THE CENTRAL MEDITERRANEAN NATURALIST

PERIODICAL ISSUED BY THE

SOCIETY FOR THE STUDY AND CONSERVATION OF NATURE

FOUNDED 1962

VOLUME 1 PART 4 MALTA, SEPTEMBER 1986

THE CENTRAL MEDITERRANEAN NATURALIST

Volume 1 Part 4 **Malta, September 1986**

CONTENTS

Issued by the SOCIETY FOR THE STUDY AND CONSERVATION OF NATURE,

P.O. BOX 459, VALLETTA, MALTA.

EDITOR: Edwin Lanfranco

Offset Printed by A & M Printers, QALA, GOZO, MALTA.

The Central Mediterranean Naturalist, Vol. 1 (4) - 1986

THE MACROFUNGI OF THE MALTESE ISLANDS: ADDITIONS AND NOTES

Michael BRIFFA * and Edwin LANFRANCO **

* 20 Creche Street, Sliema, MALTA

** Department of Mathematics and Science, The University of Malta, Msida, MALTA

ABSTRACT

Fifty species of macrofungi are recorded for the first time from the Maltese Islands in the form of a classified annotated list. A brief history of the study of macrofungi in Malta is also given.

INTRODUCTION

The first records of macrofungi from the Maltese archipelago are those of ZERAPHA (1827 & 1831) who cites four species: *Agaricus campestris* (ZERAPHA, 1827) and *Agaricus ephemerus*, *Boletus igniarius* and *Phallus impudicus* (ZERAPHA , 1831). GRECH-DELICATA (1853) quotes Zerapha's records. GULIA (1855-56) cites Zerapha's record of *Phallus impudicus* and also gives *"Agaricus"*. In a later work (GULIA, 1858-59) he records seven species, the four cited by Zerapha with revised nomenclature, and three of his own. Gulia seems to equate Zerapha's *Agaricus ephemerus* with what he calls *"Coprinus helvolus* Pers." while he also cites a *"Dermocybe helvolus* Pers." as one of his own finds. It is not clear whether he is alluding to *Cortinarius helvolus* Fries. The other two species added by Gulia are *Poliporus* (sic) *lucidus* Fries and *Daedalea unicolor* Fries. His son (GULIA, 1889-90) simply follows his father's first-cited work. BORG (1899) adds four species: *Agaricus hesperidium*, *Fomes obliquus*, *Daldinia concentrica* and *Armillaria citri* as well as two sterile states of basidiomycetous fungi: *"Ozonium auricomum"* and *"Himantia fulva"*. The former may refer to a *Coprinus*, possibly *Coprinus radians* or *C. domesticus* (HEIM, 1969) while the second is possibly a corticoid species (AINSWORTH *et al.*, 1973). In a subsequent work (BORG, 1901) two species are cited of which *Polyporus fumosus* is new.

The first exhaustive lists of Maltese fungi are those of SACCARDO (1912, 1914, 1915) who records a large number of fungi the specimens of which were provided mainly by A. Caruana Gatto and J. Borg. Saccardo records 43 species of macrofungi of which 40 are new records. Saccardo also describes some new forms based on the Maltese material. These are: *Pleurotus nebrodensis* forma *minor* Sacc., *Fomes ribis* forma *tamaricis* Sacc., *Fomes robustus* forma *punicae* Sacc., *Fomes robustus* forma *amygdali* Sacc., and *Trametes hispida* forma *resupinata* Sacc.

The major work recording Malta's fungi is that of SOMMIER and CARUANA GATTO (1915) which cites and evaluates all previous records (with the exception of Gulia's *Dermocybe helvolus*) revising their names. In addition to previous records, Sommier and Caruana Gatto add a further six species of which one is in a form presumably new to science and cited as *Colus hirudinosus* forma *minor* CG. which is not, however, accompanied by a description. Thus Sommier and Caruana Gatto record a total of 58 macrofungi (47 Hymenomycetes, 4 Gasteromycetes, 5 Discomycetes and 2 Pyrenomycetes) of which two (Borg's *Agaricus hesperidium* and *Armillaria citri*) are treated as doubtful while another two are Borg's records of sterile states. BORG (1922) cites 16 species of macrofungi of which three (all polypores) are additions to the Maltese list.

The works of Borg and of Sommier and Caruana Gatto were followed by a long hiatus in the addition of information regarding Maltese macrofungi until LANFRANCO (G.) (1954, 1957, 1959, 1961) produced a number of popular articles. No species are specifically named but these articles were accompanied by a plate depicting a number of locally observed macrofungi. These can be identified (from the plate but also on the basis of surviving herbarium material) as *Morchella vulgaris, Schizophyllum commune, Coprinus comatus, Paxillus panuoides, Agrocybe praecox* and species of *Phellinus, Inocybe* and *Stereum*. One of us records six new additions (LANFRANCO, 1972) and cites some previously known species (LANFRANCO, 1968, 1979). Some floristic information on Maltese macrofungi was also given in some duplicated lecture notes and field notes (LANFRANCO, 1984a, 1984b and 1984c).

Since 1979, one of us (M.B.) has been undertaking a systematic exploration of likely habitats for macrofungi. This has resulted in the discovery of well over a hundred previously unrecorded species. In addition this author has kept a complete photographic record of his finds as well as both dried and preserved herbarium material. A substantial number were eventually determined (by E.L.) down to the species level and these form the basis of the present contribution. Numerous species remain incompletely determined, particularly several *Coprinus, Inocybe, Psathyrella, Agaricus, Hygrophorus*, polypores and Discomycetes. It is hoped that these will be the subject of future contributions.

SPECIES LIST

Classification is based on AINSWORTH *et al.* (1973) except that the order name Aphyllophorales has been substituted by Polyporales. Records for each species are given. Where the collector is one of the authors, the name is abbreviated (MB and EL). Names of other collectors are written in full. Numbers in parentheses refer to the designations in the authors' private herbaria. In some cases only photographs were taken; such records are distinguished by italics. In other cases the specimens were identified in the field hence the absence of a designating number for some of the records. All records are from Malta except where otherwise stated.

Division: EUMYCOTA

Sub-division: ASCOMYCOTINA

Class: DISCOMYCETES

Order: PEZIZALES

Family: HELVELLACEAE

1. *HELVELLA CRISPA* (Scopoli)Fries

Ballut tal-Wardija: 30.12.1983, under *Quercus ilex*, leg. MB (MB135); Imġiebaħ: 4.1.1985, under *Quercus ilex*, leg. MB (MB112); specimen with brownish pileus, leg. MB (MB89).

2. *HELVELLA LACUNOSA* Afzelius ex Fries

Ballut tal-Wardija: 19.1.1984, under *Quercus ilex*, leg. MB (MB114); Ta' Wied Rini: 12.1.1985, dwarfed specimen under *Cistus monspeliensis*, leg. MB (MB138).

Family: PEZIZACEAE

3. *SARCOSPHAERIA EXIMIA* (Durand & Lēviellē) Maire

Buskett: 30.1.1985, on pine needles, leg. MB; Verdala: 22.1.1980, under conifers, leg. MB (EL260); 21.1.1985, leg. MB (MB144).

4. *PEZIZA MURALIS* Sowerby

Marsa: 31.5.1982, on rotting cricket knee-guards in a store room, leg. Carmelo Briffa and MB (MB35).

Family: PYRONEMATACEAE

5. *HUMARIA HEMISPHAERICA* (Wigg.) Fuckel

Addolorata Cemetery (Marsa): 19.1.1981, leg. MB (EL258); Buskett: 28.12. 1972, among mosses, leg. EL (EL256); Verdala: 25.1.1981, leg. MB and Stephen Schembri (EL257).

6. *ALEURIA AURANTIA* (Fries) Fuckel

Maqluba: 10.2.1985, on moist clay loams, leg. MB and EL (EL434); Tabía (Imtarfa): 19.11.1984, along footpaths, leg. MB (MB158); Ta' Ġorni: 11. 1.1971, along footpaths, leg. Mario Gauci (EL254).

Sub-division: BASIDIOMYCOTINA

Class: HYMENOMYCETES

Sub-class: HOLOBASIDIOMYCETIDAE

Order: POLYPORALES

Family: GANODERMATACEAE

7. *GANODERMA APPLANATUM* (Persoon ex Wallroth) Patouillard

Wied il-Luq (Buskett): 8.7.1976, on base of trunk of *Ulmus* sp., leg. EL (EL272); 2.9.1985, at base of dying *Laurus nobilis*, leg. MB (MB1234); Buskett: 29.8.1984, on old unidentified stump, leg. MB and Anthony Valletta (MB1019/20).

Family: HYMENOCHAETACEAE

8. *PHAEOLUS SCHWEINITZII* (Fries) Patouillard

Ballut tal-Wardija: 15.1.1980, on roots of *Ceratonia siliqua*, leg. MB (EL277); Buskett: 1.1.1972, under conifers, leg. EL and Guido Lanfranco (EL276); Verdala: 26.1.1982, on trunk base of *Ceratonia siliqua*, leg. MB; Wied Għollieqa (Kappara): 6.12.1981, on roots of *Ceratonia siliqua*, leg. MB (EL278); Wied il-Kbir (Qormi): 20.4.1986, in small cave, leg. David Dandria and EL (EL443).

Family: CANTHARELLACEAE

9. *CANTHARELLUS CIBARIUS* Fries

Ballut tal-Wardija: 20.11.1982, grove of *Quercus ilex*, leg. MB and Salv. Fenech (MB108,EL265).

Family: CLAVARIACEAE

10. *CLAVULINOPSIS FUSIFORMIS* (Sowerby ex Fries) Corner

Buskett: 30.1.1985, under cypress, leg. MB (MB116).

Family: SPARASSIDACEAE

11. *SPARASSIS LAMINOSA* Fries

Ħal-Farruġ: 8.12.1982, near burnt stump of *Ceratonia siliqua*, leg. Carmelo Briffa and MB (MB136); Wied Għollieqa (Kappara): 5.12.1983, near recently burnt stump of *Ceratonia siliqua*, leg. MB (MB950/1); Wied Ħażrun: 23.11.1984, near burnt stump of *Quercus ilex*, leg. MB and Anthony Valletta.

Family: POLYPORACEAE

12. *MERIPILUS GIGANTEUS* (Persoon ex Fries) Karsten

Imġiebaħ: 26.11.1985, on apex of main trunk of *Quercus ilex*, leg. MB (MB1172/3)

13. *POLYPORUS BRUMALIS* Persoon ex Fries

Ta' Wied Rini: 3.11.1982, on old branch of *Cistus monspeliensis*, leg. MB (MB840,EL288); Plateau overlooking Dahlet Qorrot Road (GOZO): 6.2.1985, On old branch of *Cistus monspeliensis*, leg. MB (MB39).

Order: AGARICALES

Family: BOLETACEAE

14. *XEROCOMUS CHRYSENTERON* (Bulliard ex St. Amans) Quēlet

Ballut tal-Wardija: 25.11.1982, under *Quercus ilex*, leg. MB (MB80, EL214); Imġiebaħ: 7.11.1984, under *Quercus ilex*, leg. MB (MB128); Ta' Wied Rini: 26.11.1982, under *Cistus monspeliensis*, leg. MB (EL215); Wied Ħażrun: 2. 11.1984, under *Quercus ilex*, leg. MB and EL (MB123, EL389).

Note: The specimens encountered at Wied Ħażrun and Imġiebaħ have a distinctly purplish-red pileus and may be ascribable to var. *versicolor* Rostkovius. The population at Imgiebah is distinguished by the constant presence of a white margin to the pileus.

15. *XEROCOMUS BADIUS* (Fries) Kühner ex Gilbert

Il-Bosk (Buskett): 25.11.1984, under *Pinus halepensis*, leg. MB(*MB1042*).

16. *BOLETUS PULVERULENTUS* Opatowski

Buskett: 18.10.1984, under *Hedera helix*, leg. MB and Anthony Valletta, (*MB1028/9*, EL385).

17. *BOLETUS LURIDUS* Schaeffer ex Fries

Ta' Wied Rini: 5.11.1982, under *Cistus monspeliensis*, leg. MB (*MB857-60*, EL212); 4.11.1984, under *Cistus monspeliensis*, leg. MB (EL393).

Note: Highly variable. Some specimens at the above locality and at Imġiebaħ show characters transitional to *Boletus calopus* Fries. These have been excluded from the records given since doubt still persists about their correct determination.

Family: HYGROPHORACEAE

18. *CAMAROPHYLLUS NIVEUS* (Scopoli ex Fries) Wünsche

Ta' Wied Rini: 27.12.1984, among *Cistus monspeliensis*, leg. MB; 7.1.1985 leg. MB (MB24b); Verdala: 4.1.1980, under conifers, leg. MB (EL192); 26.2.1982, leg. MB (MB24a); Wied id-Dis: 15.1.1985, numerous among grass, leg. MB.

19. *HYGROCYBE OVINA* (Bulliard ex Fries) Kühner

Ballut tal-Wardija: close to *Olea europaea*, leg. MB (MB143).

Family: TRICHOLOMATACEAE

20. *CRINIPELLIS STIPITARIUS* (Fries) Patouillard

Ta' Wied Rini: 24.11.1982, on grass remains, leg. MB (MB75, EL96).

21. *MELANOLEUCA MELALEUCA* (Persoon ex Fries) Maire

Buskett: 24.1.1971, under conifers, leg. EL and Guido Lanfranco (EL101a); Verdala: 23.2.1980, leg. MB (*MB514a*,EL103); 2.1.1981, under conifers,leg. MB and EL (EL102).

22. *TRICHOLOMA COLOSSUM* (Fries) Quēlet

Verdala: 24.2.1980, on pine needles, leg. MB (EL125); 2.1.1981, leg. EL and MB (EL124); 9.1.1981, leg. MB (*MB669*).

Note: Gregarious. Various specimens had a pileus up to 15 cm in diameter.

23. *TRICHOLOMA SCALPTURATUM* Fries

Imġiebaħ: 26.1.1985, under *Quercus ilex*, leg. MB (EL353); 4.1.1985, leg. MB (MB147).

24. *TRICHOLOMOPSIS PLATYPHYLLA* (Persoon ex Fries) Singer

Verdala: 10.1.1980, on pine needles. leg. MB (EL89).

25. *LYOPHYLLUM LORICATUM* (Fries) Kühner

Addolorata Cemetery (Marsa): 2.12.1982, under conifers, leg. MB (EL301); 29.12.1982, leg. EL and MB (EL349); Verdala: 2.1.1981, under conifers, leg. MB and EL (EL92); 25.1.1981, leg. MB (EL91); 7.2.1982, leg. EL (EL90).

Note: This is a highly variable species which usually occurs in considerable numbers in the two localities cited. In addition to this, other species of the *Lyophyllum aggregatum* group seem to be present.

26. *CLITOCYBE INFUNDIBULIFORMIS* (Schaeffer ex Weinmann) Quélet

Verdala: 2.1.1981, under conifers, leg. EL and MB (EL87).

27. *PLEUROTUS OSTREATUS* (Jacquin ex Fries) Quélet

St. Andrews: 26.12.1972, on tree trunk, leg. John Mifsud (EL142).

Note: Only one specimen, 20 cm. in diameter, has been seen.

28. *PLEUROTUS OPUNTIAE* Durand and Léveillé

Wied Għollieqa (Kappara): 19.12.1981, on remains of *Opuntia ficus-indica*, leg. MB (EL141); 28.12.1982, leg. EL (EL350).

29. *ARRHENIA MUSCIGENA* (Bulliard ex Fries) Quélet

Verdala: 13.1.1980, on mosses, leg. MB and Salv. Fenech (EL264).

Family: CORTINARIACEAE

30. *CREPIDOTUS AMYGDALOSPORUS* Kühner

Maqluba: 21.12.1980, on twigs of *Punica granatum*, leg. MB and Joseph Cilia (EL130); Imġiebaħ, 4.1.1985, on twigs of *Quercus ilex*, leg. MB.

Note: spores of Maqluba specimen 7.0 x 5.0 µm.

31. *CREPIDOTUS HAUSTELLARIS* Fries

Wied Għollieqa (Kappara): 26.1.1982, on trunk of *Ceratonia siliqua* leg. MB (EL129).

Family: BOLBITIACEAE

32. *AGROCYBE AEGERITA* (Briganti) Singer

Ġnien il-Kbir: 25.1.1981, on trunk of *Salix alba*, leg. MB and Stephen Schembri (EL76).

Family: STROPHARIACEAE

33. *STROPHARIA CORONILLA* Bulliard

Baħrija: 6.11.1983, among grass, leg. EL (EL36); Dingli Cliffs: among grass on rocky ground, leg. Charles Camilleri (EL375); Miżieb: 10.12. 1984, leg. MB; Ta' Wied Rini: 24.11.1982, 1.12.1982, among *Cistus monspeliensis*, leg. MB (MB76, EL44/229).

Family: COPRINACEAE

34. *COPRINUS ATRAMENTARIUS* (Bulliard ex Fries)Fries

Near Addolorata Cemetery: 3.2.1982, on burnt ground beneath frondose trees, leg. MB (MB8).

35. *COPRINUS PICACEUS* (Bulliard) Fries

Msida: 18.11.1983, on mat of coconut fibre in a room, leg. EL; Sliema: 11.3.1982, on mat of coconut fibre, leg. Guido Lanfranco (EL19); Santa Venera: 29.10.1982, on mat of coconut fibre, leg. MB (MB49); Wied Għollieqa (Kappara): January 1979, on decaying *Opuntia ficus-indica*, leg. MB (*MB347*). Also reports from Birkirkara and Dingli based on descriptions by Stephen Schembri and Michael Grima respectively, also on mats of coconut fibre.

Note: It will be seen that nearly all the records of this species are of fungi growing on mats of coconut fibre, invariably indoors. These differ from the specimens from Wied Għollieqa in being gregarious and often tufted. The mat from which the Sliema specimen was collected was kept under observation for about 18 months during which time there was a continuous crop of basidiocarps, provided the mat was kept moist.

36. *COPRINUS PLICATILIS* Fries ex Curtis

Fiddien: 14.12.1985, several specimens among grass, leg. EL (EL349).

37. *PSATHYRELLA CANDOLLEANA* (Fries) Maire

Near Addolorata Cemetery (Marsa): 14/31.3.1982, on burnt ground under frondose trees, leg. MB and EL (EL42); Buskett: 2.1.1979, under a butress root of *Cupressus sempervirens*, leg. El and MB (EL52); Maqluba: 14.11. 1982, under frondose trees, leg. MB, Joseph Cilia and Stephen Schembri (EL40); Sliema: March 1984, among grass on pavement strip, leg. EL; Verdala: 10.11.1982, on litter of *Cupressus*, *Olea* and *Nerium*, leg. MB (EL41); Wied il-Għasel (Mosta): 6.11.1983, on mud, leg. EL (EL361); Wied Għollieqa (Kappara): 14.1.1985, under frondose trees, leg. MB (MB139,140, 156); Wied ix-Xagħri (Girgenti): 12.2.1984, on leaf litter of frondose trees, leg. MB, EL and Salv. Fenech (MB115-7).

Note: This is one of the most widespread species. It is also extremely variable as a result of which a number of specimens which might be ascribable to this species have been left out since there persist doubts about their exact identity.

38. *PSATHYRELLA MELANTHINA* (Fries) sensu Kühner et Romagnesi

Ballut tal-Wardija: 16.11.1983, on *Ceratonia siliqua*, leg. MB; Ġnien il-Kbir: 3.1.1982, on *Salix alba*, leg. MB (EL24); Imġiebaħ: 4.1.1985, on *Quercus ilex*, leg. MB; Imtaħleb: 25.11.1984, on rotting softwood box, leg. EL; Magħtab: 6.11.1982, on *Opuntia ficus-indica*, leg. MB; Maqluba: 21.12.1980, on remains of *Arundo donax* and *Laurus nobilis*, leg. MB, Joseph Cilia and Patrick Schembri (EL33); Siggiewi: 13.12.1984, on *Opuntia ficus-indica*, leg. David Dandria (EL440); Tabía (Mtarfa): 19.11.1984, on *Ceratonia siliqua*, leg. MB; Ta' Braxia Cemetery (Pietà):16.12.1982, on *Laurus nobilis*, leg. MB (MB81); Wied Għollieqa (Kappara): January 1979, on remains of *Opuntia ficus-indica*, leg. MB (*MB347*); 8.12.1980, leg. MB; 23. 2.1982, leg. MB (EL55); 30.12.1981, on leaf litter, leg. MB (EL54); 22. 11.1983, on *Ceratonia siliqua*, leg. MB (EL371).

Note: A widespread and variable species, always associated with dead, more or less woody substrates. The Imtaħleb record was quoted in a stencilled field note (LANFRANCO, 1984c).

Family: LEPIOTACEAE

39. *LEPIOTA NAUCINA* Fries

North of Qammieħ: 12.11.1983, among grass, leg. MB (MB122).

40. *LEPIOTA CRISTATA* (Albertini et von Schweinitz ex Fries)Kummer

Qormi: on compost in a flower-pot, leg. Charles Camilleri (EL359).

41. *HIATULA BREBISSONI* (Godey) Locquin

Hamrun: Spring 1983, hanging down from a roof with wooden beams, leg. Charles Camilleri (EL370).

Family: AGARICACEAE

42. *AGARICUS XANTHODERMUS* Genevier

Attard: October 1983, in garden, leg. Mark Farrugia (EL441); Gwardamangia: 8.11.1982, in garden, leg. Antoine Lanfranco (EL164); Hal Farrug: 8.12. 1982, open ground, leg. MB and Carmelo Briffa; Naxxar: 14.10.1985, in garden, leg. Pauline Miceli (EL442); Sliema: 27.10.1975, in garden, leg. Victor Buhagiar (EL165); Verdala: 19.11.1982, open ground, leg. MB (EL163); Tal-Virtù (Rabat): 24.10.1983, in garden, leg. Grace Agius-Bonello (EL357).

Note: This species is fairly frequent in gardens. Most of the specimens were brought to our attention by persons wishing to know whether the species is edible. A number of aberrant forms have been encountered. These have not been cited since doubt persists about their identity.

Family: AMANITACEAE

43. *AMANITA OVOIDEA* Fries ex Bulliard

Wardija (northern slope): 30.10.1985, under *Pinus halepensis*, leg. MB, Salv. Fenech and Sunny Vassallo (a local farmer) (MB169).

44. *AMANITA VERNA* (Bulliard ex Fries) Persoon ex Vittadini

Maqluba: 21.12.1980, under frondose trees, leg. MB and Joseph Cilia (EL187).

Note: Annulus not irregularly torn as seen in most illustrations.

Family: PLUTEACEAE

45. *VOLVARIELLA SPECIOSA* (Fries) Singer var. *SPECIOSA*

Argotti Botanic Gardens (Floriana): 17.12.1954, leg. Guido Lanfranco; Manoel Island: 3.3.1968, among grass, leg. Mario Gauci; Ġnejna: 12.2.1981, on clay, leg. MB (EL184); Laroka (Buskett): 19.11.1972, among grass, leg. EL (EL169); Magħtab: 17.1.1982, on open ground, leg. MB (EL179); Maqluba: 4.1.1981, under frondose trees, MB and Stephen Schembri (EL177); Msida: 22.2.1982, on grass, leg. Jeremy Lanfranco (EL175); Paola: January 1982, in public garden, leg. Mario Zammit; Qaliet (St. Julians): 13.12.1983, on grass, leg. EL (*EL7390*); St. George's Bay (St. Julians): 24.11.1976, among grass, leg. MB (EL171); St. Edward's College (Cottonera): 23.1.1971, in garden, leg. Guido Lanfranco (EL180); San Anton Gardens (Attard): February 1982, leg. MB (EL174); Sliema: 30.11.1982, in garden, leg. EL (EL294); Wied Għollieqa (Kappara): 7.2.1982, among grass, leg. EL (EL169); Wied Għomor (St. Julians): 13.12.1981, on grass among *Foeniculum vulgare*, leg. EL and MB (EL1773); 20.2.1982, leg. Guido Lanfranco (EL178); Wied il-Lunzjata (GOZO): 6.3.1984, in grass, leg. Raymond Galea; New Lyceum grounds (Msida): under *Citrus* trees., leg. EL.

Note: One of the largest and most frequently encountered fungi in the Maltese Islands. SACCARDO (1915) and SOMMIER and CARUANA GATTO (1915) record *Volvaria gloiocephala* DC. This is now usually regarded as a variety of *Volvariella speciosa* and its proper citation at the varietal level would be *Volvariella speciosa* var. *gloiocephala* (DC. ex Fries) Singer. Our experience suggests that the type is much more frequent than the variety. KÜHNER and ROMAGNESI (1953) quote M. Josser- and that one can find a whole gamut of forms linking the two varieties growing in the same site. We have experienced this at Wied Għomor where both type and variety, as well as intermediates were present. Specimens of var. *gloiocephala* which we have seen tend to be smaller than the type. Specimens of the type often attain a considerable size. Some pilei measured had a diameter of up to 14 cm. The records from Manoel Island and Gnejna refer to specimens with small basidiocarps with pileus measuring 4 cm. to 6 cm and with a relatively short stipe. In gross morphology they resemble *Volvaria media* sensu Quelet as described by KUHNER and ROMAGNESI (1953) who give the clear impression that this is a doubtful and poorly known species. The spores of the Gnejna specimens measure 13.5 - 20.0 x 7.0 - 10.0 µm which places them in the same range as *Volvariella speciosa*. We feel that these specimens fit comfortably within the concept of *V. speciosa* var. *speciosa*.

Family: RUSSULACEAE

46. *LACTARIUS SANGUIFLUUS* Paulet

Ta'Wied Rini: 23.11.1982, under *Cistus monspeliensis*, leg. MB (MB106/120, EL226); 27.12.1984, leg. MB, 7.11.1985, leg.MB.

Note: Residents of the locality collect this species for food, calling it "FAQQIEĦ TAD-DEMM" which translates as "Blood Mushroom".

47. *RUSSULA LEPIDA* Fries

Ta' Wied Rini: 7.11.1982, under *Cistus monspeliensis*, leg. MB (MB54, EL221); 4.11.1984, 3.12.1984, leg. MB (EL425).

Note: The cuticle of the pileus varies from light red to nearly white. The stipe is usually flushed pinkish but this colour occasionally disappears.

48. *RUSSULA XERAMPELINA* (Schaeffer ex Secreton) Fries

Ballut tal-Wardija: 20.11.1982, under *Quercus ilex*, leg. MB (EL225).

Note: Grows together with very large Russulae with pileus often reaching 21 cm. in diameter. These vary from typical *R. xerampelina* in that the pileus cuticle is ochre-yellow to greyish-brown (in younger specimens). These did not respond to the ferrous sulphate test.

Class: GASTEROMYCETES

Order: LYCOPERDALES

Family: LYCOPERDACEAE

49. *CALVATIA EXCIPULIFORME* (Persoon) Perdeck

Ballut tal-Wardija: 20.11.1982, under *Quercus ilex*, leg. MB (MB876).

Order: NIDULARIALES

Family: NIDULARIACEAE

50. *CYATHUS OLLA* Persoon

Pietà: 11.2.1981, in a flower-pot, leg. EL and Hubert Spiteri (*EL6063*); Verdala: 2.1.1981, under *Pistacia lentiscus*, leg. EL, MB, Patrick Schembri and Stephen Schembri (EL228).

CONCLUSION

The recent discovery of such a large number of species is due to the fact that there has been little systematic effort to investigate the macrofungi. Most previous work has tended to stress the phytopathological species while there is little interest locally in the use of indigenous macrofungi for gastronomic purposes; indeed only *Pleurotus nebrodensis* and *Agaricus campestris* have been recorded as appearing for sale in market-places (SOMMIER and CARUANA GATTO, 1915).

As can be seen from the records in this paper, macrofungi have been seen in various localities and habitats. It is evident that certain areas have a richer macromycoflora than others. Among the most favoured localities are the Buskett/Verdala area which is a semi-artificial evergreen wood dominated by conifers, especially *Pinus helepensis* and *Cupressus sempervirens;* Ta' Wied Rini in which the main habitat is a low maquis dominated by *Cistus monspeliensis* and Wied Għollieqa, a small valley dominated by *Ceratonia siliqua* and *Opuntia ficus-indica* which lies in a highly urbanized area and is much subject to human interference. Several trees at Wied Għollieqa have been recently destroyed and this has resulted in a substantial decrease in the mycoflora. To these localities one may add the few residual populations of *Quercus ilex* at Ballut tal-Wardija, Imġiebaħ, Wied Ħażrun and Il-Bosk (in the Buskett area). As may be expected open ground species are extremely sporadic as a result of lack of water and shelter.

The accumulated information is now making it possible to assess the relative frequency of macrofungal species and it appears that the most widespread are *Agaricus xanthodermus, Volvariella speciosa, Psathyrella melanthina* and *Psathyrella candolleana.* It is odd that none of these species had been recorded previously. Some undetermined species of *Coprinus, Psathyrella* and *Inocybe* also seem to be frequent. Of the major genera, only *Cortinarius* does not seem to be well represented.

ACKNOWLEDGEMENTS

The authors are indebted to all those persons, mentioned in the records, who have contributed specimens, information and help in the field.

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received January 1986
revised August 1986

The Central Mediterranean Naturalist, Vol. 1 (4) - 1986

DAPHNIS NERII L. (LEPIDOPTERA: SPHINGIDAE) IN MALTA

Stephen SCHEMBRI

"Pearl", Vjal il-Helsien, Zebbug, MALTA

A specimen of the Oleander Hawk Moth (*Daphnis nerii* L.) was handed to the author on 24 July 1984. This large moth was taken from Żurrieq (southern Malta) where it had entered a house, presumably having been attracted to light. The hawk moth was in good condition when captured but due to mishandling it reached the author in a very battered state. However identification was readily made.

The distribution of *Daphnis nerii* includes Africa and the Middle East to eastern Asia. Elsewhere it occurs in countries bordering these regions as a migrant. The larval food plants are *Nerium oleander* and occasionally *Vinca*, *Gardenia*, *Jasminium* and *Ligustrum*. The species is multibrooded (PITTAWAY, 1983).

The Oleander Hawk Moth does not form part of the Maltese fauna. It has previously been recorded twice from Malta: from the then Central Hospital at Floriana in 1943 and from the Argotti Gardens also in Floriana in 1955 (VALLETTA, 1973).

The author is grateful to Mr. A. Valletta and to Dr. P. J. Schembri for their helpful comments.

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received August 1985

The Central Mediterranean Naturalist, Vol. 1 (4) - 1986

A NOTE ON NON-MARINE LEECHES (ANNELIDA: HIRUDINEA) FROM THE MALTESE ISLANDS

Patrick J. SCHEMBRI

Department of Mathematics and Science, The University of Malta, Msida, MALTA

ABSTRACT

A population of the predatory leech *Haemopis sanguisuga* (Linnaeus, 1758) has been discovered at Xlendi Valley, Gozo. This is the first record of leeches living in the wild in the Maltese Islands. Brief notes on the distribution, habitat and behaviour of the Gozo leeches are given. The only previous reports of leeches from the Maltese Islands are those of haematophagous species imported for medical use or accidentally. The possible identity of these species is discussed.

INTRODUCTION

In September 1983, while studying the fauna of permanent freshwater streams, I came across a population of a large arhynchobdellid leech living along one such stream in Gozo. In attempting to identify the species I surveyed the literature for records of leeches from the Maltese islands and was very surprised to find that there were no specific records of these animals from the region. The occurrence of leeches in the Maltese Islands was mentioned by GULIA (1913) in his survey of the Maltese fauna, however, this author simply stated that "parecchi Irudinei" occur without naming any species or even saying whether he was referring to marine, freshwater or terrestrial leeches. More recently CASSAR (1964) collected all the information available on the medical use of leeches locally in his treatise on Maltese medical history. In view of this lack of information, specimens of the Gozo leech were sent to the British Museum (Natural History), London for identification and this record therefore constitutes the first definite report of a member of this group from the Maltese islands.

SPECIES RECORDED

Haemopis sanguisuga (Linnaeus, 1758) (family: Haemopidae)

MATERIAL EXAMINED: 6 specimens; Gozo, NE end of Xlendi Valley 21.9.83, from small permanent stream; leg. P.J. Schembri and M. Gauci; det. E.G. Easton British Museum (Nat. Hist.). (Two specimens have been deposited in the collections of the BMNH, the remaining four are in the author's collection.)

HABITAT: The leeches were found under small stones in the permanent stream which runs through Xlendi Valley. At the time of collection this stream was some 50cm wide and about 5cm deep but the dimensions vary widely depending on the season, the stream almost drying completely in summer and becoming a torrent after heavy rain.

DISTRIBUTION: In spite of searches in other localities in the Maltese Islands with permanent streams, no leeches have been found. This species therefore appears to be limited to a single valley in Gozo. Farmers in the area, when questioned, reported leeches living also in cisterns in their fields on the sides of Xlendi Valley. *H. sanguisuga* is a western palearctic species widely distributed in Europe including Italy and Sicily (MINELLI, 1979).

OBSERVATIONS: At Xlendi Valley the species was found adhering to the underside of stones in daytime. If the stones were turned over, the leeches inched their way to the undersurface again, apparently to escape from bright sunlight. If detached from the stones, the leeches swam against the current by undulating their body until they regained a solid substratum. Specimens from Xlendi have been kept in freshwater aquaria and fed on ostracods, small isopods and amphipods, small gastropods and insect larvae. The leeches spend most of their time on the bottom of the aquaria hiding underneath debris but occasionally wander up and down the sides or climb out of the water.

DISCUSSION

H. sanguisuga is a macrophagic, predatory leech, is amphibious and is common in most of Europe (MINELLI, 1979). It is not surprising therefore that it occurs also in the Maltese Islands. Its amphibious habits, particularly its habit of ovipositing out of the water in damp soil (MINELLI, 1979), make it particularly suited for life in Maltese streams which are very variable depending on season. What is surprising however, is that this species has not been recorded before. This could either be due to lack of collecting in Gozo, or else *H. sanguisuga* may be a recent introduction to the islands. In spite of this, the Maltese are familiar with leeches, even having a name for these animals (*"sangisug"*) in their language (see for example BUGEJA, 1982 p. 353). This is very probably due to the extensive use of leeches for medical purposes, a practice which was still widespread up till the 1930's (CASSAR, 1964) and, in isolated instances, even later (G. ZAMMIT MAEMPEL, personal communication, 1983, who reports seeing a case of blood-letting by means of a leech at Birkirkara, Malta in the late 1960's. The leech was imported from Catania, Sicily, specially for the purpose.). CASSAR (1964) does not report which species of leech was used in therapy but does say that they were imported from "Tunis and Bône". This species is presumably *Hirudo medicinalis* (L.), the traditional medicinal leech of Europe.

ZAMMIT MAEMPEL (personal communication, 1983) reports that leeches used to be found in public animal drinking troughs at Birkirkara, Malta in the 1930's. These leeches originated from the inside of the mouth and nasal passages of cattle imported from North Africa which used these drinking troughs as they were being driven in the streets. The species in question may be *Limnatis nilotica* (Savigny), a circum-mediterranean species which lives on mammalian blood but which is unable to pierce mammalian skin and therefore attaches to the soft buccal and nasal mucosa (MINELLI, 1979).

In view of the recurrent introduction of these exotic leech species into the Maltese Islands, it is somewhat surprising that populations have not become established. Such an avenue of introduction for the Xlendi Valley *H. sanguisuga* is excluded since this species is entirely macrophagous.

ACKNOWLEDGEMENTS

I thank Dr. R.W. Sims of the British Museum (Nat. Hist.) for arranging the identification of my specimens and Dr. E.G. Easton of the same institution for their determination.

I am very grateful to Dr. G. Zammit Maempel for information on leeches in Malta, to Mr. Mario Gauci for arranging my Gozo trips and for his help in the field, and to Mrs. D.M. Johnson for culturing specimens in the laboratory.

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received March 1985

The Central Mediterranean Naturalist, Vol. 1 (4) - 1986

NYMPHALIS POLYCHLORUS L. (LEPIDOPTERA: NYMPHALIDAE) IN THE MALTESE ISLANDS

Stephen SCHEMBRI

"Pearl", Vjal il-Helsien, Zebbug, MALTA.

BORG (1932) in his list of Maltese Lepidoptera included, among several other 'exotic' species, *Nymphalis polychlorus*, the Large Tortoiseshell Butterfly. Borg's list is considered unreliable by most local entomologist's and therefore this species has up to now been unconfirmed (VALLETTA, 1972; SAMMUT, 1984).

A specimen of *Nymphalis polychlorus* L. was observed by the author resting on dry vegetation on Comino Island, very near the Blue Lagoon. The butterfly which was in good condition, flew for short distances when disturbed.

The species is single brooded, first appearing in June-July, but has a long flight period, being again on the wing in spring after hibernation. Its typical habitat is light woodland and low lands to about 1500 m. The larvae feed on elms, willows and various fruit trees. *Nymphalis polychlorus* occurs in western Europe, including southern Fennoscandia, south England and certain Mediterranean islands (HIGGINS and RILEY, 1973)

The author would like to thank Mr. A. Valletta for his generous assistance.

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received August 1985

The Central Mediterranean Naturalist, Vol. 1 (4) - 1986

TWO INTERESTING ADDITIONS TO THE FLORA OF THE MALTESE ISLANDS

Michael BRIFFA

20, Creche Street, Sliema, MALTA

ABSTRACT

The occurrence of *Muscari commutatum* Guss. and *Sarcopoterium spinosum* (L.)Spach in the Maltese Islands is reported for the first time. Information on habitat, distribution and status is also given.

On the 19th March 1983 the author found a small colony of *Muscari commutatum* Guss. - about thirty plants in all - on the rocky upper coralline plateau overlooking the northern slope of Wied Rini (valley), Malta, between a small field and a low rubble wall sheltering an old, solitary *Citrus limon* (L.)Burm.

Although the flora of the Maltese islands has been diligently studied, there is clear indication that this area has never been explored by earlier botanists; and this is the presence of a conspicuous, fairly large population of *Cistus monspeliensis* L., which the author had earlier found in the vicinity, on both sides of the valley, and which had never been recorded previously.

The accompanying flora included *Thymus capitatus* (L.)Hoffmanns. & Link, *Phagnalon* sp., *Sanguisorba minor* Scop., *Fumana thymifolia* (L.)Sprach ex Webb, *Urginea maritima* (L.)Baker, *Asphodelus aestivus* Brot., *Psoralea bituminosa* L., *Dactylis glomerata* L., *Leontodon tuberosus* L., *Arisarum vulgare* Targ.-Tozz., *Euphorbia pinea* L., *Silene vulgaris* (Moench)Garcke, *Lobularia maritima* (L.)Desv. *Reichardia picroides* (L.) Roth, *Tetragonolobus purpureus* Moench, *Foeniculum vulgare* Miller, *Anemone coronaria* L.,*Bellis annua* L., *Oxalis pes-caprae* L., a much reduced form of *Plantago lagopus* L., and a single tuft of *Schoenus nigricans* L., which one would expect to find much nearer the coast.

Muscari commutatum grows on limestone hills in the eastern Mediterranean from Italy, Sicily and Sardinia to Israel.

So far it is difficult to say whether the plants found in Malta are of native origin. The small size of the colony, the restricted area that it occupies in a common habitat, and its close proximity to the old tree, which was obviously planted there, suggest an accidental introduction.

Another interesting species, *Sarcopoterium spinosum* (L.)Spach, was found by the author on the 10th March 1985. It was a small colony in the middle of a sizeable stretch of karst-land of lower coralline limestone, tilting gently from the former Pembroke Army Camp towards the sea. It is still known as Pembroke Rifle Ranges.

This place was not very accessible to nineteenth century botanists in whose time good roads leading to it were not yet built. In fact the earliest botanical records from this locality are those of SOMMIER and CARUANA GATTO (1915).

The bushes discovered were accompanied by a robust form of the related *Sanguisorba minor* Scop., *Ophrys* cf. *sphegodes* Miller, *Plantago serraria* L., *Thymus capitatus* (L.)Hoffmanns. & Link, *Urginea maritima* (L.)Baker, *Orchis coriophora* L., *Asphodelus aestivus* Brot.,*Teucrium fruticans* L., *Dactylis glomerata* L., *Tetragonolobus purpureus* Moench, *Cynara cardunculus* L., *Leontodon tuberosus* L., and *Euphorbia pinea* L.

A dominant species of eastern Mediterranean garigue communities, *Sarcopoterium spinosum* grows in Italy, Sicily amd from Greece to Israel.

Again it is possible that this eastern species could be indigenous in Malta since Malta is very close to the western limit of its geographical range. In this case however, the colony consists of an old bush, surrounded by younger ones of different sizes giving the impression of an invading introduction, rather than traces of an old population on its way out. This would not be surprising when considering that, during the first half of this century, units of the British Army were frequently on the move between Malta and the Near East, and during the same time the Pembroke Rifle Range was being utilized for rifle practice and manoeuvers, in which thousands of soldiers fresh from eastern Mediterranean countries must have taken part. Further supporting this suggestion is the presence at Pembroke Camp of a rare early-flowering form of *Gynandriris sisyrinchium* (L.)Parl. (found by the author in March 1986) which according to GOLDBLATT (personal communication) who examined plants of this form from another Maltese population, could also be an introduction from the Eastern Mediterranean.

Any conclusion drawn on the status of these two species in the flora of the Maltese Islands would be mere speculation. What is certain is the fact that they are now established elements of the Maltese flora.

In both cases specimens have been deposited in the private herbarium of Edwin Lanfranco in Malta and at the Kew Herbarium.

The author is indebted to Edwin Lanfranco for identifying both species and to Prof. Peter Goldblatt of Missouri (USA) for information about the early-flowering *Gynandriris sisyrinchium*.

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