lactarius zonarius* (Bull.) Fr.

Frequency: common

Distribution: T

Lactifluus (Pers.) Roussel

This genus is mainly distributed in the tropics (DE CROP ET AL., 2017), as Africa, South-East Asia, and Central-Southern America, with only a few representatives growing in temperate regions, as Europe and North America.

362. *Lactifluus piperatus* (L.) Roussel

Frequency: common

Distribution: T

363. *Lactifluus vellereus* (Fr.) Kuntze

Frequency: rather rare

Distribution: T

364. *Lactifluus volemus* (Fr.) Kuntze s.l.

Frequency: occasional

Distribution: T

Russula Pers.

365. *Russula acrifolia* Romagn.

Frequency: frequent

Distribution: T

366. *Russula albonigra* (Krombh.) Fr. var. *pseudonigricans* (Romagn.) Bon

Frequency: rare

Distribution: M

367. *Russula amoenicolor* Romagn.

Frequency: occasional

Distribution: M

368. *Russula anatina* Romagn.

Frequency: 1 collection

Distribution: T-M

Notes: This rather rare and localized species seems restricted to thermophilous oaks. Only a few growing sites are reported in Tuscany, and in Italy on the whole.

369. *Russula atropurpurea* (Krombh.) Britzelm. (= *R. krombholzii* Shaffer)

Frequency: uncommon

Distribution: T

370. *Russula aurea* Pers.

Frequency: occasional

Distribution: T

371. *Russula aurora* Bres. (= *R. rosea* Quél.; *R. velutipes* Velen.)

Frequency: uncommon

Distribution: T

372. *Russula carminipes* Romagn.

Frequency: rather rare

Distribution: T-M

373. *Russula carpini* Girard & Heinem.

Frequency: 1 collection

Distribution: T

374. *Russula convivialis* Sarnari

Frequency: rather rare

Distribution: T-M

Notes: One collection of this taxon from Rocconi has been discussed in MICHELIN (2007). It is an uncommon and rather localized species, mainly associated to thermophilous oaks.

375. *Russula cuprea* Lange

Frequency: uncommon

Distribution: T

376. *Russula cyanoxantha* (Schäff.) Fr.

Frequency: rare

Distribution: T

377. *Russula decipiens* (Singer) Kühner & Romagn.

Frequency: frequent

Distribution: T

378. *Russula delicata* Fr. sl.

Frequency: common

Distribution: T

379. *Russula fragilis* Fr.

Frequency: common

Distribution: T

380. *Russula galochroides* Sarnari

Frequency: occasional

Distribution: M

381. *Russula globispora* (Blum) Bon

Frequency: frequent

Distribution: T-M

382. *Russula graveolens* Romell

Frequency: occasional

Distribution: T

383. *Russula grisea* Fr. (incl.: *R. stenothrica* Romagn.)

Frequency: occasional

Distribution: T

Notes: It is now widely accepted that *R. stenothrica* is only a green form of *R. grisea*.



Russula anatina

Foto di Marco Clericuzio



Russula galochroides

Foto di Marco Clericuzio



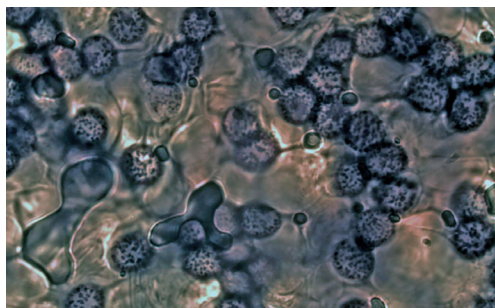
Russula lutensis

Foto di Marco Clericuzio



Russula lutensis

Foto di Marco Clericuzio



Russula lutensis. Spore.

Foto di Marco Clericuzio

384. *Russula heterophylla* (Fr.) Fr.

Frequency: frequent

Distribution: T

385. *Russula ilicis* Romagn., Chevassut & Privat

Frequency: 1 collection

Distribution: M

386. *Russula laeta* Jul. Schäff.

Frequency: uncommon

Distribution: T

387. *Russula lepida* Fr.

Frequency: frequent

Distribution: T

388. *Russula lividopallescens* Sarnari

Frequency: 1 collection

Distribution: T-M

Notes: This rare species was described by Sarnari in 2001, and afterwards, it has been reported from a few sites in Central-Northern Italy, and from Spain.

389. *Russula lutensis* Romagn.

Frequency: rare

Distribution: T-M

Description of our findings:

Cap 2.5-4.5 (6.5) cm, convex-plane, soon depressed at centre; at the end strongly depressed. Margin thin, constantly striate, even if shortly so. Surface mat, but more brilliant in wet weather, wrinkled. Colour mostly neat red, cherry red, also pink red or orange red, with yellow or whitish spots all over.

Gills rather spaced, adnate to sub-decurrent, narrow, fragile, often interveined in old specimens; whitish at the beginning, pale yellow at maturity.

Spores print pale yellow, IVa-b of the Romagnesi code, rarely lighter (IIIc).

Stem cylindrical, tapering at base, solid, but soon hollow, brittle, fragile. White, with little or no tendency to turn yellow; once found to turn greyish in very moist weather.

Flesh fragile, inconsistent, unchanging; smell faint, fruity, like that of *Pelargonium* flowers; taste completely mild.

Spores subglobose, $6.7-8.0 \times 6.0-7.0 \mu\text{m}$ with medium-high warts, up to $1 \mu\text{m}$, often isolated, but also with sparse short connections and ridges, a few more markedly connected and with thick ridges. In the average, a rather variable spore design, as it is commonplace in sect. *Tenellae*. In my personal experience of six collections, more than 90% of spores can be described as having isolated warts (about 60%) or having short ridges (30-35%), but actually there is a certain number (5-10%) having strongly connected warts.

Cuticle with fusiform dermatocystidia, $4-8 \mu\text{m}$ wide, generally with 1-2 septa, sometimes without septa, or with more than two septa. Hairs cylindrical, slender, $2.5-3.5 \mu\text{m}$ wide, tapering at top, more rarely clavate; mostly little septate, but some of them may be pluri-septate, depending on the collection and probably on the cap point where the observation is made (if closer to centre or to edge). Some diverticula may be present on the hairs, but they are often sparse or absent.

Habitat typically found in oak woodlands, mainly *Quercus cerris* L. and *Q. pubescens* Willd. in the Apennines (but also common under *Q. suber* L. according to SARNARI, 2005), very often at wood edges, path sides, and in small, open oak groves. It prefers clayly soils, but can be found both on siliceous and on calcareous terrains. In Central, Atlantic France, where it is rather rare according to Romagnesi, it is also found under *Carpinus betulus* L.

Besides the two collections at Rocconi, we have also one collection at Scansano (Poggioferro), Follonica (Montioni), both in Tuscany and in the province of Grosseto; one from Latium, Roma (Ardeatina); Fabrizio Boccardo kindly sent us one collection of his, from Liguria (Sassello, Savona). SARNARI (2005) reports it as common in the cork-oak woods of Roccastrada (M. Lattaia), in the Grosseto province, plus some other findings in Latium and Umbria.

Notes: notwithstanding Romagnesi places this russula in sect. *Coccineae* (a section to be abandoned), and Sarnari in sect. *Polychromae*, I am convinced that *R. lutensis* is a typical *Tenellae* of subsection *Rhodellinae*. The characters that speak to this placement are the fragile and small consistence (only rarely more robust and larger), the striate cap edge, the septate Dcy's; the pure red colours and the unchanging flesh indicate its belonging to *Rhodellinae*. This species is not

rare in Central Italy, and probably in the whole Southern-Central Europe, but is often mistaken for other taxa. In particular, the collections reported from Manciano (Marsiliana), Tuscany, by SARNARI (2005) as *R. impolita* (Romagn.) Bon, fit well with the present concept of *R. lutensis*, owing to the cap colour, the small dimensions, and the spore print; the microscopic characters are also completely compatible with *R. lutensis*. Sarnari likely excluded this species owing to the absence of diverticula on the cuticle hairs: anyway, this character is variable, overrated, and by no means can be used alone as a differentiating character. Moreover, *R. impolita* is a ghost, unclear species, probably only a form of *R. font-queri* Singer, a *Betula* allied *Tenellae*, at least in Romagnesi's idea, who described the taxon as a variety of this latter species.

From one of the samples (Montioni 16/10/2014), we could extract total DNA, and then amplify and sequence the ITS region of *rDNA*. Phylogenetic analysis (data not shown), placed our sequence in the close vicinity of a collection named *R. font-queri*, and nested in a larger clade containing some *Tenellae*, as *R. cessans* A. Pearson and *R. laricina* Velen. (but also *R. curtipes* F.H. Møller & Jul. Schäff., a typical *Polychromae*). However, most sequences present in GenBank, contained in this clade, are from uncultured, unnamed clones; in addition, the *Russula* genetic sampling is so scant to date, not to allow any safe conclusion about the systematic position of *R. lutensis*.

390. *Russula luteotacta* (Fr.) Fr.

Frequency: frequent

Distribution: T

391. *Russula maculata* Quél.

Frequency: occasional

Distribution: T

392. *Russula melliolens* (Fr.) Fr.

Frequency: rather rare

Distribution: T

393. *Russula minutula* Velen.

Frequency: rather rare

Distribution: T

394. *Russula nigricans* Fr.

Frequency: occasional

Distribution: T

395. *Russula odorata* Romagn.

Frequency: frequent

Distribution: T

396. *Russula parodorata* Sarnari

Frequency: frequent

Distribution: M

397. *Russula pelargonica* Niolle

Frequency: occasional

Distribution: T

398. *Russula persicina* Krombh.

Frequency: frequent

Distribution: T

b. *Russula persicina* f. *alboflavella* Chiarello & Battistin

Frequency: rare

Distribution: M



Russula persicina f. *alboflavella*

Foto di Marco Clericuzio

Notes: this interesting taxon was recently described to accommodate a collection of a yellow-orange acrid *Russula*, from nearby Capalbio (BATTISTIN & CHIARELLO, 2015), also from the Grosseto province. We had two collections of this mushroom from Rocconi, but we were unsafe about its identity. The attribution to an intraspecific taxon of common *R. persicina*, however, will have to be demonstrated by DNA analysis.

399. *Russula praetervisa* Sarnari (= *R. pectinatoides* Peck p.p.)

Frequency: common

Distribution: T

400. *Russula pseudoaeruginea* (Romagn.) Kuyper & Vuure

Frequency: occasional

Distribution: T-M

401. *Russula purpurata* (Crawshay) Romagn.

Frequency: occasional

Distribution: T

Notes: This species is considered only a form of *R. graveolens* Romell by several authors (see for example SARNARI, 2005). However, as genetic studies on *Viridantinae* are missing, we prefer to treat it as a separate species, until contrary evidence.

402. *Russula risigallina* (Batsch) Sacc. [= *R. chamaeleontina* (Lasch) Fr.]

Frequency: frequent

Distribution: T

403. *Russula rubra* (Fr.) Fr.

Frequency: 1 collection

Distribution: T

404. *Russula rubroalba* (Singer) Romagn.

Frequency: occasional

Distribution: T

405. *Russula rutila* Romagn.

Frequency: occasional

Distribution: T-M

406. *Russula seperi* Dupain

Frequency: uncommon

Distribution: T

407. *Russula sororia* Fr.

Frequency: occasional

Distribution: T

408. *Russula subfoetens* W.G. Sm.

Frequency: frequent

Distribution: T

409. *Russula sublevispora* (Romagn.) Kühner & Romagn.

Frequency: 1 collection

Distribution: T

Notes: A particularly rare and localized species, one of the most important pieces of biodiversity of the reserve. To be protected.

410. *Russula vesca* Fr.

Frequency: common

Distribution: T

411. *Russula vinosobrunnea* (Bres.) Romagn.

Frequency: common

Distribution: T

412. *Russula violeipes* Quél.

Frequency: fairly frequent

Distribution: T

413. *Russula virescens* (Schaeff.) Fr.

Frequency: occasional

Distribution: T

414. *Russula zvarae* Velen.

Frequency: uncommon

Distribution: T-M

II. Auriscalpiaceae

Lentinellus P. Karst.

415. *Lentinellus ursinus* (Fr.) Kühner

Frequency: rather frequent

Distribution: T

III. Stereaceae

Stereum Pers. ex Gray

416. *Stereum hirsutum* (Willd. ex Fr.) Gray

Frequency: common

Distribution: T

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Acknowledgments

WWF Italia is kindly acknowledged for having made the present research possible. We would like to thank Francesco Dovana (Alessandria) for the molecular work on *Russula lutensis*.

References

- BASSO M.T. – 1999: *Lactarius*. Fungi Europaei 7. Ed. Candusso, Alassio.
- BOCCARDO F. & OSTELLARI C. – 2013: *Russule rare o interessanti di Liguria*. FND, 65, Ed. Candusso. Alassio.
- BON M. – 1988: *Clé monographique des russules d'Europe*. Docum. Mycol. 18: 1-120.
- CHIARELLO O. & BATTISTIN E. – 2015: *Russula persicina* f. *alboflavella* f. *nov.* RdM 1: 35-41.
- CLERICUZIO M. – 2014: *The mycological flora of the nature reserve "Bosco Rocconi" (Italy, Southern Tuscany): a contribution. 7th part*. Micol. Veget. Medit. 29: 141-164.
- DE CROP E., NUYTINCK J., VAN DE PUTTE K., WISITRASSAMEEWONG, K., HACKEL J., STUBBE D., HYDE K.D., ROY M., HALLING R.E., MOREAU P.-A., EBERHARDT U. & VERBEKEN A. – 2017: *A multi-gene phylogeny of Lactifluus (Basidiomycota, Russulales) translated into a new infrageneric classification of the genus. Persoonia* 38: 58–80.
- MICHELIN L. – 2007: *Russula convivialis* et *R. rhodomelanea*, deux russules peu fréquent des "sentieres Sarnariens". Bull. Trimes. Soc. Mycol. Fr. 123: 11-28.
- ROMAGNESI H. – 1985: *Les Russules d'Europe et d'Afrique du nord*. J. Cramer, Vaduz.
- SARNARI M. – 1998: *Monografia illustrata del genere Russula in Europa*, vol. 1. AMB Centro Studi Micologici, Vicenza.
- SARNARI M. – 2005: *Monografia illustrata del genere Russula in Europa*, vol. 2. AMB Centro Studi Micologici, Vicenza.

Siti internet

<http://asociacionvallisoletanademicologia.com/wordpress/wp-content/uploads/2015/02/Russulalividopallescens.pdf>