Article

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Stephen Mifsud & David Mifsud

The macrofungi of Gozo (Maltese Islands): an annotated checklist

Abstract

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Records of macrofungi from Gozo are few and underrepresented when compared to those found in mainland Malta. An investigation on the macrofungi occurring on Gozo has been carried out to narrow this knowledge gap. During the present study, 147 samples were collected from Gozo between October 2019 and April 2021. From this sampling effort, 70 different species of macrofungi were identified, of which 61 were new records for Gozo and 45 were new records for the Maltese Islands. Five of these new records (one new to science) were already published during the progress of this work, whereas the remaining 40 new records are reported for the first time in this account. This investigation elevated the number of macrofungi in Gozo from 36 (prior to the onset of this work) to 97 species. For each of the 40 new records, a detailed account of the examined material, ecology, macro- and micro- morphology, and notes related to the taxonomy and closely related species are provided. An annotated checklist of all the 97 species occurring in Gozo is given, and details on the locations of each collection are also included. The main threats that local macrofungi are currently facing in Malta and Gozo are for the first time exposed, and conservation measures are discussed.

Key words: Ascomycota, Basidiomycota, biodiversity, Malta.

Introduction

The Maltese archipelago comprises of five principal islands, of which mainland Malta (246 km^2), Gozo (67 km^2) and Comino (3.5 km^2) are the largest and habitable. The climate is typically Mediterranean with mild winters and hot dry summers. Mycological studies pertaining to the Maltese Islands started in the early 20th century, with the important contributions being those by Saccardo (1912, 1914, 1915), Sommier & Caruana Gatto (1915) and Borg (1922). Previous records (e.g. Zerapha 1827, 1831; Gulia 1858-1859) consisted of sporadic records, mostly polypores or plant parasites.

A total of 72 species of macrofungi were recorded from the Maltese Islands prior to the publications listed above and of these, only two (*Pleurotus nebrodensis* var. *ferulae* (*nom. inval.*) and *Polyporus ceratoniae* Risso (= *Laetiporus sulphureus* (Bull.) Murrill) were recorded from the island of Gozo. This disproportionality of records between mainland Malta and Gozo (politically including Comino as part of the Għajnsielem local council) perpetuated till the beginning of the 21st century (refer to table 1). For example, only four records of macrofungi were recorded from Gozo compared to about 160 species from mainland Malta (Lanfranco 1972; Briffa & Lanfranco 1986; Briffa 2001, 2002) in the early years of 2000.

The first important contribution to the macrofungi occurring in Gozo was that by Mifsud (2017a, 2017d), where 33 new records were reported from Gozo, of which some were also new to the Maltese Islands. Other sporadic records were published by Mifsud (2011, 2015, 2016a, 2016b, 2017b, 2017c), Sammut & Melzer (2012) and Sammut (2015-2016, 2021).

Prior to this study which commenced in October 2019, a total of 252 species of macrofungi were recorded from the Maltese Islands (Appendix Table A1), of which only 36 were reported as occurring on Gozo (Table 1). This knowledge gap of macrofungi from Gozo was the main objective for the current mycological investigation, which was carried out over a two year period (2019-2021) and formed part of the MSc dissertation of one of us (SM) at the Institute of Earth Systems, University of Malta. This work thus aims to provide an updated annotated checklist of macrofungi occurring in Gozo, in order to narrow the deficit in records and to document in detail the morphology of those species recorded in Gozo that are first records for the Maltese Islands.

Table 1. Records of macrofungi from Gozo that were published prior to the present study including the location, date collected and publication for each record. The taxa are given as cited in the original literature, but the current accepted taxon (according MycoBank 2022 and Index Fungorum 2022).

Sp. No	Taxon (as cited in text)	Current Taxon (Mycobank)	Publication	Locality	Date recorded
-	*Pleurotus nebrodensis* var. *ferulae* (Lanzi) Sacc.	Nom. Inval.	Sommier & Car. Gatto (1915)	not given	Date not given
1	*Polyporus ceratoniae* Risso	*Laetiporus sulphureus* (Bull.) Murrill	Borg (1922)	Qala	Date not given
2	*Polyporus brumalis* (Pers.) Fr.	*Lentinus brumalis* (Pers.) Zmitr.	Briffa & Lanfranco (1986)	Qortin tal-Magun, Nadur	06/02/1985
3	*Montagnea candollei* Fr.	same	Lanfranco (1989)	Ramla l-Ħamra, Xagħra	No date/1988
4	*Inonotus tamaricis* (Pat.) Maire	*Inocutis tamaricis* (Pat.) Fiasson & Niemelä	Briffa (2001)	Ramla l-Ħamra, Xagħra	06/02/1985
5	*Marasmius corbariensis* (Roum.) Sing	*Marasmius corbariensis* (Roum.) Sacc.	Mifsud (2011)	Ġnien ta Blankas, Xewkija	30/01/2011
6	*Coprinopsis marcescibilis* (Britzelm.) Örstadius & E. Larss.	same	Sammut & Melzer (2012)	Ta Kuljat, Żebbuġ,	11/01/2009
7	*Kompsoscypha chudei* (Pat. Ex Le Gal) Pfister	same	Sammut (2015–2016)	Wied Binġemma, Nadur	14/12/2013
8	*Moellerodiscus lentus* (Berk. & Broome) Dumont	same	Mifsud (2015)	Wied Mġarr ix-Xini, Sannat	10/02/2015
9	*Stilbella fimetaria* (Pers.) Lindau	same	Mifsud (2016a)	Wied Binġemma, Nadur	13/11/2016
10	*Cheilymenia cadaverina* (Velen.) Svrcek	same	Mifsud (2016b)	Victoria (Fields below St. Francis church)	08/11/2016
11	*Cosmospora flavoviridis* (Fuckel) Rossman & Samuels	same	Mifsud (2017a)	Tas-Sagħtrija, iż-Żebbuġ	30/11/2014
12	*Melanoleuca cf paedida* (Fr.) Kühner & Maire	same	Mifsud (2017a)	Ta' Mavi area, Nadur	25/11/2013
13	*Dermoloma cuneifolium* (Fr.) Singer ex Bon	same	Mifsud (2017a)	Tas-Sagħtrija, iż-Żebbuġ	30/11/2013
14	*Leucoinocybe lenta* (Maire) Antonín	same	Mifsud (2017a)	Close to tal-Pergla area, Xagħra	07/11/2015

Table 1. continued.

15	*Coprinopsis tigrinella* (Boud.) Redhead, Vilgalys & Moncalvo	same	Mifsud (2017a)	Wied ta’ Marsalforn, iż-Żebbuġ	08/11/2015
16	*Coprinopsis cinerea* (Schaeff.) Redhead, Vilgalys & Moncalvo	same	Mifsud (2017a)	Munxar, close to playing fields	08/02/2015
17	*Hemimycena gracilis* (Quél.) Singer	same	Mifsud (2017a)	Wied Binġemma, Nadur	15/02/2015
18	*Panaeolus papilionaceus* var. *parvisporus* Ew. Gerhardt	same	Mifsud (2017a)	Wied Binġemma, Nadur	14/12/2013
19	*Peziza vesiculosa* Bull.	same	Mifsud (2017a)	Ġnien ta Blankas, Xewkija	03/02/2014
	Peziza vesiculosa		Mifsud (2017a)	Munxar, Gozo	08/02/2015
20	*Daldinia concentrica* (Bolton) Ces. & De not	same	Mifsud (2017a)	Wied il-Lunzjata, Kerċem	04/02/2016
	Daldinia concentrica		Mifsud (2017a)	Wied tax-Xlendi, Munxar	14/05/2016
21	*Suillus collinitus* (Fr.) Kuntze	same	Mifsud (2017a)	Between Blue Lagoon and Hotel, Comino	15/11/2015
	Coprinopsis marcescibilis		Mifsud (2017a)	Xewkija Industrial Estate, Xewkija	31/12/2015
22	*Coprinus comatus* (O.F. Müll.) Pers.	same	Mifsud (2017a)	Villa Rundle, Victoria	02/12/2015
23	*Psathyrella melanthina* (Fr.) Kits van Wav.	*Coprinopsis melanthina* (Fr.) Örstadius & E. Larss.	Mifsud (2017a)	Wied Binġemma, Nadur	15/02/2015
	Psathyrella melanthina		Mifsud (2017a)	Xewkija Industrial Estate, Xewkija	31/12/2015
24	*Psathyrella candolleana* (Fr.) Maire	*Candolleomyces candolleanus* (Fr.) D. Wächt. & A. Melzer	Mifsud (2017a)	Garden at the Ministry for Gozo, Victoria	23/02/2015
25	*Psathyrella bivelata* Contu	*Candolleomyces bivelatus* (Contu) D. Wächt. & A. Melzer	Mifsud (2017a)	Wied ta' Marsalforn, iż-Żebbuġ	10/11/2015
26	*Mycena olida* Bres.	same	Mifsud (2017a)	Wied Binġemma, Nadur	15/02/2015
27	*Arrhenia rickenii* (Hora) Watling	same	Mifsud (2017a)	Wied tax-Xlendi, Munxar	10/01/2015
28	*Clitopilus hobsonii* (Berk. & Broome) P.D. Orton	same	Mifsud (2017a)	Wied Binġemma, Nadur	15/02/2015
29	*Rectipilus cistophilus* Esteve-Rav. & Vila	same	Mifsud (2017a)	Wied Binġemma, Nadur	15/02/2015
30	*Volvopluteus gloiocephalus* (DC.) Vizzini, Contu & Justo	*Volvariella gloiocephala* (DC.) Boekhout & Enderle	Mifsud (2017a)	Wied ta' Feliċ, Xagħra	06/12/2013
	Volvopluteus gloiocephalus		Mifsud (2017a)	Wied il-Għasri, Sannat	13/12/2014
	Volvopluteus gloiocephalus		Mifsud (2017a)	Wied Mġarr ix-Xini, Sannat	04/12/2015
31	*Pleurotus eryngii* var. *ferulae* (Lanzi) Sacc.	same	Mifsud (2017a)	Tal-Biziel area, Xagħra	06/12/2013
	Pleurotus eryngii var. *ferulae*		Mifsud (2017a)	Comino, several sites	21/01/2014
	Pleurotus eryngii var. *ferulae*		Mifsud (2017a)	Nuffara Hill, Xagħra	23/03/2016
32	*Peziza varia* (Hedw.) Alb. & Schwein.	same	Mifsud (2017b)	Xagħra (private residence)	10/02/2017
33	*Morchella galilaea* S.Masaphy & Clowez	same	Mifsud (2017c, 2017d)	Ġnien ta’ Blankas, Xewkija	18/12/2015
34	*Terana caerulea* (Schrad. ex Lam.) Kuntze	same	Mifsud (2017d)	Wied Binġemma, Nadur	14/12/2013
35	*Anthracobia nitida* Boud.	same	Mifsud (2017d)	Ġnien ta’ Blankas, Xewkija	18/12/2015
36	*Battarrea phalloides* (Dicks.) Pers.	same	Mifsud (2017d)	Victoria (playing fields)	11/05/2017

Methodology

Macrofungi are here defined as organisms whose fruiting bodies are visible by the naked eye, approximately 1 mm in size. Moulds and most plant microfungal parasites are excluded, even if their mycelium mass (e.g. rusts, smuts or mildew) is generally visible on the host-plant. This definition also comprises minuscule fruiting bodies that cluster together to form well visible aggregates such as *Nectria* (Fr.) Fr. or *Cheilymenia* Bound. or else form continuous matrices (or stroma) that are usually larger than 1 cm embedding tiny reproductive units (usually pycnidia) such as *Hypoxylon* Bull. and some *Xylaria* spp.

Six pilot study sites in Gozo that are considered to be hot spots for fungal biodiversity have been identified where most of the forays have been carried out. These sites are listed below and indicated in the map (Fig. 1)

1. Wied tal-Egħżien, Xagħra - a huge plantation of *Eucalyptus* trees on clayey slopes with some water streams and perched aquifers, approximately 50 years old;
2. Wied Raħan, Nadur - a variety of agricultural trees in a damp location on valley sides;
3. Wied Binġemma, Nadur - an old remnant forest of almond and olives trees;
4. Il-Qortin il-Kbir u ix-Xagħra tal-Magun, Nadur - harbouring a large population of *Cistus* spp.;
5. Mġarr ix-Xini, Xewkija and Sannat - maquis at a deep rocky valley, including trees in valley bed;
6. Wied il-Lunzjata, Kerċem – a dense maquis with permanent freshwater at a rocky valley side.

Fig. 1. Map of Gozo showing the six main study sites for mycological research carried out during the present study: 1. Wied tal-Egħżien, Xagħra; 2. Wied Raħan, Nadur; 3. Wied Binġemma, Nadur; 4. Il-Qortin il-Kbir u ix-Xagħra tal-Magun, Nadur; 5. Mġarr ix-Xini, Xewkija/Sannat; 6. Wied il-Lunzjata, Kerċem.

However, collections were not limited to the above mentioned sites only. Fruiting bodies encountered in Gozo during ad-hoc surveys and random encounters were collected, including visits to the island of Comino or public parks (e.g. Villa Rundle, Chambray pinetum, and some valleys).

Photographs of specimens in situ were taken with a Canon G5X or/and Canon EOS 750d digital camera. Photographs included the entire population and its habitat, host plants/trees and close-ups (macro photographs) to show better certain details such as attachment of lamella, texture, ring, veil, and sometimes longitudinally dissected specimens. An accurate colour representation of the subject photographed was achieved by applying manual white balancing before each photoshoot, as explained by Robins (2019).

Three types of data were recorded on site: (i) ecological and habitat observations; (ii) population size, grouping and direct threats; and (iii), a physical examination of the fungus. Regarding the latter, parameters included the size, shape, colours and texture of the fruiting body; the presence of special structures such as veil, cortina, volva, ring, etc.; assessment of diagnostic characteristics such as deliquescence, hygrophany, colour change on bruising/sectioning in half, exudate of sap, scent (sometimes taste) and other features that were best examined on fresh specimens depending the type of macrofungus being examined. This data was filled on a field datasheet for each population. Before leaving the site, one or a few representative specimens were collected and wrapped in aluminium foil, labelled and placed in storage containers. Samples were always collected by cutting the fruiting body from the base with a sharp knife, leaving the underground mycelia intact in situ. Once in the laboratory, samples were examined as soon as possible, but if this was not possible, they were stored in a refrigerator at 4–8 ºC and processed within 24 hours. However, deliquescent samples, namely ink caps (*Coprinus* s. l.), were processed immediately and usually collected last during a foray.

Once the collected specimens arrived in the laboratory, other procedures were carried out systematically, depending on the type of fungus collected. Foremost, small fungi were photographed again using a wind-free environment and a more dedicated photographic setup. A Canon EOS 750D equipped with an EX Sigma 105mm 1:2.8 DG Macro HSM Lens was used with other accessories such as a tripod, a macro rail, artificial light and filters to obtain a magnified and high-resolution image of the specimen and reveal some of its diagnostic parts. Then, specimens were photographed against a metric graph paper or measuring mat, so the photographs included a measuring scale. Tiny specimens (e.g. ascomycetes), were sometimes further examined and photographed under the stereomicroscope (Motic K500L) to reveal fine characteristics that might be diagnostic [e.g. hairs in *Cheilymenia* and *Scutellinia* (Cooke) Lambotte].

Chemical tests were then carried out on fresh material. The choice of tests vary between different families of fungi, but one of the general tests carried out on most specimens was the alkaline reaction (4% KOH) on the pileus surface and/or on the flesh of dissected fruiting bodies. Other chemical tests (e.g. Iron salt reaction) where carried out depending on the genus of the investigated specimen.

A spore-print was carried out for most sizeable basidiomycetes as it is an important diagnostic character to determine the genus (McAdam 2009) but was also helpful in collecting spores over a coverslip and an easier mounting for microscopical investigations.

Many samples were preserved for future re-examination or to send exsiccata to experts for further examination (including DNA sequencing). Preservation was carried out by cutting the sample longitudinally in half or more, and then placed in an incubator at 38–42º C. According to Clémençon (2009) the temperature should not exceed 50 ºC and drying must be carried out soon after collection so that moulds, larvae, nematodes or bacteria will have no time to consume, spoil or contaminate the specimen's tissue.

Finally, microscopic examinations were carried out on fresh specimens or, when not possible, on rehydrated dried exsiccata using 4% KOH or 10% Ammonia solution. Fine sections of samples were produced with a razor blade and mounted in water, 4% KOH or stained, namely in 1% Congo Red; 1% Lactophenol Cotton Blue; 1% Phloxine or Lugol's Iodine (or Melzer Reagent). Most of the sectioning, mounting and staining procedures follow the mycological techniques provided by Clémençon (2009) and McAdam (2009). Microscopy was carried out using a Zeiss AxioLab RE light microscope (Germany) equipped with a trinocular head and an ocular scale and calibrated against a stage micrometre for measuring various tissue, cells and spores. Measurements and relevant statistics were achieved from microphotographs using the software Piximetre 5.2 by Boris Assyov. Measurements (at least for spores) are given as (Absolute minimum–)lowest mean – highest mean(– Absolute maximum) followed by the sample size (n). The length/width ratio is denoted by Q value.

Material was collected and examined between October 2019 and April 2021. Genera were identified through general identification literature, namely those by Largent & al. (1977), Boccardo & al. (2008), McAdam (2009), La Chiusa (2014). Specific monographs were then consulted to determine the species as indicated in each species diagnosis given in the results. Some experts have been involved in determining some species (see acknowledgements). The nomenclature and accepted taxa follow that of Mycobank (2022). A full morphological description is here given to those species new to the Maltese Islands. The terminology used in descriptions is based on Vellinga (1988) and Ulloa & Hanling (2000). Collections of the same species that are 500 m apart are considered as different collections (populations) for distributional purposes. Results are reported in an annotated systematic checklist for all species of macrofungi occurring in Gozo by combining previously published species and those retrieved from this study. A table of all records collected in this survey and details such as date, location, and population size is also provided.

Results

A total of 147 collections (sampling records) were attained and examined, which details are provided in supplementary Table A2. 107 sample records were collected from the six study sites as follows: Wied il-Lunzjata - 32; Wied Mġarr ix-Xini - 24; Wied l-Egħżien - 18; Qortin tal-Magun - 16; Wied ta Binġemma - 12; and Wied Riħħan – 5 collections, with the rest (40 collections) being collected from other localities around Gozo and Comino. From this examined material, a total of 126 collections were fully identified to species level.

The identified material corresponded to 72 different species of macrofungi since some sampling records proved to have the same macrofungus found in different locations. Of these, 61 records are new macrofungi for Gozo, of which 45 species have not been previously recorded from the Maltese Islands, as shown in Table 2 below. This Table indicates which species were previously recorded from Gozo, which are new to the Maltese Islands and which are new to Gozo only (previously reported from mainland Malta prior of this study). *Polyporus meridionalis* (A. David) H. Jahn is here assigned as a new record, but it is possibly the same record cited by Briffa & Lanfranco (1986) as *Polyporus brumalis* (Pers.) Fr. As a result of this work, the total number of macrofungi occurring in Gozo has almost tripled to 97 records.

Table 2. An updated list of macrofungi occurring in Gozo and their record status (* record originated from and published during the progress course of this work).

#	Species	Species previously recorded from Gozo	New records for Gozo	
			New for the Maltese Islands	New for Gozo (previously recorded from mainland Malta)
1	*Agaricus iodomus*		X	
2	*Agaricus subrufescens*		X	
3	*Agaricus xanthodermus*			X
4	*Anthracobia nitida*	X		
5	*Arrhenia rickenii*	X		
6	*Auricularia auricula-judae*			X
7	*Battarrea phalloides*	X		
8	*Calycellina populina*		X	
9	*Calycina sulfurina*			X
10	*Candolleomyces bivelatus*	X		
11	*Candolleomyces candolleanus*	X		
12	*Cheilymenia cadaverina*	X		
13	*Cheilymenia theleboloides* (inc. f. *glabra*)		X	
14	*Clitopilus hobsonii*	X		
15	*Conocybe brachypodii*			X
16	*Coprinellus micaceus*			X
17	*Coprinellus radians*			X
18	*Coprinellus saccharinus*			X
19	*Coprinopsis* cf. *kubickae*		X	
20	*Coprinopsis cinerea*	X		
21	*Coprinopsis lilacina*		X	
22	*Coprinopsis marcescibilis*	X		
23	*Coprinopsis melanthina*	X		
24	*Coprinopsis pseudomarcescibilis*		X	
25	*Coprinopsis subtigrinella*	X		
26	*Coprinus comatus*	X		
27	*Coriolopsis gallica*			X
28	*Coriolopsis trogii*		X	
29	*Cortinarius ayanamii* *		X	
30	*Cosmospora flavoviridis*	X		
31	*Crinipellis scabella*			X
32	*Cryptomarasmius corbariensis*	X		

Table 2. continued.

33	*Cyathicula cacaliae*		X	
34	*Daldinia concentrica*	X		
35	*Dermoloma cuneifolium*	X		
36	*Emmia latemarginata*		X	
37	*Entoloma poliopus var. discolor*		X	
38	*Fomitiporia rosmarini*		X	
39	*Ganoderma australe*			X
40	*Helvella sublicia*		X	
41	*Hemimycena gracilis*	X		
42	*Hohenbuehelia cyphelliformis*		X	
43	*Hypoxylon crocopeplum*		X	
44	*Hypoxylon petriniae*		X	
45	*Inocutis tamaricis*	X		
46	*Inocybe mecoana*		X	
47	*Inonotus euphoriae*			X
48	*Kompsoscypha chudei*	X		
49	*Lachnella alboviolascens*		X	
50	*Laetiporus sulphureus* (=*Polyporus ceratoniae*)	X		
51	*Lepiota farinolens*		X	
52	*Lepiota griseovirens*		X	
53	*Lepiota nigrescentipes*		X	
54	*Leucoagaricus leucothites*			X
55	*Leucoagaricus littoralis*		X	
56	*Leucoinocybe lenta*	X		
57	*Limacella subfurnacea*		X	
58	*Melanoleuca* cf. *paedida*	X		
59	*Moellerodiscus lentus*	X		
60	*Montagnea arenaria*	X		
61	*Morchella galilaea*	X		
62	*Mycena olivaceomarginata*			X
63	*Mycena olida*	X		
64	*Mycena roseoquercina*		X	
65	*Ossicaulis lachnopus*		X	
66	*Panaeolus papilionaceus* var. *parvisporus*	X		
67	*Parasola auricoma*	X		
68	*Parasola conopilus*			X
69	*Patellaria atrata*		X	
70	*Duportella malençonii*		X	
71	*Peziza varia*	X		
72	*Peziza vesiculosa*	X		
73	*Phaeoclavulina decurrens* *		X	
74	*Phloeomana hiemalis*		X	
75	*Pholiotina dasypus*		X	
76 77	*Pisolithus albus* * *Pisolithus marmoratus* *		X X	
78	*Pleurotus eryngii* var. *ferulae*	X		
79	*Pluteus nanus*		X	
80	*Polyporus meridionalis*	(recorded as *P. brumalis*)	X	

Table 2. continued.

81	*Rectipilus cistophilus*	X		
82	*Scleroderma albidum*		X	
83	*Sclerotinia sclerotiorum*		X	
84	*Scuttelinia barlae*		X	
85	*Sepultariella semiimmersa*		X	
86	*Simocybe reducta*		X	
87	*Stilbella fimetaria*	X		
88	*Suillellus luridus*			X
89	*Suillus collinitus*	X		
90	*Terana caerulea*	X		
91	*Tubaria furfuracea*		X	
92	*Volvopluteus gloiocephalus*	X		
93	*Xerocomus redeuilhii*		X	
94	*Xerocoprinus arenarius*		X	
95	*Xerophorus donadinii*		X	
96	*Xylaria melitensis* *		X	
97	*Xylaria sicula*			X
	Number of species	36	45	16

Finally, an updated annotated checklist of all macrofungi occurring in Gozo is provided below. This combines the previously published records and the new records from this study. The higher classification of the macrofungi follows that by Mycobank (2022), and within each family, the species therein are listed in alphabetical order. In this checklist, species in bold represent new records for the Maltese Islands, and those marked with an asterisk represent records new to Gozo but previously recorded from mainland Malta. The rest of the species are records that were previously recorded from Gozo (Table 1).

DIKARYA Hibbett, T.Y. James & Vilgalys

Ascomycota Caval.-Sm.

Pezizomycotina O.E. Erikss. & Winka

Dothideomycetes O.E. Erikss. & Winka

PATELLARIALES D. Hawksw. & O.E. Erikss.

Patellariaceae Corda

Patellaria atrata (Hedw.) Fr. – Qala, Wied Biljun (30-4-2021)

Leotiomycetes O.E. Erikss. & Winka

HELOTIALES Nannf.

Helotiaceae Rehm

Cyathicula cacaliae (Pers.) Dennis – Xagħra, Wied ta’ Xħajma (5-2-2020).

Hyaloscyphaceae Nannf.

Calycellina populina (Fuckel) Höhn. – Kerċem, Wied il-Lunzjata (26-11-2020).

Pezizellaceae Velen.

**Calycina sulfurina* (Quél.) Boud – Xewkija, Wied Mġarr ix-Xini (1-12-2019); Nadur, Wied ta’ Binġemma (29-1-2021).

Peziza varia (Hedw.) Alb. & Schwein. – Xagħra, ceiling of private residence (old house) (10-2-2017) (Mifsud 2017b)

Peziza vesiculosa Bull. – Xewkija, Ġnien ta Blankas (3-2-2014); Munxar, fields near playing fields (8-2-2015) (Mifsud 2017a)

Sclerotiniaceae Whetzel

Moellerodiscus lentus – (Berk. & Broome) Dumont – Previous records: Sannat, Wied Mġarr ix-Xini (valley bed) (10-2-2015) (Mifsud 2015). Present study: Xewkija, Wied Mġarr ix-Xini (below Ta' Blankas, Xewkija side) (1-12-2019); Kerċem, Wied il-Lunzjata (9-10-2020); Nadur, Qortin tal-Magun (19-1-2021).

Sclerotinia sclerotiorum (Lib.) de Bary – Victoria, Wied Sara (15-1-2021).

Pezizomycetes O.E. Erikss. & Winka

PEZIZALES J. Schröt.

Helvellaceae Fr.

Helvella sublicia Holmsk. – Nadur, Wied Riħħan (19-1-2021).

Morchellaceae Rhcb.

Morchella galilaea S. Masaphy & Clowez – Xewkija, Ġnien ta Blankas (18-12-2015) (Mifsud 2017d).

Pyronemataceae Corda

Anthracobia nitida Boud. – Għajnsielem, Chambray pinetum (24-12-2020); Xewkija, Ġnien ta Blankas (18-12-2015) (Mifsud 2017d).

Cheilymenia cadaverina (Velen.) Svrcek – Victoria, fields below St. Francis church (8-11-2016) (Mifsud 2016b).

Cheilymenia theleboloides (Alb. & Schwein.) Boud. – Xewkija, Wied Mġarr ix-Xini (1968)

- ***Cheilymenia theleboloides* f. *glabra*** J. Moravec – Qala, Tal-Mintuff (l/o wied tal-Ħalq) (22-12-2020).

Scutellinia barlae (Boud.) Maire – Xagħra, Wied ta' Xħajma (5-2-2020).

Sepultariella semiimmersa (P. Karst.) Van Vooren, U. Lindem. & Healy – Għajnsielem, Chambray pinetum (24-12-2020).

Sarcoscyphaceae Le Gal ex Eckblad

Kompsoscypha chudei (Pat. ex Le Gal) Pfister, Nadur, Wied ta' Binġemma (14-12-2013) (Sammut 2015-2016)).

Sordariomycetes O.E. Erikss. & Winka

HYPOCREALES Lindau

Nectriaceae Tul. & C. Tul.

Cosmospora flavoviridis (Fuckel) Rossman & Samuels – Żebbuġ, Tas-Sagħtrija (30-11-2014) (Mifsud 2017a)

Incertae sedis

Stilbella fimetaria (Pers.) Lindau. – Nadur, Wied ta' Binġemma (13-11-2016) (Mifsud 2016a)

XYLARIALES Nannf.

Hypoxylaceae DC.

Daldinia concentrica (Bolton) Ces. & De Not. – Previous records: Kerċem, Wied il-Lunzjata (maquis opposite chapel) (4-2-2016); Munxar, Wied tax-Xlendi (14-5-2016) (Mifsud 2017a). Present study: Xagħra, Wied tal-Egħżien (7-11-2019);

Xagħra, Wied tal-Egħżien (is-Sinet area) (10-11-2019); Kerċem, Wied il-Lunzjata (is-Sellum area) (26-11-2020); Għajnsielem, Chambray pinetum (14-12-2020).

Hypoxylon crocopeplum Berk. & M.A. Curtis – Nadur, Wied ta' Binġemma (5-1-2021).

Hypoxylon petriniae M. Stadler & J. Fourn. – Nadur, Wied ta' Binġemma (10-3-2020); Kerċem, Wied il-Lunzjata (29-10-2020).

Xylariaceae Tul. & C. Tul.

Xylaria melitensis J. Fourn., Lechat, Mifsud & Sammut – Xagħra, Wied tal-Egħżien (31-10-2019); Nadur, Wied ta' Binġemma (29-3-2020); Kerċem, Wied il-Lunzjata (29-10-2020).

**Xylaria sicula* Pass. & Beltrani – Kerċem, Wied il-Lunzjata (29-10-2020).

Basidiomycota Whittaker ex R.T. Moore

Agaricomycotina Doweld

Agaricomycetes O.E. Erikss. & Winka

AGARICALES Underw.

Agaricaceae Chevall.

Agaricus iodosmus Heinem. – Xagħra, Wied tal-Egħżien (16-12-2020).

Agaricus subrufescens Peck – Nadur, Qortin tal-Magun (05-12-2020).

**Agaricus xanthodermus* Genev. – Comino, Art Ħażina (01-11-2020).

Battarrea phalloides (Dicks.) Pers. – Victoria, close to playing fields and car park (11-05-2017) (Mifsud 2017d)

Coprinus comatus (O.F. Müll.) Pers. – Victoria, Villa Rundle (02-12-2015) (Mifsud 2017a).

Lepiota farinolens Bon & G. Riousset – Nadur, Qortin tal-Magun (04-12-2020).

Lepiota griseovirens Maire – Nadur, Qortin tal-Magun (04-12-2020).

Lepiota nigrescentipes G. Riousset – Xewkija, Wied Mġarr ix-Xini (15-11-2020).

Leucoagaricus leucothites (Vittad.) Wasser – Kerċem, Wied il-Lunzjata (26-11-2020); Għajnsielem, Chambray pinetum (24/12/2020).

Leucoagaricus littoralis (Menier) Bon & Boiffard – Xewkija, Wied Mġarr ix-Xini (01-12-2019).

Montagnea arenaria (DC.) Zelleri – Xagħra, Ramla l-Ħamra (only the year 1988 was given), recorded under the synonym *Montagnea candollei* Fr. (Lanfranco 1989).

Xerocoprinus arenarius (Pat.) Maire – Nadur, Qortin tal-Magun (05-12-2020).

Amanitaceae R. Heim ex Pouzar

Limacella subfurnacea (Letell.) E.-J. Gilbert – Xagħra, Wied tal-Egħżien (07-11-2019) ; Kerċem, Wied il-Lunzjata (is-Sellum area) (09-10-2020) ; Kerċem, Wied il-Lunzjata (maquis opposite chapel) (26-11-2020) ; Għajnsielem, Chambray pinetum (24-12-2020).

Bolbitiaceae Singer

**Conocybe brachypodii* (Velen.) Hauskn. & Svrcek – Nadur, Qortin tal-Magun (05-12-2020).

Pholiotina dasypus (Romagn.) P.-A. Moreau – Kerċem, Wied il-Lunzjata (26-11-2020)

Callistosporiaceae Vizzini, Consiglio, M. Marchetti & P. Alvarado (2020)

Xerophorus donadinii (Bon) Vizzini, Consiglio & M. Marchetti – Comino, It-Taġen (01-11-2020).

Cortinariaceae R. Heim

Cortinarius ayanamii A. Ortega, Vila, Bidaud & Llimona – Nadur, Qortin tal-Magun (19-01-2021).

Crepidotaceae (S. Imai) Singer

Simocybe reducta (Fr.) P. Karst. – Xagħra, Wied tal-Egħżien (17-11-2019).

Entolomataceae Kotl. & Pouzar

Clitopilus hobsonii (Berk. & Broome) P.D. Orton – Previous records: Nadur, Wied Binġemma (15-02-2015). Present study: Kerċem, Wied il-Lunzjata (26-11-2020).

Entoloma poliopus (Romagn.) Noordel. **var. *discolor*** Noordel. (1985) – Nadur, Qortin tal-Magun (04-12-2020)

Hygrophoraceae Lotsy

Arrhenia rickenii (Hora) Watling – Munxar, Wied tax-Xlendi (10-01-2015).

Inocybaceae Jülich

Inocybe mecoana Fachada, Bandini & Mifsud – Għajnsielem, Chambray pinetum (24-12-2020).

Lyophyllaceae Jülich

Ossicaulis lachnopus (Fr.) Contu – Xewkija, Wied Mġarr ix-Xini (07-12-2019).

Marasmiaceae Roze ex Kühner

Crinipellis scabella (Alb. & Schwein.) Murrill – Nadur, Wied ta' Binġemma (15-10-2020).

Mycenaceae Overeem

Hemimycena gracilis (Quél.) Singer – Nadur, Wied Binġemma (15-02-2015) (Mifsud 2017a).

Mycena olida Bres. – Nadur, Wied Binġemma (15-02-2015)(Mifsud 2017a).

Mycena olivaceomarginata (Massee) Massee – Nadur, Qortin tal-Magun (04-12-2020).

Mycena* cf. *roseoquercina M. Villarreal & Esteve-Rav. – Kerċem, Wied il-Lunzjata (26-11-2020).

Niaceae Jülich

Lachnella alboviolascens (Alb. & Schwein.) Fr. – Xewkija, Wied Mġarr ix-Xini (15-11-2020).

Physalacriaceae Corner

Cryptomarasmius corbariensis (Roum.) T. S. Jenkinson & Desjardin – Previous records: Xewkija, Ġnien ta Blankas (30-01-2011), recorded under the synonym *Marasmius corbariensis* (Roum.) Singe (Mifsud 2011). Present study: Nadur, Wied ta' Binġemma (15-10-2020).

Pleurotaceae Kühner

Hohenbuehelia cyphelliformis (Berk.) O.K. Mill. – Għajnsielem, Fields aside Triq Bengħażi (11-11-2020); Nadur, Wied ta' Binġemma (24-11-2020).

Pleurotus eryngii var. *ferulae* (Lanzi) Sacc. – Previous records: Gozo (no locality and no date) recorded by Sommier & Caruana Gatto (1915) under the invalid taxon *Pleurotus nebrodensis* var. *ferulae* (Lanzi) Sacc.; Xagħra, Tal-Biziel area (06-12-2013); Comino, Scattered in several sites (21-01-2014); Xagħra, Nuffara hill (23-03-2016) (Mifsud 2017a).

Pluteaceae Kotl. & Pouzar

Pluteus nanus (Pers.) P. Kumm. – Xagħra, Wied tal-Egħżien (is-Sinet Area) (17-11-2019); Kerċem, Wied il-Lunzjata (28-01-2020); Xagħra, Wied tal-Egħżien (west side of valley) (16-12-2020); Għajnsielem, Chambray pinetum (24-12-2020).

Volvopluteus gloiocephalus (DC.) Vizzini, Contu & Justo – Previous records: Xagħra, Wied ta' Felic (06-12-2013); Għasri, Wied il-Għasri (13-12-2014); Xewkija, Wied Mġarr ix-Xini (fields besides Blankas garden) (04-12-2015) (Mifsud 2017a). Present study: Sannat, Wied Mġarr ix-Xini (in valley bed near dam) (01-12-2019); Kerċem, Wied il-Lunzjata (26-11-2020); Qala, Wied tal-Marġa (08-01-2021); Qala, Ta' Mejxu area, near quarries (10-02-2021).

Porotheleaceae Murrill

Phloeomana hiemalis (Osbeck) Redhead – Xewkija, Wied Mġarr ix-Xini (01-12-2019).

Psathyrellaceae Vilgalys, Moncalvo & Redhead

Candolleomyces bivelatus (Contu) D. Wächt. & A. Melzer – iż-Żebbuġ, Wied ta' Marsalforn (10-11-2015), recorded under the synonym *Psathyrella bivelata* Contu (Mifsud 2017a)

Candolleomyces candolleanus (Fr.) D. Wächt. & A. Melzer – Previous records: Nadur, Wied Binġemma (15-02-2015); Victoria, Garden at Ministry for Gozo (23-02-2015); Xewkija, Xewkija Industrial Estate (near Ulysses grove) (31-12-2015). All records were reported under the synonym *Psathyrella candolleana* (Fr.) Maire (Mifsud 2017a). Present study: Xagħra, Wied tal-Egħżien (07-11-2019); Xewkija, Wied Mġarr ix-Xini (close to the shore) (05-04-2020); Xewkija, Wied Mġarr ix-Xini (in valley bed near pumping station) (16-01-2021).

**Coprinellus micaceus* (Romagn.) Vilgalys, Hopple & Jacq. – Nadur, Wied ta' Binġemma (29-03-2020)

**Coprinellus radians* (Desm.) Vilgalys, Hopple & Jacq. – Kerċem, Wied il-Lunzjata (25-10-2019); Kerċem, Wied il-Lunzjata (Sellum area) (29-10-2020, 26-11-2020) ; Nadur, Wied ta' Binġemma (24-11-2020) ; Xewkija, Wied Mġarr ix-Xini (16-01-2021).

**Coprinellus saccharinus* (Romagn.) P. Roux, Guy Garcia & Dumas – Kerċem, Wied il-Lunzjata (09-10-2020).

Coprinopsis* cf. *kubickae (Pilát & Svrček) Redhead, Vilgalys & Moncalvo – Nadur, Wied ta' Binġemma (24-11-2020).

Coprinopsis cinerea (Schaeff.) Redhead, Vilgalys & Moncalvo – Munxar, Fields near playing fields (08-02-2015) (Mifsud 2017a).

Coprinopsis lilacina (Berk. & Broome) Redhead – Kerċem, Wied il-Lunzjata (29-10-2020).

Coprinopsis marcescibilis (Britzelm.) Örstadius & E. Larss. – Previous records: Żebbuġ, Ta Kuljat hill (11-01-2009), recorded under the synonym *Psathyrella marcescibilis* (Britzelm.) Singer (Sammut & Melzer 2012) from a collection by Stephen Mifsud. Present study: Xewkija, Xewkija Industrial Estate (31-12-2015).

Coprinopsis melanthina (Fr.) Örstadius & E. Larss. – Previous records: Nadur, San Blas (15-2-2015); Xewkija, Ulysses grove (near industrial estate), recorded under the synonym *Psathyrella melanthina* (fr.) Kiys van Wav. (Mifsud 2017a). Present study: Kerċem, Wied il-Lunzjata (25-10-2019); Xagħra, Wied tal-Egħżien (17-11-2019); Xewkija, Wied Mġarr ix-Xini (01-12-2019); Kerċem, Wied il-Lunzjata (29-10-2020); Nadur, Wied Riħħan (14-11-2020); Xagħra, Wied tal-Egħżien (16-12-2020); Qala, Tal-Mintuff (l-o wied tal-Ħalq) (22-12-2020); Nadur, Wied San Blas (09-02-2021).

Coprinopsis pseudomarcescibilis Heykoop, G. Moreno & P. Alvarado – Qala, Tal-Mintuff (l-o wied tal-Ħalq) (22-12-2020); Nadur, Qortin tal-Magun (19-01-2021).

Coprinopsis subtigrinella (Boud.) Redhead, Vilgalys & Moncalvo – Żebbuġ, Wied ta' Marsalforn (08-11-2015), recorded under the synonym *Coprinopsis tigrinella* (Boud.) Redhead, Vilgalys & Moncalvo (Mifsud 2017a).

Panaeolus papilionaceus var. *parvisporus* Ew. Gerhardt – Nadur, Wied Binġemma (14-12-2013) (Mifsud 2017a).

Parasola auricoma (Pat.) Redhead, Vilgalys & Hopple – Nadur, Wied ta' Bingemma (14-12-2013, with C. Sammut) (Sammut 2021); Xewkija, Wied Mġarr ix-Xini (05-04-2020).

**Parasola conopilus* (Pat.) Redhead, Vilgalys & Hopple – Kerċem, Wied il-Lunzjata (29-10-2020); Nadur, Wied San Blas (09-02-2021).

Schizophyllaceae Quél.

Rectipilus cistophilus Esteve-Rav. & Vila – Previous records: Nadur, Wied Binġemma (15-02-2015) (Mifsud 2017a). Present study: Nadur, Wied ta' Binġemma (24-11-2020).

Tricholomataceae (Fayod) R. Heim

Dermoloma cuneifolium (Fr.) Singer ex Bon – Żebbuġ, Tas-Sagħtrija (30-11-2013) (Mifsud 2017a).

Leucoinocybe lenta (Maire) Antonín – Xagħra, Close to tal-Pergla area (07-11-2015); Żebbuġ, Wied ta' Marsalforn (10-11-2015) (Mifsud 2017a).

Melanoleuca cf. *paedida* (Fr.) Kühner & Maire – Nadur, Ta' Mavi area (25-11-2013) (Mifsud 2017a).

Tubariaceae Vizzini

Tubaria furfuracea (Pers.) Gillet – Xagħra, Wied tal-Egħżien (16-12-2020).

AURICULARIALES E.F. Bromhead

Auriculariaceae Fr. ex Lindau

**Auricularia auricula-judae* (Bull.) Quél. – Nadur, Wied Riħħan (01-04-2020); Fontana, Ghajn Tuta (26-11-2020) ; Xagħra, Wied tal-Egħżien (02-01-2021).

BOLETALES E.-J. Gilbert

Boletaceae Chevall.

Xerocomellus redeuilhii A.F.S. Taylor, U. Eberh., Simonini, Gelardi & Vizzini – Nadur, Qortin tal-Magun (04-12-2020).

Sclerodermataceae Corda

Pisolithus albus (Cooke & Massee) Priest – Xewkija, Tal-Gruwa (15-12-2019); Xagħra, Wied tal-Egħżien (29-08-2020); Xagħra, Wied tal-Egħżien (27-09-2020) ; Xagħra, Id-dahla tal-Bullara (27-09-2020) ; Żebbuġ, Wied ta' Marsalforn (27-09-2020) ; Santa Luċija, Is-Sidir Area (01-10-2020) ; Kerċem, Ta' Kerċem Area (south of football ground) (01-10-2020) ; Xagħra, Ta' Sruġ (23-10-2020) ; Victoria, Ta' Cianti area (17-02-2021) ; Comino, Art Ħażina (20-03-2021).

Pisolithus marmoratus (Berk.) E.Fisch. — Xewkija, Tal-Gruwa (15-12-2019).
Scleroderma albidum Pat. & Trab. – Comino, Art Ħażina (20-03-2021).
Suillaceae (Singer) Besl & Bresinsky
Suillellus luridus (Schaeff.) Murrill – Nadur, Qortin tal-Magun (04-12-2020).
Suillus collinitus (Fr.) Kuntze – Previous records: Comino, between Blue Lagoon and Comino hotel (15-11-2015) (Mifsud 2017a) . Present study: Xagħra, Wied tal-Egħżien (17-11-2019); Nadur, Wied Riħħan (14-11-2020); Għajnsielem, Chambray pinetum (24-12-2020).
GOMPHALES Jülich
Gomphaceae Donk
Phaeoclavulina decurrens (Pers.) J.H. Petersen – Xewkija, Wied Mġarr ix-Xini (01-12-2019) ; Kerċem, Wied il-Lunzjata (28-01-2020).
HYMENOCHAETALES Oberw.
Hymenochaetaceae Donk
Fomitiporia rosmarini (Bernicchia) Ghobad-Nejhad & Y.C. Dai – Nadur, Qortin tal-Magun (05-12-2020).
Inonotus euphoriae (Pat.) Ryvarden – Kerċem, Wied il-Lunzjata (29-10-2020).
Inocutis tamaricis (Pat.) Fiasson & Niemelä – Xagħra, Ramla l-Ħamra (06-02-1985), recorded under the synonym *Inonotus tamaricis* (Pat.) Maire (Briffa 2001).
POLYPORALES Gäum.
Laetiporaceae Jülich
Laetiporus sulphureus (Bull.) Murrill – Previous records: Qala (no date given), recorded under the synonym *Polyporus ceratoniae* Risso ex Barla (Borg,1922). Present study: Xagħra, il-pjazza tal-Mithna (16-10-2019).
Meruliaceae Rea
Emmia latemarginata (Durieu & Mont.) Zmitr., Spirin & Malysheva – Kerċem, Wied il-Lunzjata (26-11-2020) ; Għajnsielem, Chambray pinetum (24-12-2020).
Phanerochaetaceae Jülich
Terana caerulea (Schrad. ex Lam.) Kuntze – Nadur, Wied Ta' Bingemma (14-12-2013) (Mifsud 2017d)
Polyporaceae Corda
Coriolopsis gallica (Fr.) Ryvarden – Xagħra, Id-dahla tal-Bullara (27-09-2020); Kerċem, Wied il-Lunzjata (09-10-2020); Xagħra, In-Nuffara (19-10-2020).
Coriolopsis trogii (Berk.) Domanski – Nadur, Wied ta' Binġemma (24-11-2020).
Ganoderma australe (Fr.) Pat. – Xewkija, Wied Mġarr ix-Xini (near the dam) (01-12-2019); Xewkija, Wied Mġarr ix-Xini (near old pumping station) (16-01-2021).
Polyporus meridionalis (A. David) H. Jahn – Nadur, Qortin tal-Magun (06-02-1985) (Briffa & Lanfranco 1986 reported as *Polyporus brumalis* (Pers.) Fr.). Material examined from the same location (04-12-2020) and associated on same host were ascribed to *P. meridionalis* and should replace past records of *P. brumalis*.
RUSSULALES Kreisel ex P.M. Kirk, P.F. Cannon & J.C. David
Peniophoraceae Lotsy
Duportella malençonii (Boidin & Lanq.) Hjortstam – Kerċem, Wied il-Lunzjata (29-10-2020).

New records of macrofungi to the Maltese Islands

Fourthy-four new records of macrofungi to the Maltese Islands had resulted from this investigation, of which five have already been documented during the progress of this work. These are *Phaeoclavulina decurrens* (Pers.) J.H. Petersen (Mifsud 2019); the presumed endemic *Xylaria melitensis* J. Fourn., Lechat, Mifsud & Sammut (Fournier & al. 2021); *Cortinarius ayanamii* A. Ortega, Vila, Bidaud & Llimona (Mifsud & Mifsud 2021); *Pisolithus albus* (Cooke & Massee) Priest and *Pisolithus marmoratus* (Berk.) E. Fisch. (Mifsud & Mifsud 2022) and will not be treated further in this account. For the rest of the 40 new records, the following information is provided: i) details of material examined, ii) a differential diagnosis between morphologically related species and relevant taxonomic notes (these are provided below), and iii) detailed morphological descriptions and photographs based on the material collected during the present study are provided in the appendices (refer to the Electronic supplementary file1).

***Patellaria atrata* (Hedw.) Fr. (1822)**
Basionym: *Lichen atratus* Hedw. (1789)

Examined material: SM672: Wied Biljun, Qala (30-Apr-2021) – Approximately 60 small ascocarps on the bark of decaying branches of *Ficus carica* L.
Notes: The genus *Patellaria* Fr. is characterised by species having small superficial discoid apothecia forming multiseptated ascospores (including transversal septa) that are more than 15 µm long (Kutorga & Hawksworth 1997; Yacharoen & al. 2015). The genus currently accommodates ten species (Hawksworth & al. 1995) of which seven occur in India (Tilak & Srinivasulu 1974). According to GBIF (2021a), *P. atrata* is the most common species of *Patellaria* in Europe, as mentioned by Kutorga & Hawksworth (1997). Morphologically, the above-mentioned material from Gozo compares well with the descriptions available of this European species, which according to Kutorga & Hawksworth (1997), is characterized by small black discoid apothecia; dull green epithecium made of branched paraphyses; and clavate phragmospores (ascospores that are multi-septate). Moreover, this species has a characteristic fissitunicate dehiscence (Bellemère & al. 1986), usually observed in lichenized fungi. Variations in the sizes of asci and ascospores have been documented by Kutorga & Hawksworth (1997), and they suggested that this variation has to be studied carefully to assess any taxonomic significance (cryptic species).

***Cyathicula cacaliae* (Pers.) Dennis (1975)**
Basionym: *Peziza cacaliae* Pers. (1822)

Examined material: SM461: Wied ta' Xħajma, Xagħra (5-Feb-2020) – Some 40 ascocarps on dead stems of herbaceous plants, possibly *Acanthus mollis* L. or *Urtica membranacea* Poir. lying on damp calcareous ground of a valley bed.
Notes: The genus *Cyathicula* de Not. was studied in detail by Dennis (1956, 1975) and a

monograph was later published by Carpenter (1981). Originally described as *Peziza cacaliae* Pers., the species was first transferred to the genus *Cyathicula* de Not. by Dennis (1975) and then to *Crocicreas* Fr. and treated as a mere variety of *Crocicreas cyathoideum* (Bull.) S.E. Carp. (Carpenter 1981). Different classifications adopted different treatments with Index Fungorum (2022) synonymizing it with *Cyathicula cyathoidea* (Bull.) Thüm., hence rejecting the genus *Crocicreas*, *w*hereas, Mycobank (2022) accept both the genus and the distinctness of this fungus under the taxon *Crocicreas cyathoideum* var. *cacaliae* (Pers.) S.E. Carp. as originally proposed by Carpenter (1981). However, several mycologists still use the name of *Cyathicula cacaliae* for this fungus (Baral Hans-Otto, personal communication, December 21, 2021) and is also found as such in the Atlas of Danish fungi (Læssøe 2019). *Cyathicula cyathoidea* differs from *Crocicreas cacaliae* in having a paler colour, and its medullary excipulum has a hyaline colourless tissue (Carpenter 1981). The population in Wied ta' Xħajma, Xagħra (SM461) had brown-coloured apothecia and hence it was here assigned as *Cyathicula cacaliae.* Other related species are *Cyathicula coronata* (Bull.) Rehm and *Crocicreas pallidum* (Velen.) S.E. Carp. which differ by having denticulate to bristly apothecial margin and larger ascospores (Carpenter 1981).

***Calycellina populina* (Fuckel) Höhn. (1918)**
Basionym: *Helotium populinum* Fuckel (1870)

Examined material: SM551: Wied il-Lunzjata, Kerċem, (26-Nov-2020) – Cluster of 150–200 tiny fruiting bodies on decaying leaflet of *Ceratonia siliqua* L.
Notes: The identification of this species was based on Lowen & Dumont (1984), a work that is now considered somewhat outdated. According to this work, the non-pteridophytic specimens (not growing on ferns) having asci with 8 spores, unbranched paraphyses and 1-celled ascospores wider from 2 µm matched to two closely related species: *C. populina* and *C. dennisii* Raschle. Lowen & Dumont (1984) remarked about the difficulty in distinguishing these two species, which share overlapping characters in the size of the apothecia and length and shape of the spores. Both grow on decaying leaves of deciduous trees, namely oaks. One difference between the two species is that *C. dennisii* is light yellow while *C. populina* varies from cream to pale yellow (Lowen & Dumont 1984). The studied material (SM551) was here assigned to *C. populina* for two main reasons: (i) the apothecia of *C. dennisii* is described to range from 200–400 µm while in SM551 this was almost 1 mm hence closer to *C. populina,* which is described to be around 800 µm; (ii) *C. dennisii* is very rare and recorded only from Japan (GBIF 2021b) whereas *C. populina* is very common in many European territories (GBIF 2021c).

***Sclerotinia sclerotiorum* (Lib.) de Bary (1884)**
Basionym: *Peziza sclerotiorum* Lib. (1837)

Examined material: SM597: Wied Sara, Victoria (15-Jan-2021) – clump of 18 fruiting bodies from a common sclerotium immersed in damp, sandy soil in a shaded area close to the valley side and under *Laurus nobilis* L. (and other trees including *Punica* *granatum* L. and *Ceratonia siliqua* L.) and a naturalised population of *Chlorophytum comosum* (Thunb.) Jacques.

Notes: The colour and size of the apothecia, the size of the sclerotium and the spore size of the Maltese material fits well with this worldwide-distributed plant pathogen. It is reported to infect more than 408 species from 74 different families (Boland & Hall 1994). Two closely related species are *S. trifoliorum* Erikss. and *S. minor* Jagger and the main characters used to distinguish these three species are the size of the sclerotium, the host-specificity and the size of the ascospores (Kohn 1979; Willets & Wong 1980). The two species above have ascospores measuring approximately 13–16 µm and distinctly larger from the examined material, which matches that of *S. sclerotiorum* ranging 10–14 µm (Willets & Wong 1980). Moreover, *S. trifoliorum* has dimorphic spores (Kohn 1979) – a characteristic not detected in the above-mentioned studied material, whereas *S. minor* has much smaller sclerotia (up to 5 mm) according to Kohn (1979), wherein the studied material it was > 16mm long. The host range of *S. minor* is much narrower from *S. sclerotiorum*, whereas for *S. trifoliorum* the range is specific to a few species of herbaceous legumes (Boland & Hall 1994). No leguminous plants were observed on the site of collection. Despite being found on the ground close to the trunk of a young *L. nobilis* tree, the fungus (sample SM597) was more likely parasitizing a naturalized population of *Chlorophyton* cf. *comosum* (Thunb.) Jacques – an ornamental plant frequently used by Maltese people. It is assumed that the fungus might have been imported with the soil in pots of the ornamental spider plants.

***Helvella sublicia* Holmsk. (1799)**

Examined material: SM610: Wied tar-Riħħan, Nadur (19-Jan-2021) – A rather large population, about 10 × 20 m in size located in damp and wet soil, estimated to consist of 100 to 120 fruiting bodies, usually grouped in small clumps (three to ten each) and scattered and hidden beneath the thick leaf litter and detritus of the tree *Carya illinoinensis* (Wangenh.) K. Koch.

Notes: This species can be confused with a few morphologically related species such as *Helvella latispora* Boud., which differs in having a smoother surface below the cap and the stipe and having a hymenial surface that is distinctly beige or light brown. *H. atra* has a medium grey stipe, and the overall colour of the species is darker and without a hint of beige. In a recent study, Skrede & al. (2020) sequenced *Helvella* L. species from Spain and discriminated 27 different species, of which, nine were described as new to science. Of these, *H. poculiformis* Skrede & T. Schumach. was found to be closely related to *H. sublicia.* According to the photographs provided by the authors, *H. poculiformis* differ from *H. sublicia* in having a darker hymenium (medium grey to lead black) and slightly smaller spore averaging 19.2 × 10.0 µm. In contrast, spores of *H. sublicia* are 20.1 × 12.5 µm. The authors mainly relied on genetic differences to distinguish these two closely related species without giving much morphological differences. The material from Gozo looks very similar to *H. sublicia*, and the width of the spores also matches, but the length of the spores is rather close to *H. poculiformis*. Pending further molecular studies, the Gozitan material is for now assigned to *H. sublicia*.

***Cheilymenia theleboloides* forma *theleboloides* (Alb. & Schwein.) Boud. (1907)**
Basionym: *Peziza theleboloides* Alb. & Schwein. (1805)

Examined material: SM532: Wied ta' Marsalforn, iż-Żebbuġ (18-Nov-2020) – A dense population of some 800–1000 fruiting bodies covering an area of about 60 × 40 cm, tightly packed and sometimes heaped over each other, growing on animal bedding composed of straw and wooden chips, animal hairs and possibly animal excreta located on soil of an open field. (SM578): Ta' Mintuff area, close to Wied il-Ħalq, Qala (22-Dec-2020) – A swarm of some 500 fruiting bodies tightly aggregated or sometimes heaped over each other covering an area of about 30 × 30 cm, growing at the side of a field littered with herbaceous and grass debris and stalks and what seems as remains of diffused burnt organic matter.

Notes: *C. theleboloides* is a highly variable species represented by five different forms (Moravec 2005). Generic determination was based on the shape of the rather smooth, broadly ellipsoid, eguttulate spores as well from the gross morphology of flattened, orange, discoid apothecia without visible hair. *C. theleboloides* and *C. granulata* (Bull.) J. Moravec are two closely related species and the Maltese material fits well within these two species. However, *C. granulata* is a strict dung-growing species, bearing paraphysis with conspicuously swollen apices and strongly striated ascospores that were not observed in the material examined. The examined material, resulted in two different forms of *C. theleboloides* which can be morphologically distinguished by the hair morphology present on the rim of the apothecia (Moravec 2005). From the examined material, population (SM578) had almost glabrous apothecia or with very short hyphoid hairs (30–150 µm long) which according to Moravec (2005) this is assigned to the forma *glabra.* Well defined hairs were present on the rim of the apothecia of the other population (SM532) and this was attributed to the forma *theleboloides*.

***Scutellinia barlae* (Boud.) Maire (1933)**
Basionym: *Ciliaria barlae* Boud. (1887)

Examined material: SM460: Wied Ta' Xħajma, Xagħra (5-Feb-2020) – 18 fruiting bodies were observed scattered on wet silty and clayey sediment in valley bed vegetated with several wild plants namely *Acanthus mollis* L. and *Rumex conglomeratus* L. Surface of soil was matted with mosses, possibly the direct host of this ascomycete.

Notes: A few closely related *Scutellinia* species forming globose spores can be confused with *S. barlae*. According to Schumacher (1990), important morphological structures which distinguish *S. barlae* from other congeners include the length and the rooting type of the hairs, and the size, distribution and shape of warts or spines on the spore wall. *S. barlae* is characterized by having rounded warts with flat tops. The warts are typically of unequal size, up to 2.0 µm wide (but mostly about 1.2 µm wide) and are unevenly distributed on the spore surface. *S. minor* (Vel.) Svr. is a closely related species and is distinguished from *S. barlae* based on its tubercules of which spores are comparatively slightly larger and possess subacute apices (not flattened). In addition, the distribution of the spore's tubercles are very irregular, and sometimes they are found clustered and appear as large blobs. In addition, *S. minor* differs from *S. barlae* by having hairs with bi- or tri-furcate roots (Schumaker 1990).

Sepultariella semiimmersa **(P.Karst.) Van Vooren, U.Lindem. & Healy (2017)**
Basionym: *Peziza semiimmersa* P. Karst. (1869)

Examined material: SM580: Pinetum below Fort Chambray, Mġarr, Għajnsielem (24-Dec-2020) – Some 200 fruiting bodies immersed in clayey soil with burnt wood scattered in an area of about 100 × 80 cm in an afforested area of *Pinus halepensis* Mill. and *Eucalyptus gomphocephala* A. Cunn. ex DC.

Notes: This genus is represented by two closely related species, *S. patavina* (Cooke & Sacc.) Van Vooren, U. Lindemann & Healy and *S. semiimmersa*. The two species are distinguished using the work of Pancorbo & Ribes (2010). The most relevant characters to distinguish *S. semiimmersa* are the smaller and pale ascocarps (5–12 mm diameter and rusty orange in *S. patavina*), and the smaller spores around 20.5 µm in length (ca. 26 µm in *S. patavina*).

Hypoxylon crocopeplum Berk. & M.A. Curtis (1875)

Examined material: SM595: Wied Ta' Binġemma, Nadur (5-Jan-2021) – Two stromata (aethelia) about 4 × 2 cm in size on fallen branches and twigs of *Olea europaea* L., occurring in a damp habitat.

Notes: The identification of this species was confirmed by Dr Lucile Wendt and Dr Marc Stadler, who examined voucher specimens and determined the species using HPLC profiles of the extractable pigments and molecular sequencing from cultivated cultures. *H. crocopeplum* was regarded as a tropical species, but recent reports from central Europe alludes that it is a globally widespread and it may have been overlooked with the similar *R. rubiginosum* s. l. (Fournier & Magni 2004). This species forms distinct golden-amber stromata with dark greyish ostioles, broad ascospores with sharp ends and wide and conspicuous sigmoid germ slit in the ascospore wall. In addition, it has the compound Mitorubrinol, which is not found in any member of the *H. rubiginosum* group (Fournier & Magni 2004).

Hypoxylon petriniae **M. Stadler & J. Fourn. (2004)**

Examined material: SM465: Wied Ta' Binġemma, Nadur (10-Mar-2020) – Abundant, about 15 stromata (about 3 × 2 cm each) on fallen branches and twigs of *Olea europaea* L.

scattered in a damp habitat; SM512 (A075): Wied il-Lunzjata (Sellum area), Kerċem (29-Oct-2020) – Frequent on fallen branches and twigs of a cultivated copse of *O. europaea*.

Notes: As for *H. crocopeplum*, the identification of this species was confirmed by Dr Lucile Wendt and Dr Marc Stadler who examined voucher specimens and determined the species using HPLC and molecular sequencing. This species had been repeatedly reported on *Fraxinus* spp. (Oleaceae), less frequently on *Populus* and *Salix* spp. (both Salicaceae) and rarely on *Ulmus* and *Acer* spp. (Sapindaceae) Fournier, J. & Magni, J.-F. (2004). The findings from Gozo are hence the first report of this species on *Olea europaea.* The extractable pigments of this species have a rusty-brown colour with only a faint violaceous hue, unlike other closely related taxa, which have a predominantly purplish colour. The black margin of the stromata seems to be another distinct character for *H. petriniae* (Stadler & al. 2004).

***Agaricus iodosmus* Heinem. (1965)**

Examined material: SM572: Wied tal-Egħżien, Xagħra (16-Dec-2020) – One individual in a weedy place at the side of a path close to *Ceratonia siliqua* L.

Notes: The three rimed ring found on the pileus of the examined material is characteristic for two closely related species within the *Xanthodermatei* group: *A. iodosmus* and *A. menieri* Bon. This material was determined as *A. iodosmus* using the key (Section *Xanthodermatei*) in Parra Sánchez (2013), where it is morphologically distinct from *A. menieri*, for the presence of brown scales on the pilleus, the presence of multi-septate cheilocystidia and the smaller spores ca. 5.0 µm long (6.0–8.5 µm in *A. menieri*). Moreover, *A. menieri* grows in sandy places such as sand dunes and shores, while the material examined from Gozo was found in anthropogenic nitrophilous habitats which are typical for *A. iodosmus* Parra Sánchez (2013).

***Agaricus subrufescens* Peck (1893)**

Examined material: SM568: Il-Qortin tal-Magun, Nadur (about 600 m away from SM086) (5-Dec-2020) – Five specimens in degraded weedy plots scattered in a Mediterranean sclerophyllous phrygana shrubland (mosaic of *Cistus* spp. and *Anthyllis hermanniae* s. l.).

Notes: The examined material was determined as *A. subrufescens* using the key (Section *Arvenses*) in Parra Sánchez (2013). The closely related *A. osecanus* Pilát, growing in similar grassy habitats, differ by having slightly larger spores measuring 7.1 × 5.2 µm (ca. 6 × 4.5 in *A. subrufescens*) and its pilear scales are less dense and appressed small tufts giving it an overall lighter colour appearing almost white. *A. comtulus* Fr. is also morphologically closely related, however it forms smaller basidiomata that lack the flattened tufts on the surface of the pileus and its spores are slightly smaller (4.8 × 3.5 µm long) according to Parra Sánchez (2013).

Lepiota farinolens **Bon & G. Riousset (1992)**

Examined material: SM560: Qortin tal-Magun, Nadur (4-Dec-2020) – Two fruiting bodies, ca. 40 m apart, solitary, terrestrial, close to the shrubs *Cistus monspeliensis* L., *Anthyllis hermanniae* subsp. *melitensis* Brullo & Giusso and *Thymus capitatus* (L.) Hoffmanns & Link. It may also be associated with *Bromus* spp. growing under the shrubs.

Notes: The species belong to subsect. *Helveolinae* section *Ovisporae* owing to the clavate cheilocystidia, elongated pileipellis elements and ovate spores (Bon 1992). It shows a scattered distribution in Europe, where it was reported in France (Bon 1992), Spain, Canary Islands, Switzerland (GBIF 2021d), Cyprus (Loizides 2016) and Altai Republic situated in the central southern Russia (Gorbunova 2020). The measurements of many characters (spores, cheilocystidia, basidia, etc.) were found on the lower the range for this species and most basidia were bisporous. A similar observation was made by Gorbunova (2020), who studied material growing in harsh climatic conditions of dry steppic grassland at an altitude of ca. 2200 m. The collection from Gozo was also found growing in deprived soil and relatively in arid conditions compared to the other records in Europe. Thus there is a likely a morphological relationship in this type habitat. The specimens in Gozo was found in a shrub-dominated habitat, but *L. farinolens* is probably a terrestrial species associated with wild grasses, the same as reported in several other records from Europe and Russia (*op cit*.).

Lepiota griseovirens **Maire (1928)**

Examined material: SM563: Qortin tal-Magun, Nadur (4-Dec-2020) – One fruiting body under *Cistus monspeliensis* L. and *Thymus capitatus* (L.) Hoffmanns & Link. It is difficult to confirm whether it was saprophytic with these shrubs or a terrestrial species growing on accompanying grasses or weeds.

Notes: The species was determined using the keys and species descriptions available in Vellinga (2001) and Boccardo & al. (2008). The lateral spur of spores found in the examined material is characteristic for Section *Stenospore* (= *Cristatae*) where this species is included (Boccardo & al. 2008). The grey-green colours of the fruiting body, which do not turn orange with age, are distinct for this species (Vellinga 2001). Closely related species include *L. grangei* (Eyre) J.E. Lange but this has spores longer than 10 µm (7–9 µm for *L. griseovirens*) (Boccardo & al. 2008), and *L. tomentella* J.E. Lange, which according to Vellinga (2001), it differs by having pileipellis septate and without clamp junctions and young basidiocarps are pinkish-beige (dark olive-green in *L. griseovirens*).

Lepiota nigrescentipes **G. Riousset (1992)**

Examined material: SM527: Wied Mġarr ix-Xini, Xewkija (15-Nov-2020) – Seven fruiting bodies (few others in decaying state) on fallen small branches of *Ceratonia siliqua* L. over a grassy/weedy moist ground.

Notes: *Lepiota nigrescentipes* is distinguished from its congeners for its small fruiting bodies that are completely white; its pileus having a satin-like texture and without colourful scales; for its small spores (< 5 µm) and more importantly, for the blackening of the base of the stipe when bruised or cut. The epithet '*nigrescentipes*' (= blackening foot) was given for the last characteristic. According to Salom & Siquier (2009), morphologically, *L. parvannulata* (Lasch: Fr.) Gill. is probably the most closely related species. It differs in several characters, namely being more robust and colourful from *L. nigrescentipes,* texture of the pileus is more tomentose rather than silky, stipe has a thick floccose-squamulose texture, and the terminal ends of the pileipellis are longer (reaching up to 350 µm) and without parietal pigmented incrustations.

***Leucoagaricus littoralis* (Menier) Bon & Boiffard (1976)**
Basionym: *Lepiota littoralis* Menier (1889)

Examined material: SM445: Wied Mġarr ix-Xini, Xewkija (1-Dec-2019) – Four basidiocarps in leaf litter and fallen twigs of *Ceratonia siliqua* L.

Notes: This *Leucoagaricus* belongs to the section *Rubrotincti* for its fleshy basidiomata with red, brown, pinkish or orange pileus that does not change colour when bruised or cut and forms spores with an ellipsoid to almond shape. Moreover, the flesh negatively reacts to ammonia or alkali (Singer 1986). The material examined from Gozo was determined as *L. littoralis* using the work of Vellinga (2001). Closely related is *L. wychanskyi* (Pilát) Bon & Boiffard (e.g. Singer 1986; Vellinga 2001), which differ mainly by having a white, persistent veilar patch on the pileus [absent in *L. littoralis* or *L. sublittoralis* (Kühner ex Hora) Singer] and has a large bulbous stipe (much reduced in *L. littoralis* or *L. sublittoralis*) as well minor differences in the shape of the cheilocystidia (Vellinga 2001). According to the phylogenetic studies carried out by Dizkirici & al. (2019), *L. littoralis* and *L. wychanskyi* are genetically similar and form their own clade in the section *Rubrotincti.*

***Xerocoprinus arenarius* (Pat.) Maire (1906)**
Basionym: *Coprinus arenarius* Pat. (1896)

Examined material: SM566: Qortin tal-Magun, Nadur (5-Dec-2020) – One individual in a grassy clearing mostly composed of *Bromus* sp., within a garigue-phrygana habitat in calcareous *Terra rossa* soil (Luvisol) which are sandier and loamier from clayey calcisols.

Notes: Patouillard (1892) originally described this species from Tunisia as *Coprinus arenarius*, based on its black spores and deliquescent pileus which are unique characters for this genus. According to Ruiz & Martinez (2011), Maire also examined similar material from Tunisia and observed that the hymenophore was not deliquescent as provided in the original description. Consequently, Maire transferred the species in the family Agaricaceae and assigned it under a new and currently monotypic genus, *Xerocoprinus* Maire. Ruiz & Martinez (2011) compared and scrutinized the protologues and descriptions of both taxa

and presumed that the holotype specimen examined by Patouillard and the material examined by Maire are probably different species. They suggested that the species by Patouillard is probably a *Coprinus* Pers. for being deliquescent and has typical coprinoid spores, while the collection examined by Maire belongs to a different species; possibly a *Montagnea* sp. (Ruiz & Martinez 2011). The authors further remarked that the specimens were not collected by Maire, but submitted to him by members of the French Botanical Society collected several days earlier. While they proposed maintaining the orginal taxon of *C. arenarius* as first described by Patouillard (1892), current classifications give *X. arenarius* the accepted name (Index Fungorum 2022; Mycobank 2022; Marcos Martinez 2016, etc.).
The species has a restricted distribution in northwest African and Spain and was proposed for a Global Red List Assessment (Marcos Martinez 2016). The species is recorded from Algeria, Morocco, Tunisia, Spain (Marcos Martinez 2016) and the Maltese Islands (in Gozo).

***Limacella subfurnacea* Contu (1990)**

Examined material: SM422: Wied tal-Egħżien, Xagħra (7-Nov-2019)– Some 30 specimens widespread in an area of 10 × 10 m under *Eucalyptus gomphocephala* A. Cunn. Ex DC; SM490: Wied il-Lunzjata (is-Sellum area), Kerċem (9-Oct-2020) – Eight specimens under *Ceratonia siliqua* L.; SM544: Wied il-Lunzjata (maquis opposite Annunciation chapel), Kerċem (26-Nov-2020) – One fruiting body under *C. siliqua*; SM583: Chambray pinetum, Għajnsielem (24-Dec-2020) – 13 specimens rather close to each other in leaf litter of *Pinus halepensis* Mill.

Notes: *L. subfurnacea* was described by Contu (1990) from material collected in Sardinia. Gminder (1994) revised the seven European species of *Limacella* Earle and this work was the basis to identify the material collected from Gozo. *L. subfurnacea* is a thermophilic Mediterranean species closely related to *L. furnacea* (Letell.) E.-J. Gilbert. Three main differences are highlighted between these two species as provided by Gminder (1994): *L. subfurnacea* have slightly larger spores (5–8 µm compared to 4.5–6.0 µm in *L. furnacea*); an unstriped smooth ring (grooved and striped in *L. furnacea*) and a farinose-aromatic scent which becomes foul and nauseatic when ageing (nearly odourless in *L. furnacea*). All these characters matched with *L. subfurnacea* in the examined material from Gozo, especially the characteristic disagreeable smell also detected in young specimens. Neville & Poumarat (2004) have synonymized *L. subfurnacea* with *L. furnacea* while some authors such as Boccardo & al. (2008) still retain them as distinct species. This left a rather wide debate between Mediterranean mycologists as for example argued on an online post (refer Zanella 2015). In his account on *Limacella* species, Tulloss (n.d.) does not take a definite position and treats *L. subfurnacea* and *L. furnacea* as separate species. For the moment, this study retains the splitting approach of two distinct species, until further molecular studies provides more conclusive taxonomic information.

***Pholiotina dasypus* (Romagn.) P.-A. Moreau (2005)**
Basionym: *Naucoria dasypus* Romagn. (1937)

Examined material: SM545: Wied tal-Lunzjata, Kerċem (26-Nov-2020) – Four isolated individuals close to each other through leaf litter and debris of *Ceratonia siliqua* L.

Notes: *Pholiotina dasypus* is widespread in North Africa and Europe (Arnolds 2005) and is probably the same for Malta were many small brown fungi are not well studied. The finely verrucose spores, only visible with an electron microscope or vaguely with a good-quality light microscope at × 1000, is a unique feature for the genus *Pholiotina*, wherase ths small pore is also a rare feature for the genus (Arnolds 2005). The partial veil on the stipe (an important character of *Pholiotina*) disappears quickly and specimens manifest themselves without a veil in the field (Arnolds 2005) causing confusion with other species, namely *T. furfruacea* which has has similar morphologies but the latter has brownish stipe and adnate gills amongst other minor differences.

***Xerophorus donadinii* (Bon) Vizzini, Consiglio & M. Marchetti (2020)**
Basionym: *Callistosporium olivascens* var. *donadinii* Bon (1990)

Examined material: SM516: Area known as it-Taġen, Comino (Għajnsielem) (1-Nov-2020) – Nineteen fruiting bodies were observed in two clusters very close to each other (< 50 cm apart) on shallow *Terra rossa* soil partly covered with leaf litter of *Pinus halepensis* Mill. trees. Material was drying out with concentric shrivelling marks at the margin of the pileus. Growth appeared terrestrial, but the fungus was growing from some dead branches, assumedly of pine trees buried in the ground.

Notes: Recent taxonomic revision of Tricholomatineae (Vizzini & al. 2020) resulted in a greatly modified reclassification of the Biannulariaceae with several related new families such as Callistosporiaceae. Three species of *Xerophorus* (Bon) Vizzini, Consiglio & M. Marchetti are currently accommodated in the family Callistosporiaceae. *Xerophorus* spp. are characterized by spaced lamellae, long hygrophoroid basidia and amygdaliform spores (Vizzini & al. 2020). *X. dominiacus* Angelini, Vizzini & Bizzi, is only known from the Dominican Republic. *X. olivascens* (Boud.) Vizzini, Consiglio & M.Marchetti is closely related to *X. donadinii.* However, *X. donadinii* differs primarily by having thinner cuticular hyphae (10–20 µm in *X. olivascens*), a more light-coloured pileus (brown-olive to grey olive in *X. olivascens*); and slightly smaller spores (8–13 × 5–7 µm in *X. olivascens)* (Vizzini & al. 2020).

***Simocybe reducta* (Fr.) P. Karst. (1879)**
Basionym: *Agaricus reductus* Fr. (1818)

Examined material: SM431: Wied tal-Egħżien, Xagħra (17-Nov-2019) – Six basidiocarps on decaying branches and twigs of *E. gomphocephala* lying on a damp clayey soil.

Notes: The examined material having a small, velvety, helmet-shaped, caramel-brown pileus, lacking a ring or pilear partial veil; the tobacco-rust spore-print and the hymeniderm-type pileipellis with clamp junctions are morphological characteristics for the genus *Simocybe* (Hausknecht 2012). The dichotomous key provided by Hausknecht (2012) for *Simocybe* species in Europe was used to determine the material from Gozo to species level. *S. reducta* is closely related to *S. centunculus* (Fr.) P. Karst, which is more widespread in the Mediterranean region and differs from *S. reducta* in having smaller spores with obscure or indistinct germpore and are seldom almond-shaped. *S. sumptuosa* P.D. Orton, another common species in Europe, is distinct for having very long cheilocystidia, reaching about 100 µm and again shorter spores without a distinct germ pore (Hausknecht 2012). *S. maritima* Bon is also morphologically related, but it is a typically sand-dune species with distant and thick lamellae (Hausknecht 2012). The germ pore that is easily detected in most spores and the almond-like shape of the spores are reliable characters for *S. reducta*.

***Entoloma poliopus* var. *discolor* Noordel. (1985)**
Basionym: *Rhodophyllus poliopus* Romagn. (1954)

Examined material: SM561: Qortin tal-Magun, Nadur (4-Dec-2020) – Two individuals on moss-covered soil close to *Cistus monspeliensis* L. and *Anthyllis hermanniae* L. subsp. *melitensis* Brullo & Giusso.

Notes: The species was determined using the dichotomous key provided by Noordeloos (1988). Three varieties of *E. poliopus* are recognized: var. *parvisporigerum* Noordel. with spores less than 10 µm; var. *discolor* Noordel. with the lamella edge concolorous, stipe steel blue when fresh and short cheilocystidia up to 40 µm long, and var. *poliopus* (Romagn.) Noordel. with brown lamella edges, more bluish tones in the stipe when fresh and longer (>40 µm) cheilocystidia (Noordeloos 1988). The examined specimen from Gozo fits with the var. *discolor*, although the lamella's edge was interruptedly marked brown rather than entirely so. The habitat of *E. poliopus* s. str. is a sandy or peaty substrate at river banks and coastal dunes, while that of var. *discolor* is grassland in moist and slightly calcareous soil near the coast (Noordeloos 1988). Hence the habitat preference of the latter variety also matches better with the examined material found growing in a similar environment.

***Inocybe mecoana* Fachada, Bandini & Mifsud (2022)**

Examined material: SM588: Chambray Pinetum, Għajnsielem (24-Dec-2020) – The gregarious groups of 10 to 15 specimens each scattered in several places under *Pinus halepensis* Mill. where leaf litter is not dense, hence at margins, paths or clearings within the pinetum.

Notes: This collection was primarily identified as an *Inocybe* (Fr.) Fr. belonging to the *splendens* complex from its navicular-ellipsoid shape of the spores, chestnut-brown fibrillose pileus, which often fissures radially, and a pruinose covering along the entire stem. However, the size of the spores (mean of 12.1 × 6.6 µm) is relatively longer from that of *I. splendens* R. Heim (9.5 × 5.8 µm). This collection from Gozo (Chambray) is being studied by Ditte Bandini and from its morphology and molecular sequencing, it was found out that this species is new to science and was recently published as *Inocybe mecoana* Fachada, Bandini & Mifsud

Ossicaulis lachnopus **(Fr.) Contu (2007)**
Basionym: *Agaricus lachnopus* Fr. (1815)

Examined material: SM450: Wied Mġarr ix-Xini, Xewkija (7-Dec-2019) – Six fruiting bodies at different maturity stages growing on decaying stem and wood chunks of *Ficus carica* L. (or possibly *Ceratonia siliqua* L.).

Notes: The genus *Ossicaulis* Redhead & Ginns was erected by Redhead & Ginns (1985) to accommodate a species originally described as *Agaricus lignatilis* Pers. The second addition to this genus was *O. lachnopus* (Contu 2007). *Ossicaulis lachnopus* and *O. lignatilis* (Fr.) Redhead & Ginns are closely related species and sometimes are also considered as conspecific (e.g. Vesterholt 2008a). However, Holec & Kolařík (2013) confirmed that these two are distinct species based on morphological and molecular studies. The material from Gozo (SM450) corresponded to *O. lachnopus* based on the small spores (3–4 µm long for *O. lachnopus*; 4–6 µm for *O. lignatilis*); beige-grey colour of the stipe (almost white in *O. lignitis*) and natural habitat in forest and maquis (artificial habitats such as parks and garden for *O. lignitis*). Interestingly, more than half of the collections examined by Holec & Kolařík (2013) turned out to be *O. lachnopus* indicating that it is not a rare species as formerly believed and previous records of *O. lignatilis*, should be revised.

Mycena **cf. *roseoquercina*** **M. Villarreal & Esteve-Rav. (2000)**
Basionym: None.

Examined material: SM548: Wied il-Lunzjata, Kerċem (26-Nov-2020) – 200 to 300 specimens scattered over an area of about 5 × 8 m growing on twigs, leaves (mostly) and occasionally on stone seed of *Olea europaea* L.

Notes: The material from Gozo (SM 548) is here ascribed to the Section *Rubromarginatae* for the tan-pink margins of the lamellae. The material is here tentatively identified as *M. roseoquercina* following the dichotomous key of Aronsen (2015a). This presumably rare species is only known from two locations in Spain growing on leaves of *Quercus* spp. (Villareal & Esteve-Raventós 2000). The authors noted that *M. olivaceomarginata* (Massee) Massee is closely related to the new species they described. The morphology of the examined material is very close to the diagnosis of *M. roseoquercina* provided by Villareal & Esteve-Raventós (2000). Important characters include: the slender habit of the fruiting bodies; the shape and size of the spores; the diverticulate stipitipellis; the variablyshaped cheilocystidia with flexuous-irregular margins and the pink edge of the lamellae. On the other hand, the colour of the pileus did not have strong tones of pink although it can be explained by colour changes from the hygrophanous character of the pileus. Villareal & Esteve-Raventós (2000) consider *M. roseoquercina* specific to leaf litter of oak trees, however the material from Gozo was found in association with olive trees. Due to the fact that fungi in the section *Rubromarginatae* are saprophytes on a range of different host-plants, and limited data is available on this recently described species, the material in Gozo is still being attributed to *M. roseoquercina.*

***Lachnella alboviolascens* (Alb. & Schwein.) Fr. (1849)**
Basionym: *Peziza alboviolascens* Alb. & Schwein. (1805)

Examined material: SM531: Wied Mġarr ix-Xini, Xewkija (15-Nov-2020) – About 80 specimens found scattered on bark of decaying branches of an unknown tree (?*Crataegus* sp.).

Notes: This is a very unique cyphelloid basidiomycete fungus composed of a tiny discoid fruiting bodies with a pilose surface made of white hair of different lengths, the longest being present at the border. The species was identified by Michael Loizides. The characters matched with the description provided by Šandová (2015). Closely related to *L. alboviolascens* is *L. uvicola* (Spegazzini) Cooke which is however smaller, has shorter hairs and the fruiting body is ochre-buff in colour (Šandová 2015).

***Hohenbuehelia cyphelliformis* (Berk.) O.K. Mill. (1986)**
Basionym: *Agaricus cyphelliformis* Berk. (1837)

Examined material: SM523: Fields aside Triq Bengħażi, Għajnsielem (11-Nov-2020) – About 30 fruiting bodies on a branch of an unidentified dead tree, but possibly *Ceratonia siliqua* L. or *Ficus carica* L.; SM537: Wied ta' Binġemma, Nadur (24-Nov-2020) – 16 fruiting bodies on fallen branches of *F. carica* in a humid area.

Notes: This species had a long history of taxonomic treatments and was transferred in at least ten different genera. The genus *Hohenbuehelia* Schulzer was circumscribed on the basis that the anamorph state belongs to *Nematoctonus* Drechsler (a microfungi genus, characterized for trapping nematodes) and possessing metuloid cheilocystidia (Miller 1986). Originally, Singer (1975) adopted a different treatment, and placed non-metuloid species in the genus *Resupinatus* Nees ex Gray, and metuloid species in the genus *Hohenbuehelia*. Later, this artificial treatment was discarded, and *Hohenbuehelia* included both metuloid and non-metuloid species having nematophagous anamorphs. Moreover, the teleomorphic phase of this genus is characterised by wood-dwelling, fleshy fungi with a small, pleurotoid stem-less fruiting bodies covered with a gelatinous cuticle. The material from Gozo was identified as *Hohenbuehelia cyphelliformis* using the works of Consiglio & al. (2018) and Krisai-Greilhuber (1994). It is readily distinguished from other congeners by its small size, the combination of a dark brown, slimy cuticle and a few, distant white lamellae.

***Pluteus nanus* (Pers.) P. Kumm. (1871)**
Basionym: *Agaricus nanus* (Pers.) (1801)

Examined material: SM432: Wied tal-Egħżien, Xagħra (17-Nov-2019) – Some 15 individuals on wooden fragments and broken twigs and branches of *E. gomphocephala* A. Cunn. ex DC. intermixed with broken canes of *Arundo donax* L.; SM456: Wied il-Lunzjata, Kerċem (28-Jan-2020) – 18 individuals on wooden litter of *C. siliqua* L.; SM574: Wied tal-Egħżien, Xagħra (16-Dec-2020) – At least 11 specimens were observed, gregarious, scattered over an area of 4 × 2 m, on twigs of *E. gomphocephala*; SM585: Chambray Pinetum, Mġarr, Għajnsielem (24-Dec-2020) – At least 25 scattered individuals on old twigs and small branches partly immersed in soil of *E. gomphocephala*.

Notes: Identification to *P. nanus* was carried out using the dichotomous key provided by Vellinga & Schreurs (1985). Two small-sized *Pluteus* species that are morphologically similar to *P. nanus* are *P. thomsonii* (Berk. & Broome) Dennis and *P. phlebophorus* (Fr.) Kumm. *P. thomsonii* exhibits mucronate cheilocystidia and a strong venose character on its pileus, whereas *P. podospileus* is characterized by a distinct brown floccosity or punctuations on the stipe (Vellinga 1990). Such characters were never observed in the material collected from Gozo. *P. romellii* is also closely related to *P. nanus* but has a distinct pale or chrome yellow colour throughout most of the stipe, sometimes also seen in the lamellae (Vellinga & Schreurs 1985; Vellinga 1990). *P. thomsonii* (Berk. & Broome) Dennis was recorded from Wied il-Luq, Rabat in mainland Malta (Briffa 2002).

***Phloeomana hiemalis* (Osbeck) Redhead (2016)**
Basionym: *Agaricus hiemalis* Osbeck (1791)

Examined material: SM437: Wied Mġarr ix-Xini, Xewkija (1-Dec-2019) – 22 fruiting bodies scattered on the damp and mossy bark of *C. siliqua* L., sometimes grouped in pairs or threes, growing in various sizes.

Notes: The identification of the material collected from Gozo (SM463) as *P. hiemalis* was based on Aronsen (2015b). Apart from the general macromorphology, key characters to determine this species include the morphology of the caulocystidia; the shape and of terminal elements of the pileipellis; and the size and shape of the spores. In Gozo, this species was found on the bark of trees in the presence of moss, a microniche which corresponds with that found in the scientific literature (Aronsen 2015b). Species of *Mycena* (Pers.) Roussel with ascending lamellae and having a convex-shaped profile were originally classified in the Subsect. *Hiemales* within the Sect. *Hiemales* (Aronsen 2015b), however recent taxonomic work placed this group in a new genus, *Phloeomana* Redhead (Redhead 2016a, 2016b, 2016c). This genus currently accomodates five species, of which, *P. oldida* Bres. is the most morphologically related to *P. hiemalis* but differs in having few or no excrescences (projections) in the terminal hyphae of the pileipellis and caulocystidia (Aronsen 2015b).

***Coprinopsis* cf. *kubickae* (Pilát & Svrček) Redhead, Vilgalys & Moncalvo (2001)**
Basionym: *Coprinus kubickae* Pilát & Svrček (1967)

Examined material: SM535: Wied ta' Binġemma, Nadur (24-Nov-2020) – Three fruiting bodies growing amongst grass in a field.

Notes: The examined material from Gozo was identified using the work of Uljé (2001) and Melzer (2017). The presence of diverticulate hyphae in the veil assigned the studied material to the Subsect. *Alachuani.* In addition, the smooth subglobose spores with average length of 8.1 µm and the thin-walled elements of the veil agreed considerably with *C. kubickae* (Uljé, 2001; Melzer, 2017). Other related species include *C. phaeosporus* P. Karst (average spore length 7 µm) and *C. xantholepis* P.D.Orton (average spore length 6 µm). Unlike *C. kubickae*, both *C. phaeosporus* and *C. xantholepis* possess veilar hypha with thick walls. Moreover, these two species are either terrestrial or dung species whereas, the examined material was found growing on stalks of grass, which is the usual reported habitat for *C. kubickae*. *C. subtigrinella* (Dennis) Redhead, Vilgalys & Moncalvo is macromorphologically similar to *C. kubickae*, sharing the same spore morphology and habitat on grass. However, it is described to have the veil elements that are multi-branched and heavily diverticulate, sometimes looking like coralloid excrescences (Nagy 2007). The examined material did not posses veil elements with these characters. Instead unbranched and poorly diverticulate veil elements were observed. However, these two closely related species are best differenciated by molecular and thus the material from Gozo is only tentatively identified as *C. kubickae*.

***Coprinopsis lilacina* (Berk. & Broome) Redhead (2021)**
Basionym: *Rhacophyllus lilacinus* Berk. & Broome (1871) *nomen anamorphosis*

Examined material: SM500: Wied il-Lunzjata, Kerċem (29-Oct-2020) – One fruiting body on dead branch of *Ceratonia siliqua* L.

Notes: A unique species lacking a true hymenium composed of basidia and hence the species does not produce powdery basidiospores as in most other agarics. Instead the fruiting body produce bulbil-like, fluid-filled propagules called lysomeres which contains asexual spores known as loculospores. The species was thus described in the monotypic genus *Rhacophyllus* Berkeley & Broome for its unique abasidiosporic reproductive mechanism described above (Berkeley & Broome 1871). There is currently no other species in the *Psathyrellaceae* family that forms pink lysomers instead of lamellae (Melzer 2017; Stalpers & al. 2021).

***Coprinopsis pseudomarcescibilis* Heykoop, G.Moreno & P.Alvarado (2017)**

Examined material: SM577: Tal-Mintuff (l/o Wied tal-Ħalq), Qala (22-Dec-2020) – Four individuals on open ground close to pile of pruned woody branches of unidentified origin;

SM612: Qortin tal-Magun, Nadur (19-Jan-2021) – One fruiting body, terrestrial growth, on red loamy soil in an open garigue/phrygana, possibly growing from buried organic matter such as dead roots or a decaying woody stem. The specimen came loose from the soil with little effort, not allowing to determine if it was on a specific subterranean host. Plants in close vicinity are (in order of vicinity with the fungus): *Asphodelus ramosus* L., *Ranunculus paludosus* Poir., *Atractylis gummifera* L., *Bromus* sp. and *Thymbra capitata* (L.) Cavanilles.

Notes: This species was identified using the work of Melzer (2019). The lack of pleurocystidia, large spores, small cap and appendiculate margin of the pileus are key characters to determine this species. Morphological characters agree with the species description provided by Heykoop & al. (2017) who pointed out that this species is closely related to *C. marcescibilis* Scott A. Redhead, a well-known species from the Mediterranean Region and that the two species are genetically closely related with only 2.2% nucleotide difference in the ITS sequence (Heykoop & al. 2017).

***Tubaria furfuracea* (Pers.) Gillet (1876)**
Basionym: *Agaricus furfuraceus* Pers. (1801)

Examined material: SM573: Wied tal-Egħżien, Xagħra (16-Dec-2020) – Two basidiocarps growing from branches and leaves of *Eucalyptus gomphocephala* A. Cunn. ex DC lying on wet clayey soil.

Notes: *T. furfuracea* is readily identified based on the small size and colours of the pileus, light brown spore print and lachrymoid spores. However, *T. hiemalis* Romagn. ex Bon and *T. romagnesiana* Arnolds have been questioned whether they are really distinct from *T. furfuracea*. The three disputed taxa are currently referred to as the *T. furfuracea* complex. Sequencing using 25S rRNA genes and ITS regions left the *furfuracea complex* unresolved (Matheny & al. 2007). Latha & al. (2016) provided ten sistering accessions for this complex, but other authors including Volders (2002) and Vesterholt (2008b) regarded *T. furfuracea* as a single variable species and considered the characters used to differciate *Tubaria* spp. to overlap considerably. The same opinion was expressed by Antonín & al. (2012) who after examining 20 herbarium specimens of the *T. furfuracea* complex, concluded that several collections were not "*identifiable and that transient forms exist between acclaimed distinct characters*". Until further studies, the examined material is currently assigned to *T. furfuracea*. Morphologically similar is *Pholiotina dasypus*, having same size, pileus with same brown hues and similar elliptical-amagdyloid spore shape, but this species can be distingusihed for having adnexed or almost free gills (adnate in *T. fufuraceae*) and whitish stipe (light cinnamon brown in *T. furfuracea*)

***Xerocomellus redeuilhii* A.F.S. Taylor, U. Eberh., Simonini, Gelardi & Vizzini (2016)**

Examined material: SM562: Qortin tal-Magun, Nadur (4-Dec-2020) – One fruiting body was observed under a large shrub of *Cistus monspeliensis* L.

Notes: Studies by Simonini & al. (2016) showed that *X. redeuilhii* and *X. dryophilus* (Thiers) N. Siegel, C.F. Schwarz & J.L. Frank are differenciated on the basis of morphological characteristics and genetic studies. Moreover, they suggested that the distribution range of *X. redeuilhii* should include Europe and Asia, whereas that of *X. dryophillus* is North America. This was also confirmed by Bozok & al. (2019). *X. redeuilhii* is characterised by its smaller and more slender fruiting bodies and hypha of its pileipellis having less evident incrustations and tapering apices compared to those found in *X. dryophilus* (Simonini & al. 2016). In this respect, the material from Gozo compares well with *X. redeuilhii.*

***Scleroderma albidum* Pat. et Trab. (1899) emend. Guzmán (1970)**

Examined material: SM624: Vicinity of Art Ħażina, Comino (Għajnsielem) (20-Mar-2021) – Eight fruiting bodies in a weedy field with calcareous and slightly clayey soil close to *E. gomphocephala* A. Cunn. ex DC. and some fruiting trees, although these were located about 10 m away.

Notes: The material from Comino (SM624) was identified as *S. albidum* using the works of Guzmán & al. (2013) and Nouhra & al. (2011). *S. albidum* is readily distinguished from other congeners based on the following morphological characters: basidiospores not reticulated; clamp junctions absent; exoperidium smooth and not warty; the fruiting body not distinctly stipitate; and the basidiospores 13–17 µm in diameter and spinulose – as reported by Nouhra & al. (2011). The ecology of this species is reported to be associated with *Eucalyptus* spp. (Nouhra & al. 2011; Guzmán & al. 2013) as was the case of the material collected from Comino. *S. albidum* was described from Algeria but is mostly known to occur in Asia and South America (Guzmán & al. 2013).

***Fomitiporia rosmarini* (Bernicchia) Ghobad-Nejhad & Y.C. Dai (2007)**
Basionym: *Phellinus rosmarini* Bernicchia (1990)

Examined material: SM564: Il-Qortin tal-Magun, Nadur (5-Dec-2020) –One fruiting body at the base of *Cistus monspeliensis* L. (20 mm in size) and one fruiting body at the base of *Anthyllis hermanniae* L. subsp. *melitensis* Brullo & Giusso (50 mm in size).

Notes: This polypore, originally described in the genus *Phellinus* (Bernicchia 1990) was identified using the work of Bernicchia & Gorjón (2020) and later confirmed by Annamaria Bernicchia (personal communication, September 2021). Distinct features of *F. rosmarini* are the dextrinoid spores that are smaller from 6 µm and the presence of cystidioles and hymeneal setae (rare but can be found with careful examination) in the hymenium (Ghobad-Nejhad & Dai 2007). *F. erecta* (A. David, Dequatre & Fiasson) Fiasson is the most closely related species but the average spore length is more than 6.5 µm and the presence of hymeneal setae are numerous in this species (Bernicchia & Gorjón 2020).

***Emmia latemarginata* (Durieu & Mont.) Zmitr., Spirin & Malysheva (2006)**
Basionym: *Polyporus latemarginatus* Durieu & Mont. (1856)

Examined material: SM542: Wied Tal-Lunzjata (Sellum area), Kerċem (26-Nov-2020) – At least 24 specimens found scattered on decaying branches of four different trees of *C. siliqua* L; SM587: Chambray pinetum, Għajnsielem, (24-Dec-2020) – One large specimen on the base of trunk of a dead tree of *E. gomphocephala* A. Cunn. ex DC.

Notes: *E. latemarginata* was accommodated in the large genus *Polyporus* P. Micheli ex Adans and was later placed for a long time in *Oxyporus* (Bourdot & Galzin) Donk, a genus characterized by a pseudodimitic hyphal structure. Since this polypore has a monomotic structure (unlike *Oxyporus* spp.) it was circumscribed in a monotypic genus, *Emmia* Zmitr., Spirin & Malysheva, named after the Belarusian mycologist, Emma P. Komarova (Bernicchia & Gorjón 2020). Molecular analysis suggested that it has a close relationship with the genus *Ceriporia* Donk (Greslebin & al. 2004). The identification of this species was also confirmed by Annamaria Bernicchia (personal communication, October 2021).

***Coriolopsis trogii* (Berk.) Domanski (1974)**
Basionym: *Trametes trogii* Berk. (1850)

Examined material: SM536: Wied ta' Binġemma, Nadur (24-Nov-2020) – A cluster of fruiting bodies of variable sizes and shapes, the largest about 10 cm long found scattered on three fallen and dead branches (possibly logged and dumped in a pile) of *Prunus dulcis* L.

Notes: In Malta, two species of *Coriolopsis* Murrill. have been recorded, the frequently occurring *C. gallica* (Fr.) Ryvarden recorded by Saccardo (1914, 1915) and the recently recorded *C. aspera* (Jungh.) Teng (Briffa 2001). The latter is a palaeotropical species that is most common in Asia and Australia (Bernicchia & Gorjón 2020) and the Maltese record is likely due to importation of trees such as *Eucalyptus* and *Acacia*. *C. trogii* can be distinguished from *C. aspera* and *C. gallica* from its pale ash-grey to beige context that exhibits a mild reaction to KOH, where it remains unchanged or turns to medium brown only in old specimens. The other two species have a brown context that turns blackish brown with KOH (Bernicchia & Gorjón 2020). Moreover, compared to *C. trogii*, *C. aspera* then has short tubes up to 1–2 mm long, whereas *C. gallica* has on average smaller pores – 2 or 3 pores per mm (Bernicchia & Gorjón 2020).

***Polyporus meridionalis* (A. David) H. Jahn (1980)**
Basionym : *Leucoporus meridionalis* A. David (1973)

Examined material: SM556: Il-Qortin tal-Magun, Nadur (4-Dec-2020) – Several fruiting bodies found scattered in an area of about 50 × 50 m always associated or attached with dead branches of *Cistus monspeliensis* L., solitary or occasionally in pairs.

Notes: Material from Gozo is here ascribed to *P. meridionalis* following keys and descriptions provided by Bernicchia & Gorjón (2020). *P. meridionalis* and *P. brumalis* (Pers.) Fr. resemble each other macroscopically, but *P. meridionalis* produces smaller fruiting bodies with wider hymenium pores (1–3 per mm) compared with 4–7 pores per mm in *P. brumalis* (Bernicchia & Gorjón 2020). Moreover, the distribution of *P. brumalis* is predominantly northern European and is not reported on *Cistus* spp., whereas *P. meridionalis* is typically a Mediterranean maquis species which have been already recorded on *C. monspeliensis* (e.g. Loizides 2016) among other shrubs. *P. brumalis* (Pers.) Fr. reported by Briffa & Lanfranco (1986) and Lanfranco (1989) from same site and growing on same host (*C. monspeliensis* L.) as the examined material is most likely a misidentification and should instead be assigned to *P. meridionalis.*

***Duportella malençonii* (Boidin & Lanq.) Hjortstam (1987)**
Basionym: *Peniophora malençonii* Boidin & Lanq. (1977)

Examined material: SM511: Wied il-Lunzjata (Sellum area), Kerċem (29-Oct-2020) – About 100–150 crusts present on several small fallen and decaying branches of *C. siliqua* L. lying on moist leaf litter, sometimes densely populated on branches.

Notes: *D. malençonii* exhibits in characteristic crustose basidiomata of a cinnamon-brown colour darkening to chestnut-brown with purplish hues (especially in young specimens) and a contrasting white outer mycelium border. Crusts were found to be small and merging into each other as they grow to form characteristic attractive and conspicuous patchy patterns on the bark of branches, hence attaining the vernacular name 'giraffe spots'. The material in Gozo is similar to *Peniophoroa albobadia* (Schwein.) Boidin but this species mostly occurs in north America and has not been confirmed in Europe (Bernicchia & Gorjón 2010), hence it is best assigned to *D. malençonii.* Also similar is *Porostereum spadiceum* (Pers.) Hjorstam & Ryvarden but this has smaller ellipsoid-cylindrical spores, the crusts usually lack the purplish tinge and it has distinctly long skeletocystisa (>80 µm long) with very thick walls (Bernicchia & Gorjón 2010). The species was originally described under the genus *Peniophora* Cooke but transferred to *Duportella* Pat. characterised and distinct (from the former) by having a developed skeletal or skeletoid hyphae and brown encrusted pseudocystidia (Bernicchia & Gorjón 2010).

Discussion and Conclusion

This work has provided a significant contribution to the macrofungi occurring in Gozo. The 61 new records reported here had updated the Gozitan checklist of macrofungi to a total of 97 different species (16 Ascomycetes and 80 Basidiomycets), almost three times as much as before the onset of this study. The ratio of the number of species per surface area is now similar to that of mainland Malta. Despite only 5 km of sea seperates the two main islands, 75% of these records (45 species out of 61) are new records for the Maltese Islands, two of which are new to science: *X. melitensis* which is presumed to be endemic

(Fournier & al. 2021) and *Inocybe mecoana*, a rare species only occurring in Malta and Portugal (Bandini & al. 2022).. In addition, *P. brumalis*, a threatened, red-listed species with a restricted local distribution (Lanfranco 1989) was instead found to correspond to *P. meridionalis* which has a restricted Mediterranean distribution.

Current datasets suggest that the macrofungi of Gozo and Comino are considerably different from mainland Malta, even if separated from each other by 5km of sea. From a biodiversity point of view, this is not surprising when considering that floristics also follow this trend, where some species rare in mainland Malta are more frequent in Gozo and viceversally. For example *Ophrys speculum* Link is frequent in Gozo but quite rare in mainland Malta (Mifsud 2018); *Tetraclinis articulata* (Vahl) Mast. grows in mainland Malta only (Haslam & al. 1977; Baldacchino & Stevens 2000); whereas some species are such as *Hyoseris frutescens* Brullo et Pavone and *Helichrysum melitense* (Pignatti) Brullo, Lanfranco, Pavone & Ronsisvalle, seem to be almost entirely endemic to Gozo only (Lanfranco & Bonett 2018). The two islands exhibit a slightly different habitat composition and, being less densely populated, Gozo exhibit less or different threats and pressures from mainland Malta.

Regarding the mycobiotic habitats, Gozo has a less riparian woodland than mainland Malta, does not harbour a real ancient woodland habitat like that in Buskett-Verdala in Malta, and lacks remnant oak forests (as in Wardija, Malta). Yet the island of Gozo features several old maquis dominated by carobs and almonds lining the deep rocky valley sides that are permanently moist during the wet season from percolating water. In addition, the beds or some valleys are adorned with permanent water courses (e.g. Wied il-Lunzjata) or semi-permanent ones flowing in deep, shaded, moist, gorge-like depressions (e.g. Wied Mġarr ix-Xini, Ħondoq ir-Rummien, Wied l-Għawdxija) furnishing ideal habitats for the growth of macrofungi. Surprisingly, the few visits in Comino resulted in interesting new records of xerophilic fungi such as *X. donadinii.*

The 97 records are far from a complete inventory of the macrofungi occurring in Gozo. In this short-period and time constrained study, some artificial habitats have not been properly explored, such as farmed areas prone to coprophilous fungi, arable agricultural ground, steppic areas with wild grass lawns, as well parks and public gardens in urban areas. Moreover, between the work carried out between 2014–2016 (Mifsud 2017a, 2017d) and this work (end 2019-2021), some 40 unpublished new records were collected by one of us (SM), some of which are still being determined. Nonetheless, this work has narrowed the knowledge gap about the macrofungi recorded from the sister islands of Maltese archipelago and provided the first record for several genera namely *Phaeoclavulina* Brinkmann (Mifsud 2019), *Cortinarius* (Pers.) Gray (Mifsud & Mifsud 2021), *Fomitiporia* Murrill, *Hypoxylon* Bull., *Scleroderma* Pers., *Sepultariella* Van Vooren, U. Lindem. & Healy and *Xerophorus* (Bon) Vizzini, Consiglio & M. Marchetti amongst others.

Finally, from the repeated site visits during this study and experience gained in previous years have permitted us to perceive ecological observations and the main threats related to macrofungi conservation. Three major conservation measures have been identified.

Foremost, the soft, spongy wood of *C. siliqua* and its copious leaf and wood litter makes it most important tree where saprobic macrofungi are found growing. *P. halepensis*, *Cistus* spp. and to some extent, Eucalyptus trees are also important contributors in providing detritus for saprobic habitats (refer to the supplementary table A2). Carob trees are in a continuous decline in Malta, the majority for urban development (e.g. Baldacchino 2020, 2021) and hence the current lax protection should be revised to decrease the unnecessary destruction of carob trees (Fig. 2), sometimes occurring in ODZ (Out of Development) areas (see Borg 2000).

Fig. 2. Destruction of an old carob tree in a non-protected area for development purposes in Victoria, Gozo, despite the area may have qualified for protection as surviving countryside remnants within the urban area.

Moreover, wildfires destroy many trees yearly, which in Gozo seem to be set deliberately during summer (but also accidentally through cast-off trash). Fires also consume all the coarse dead wood, leaf litter and all organic detritus where macrofungi's mycelium and spores reside. Even if the mycelium would survive in the soil, the detritus and canopies are no longer present to promote the right environment for regrowth in the wet season. This threat can be exemplified by two accidents that took place in Gozo in June 2021. One of the sites was in the study area of Wied tal-Egħżien, Xagħra, (Times of Malta 2021), where many maquis trees were completely burnt down (Fig. 3). A few days later, another and larger fire covering more the 2 km^2 have blazed numerous trees, mostly carob trees, Maltese salt trees (endemic) and almond trees in the limits of Għajn Damma and Ramla l-Ħamra (also in Xagħra). It was accidentally caused by a private fireworks display in a natural rural reaching the Ramla Bay Natura 2000 site. According to the Malta Independent (2021) a permit was issued for this event, even if it was located in the heart of an Out of Development Zone, adorned with many maquis and endemic trees. More sensibility is hence recommended concerning permitting such pyrotechnic activities, and fire fighting should be tackled more efficiently.

Fig. 3. Massive fire at Wied tal-Eghzien, including burning of carob trees (inset).

Finally, another common habitat loss for macrofungi is derived from ‘cleaning’ activities where the understory of afforested areas has been turned into embellishment projects. As witnessed several times, such cleaning activities are aggressive, and most if not all of the understory (including fallen woody branches and detritus) is removed completely from under the trees and disposed of in waste facility centres, bringing about a major habitat loss for saprophytic macrofungi. In Gozo, a good example is that at il-Ġnien ta’ Blankas, Xewkija (Fig. 4). This afforested olive grove is over 70 years of age, and several rare and interesting macrofungi have been encountered there in the past, for example, the first record of *Morchella galilaea* Masaphy & Clowez (Mifsud 2017c, 2017d) or the red data book species *Hygrocybe conica* (Schaeff.) P. Kumm. (Lanfranco 1989). This olive grove was ‘refurbished’ and trans-

Fig. 4. Afforested olive grove at Ta Blankas Garden, Xewkija, Gozo. Left: the original state of the understory offering a suitable habitat for macrofungi; Right: aggressively cleaned area, destroying the habitat for most macrofungi.

formed into a family park in 2014 (GozoNews 2014), where most of the understory was cleared to give a 'cleaner' appearance to the visitors. After this event, occurrences of macrofungi have drastically decreased from Ġnien ta' Blankas. It is hence suggested that environmental policies are created to find a balance between embellishing such an area (if necessarily) and keeping the habitat of macrofungi sustainable.

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Addresses of authors
Stephen Mifsud[1*] & David Mifsud[2],
[1]EcoGozo Directorate, Ministry for Gozo, Victoria, Gozo.
E-mail: info@maltawildplants.com
[2]Institute of Earth Systems, Division for Rural Sciences and Food Systems, University of Malta, Msida, Malta.
*Corresponding author