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## SOME ADDITIONS TO THE MACROFUNGI OF MALTA

Michael Briffa<sup>1</sup>

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### ABSTRACT

Twenty two macrofungi are recorded for the first time as occurring in Malta: *Amanita echinocephala*, *A. gracilior*, *Volvariella murinella*, *Psathyrella spintrigera*, *Pluteus thomsonii*, *Pleurotus pulmonarius*, *Tricholoma caligatum*, *Mycena galericulata*, *M. alba*, *Lactarius atlanticus*, *L. tesquorum*, *Xerocomus dryophilus*, *Gyroporus castaneus*, *Omphalotus olearius*, *Macrotyphula juncea*, *Ramariopsis kunzei*, *Phellodon niger*, *Lycoperdon lividum*, *Myxarium nucleatum*, *Auricularia auricula-judae*, *Paxina leucomelas*, and *Peziza proteana* fma. *sparassoides*. The last one cancels and replaces previous erroneous records of *Sparassis laminosa*. Former records of *Psathyrella candolleana* are doubtful. The examined specimens together with their respective photographs, taken *in situ*, are deposited in the author's herbarium (MB).

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### INTRODUCTION

Throughout the eighties and the first half of the nineties I collected and preserved a considerable amount of material of macrofungi, mainly from the few wooded localities we have in Malta, classified it and recorded the respective data. I have also taken photographs *in situ* of practically all the specimens collected. However, in many cases I still find it difficult to have them accurately determined at species level.

Modern natural taxonomy is no longer based solely on spore-colour and simple macroscopic morphology. Sometimes accurate identification is a very difficult and painstaking process, involving a lot of microscopic analysis and the use of chemical reagents to distinguish between similar-looking or closely related species. Ideally identification should be left to competent, professional mycologists. Unfortunately, however, mycologists scarcely ever visit Malta, the literature we have available is very limited, we lack expensive sophisticated equipment, and most of all we have no local professional expertise.

One of the main problems I have experienced is the fact that most of the material collected is preserved in 9% formaldehyde, in glass jars, which are unsuitable for mailing to expert colleagues abroad. In this condition the material cannot be tested with chemical reagents, and its smell and taste cannot be perceived. It can only be examined microscopically.

Local efforts at identification were first attempted in the

first half of the eighties when a good number of the collected specimens of species not yet recorded in Malta were published in Briffa & Lanfranco (1986). In the case of polypores, the material could be easily dried, and the exsiccata were later examined and determined by polyporologists abroad and published in Briffa (2001).

In the present work some previously unrecorded species, which could now be determined with reasonable certainty, are published. Their identification is based on the actual herbarium material as described here, the respective photographs and the recorded field observations. In a few cases where exsiccata were available, help from mycologists abroad was sought and obtained.

The species being published here are new records for Malta, meaning they do not appear in the local literature published by Zerapha S. (1831), Gulia G. (1859), Borg G. (1899), Borg G. (1901), Saccardo, P.A. (1912), Saccardo, P.A. (1913), Saccardo, P.A. (1914), Sommier, S. & Caruana Gatto A. (1914), Borg J. (1922), Lanfranco E. (1972), Briffa M. & Lanfranco, E. (1986), and Briffa M. (2001).

Considerable, outstanding, old material in my herbarium belonging to the genera *Amanita*, *Agaricus*, *Lepiota* (and allied genera), *Coprinus*, *Psathyrella*, *Inocybe*, *Pleurotus*, *Marasmius*, *Mycena*, *Tricholoma*, *Clitocybe*, *Hygrocybe*, *Russula*, *Boletus*, *Suillus*, *Xerocomus*, *Peziza* and other Ascomycete genera is still awaiting accurate identification at species level.

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<sup>1</sup> 'Durham House' 20, Creche Street, Sliema.

## THE NEW RECORDS

### CLASS HYMENOMYCETES

#### ORDER AGARICALES

##### Family Amanitaceae

###### 1. *Amanita echinocephala* (Vitt.) Quél.

**Material examined:** MB365, Ballut tal-Wardija Malta, 1.11.93, under *Quercus ilex*.

This sizeable specimen had a white, outstretched pileus (diam. c. 9cm), adorned with conical scales; white, free gills and a white stipe (c. 9 X 2cm) which included a membranous ring and a bulbous, turbinated, deeply rooting base (diam. 3.5cm), surrounded by bands of scales. Its white, ellipsoid spores measured c. 10 X 6 $\mu$ .

The peculiar, conical, thorn-like scales on the pileus, as implied by its specific name, were sufficient to lead to its identification in the section *Lepidella* Gilb. A similar looking species is *A. boudieri*, a Mediterranean species, which according to Cetto (1994) only appears in Spring.

###### 2. *Amanita gracilior* Bas & Honrubia

**Material examined:** MB346, Wied Hazrun Malta, 2.11.84 near *Erica multiflora* not far from a grove of *Quercus ilex*.

The specimens had a somewhat viscose, white, outstretched pileus with a diameter of c. 6cm, adorned with some small scales in the centre; white, almost free gills; white flesh, and a stipe c. 10cm long 2cm wide at the apex and ending in a buried turbinated, rooting, bulbous base 4.5 X 3.5cm. The white spores contained oil drops or granules, and measured c. 10-11.5 X 5-6 $\mu$ .

Had it not been for its peculiar spores and viscose pileus, this species could easily have been mistaken for *A. boudieri*, which has almost identical morphological features. In fact, Cetto (1994) says '*A. gracilior* is a species that can be considered as the autumn form of *A. boudieri* which appears in spring.'

##### Family Coprinaceae

###### 3. *Psathyrella spintrigera* (Fr.) Konr. & Maubl.

**Material examined:** MB027, Verdala Park, Malta, 10.11.82, on litter of *Cupressus*, *Olea* and *Nerium*.

The specimens could be easily recognized by their reddish-brown or date-coloured pileus with a diameter up to c. 5 cm with a paler crown, decorated with cottony white scales; their white floccose, fistulose stipe c. 5 X 0.5cm; and oval spores measuring c. 7 X 5 $\mu$ .

This record had been erroneously published as *P. candolleana* in Briffa and Lanfranco (1986). The authors may have had a mistaken concept of *P. candolleana*.

Mature specimens appearing on photographs of at least three others of its supporting records did not have a white pileus.

#### ORDER PLUTEALES

##### Family Pluteaceae

###### 4. *Volvariella murinella* (Quél.) Moser

**Material examined:** MB130, Buskett Malta, 5.12.86, on pine needles under *Pinus halepensis*.

The specimens had a silky, grey, convex pileus, c. 2cm, expanding to c. 3cm; pale pink, rather crowded, almost free gills; and white stipe, c. 3cm X 6mm, with a lobed, white volva. The ellipsoid, pink spores measured 6.5-7.8 X 4.5 $\mu$ .

The size of the carpophore, the mouse-grey pileus, the lobed, white volva, and the spore dimensions are indicative of this species, even though according to Moser its normal habitat is 'meadows, pasture and waysides'.

###### 5. *Pluteus thomsonii* (Berk. & Br.) Dennis

**Material examined:** MB367, Wied il-Luq, Malta, 16.10.95, on dead remains of *Laurus nobilis*.

The specimen could be easily identified by the peculiar morphological features of its pileus. The small grey pileus, with a diameter of 2cm, was adorned by conspicuous reticulate irregular ridges or veins in the centre and a striate margin. The gills were pinkish white, free and slightly dentate; the stipe was also grey covered with white flakes; and the spores were pink in mass and measured c. 8 X 5.5 $\mu$ .

#### ORDER TRICHOLOMATALES

##### Family Pleurotaceae

###### 6. *Pleurotus pulmonarius* (Fr.) Quél. (Fig. 1)

**Material examined:** MB369, 'Wied tal-Isqof Malta, 23.3.02, on main trunk and branches of a dead *Morus nigra*.' Leg. D. Dandria.

This unfamiliar specimen was a thin, flat, whitish, gilled, bracket fungus, with a negligible, rudimentary, lateral stipe. It carried elongated, hyaline spores (9-10 X 4-4.5 $\mu$ ), typical of the genus *Pleurotus* as compared with *Crepidotus*. It was examined by Moreno, who said 'The absence of a hymenial veil, and the variable morphology of the cheilocystidia are indicative of *Pleurotus ostréatus* s. lato'. (personal communication) However, the specimen did not match the description of *P. ostréatus* s.str., which is normally much fleshier and has a very dark pileus. It was subsequently determined as *P. pulmonarius*, which belongs to the *ostréatus* group. Its identification was based on the following: Bon (1987), comparing *P. pulmonarius* with *P. ostréatus* says: '*P. pulmonarius* is thinner and flatter, with

cap pale beige to whitish'. Referring to *P. pulmonarius*, Moser (1983) says : 'cap milky to ivory-white..... sometimes yellowing when dying'. Photos taken by the collector *in situ* depict aging carpophores, which were turning yellow, and which were similar to the examined specimen and on the same substrate. Moreno agreed, with the identification and confirmed there are no microscopic differences between *P. pulmonarius* and *P. ostreatus*. A final proof would have been its aniseed smell.

**Family Tricholomataceae**

**7. *Tricholoma caligatum* (Viv.) Rick.**

**Material examined:** MB351, Il-Bosk (Buskett) Malta, 11.12.86, under *Pinus halepensis*.

The specimens had a fleshy pileus (diam. c. 5cm) with dark brown scales on paler background and with a whitish involute margin, becoming outstretched later; white, sinuate gills; full stipe (5 X 2cm), white at apex above the ring and concolourous with pileus in the 'booted' end which comprised the ring; white flesh; and white, smooth, shortly elliptical spores measuring 5.5 - 6.5 X 4.5 - 5.5µ. The dimensions of the pileus and stipe were smaller than those described in Moser (1978), and Bon (1987), but the specimen collected was the smallest from a group of 6, chosen for storage convenience. The dimensions of the spores, however, and the other morphological features were typical of the species.

**Family Marasmiaceae**

**8. *Mycena galericulata* (Scop.) S.F. Gray**

**Material examined:** MB198, Ballut tal-Wardija Malta

3.12.86, on dead branch of *Ceratonia siliqua*.

These relatively sizeable specimens had a pale greyish-brown, wrinkled to striate, umbonate pileus, up to a diameter of 4.5cm when expanded; whitish to pale pinkish, ventricose, somewhat distant, interveined gills; and a firm light greyish-brown, fistulose, rooting stipe, brown at base, c. 10 X 0.4cm. The white spores were elliptical, measuring c. 10-11 X 6-7µ

**9. *Mycena alba* (Bres.) Kühn. (= *M. corticola* Bres. non Pers.)**

**Material examined:** MB136, Ballut tal-Imgiebah Malta, 10.2.86, gregarious on bark of a living *Quercus ilex*.

These minute carpophores had a white pileus (up to 6mm diam.), distant, white gills, a thin, white stipe (up to 8mm long), and round spores (c. 6µ) with a prominent apiculus. Their small size, colour, habit, habitat (as implied by the old and new specific name), and spore dimensions, were indicative of the species.

**ORDER RUSSULALES**

**Family Russulaceae**

**10. *Lactarius atlanticus* Bon**

**Material examined:** MB501, Ballut tal-Wardija Malta, 15.11.84, at base of *Quercus ilex*.

This species with an orange-red pileus, concolourous stipe and pale ochre, crowded gills belongs to the *Lactarius* section *Olentes*, with watery milk, (Bon 1987), and is associated exclusively with *Quercus ilex*. The specimens were examined and determined in 1993 by Marcel Bon, the

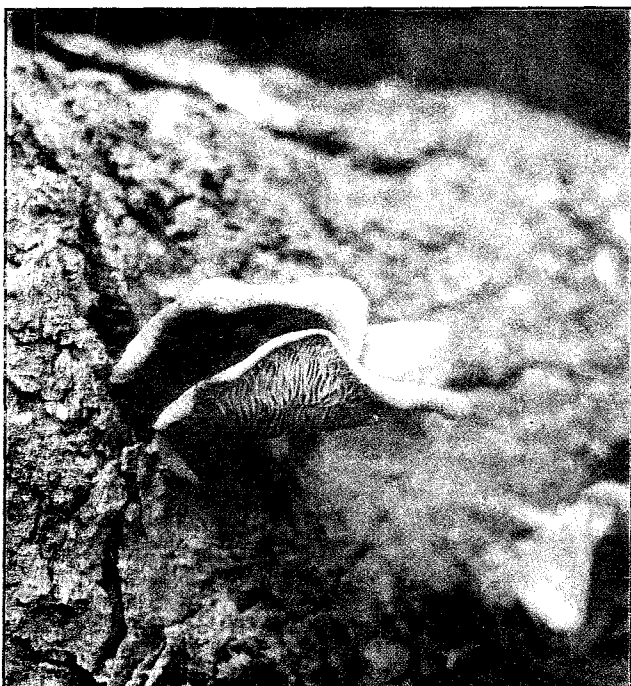


Fig. 1 *Pleurotus pulmonarius* (Fr.) Qué.

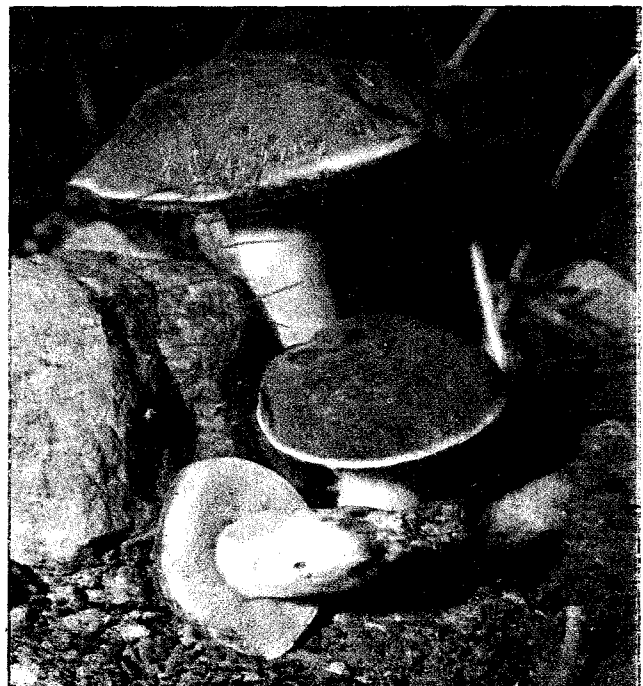


Fig. 2. *Xerocomus dryophilus* (Thiers) Singer

author of the species himself. He said, "after 9 years the exsiccata still retained a fragrant smell of chicory despite their age; the spores were globular, ca. 8 $\mu$ , reticulate and subechinulate at the junction of the cells; and the lactiferous hyphae were clearly visible in SF (sulphoformol)."

### 11. *Lactarius tesquorum* Mal.

**Material examined:** MB249, Ta Wied Rini Malta, 17.12.93, under *Cistus monspeliensis*.

The specimens had an orange, tomentose pileus with no sign of zonation; white, crowded gills turning very pale pink; a short, fistulose stipe, attenuate towards the base, concolourous with pileus; white flesh; white latex, and white, reticulate, subglobose spores measuring c. 7-8 X 6-7 $\mu$ . The taste was sharply peppery.

According to Cetto (1993), this species is almost identical with *L. mairei*, however, whereas *L. tesquorum* is confined to the Mediterranean zone and is only associated with *Cistus* species, *L. mairei* has also been reported from continental Europe and is associated with frondose trees.

## ORDER BOLETALES

### Family Boletaceae

#### 12. *Xerocomus dryophilus* (Thiers) Singer (Fig. 2)

**Material examined:** MB339, Ballut tal-Imgiebah, Malta, 7.11.84, under *Quercus ilex*. [This collection had been published as *Xerocomus chrysenteron* in Briffa and Lanfranco (1986)].

The specimens had a lightly velutinate, reddish, convex pileus (c. 4.5cm), expanding but not becoming fully outstretched, with a distinctly whitish margin, and becoming paler and glabrous on maturity; yellow tubes less than 1 cm; yellow pores c. 1 mm.; the stipe (c. 5 X 1.2cm), yellow above and dark reddish below with a narrowed or pinched base; and ellipsoid spores measuring (13.7) 14.3-15.0 (15.6) X 5.9-6.5 $\mu$ .

It is with some hesitation that this species has been included in this paper owing to its close affinity with *X. rubellus* s.l., which is also chiefly associated with *Quercus* species, as re-described unofficially by Engel et al. (1990 & 1996 in Simonini 1998) under the provisional name of *X. 'quercinus'*.

A constantly recurring characteristic of the Maltese specimens is the distinctly broad whitish margin of the pileus. This, however, is not included in Tiers' official definition of the species (in Simonini 1998). The relative photograph published by Simonini (1998), nevertheless, looks identical with the Maltese material and includes the distinctive whitish margin, even though no mention of it is included in the text. On the other hand, Cetto's description of *Boletus 'amaranthus'* nom. prov., (1989 - 1994, No.2461), which according to Simonini is the same species as *X.*

*dryophilus*, mentions the white margin; but this is not so obvious in his published photograph of the species. Engel et al. (1990) mention a greyish-white margin on the pileus of *X. 'quercinus'*. (= *X. rubellus* s.l. sensu Simonini 1998).

The distribution and ecology of *X. dryophilus* favour its occurrence in Malta. Simonini (1998) says that in Europe its distribution seems to be restricted to the Mediterranean region and it only occurs in a strictly calcareous and xerophilous environment, associated with *Quercus* species.

#### 13. *Gyroporus castaneus* (Fr.) Quél.

**Material examined:** MB343, Ballut tal-Imgiebah, Malta, 29.12.94, under *Quercus ilex*.

This specimen could be easily distinguished from other difficult species of the *Boletaceae* family. It had a mustard pileus; white, roundish pores, 1-2/mm, gradually turning ochre with age; white tubes, gradually becoming ochre, on a white base; a fragile, chambered or fistulose bulbous, stipe, tapering upwards, concolourous with the pileus; white flesh, not discolouring when handled; and ovoid, lemon-yellow spores, measuring c. 10 X 6  $\mu$ . The only other species of this genus is *G. cyanescens*, which turns blue when handled.

### Family Paxillaceae

#### 14. *Omphalotus olearius* (DC: Fr.) Sing.

**Material examined:** MB804, It-Tafal tal-Imdina, below Saqqaja Malta, 'Early November 1995, c. 30 cm up trunk of *Olea europaea*,' leg. Ch. Galea-Bonavia.

This specimen, with a brownish-orange, slightly depressed, umbonate pileus (c. 7 cm); bright orange, strongly decurrent gills; concolourous flesh; and a full, eccentric stipe with a blackish base, was easily recognisable, by its habitat, its morphological features, and its subglobose spores (c. 5 - 6 $\mu$ ).

## ORDER CLAVARIALES

### Family Clavariaceae

#### 15. *Macrotrophula juncea* (Fr.) Berthier

**Material examined:** MB142, Ghajn il-Kbira Malta, 28.12.91, on decaying leaves of *Eriobotrya japonica*.

This species is easily recognisable by its habit and habitat. The specimens consisted of unbranched, smooth, filiform carpophores measuring c. 5 - 6 cm X 1-1.5mm, mostly pointed at the apex, coloured white above and pale brownish below, and hairy at the base.

#### 16. *Ramariopsis kunzei* (Fr.) Corner

**Material examined:** MB369, Ballut tal-Wardija Malta, 16.1.96, at base of *Ceratonia siliqua*.

The specimens were whitish to cream carpophores 3.5cm

tall, consisting of a basal stipe from which emanated cespitose, ramifying branches, c. 2 mm thick, with pointed or blunt ends. Their colourless, finely decorated round spores with an apparent polygonal outline measured c. 4 - 5  $\mu$ .

## ORDER APHYLLOPHORALES

### Family Thelephoraceae

#### 17. *Phellodon niger* (Fr.) Karst.

**Material examined:** MB103, Il-Bosk (Buskett), Malta, 11.12.86, under *Pinus halepensis*.

The specimens could be easily recognized by their conspicuous, coarse, invariably blackish, pileus with a white margin and their black flesh, contrasting with their greyish white verrucose hymenium underneath.

## CLASS GASTEROMYCETES

### ORDER LYCOPERDALES

#### Family Lycoperdaceae

#### 18. *Lycoperdon lividum* Pers.

**Material examined:** MB310, Ta Wied Rini, Malta, 22.11.82, on open ground.

The specimen consisted of a subglobose to slightly pyriform carpophore, measuring c. 2 X 2 cm; a short, rooting stipe, measuring c. 5mm; a shining, very light greyish brown, finely verruculose endoperidium; whitish to light yellowish brown gleba; and globose verruculose spores measuring 3.5-4.5 $\mu$ .

## CLASS PHRAGMOBASIDIOMYCETES

### ORDER TREMELLALES

#### Family Tremellaceae

#### 19. *Myxarium nucleatum* Wallr. (= *Exidia alboglobosa* Lloyd)

**Material examined:** MB70, Near Addolorata Cemetery Malta, 12.12.83, on a decaying dead branch of *Celtis australis*.

The examined material consisted of snow-white, transparent, gelatinous, mostly confluent, subglobose carpophores, as implied by one of the former specific names of the species: *Exidia alboglobosa*. Microscopically, the basidia had long sterigmata, and the allantoid spores measured c. 11 X 4 $\mu$ .

### ORDER AURICULARIALES

#### Family Auriculariaceae

#### 20. *Auricularia auricula-judae* (L.) Schroet.

**Material examined:** MB102 (in formaldehyde), Wied il-Luq, Malta, 10.11.94, on dead branches of *Carya sp.* MB657 (exsiccata), Wied il-Luq, Malta, 6.4.98, on unidentified dead twigs.

These specimens, bell-shaped or ear-shaped, with a velutinate, tawny outer surface and a shining, light violet-brown inner surface, were easy to identify by their peculiar translucent, firm, elastic, pliant texture. When dried, the specimens of MB657 became hard, whitish and hoary outside, and blackish blue inside. This is a common cosmopolitan species which, however, had never been reported from Malta.

## CLASS ASCOMYCETES

### ORDER PEZIZALES

#### Family Helvellaceae

#### 21. *Paxina leucomelas* (Pers.) Kuntze (= *Helvella leucomelaena* (Pers.) Nannf.)

**Material examined:** MB148, Mizieb Malta, 5.2.85, on pine needles under *Pinus halepensis*.

The specimens were generally shapeless or cup-shaped, 1.5 to 3.5 cm across, with perforations in the larger carpophores, a dentate margin, a very pale greyish outer surface and a very dark greyish inner surface. From their short, relatively thick, white stipe emanated short ribs which did not spread on to the cup's outer surface as in *P. acetabulum*. The asci measured c. 288-304 X 14-15 $\mu$ ; and the large elliptic smooth spores were generally monoguttate (with one oil-drop) and measured c. 20-23 X 11-13 $\mu$ .

#### Family Pezizaceae

#### 22. *Peziza proteana* (Boud.) Seaver fma. *sparassoides* (Boud.) Korf.

**Material examined:** MB180, Hal-Farrug Malta, 8.12.1982, near burnt stump of *Ceratonia siliqua*.

This specimen, a sub-globose mass of whitish fleshy fungal folds with faint shades of violet-brown, (diam. c. 23cm), together with two other identical specimens from different localities, (5.12.1983, Wied Ghollieqa Malta, near burnt stump of *Ceratonia siliqua*, and 23.11.1984, Wied Hazrun Malta, near burnt stump of *Quercus ilex*.), had been erroneously recorded as *Sparassis laminosa* in Briffa and Lanfranco (1986). The error was detected when the specimen was subsequently examined microscopically and was found to carry asci! The asci (c. 208-220 X 10 $\mu$  attenuate towards the base) were interspersed with thin straight paraphyses, slightly clavate at the apex, and the ellipsoid, white spores measuring 10.4-11.7 X 6.5 $\mu$  were biguttate (with two oil-drops) and distinctly verruculose.

The specimen was determined as *Peziza proteana* (Boud.) Seaver fma. *sparassoides* (Boud.) Korf., a carbonicolous species, having a superficial resemblance to *Sparassis*

*laminosa*. Its macroscopic and microscopic features agree with the descriptions in Cetto (1994 VI No. 2457) and Dennis (1960, p. 16), except for the asci which were rather shorter.

This form must have proved rather enigmatic to earlier mycologists. Originally it had been regarded as a sessile *Gyromitra* species (*G. philipsii* Masee). A summary of its interesting taxonomic history follows its description in Dennis (1960).

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#### REFERENCES

- Bon M. (1987) *The Mushrooms and Toadstools of Britain and North-western Europe*, Hodder and Stoughton London. 352pp.
- Briffa M. & Lanfranco E. (1986) The Macrofungi of the Maltese Islands: Additions and notes. *The Central Mediterranean Naturalist*, 1(4) 69-79.
- Briffa M. (2001) Polypores recorded in Malta: Additions and Updated Checklist. *The Central Mediterranean Naturalist*, 3(3) 125-129
- Cetto B. (1992) *I Funghi dal Vero*, 8a Edizione Italiana, II, Arti Grafiche Saturnia Trento, 754pp.
- Cetto B. (1993) *I Funghi dal Vero*, 2a Edizione Italiana, V, Arti Grafiche Saturnia Trento, 726pp.
- Cetto B. (1994) *I Funghi dal Vero*, 3a Edizione Italiana, VI, Arti Grafiche Saturnia Trento, 722pp.
- Dennis R.W.G. (1960) *British Cup Fungi and their Allies*, Ray Society UK
- Engel H. & Brückner T. *Xerocomus quercinus* nom. prov. *Die Pilzflora Nordwestoberfrankes* Bd. 13/A: 75/78.
- Engel H., Dermek A., Klofac W. & Ludwig E. (1996) *Schmier- und Filzröhrlinge s.l. in Europa*, Weidhausen.
- Gulia G. (1858-1859) - *Repertorio di Storia Naturale*, Malta, 123, 134, 135
- Lanfranco E. (1972) Mushrooms in Malta - new records. *Maltese Naturalist*, 1 (3): 25 - 28 + 1 plate. Natural History Society of Malta (mimeographed).
- Moser M. (1978) *Keys to Agarics and Boleti*. English Edition, Publishers Roger Philips UK, 535pp.
- Saccardo P.A. (1912) Fungi ex Insula Melita (Malta), lecti a Doct. Alf. Caruana Gatto et Doct. Giov. Borg. *Bull. Soc. bot. ital.* p.314-326
- Saccardo P.A. (1913) Fungi ex Insula Melita (Malta), lecti a Doct. Alf. Caruana Gatto et Doct. Giov. Borg, Series II, *Nuovo Giorn. Bot. Ital.* XXI p.110-126
- Saccardo P.A. (1914) Fungi ex Insula Melita (Malta), lecti a Doct. Alf. Caruana Gatto et Doct. Giov. Borg, Series III, *Nuovo Giorn. Bot. Ital.* XXII p.24-76
- Simonini G. (1998) *Qualche specie rara o poco conosciuta della Famiglia Boletaceae*. Fungi non delineati, VI, Mykoflora I - Alassio - (SV) 50pp.
- Sommier S. & Caruana Gatto A. (1915) *Flora Melitensis Nova*, Firenze 502p
- Zerapha, S. (1827, 1831) *Florae Melitensis Thesaurus sive plantarum enumeratio quae in Melitae Gaulosque insulis aut indigenae aut vulgatissimae occurrunt*, Fasc. 1 (1827) : 1; Fasc. 2 (alter) (1831): 41, 44, 60. Malta.