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Distribution of five hypogeus macromycetes strictly linked to *Eucalyptus camaldulensis* and *Acacia saligna* reforestations in Sicily

Abstract

La Rocca, S. & Bazan, G.: Distribution of five hypogeus macromycetes strictly linked to *Eucalyptus camaldulensis* and *Acacia saligna* reforestations in Sicily. — *Boccone* 16(2): 1067-1082. 2003. — ISSN 1120-4060.

Distribution and ecology of five hypogeus or semihypogeus macromycetes species, *Descomyces albus*, *Hydnangium carneum*, *Hysterangium inflatum*, *Labyrinthomyces donkii* and *Setchelliogaster tenuipes*, growing in *Eucalyptus camaldulensis* and *Acacia saligna* reforestations in Sicily are given here.

Introduction

During the last century the Sicilian public administration carried out an intense activity gaol oriented to the reforestation of large island areas introducing some species of *Eucalyptus* L'Hér. (Fig. 1) and *Acacia* Miller genera together with typical mediterranean woody species like *Pinus pinea* L., *P. halepensis* Miller and *Cedrus atlantica* (Endl.) Carrière. During the last 40 years some alien species strictly linked to *Eucalyptus* woods, were occasionally introduced with woody species. Starting from 1997 periodic surveys have been carried out in these reforestations to improve the knowledge of Sicilian mycological flora. In this contribution results on hypogeus and semihypogeus macromycetes species, strictly linked to *Eucalyptus camaldulensis* Dehnh. and *Acacia saligna* (Labill.) H. Wendl. (*A. cyanophylla* Lindley) reforestations, are given.

Material and methods

During field exploration, for each taxon ecological data (habitat, substrate, associated plant), fructification period, the localities and municipalities and cartographic references were recorded.

Distributive data are referred to 1:50.000 I.G.M.I. grid map (Official Map of Italian State). All Sicilian territory falls on 63 sheets and according to Padovan (1994), each sheets is also divided in 64 subunits in order to obtain a more detailed distribution map of each



Fig. 1. *E. camaldulensis* reforestation near Corleone (Palermo).

taxon. With this aim a G.I.S. has been prepared, which is a basis for making up a cartographic database of Sicilian macromycetes.

Micromorphological details verified on both from fresh and dried specimens with a Leica Leitz DMLS microscope provided with bright-field optics. Thin, freehand sections from fresh specimens were mounted in a drop of aqueous Congo Red. Dried material has been revived in L4 (Moser 1980) or KOH 5% and then mounted in aqueous Congo Red.

The herbarium samples are kept in the *Herbarium Mediterraneum* (PAL).

Results

The field surveys carried out in several *Eucalyptus camaldulensis* and *Acacia saligna* reforestation in Sicily, allowed to find the following five hypogeus or semihypogeus species: *Descomyces albus* (Klotzsch) Bougher & Castellano (Fig. 2a), *Hydnangium carneum* Wallroth (Fig. 2b), *Hysterangium inflatum* Rodway (Fig. 2c), *Labyrinthomyces donkii* Malençon (Fig. 2d), and *Setchelliogaster tenuipes* (Setchell) Pouzar (Fig. 2e). For each of the above mentioned species a distribution map in Sicily and a detailed list of records including locality, municipality, province, altitude, ecological data, cartographic reference and date, ordered by Localities, are given.

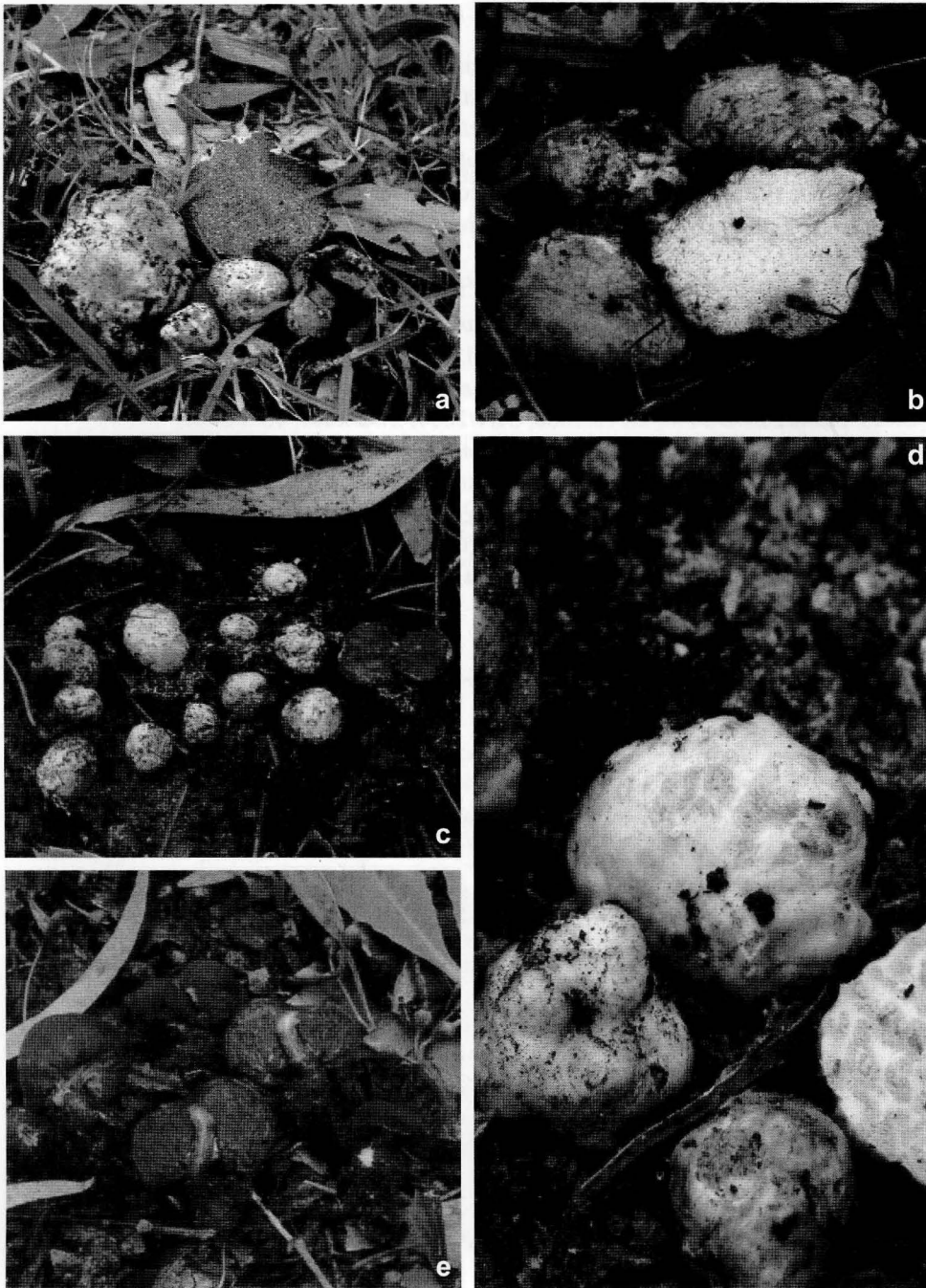


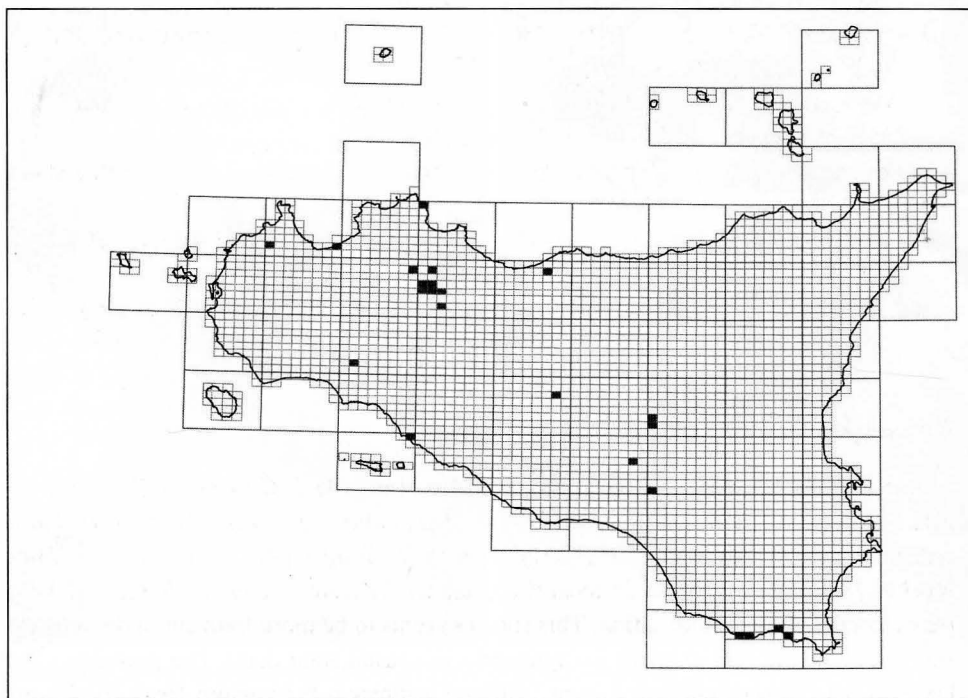
Fig. 2. a) *Descomyces albus* at La Guglia, Corleone (PA); b) *Hydnangium carneum* at Mt. Pellegrino, Palermo; c) *Hysterangium inflatum* at Alcamo Marina (TP); d) *Labyrinthomyces donki* at Le Macchie, Balestrate (PA); e) *Setchelliogaster tenuipes* near the Lago Scansano, Corleone (PA).

***Descomyces albus* (Klotzsch) Bougher & Castellano**

This taxon occurs from autumn to the beginning of spring, from the sea level to 780 m. Its presence was recorded in 21 localities distributed in 6 provinces (Map 1). This species seems to be strictly linked to *E. camaldulensis* but one time (Sampieri, Scicli, province of Ragusa) it was recorded in litter of *Acacia saligna*. In Italy, this species has been recorded from Sardinia (Contu & Dessì 1997; Montecchi & Sarasini 2000) and Latium (Montecchi & Sarasini 2000) always within *Eucalyptus* reforestation in sandy soil.

RECORDS:

- Bannata, Valguarnera (EN); 780 m; *E. camaldulensis* reforestation; cart. ref. 632334; 19/11/1999, 6/12/2000, 9/12/2001, 16/12/2002, 9/1/2003.
- Bivio Lupo, Corleone (PA); 550 m; *E. camaldulensis* reforestation; cart. ref. 608432; 3/1/2000, 23/2/2000, 20/12/2000, 31/1/2001, 27/2/2001, 13/3/2001.
- Bivio Lupotto, Godrano (PA); 600; *E. camaldulensis* reforestation; cart. ref. 608314; 20/12/2000, 31/1/2001.
- Casa Bovo Marino, Cattolica Eraclea (AG); 5 m; *E. camaldulensis* and *A. saligna* mixed reforestation; cart. ref. 635111; 22/12/2001, 10/1/2002, 27/12/2002.
- Casa Colomba, Buseto Palizzolo (TP); 450 m; *E. camaldulensis* Dehnh.; cart. ref. 593334; 21/11/2001.

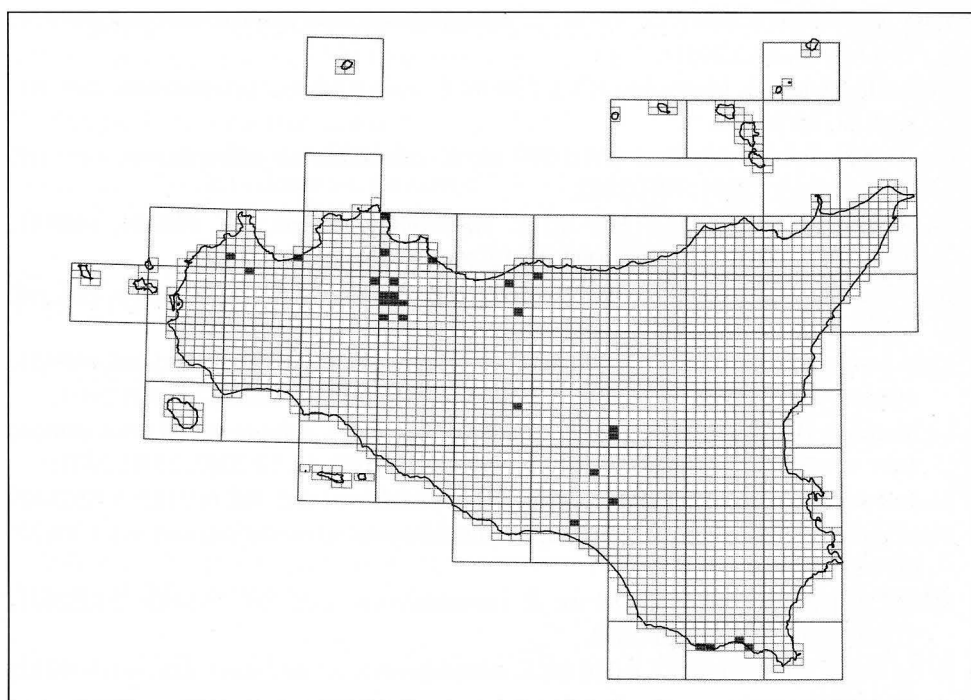


Map 1. Distribution of *Descomyces albus* in Sicily.

- Casa Nuova, Corleone (PA); 700 m; *E. camaldulensis* reforestation; cart. ref. 608324; 15/11/2000, 13/2/2001.
- Contrada Alzacuda, Mazzarino (CL); 550 m; *E. camaldulensis* reforestation; cart. ref. 638123; 20/1/2002.
- Cozzo Montagnola, Marineo (PA); 500 m; *E. camaldulensis* reforestation; cart. ref. 608442; 15/12/2001, 19/1/2002.
- La Guglia, Corleone (PA); 600 m; *E. camaldulensis*; cart. ref. 608344, 608341; 23/12/2000, 22/1/2001, 5/2/2002, 16/12/2002, 04/01/2003.
- Lago Arancio, Sambuca di Sicilia (AG); 300 m; *E. camaldulensis* reforestation; cart. ref. 619331; 18/12/2002, 25/02/2003.
- Lago Scanzano, Corleone (PA); 500 m; *E. camaldulensis* reforestation; cart. ref. 608433, 608432; 23/12/2000, 22/1/2001, 5/2/2002, 23/11/2002, 16/12/2002, 04/01/2003.
- Le Macchie, Balestrate (PA); 5 m; *E. camaldulensis* and *A. saligna* mixed reforestation; cart. ref. 593221; 23/01/1999, 30/11/1999, 26/11/2000, 18/12/2002, 25/02/2003.
- Maganoce, S. Cristina Gela (PA); 650 m; *E. camaldulensis*; cart. ref. 607112; 8/12/2002.
- Mastigarufi, San Cataldo (CL); 480 m; *E. camaldulensis* reforestation; cart. ref. 630124; 20/1/2002.
- Monte Pellegrino, Palermo; 480 m; *E. camaldulensis*; cart. ref. 595443; 2/12/2001, 7/3/2002, 6/12/2002, 5/1/2003.
- Raffo Rosso, Mazzarino (CL); 380 m; *E. camaldulensis* reforestation; cart. ref. 639333; 20/1/2002.
- Rossomanno, Valguarnera (EN); 780 m; *E. camaldulensis* reforestation; cart. ref. 632343; 16/12/2002, 9/1/2003.
- S. Maria del Focallo, Ispica (RG); 4 m; *E. camaldulensis* and *A. saligna* mixed reforestation; cart. ref. 651123, 651131; 15/2/2003.
- Sampieri, Scicli (RG); 5 m; *E. camaldulensis* and *A. saligna* mixed reforestation; 651423, 651432; 14/2/2003.
- Santa Barbara, Godrano (PA); 730 m; *E. camaldulensis* reforestation; cart. ref. 608341; 16/12/2002, 04/01/2003.
- Strada provinciale 9, Km 15, Collesano (PA); 550 m; *E. camaldulensis* reforestation; cart. ref. 609142; 4/12/2002.

***Hydnangium carneum* Wallroth**

Its occurrence in Sicily was firstly recorded by Venturella & al. (2001) at Ficuzza Wood-Rocca Busambra (Palermo province) in *Eucalyptus camaldulensis* reforestation. During field investigation we have recorded the occurrence, from winter to spring, from the sea level to 780 m in altitude, in 25 localities (Map 2): 22 from *E. camaldulensis* and 3 from pure *Acacia saligna* reforestation. This species seems to be more frequent in the reforestation of the inland and to occur exceptionally in coastal sand dune. The presence of this taxon in Italy has been recorded from Latium (Quadraccia & Lunghini 1990; Migliozi & Coccia 1987) and Sardinia (Brotzu 1983) always linked to *Eucalyptus*.



Map 2. Distribution of *Hydnangium carneum* in Sicily.

RECORDS:

- Bannata, Valguarnera (EN); 780 m; *E. camaldulensis* reforestation; cart. ref. 632334; 19/11/1999, 6/12/2000, 23/11/2001, 9/12/2001, 16/12/2002, 9/1/2003.
- Bivio Lupotto, Godrano (PA); 600 m; *E. camaldulensis* reforestation; cart. ref. 608314; 12/12/1999, 3/1/2000, 23/2/2000, 20/12/2000, 31/1/2001.
- Bosco di Scorace, Buseto Palizzolo (TP); 500 m; *E. camaldulensis* reforestation; cart. ref. 606414; 30/12/1999.
- Casa Colomba, Buseto Palizzolo (TP); 450 m; *E. camaldulensis*; cart. ref. 593334; 21/11/2001.
- Casa Nuova, Corleone (PA); 700 m; *E. camaldulensis* reforestation; cart. ref. 608324; 15/11/2000, 13/2/2001, 20/11/2001, 9/12/2002.
- Chiaranda, Palermo; 550 m; *E. camaldulensis*; cart. ref. 595343; 13/12/2002, 14/1/2003.
- Comunelli, Butera (CL); 200 m; *E. camaldulensis* reforestation; cart. ref. 643134; 20/1/2002.
- Contrada Alzacuda, Mazzarino (CL); 550 m; *E. camaldulensis* reforestation; cart. ref. 638123; 20/1/2002.
- Contrada Lavanche, Corleone (PA); 700 m; *E. camaldulensis* reforestation; cart. ref. 608334; 15/11/2000, 13/2/2001, 20/11/2001, 9/12/2002.
- Cozzo Montagnola, Marineo (PA); 500 m; *E. camaldulensis* reforestation; cart. ref. 608442; 15/12/2001, 19/1/2002.

- Firrionello, Scillato (PA); 350 m; *E. camaldulensis*; cart. ref. 609213; 04/12/2002.
- La Guglia, Corleone (PA); 600 m; *E. camaldulensis*; cart. ref. 608344, 608341; 23/12/2000, 22/1/2001, 23/11/2002, 16/12/2002, 04/01/2003.
- Lago Scanzano, Corleone (PA); 500 m; *E. camaldulensis* reforestation; cart. ref. 608433 608432; 5/2/2002, 23/11/2002, 16/12/2002, 04/01/2003.
- Le Macchie, Balestrate (PA); 5 m; *E. camaldulensis* and *A. saligna* mixed reforestation; cart. ref. 593221; 06/03/1998, 30/11/1998, 16/01/1999, 23/01/1999, 30/11/1999, 11/12/1999, 26/11/2000, 18/12/2002, 25/02/2003.
- Maganoce, S. Cristina Gela (PA); 650 m; *E. camaldulensis*; cart. ref. 607112; 8/12/2002.
- Mastigarufi, San Cataldo (CL); 480 m; *E. camaldulensis* reforestation; cart. ref. 630124; 20/1/2002.
- Monte Pellegrino, Palermo; 480 m; *E. camaldulensis*; cart. ref. 595443; 2/12/2001, 7/3/2002, 6/12/2002, 5/1/2003.
- Raffo Rosso, Mazzarino (CL); 380 m; *E. camaldulensis* reforestation; cart. ref. 639333; 20/1/2002.
- Rossomanno, Valguarnera (EN); 780 m; *E. camaldulensis* reforestation; cart. ref. 632343; 16/12/2002, 9/1/2003.
- S. Maria del Focallo, Ispica (RG); 4 m; *A. saligna* litter; 651123, 651131; 15/2/2003.
- Sampieri, Scicli (RG); 5 m; *E. camaldulensis* and *A. saligna* mixed reforestation; cart. ref. 651423, 651432; 14/2/2003.
- San Michele, Altavilla Milicia (PA); 180 m; *E. camaldulensis*; cart. ref. 595231; 3/1/2001.
- Santa Barbara, Godrano (PA); 730 m; *E. camaldulensis* reforestation; cart. ref. 608341; 23/12/2000, 16/12/2002, 04/01/2003.
- Santuario di Gibilmanna, Cefalù (PA); 780 m; *E. camaldulensis* litter; cart. ref. 610444; 04/12/2002.
- Strada Provinciale 9, Km 15 Collesano (PA); 550 m; *E. camaldulensis* reforestation; cart. ref. 609142; 4/12/2002.

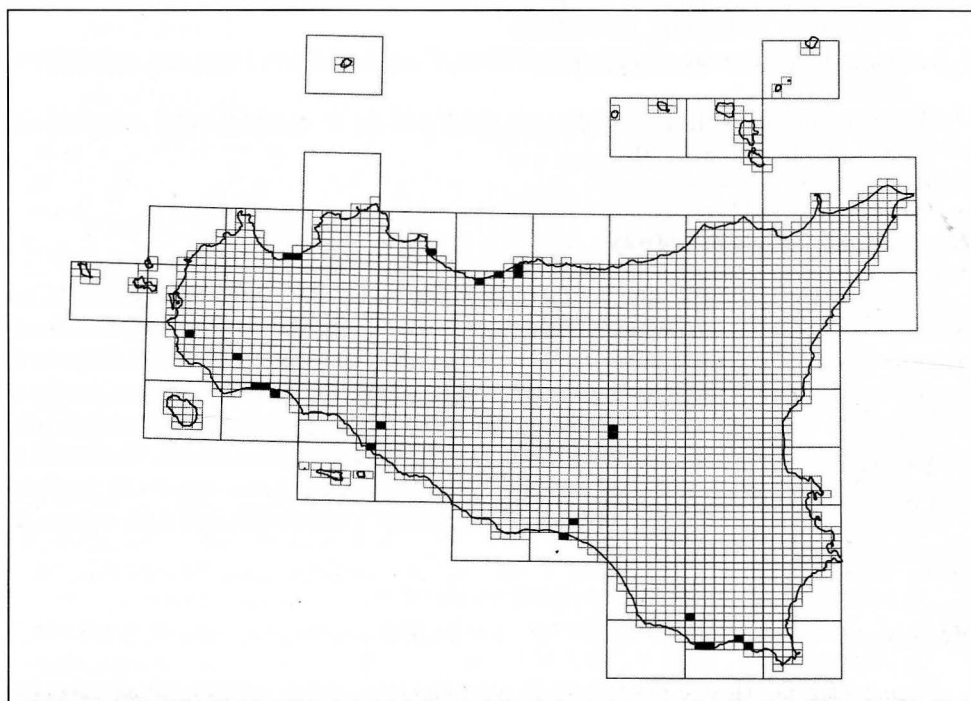
***Hysterangium inflatum* Rodway**

The occurrence of *Hysterangium inflatum* in Sicily, firstly recorded by Venturella, La Rocca & Saitta (2001), has been recorded from 21 localities (Map 3) in *Eucalyptus camaldulensis* and *Acacia saligna* pure or mixed reforestation and seems to be more frequent in coastal sand dunes. Two interesting records from Alcamo Marina (TP) and Casa del Bovo Marino (AG) where *H. inflatum* Rodway was found possibly in mycorrhizal relation with *Acacia saligna* as observed by Beaton & al. (1985) about the genus *Acacia*. Montecchi & Sarasini (2000) found *H. inflatum* associated with some *Eucalyptus* species in Sardinia, Lombardia, Latium and Tuscany. Besides Pacioni (1987) recorded it on *Cistus incanus* L. from Apulia and the Molise region.

RECORDS:

- Alcamo Marina, Alcamo (TP); 5 m; *E. camaldulensis* and *A. saligna* mixed reforestation; cart. ref. 593224; 15/2/1998, 16/01/1999, 1/2/2000, 11/12/2000, 5/1/2001.

- Bannata, Valguarnera (EN); 780 m; *E. camaldulensis* reforestation; cart. ref. 632334; 23/11/2001, 9/1/2003.
- Casa Bovo Marino, Cattolica Eraclea (AG); 5 m; *E. camaldulensis* and *A. saligna* mixed reforestation; cart. ref. 635111; 2/2/2000, 22/12/2001, 10/1/2002 11/11/2002.
- Casa Canne Masche, Termini Imerese (PA); 3 m; *E. camaldulensis*; cart. ref. 609413; 03/02/1998, 29/1/2000.
- Comunelli, Butera (CL); 200 m; *E. camaldulensis* reforestation; cart. ref. 643134; 20/1/2002.
- Contrada Stazzone, Casteldaccia (PA); 5 m; *E. camaldulensis*; cart. ref. 595242; 26/02/1998, 3/1/2001.
- Fattoria Pace, Campofelice di Roccella (PA); 2 m; *E. camaldulensis*; cart. ref. 609144; 11/12/1997, 29/1/2000.
- Foce del Belice, Castelvetrano (TP); 2 m; *E. camaldulensis* and *A. saligna* mixed reforestation; cart. ref. 627144; 30/11/1998, 16/01/1999, 11/12/1999, 26/11/2000, 18/12/2002, 25/02/2003.
- Le Macchie, Balestrate (PA); 5 m; *E. camaldulensis* and *A. saligna* mixed reforestation; cart. ref. 593221; 06/03/1998, 30/11/1998, 23/01/1999, 30/11/1999, 11/12/1999, 26/11/2000, 3/3/2001, 6/4/2001, 18/12/2002, 25/02/2003.
- Madonna Ciavolo, Marsala (TP); 100 m; *E. camaldulensis* reforestation; cart. ref. 617143; 25/02/2003.



Map 3. Distribution of *Hysterangium inflatum* in Sicily.

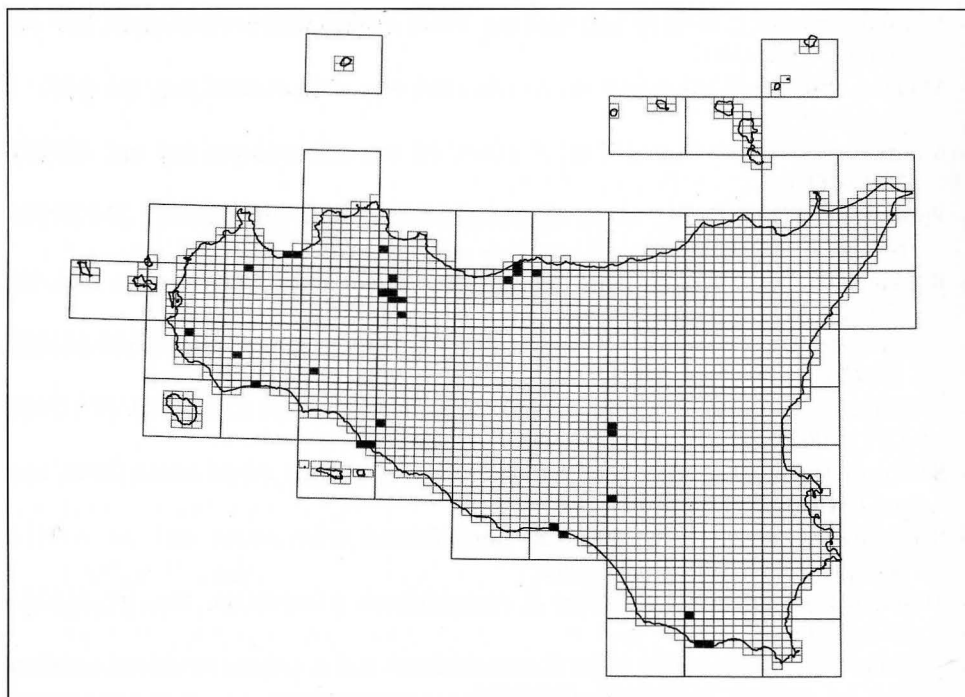
- Manfria, Gela (CL); 10 m; *E. camaldulensis* and *A. saligna* mixed reforestation; cart. ref. 643311; 13/02/2003.
- Mangiagesso, Scicli (RG); 300 m; *E. camaldulensis* reforestation; cart. ref. 648333; 15/2/2003.
- Monte Sara, Ribera (AG); 270 m; *E. camaldulensis* reforestation; cart. ref. 629343; 21/12/2002.
- Porto Palo, Menfi (AG); 15 m; *E. camaldulensis*; cart. ref. 627142; 27/12/1998, 6/1/2001, 26/11/2001.
- Rossomanno, Valguarnera (EN); 780 m; *E. camaldulensis* reforestation; cart. ref. 632343; 9/12/2001, 16/12/2002.
- S. Maria del Focallo, Ispica (RG); 4 m; litter of *A. saligna*; cart. ref. 651123 651131; 15/2/2003.
- Salinelle, Lascari (PA); 3 m; *E. camaldulensis*; cart. ref. 596223; 23/12/1999, 29/1/2000, 17/11/2002.
- Sampieri, Scicli (RG); 5 m; *E. camaldulensis* and *A. saligna* mixed reforestation; cart. ref. 651423 - 651432; 14/2/2003.
- Santa Maria, Lascari (PA); 280 m; *E. camaldulensis* reforestation; cart. ref. 609114; 29/1/2000, 18/2/2001, 17/11/2002.
- Trinità, Castelvetro (TP); 100 m; *E. camaldulensis* reforestation; cart. ref. 618341; 25/02/2003.
- Triscina, Castelvetro (TP); 10 m; *E. camaldulensis* and *A. saligna* mixed reforestation; cart. ref. 627411; 26/11/2001, 13/1/2002.

***Labyrinthomyces donkii* Malençon**

Labyrinthomyces donkii was firstly reported in Sicily by Venturella & al. (2001) e Venturella & Contu (2002). Here it is reported in 28 new other localities (Map 4) lying between the sea level and 780 altitude, where it has been found in winter and early spring time. This species has also been found at Chiaranda (PA), within a *Pinus halepensis* reforestation, at Alcamo Marina (TP) and Santa Maria del Focallo (Ispica, RG) within *Acacia saligna* plantations. *L. donkii* was also found in Sardinia, Tuscany and Latium within Eucalyptus reforestations (Montecchi & Sarasini 2000).

RECORDS:

- Alcamo Marina, Alcamo (TP); 5 m; *E. camaldulensis* and *A. saligna* mixed reforestation; cart. ref. 593224; 05/01/1998, 15/2/1998, 16/01/1999, 19/2/1999, 1/2/2000, 9/2/2001, 7/3/2001.
- Bannata, Valguarnera (EN); 780 m; *E. camaldulensis* reforestation; cart. ref. 632334; 19/11/1999, 6/12/2000, 23/11/2001, 9/12/2001, 16/12/2002, 9/1/2003.
- Bivio Lupotto, Godrano (PA); 600 m; *E. camaldulensis* reforestation; cart. ref. 608314; 20/12/2000, 31/1/2001.
- Bosco di Scorace, Buseto Palizzolo (TP); 500 m; *E. camaldulensis*; cart. ref. 606414; 30/12/1999.
- Capo Bianco, Cattolica Eraclea (AG); 5 m; *E. camaldulensis* and *A. saligna* mixed reforestation; cart. ref. 635114; 10/2/2002.



Map 4. Distribution of *Labyrinthomyces donki* in Sicily.

- Casa Bovo Marino, Cattolica Eraclea (AG); 5 m; *E. camaldulensis* and *A. saligna* mixed reforestation; cart. ref. 635111; 2/2/2000, 22/12/2001, 10/1/2002 11/11/2002, 27/12/2002.
- Casa Nuova, Corleone (PA); 700 m; *E. camaldulensis* reforestation; cart. ref. 608324; 15/11/2000, 9/12/2002.
- Chiaranda, Palermo; 550 m; *Pinus halepensis* reforestation; cart. ref. 595343; 13/12/2002.
- Cozzo Montagnola, Marineo (PA); 500 m; *E. camaldulensis* reforestation; cart. ref. 608442; 15/12/2001, 19/1/2002.
- Lago Arancio, Sambuca di Sicilia (AG); 300 m; *E. camaldulensis* reforestation; 619331; 18/12/2002, 25/02/2003.
- Lago Scanzano, Corleone (PA); 500 m; *E. camaldulensis* reforestation; cart. ref. 608433 608432; 23/11/2002, 04/01/2003.
- Le Macchie, Balestrate (PA); 5 m; *E. camaldulensis* and *A. saligna* mixed reforestation; cart. ref. 593221; 06/03/1998, 30/11/1998, 16/01/1999, 23/01/1999, 30/11/1999, 11/12/1999, 26/11/2000, 18/12/2002, 25/02/2003.
- Macconi, Butera (CL); 3 m; *A. saligna*; 643423; 13/2/2003.
- Madonna Ciavolo, Marsala (TP); 100 m; *E. camaldulensis*; 617143; 25/02/2003.
- Manfria, Gela (CL); 10 m; *E. camaldulensis* reforestation; 643311; 13/02/2003.
- Mangiagesso, Scicli (RG); 300 m; *E. camaldulensis* reforestation; 648333; 15/2/2003.

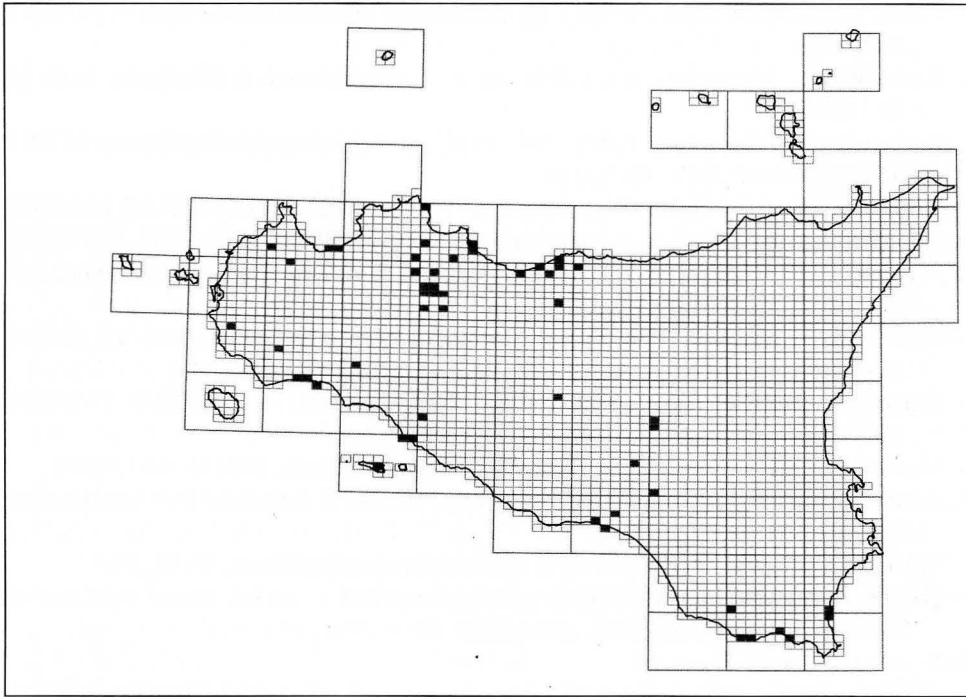
- Monte Sara, Ribera (AG); 270 m; *E. camaldulensis* reforestation; 629343; 21/12/2002; 20/1/2003.
- Raffo Rosso, Mazzarino (CL); 380 m; *E. camaldulensis* reforestation; 639333; 20/1/2002.
- Rossomanno, Valguarnera (EN); 780 m; *E. camaldulensis* reforestation; 632343; 6/12/2000, 9/12/2001, 16/12/2002.
- S. Maria del Focallo, Ispica (RG); 4 m; *A. saligna*; cart. ref. 651123-651131; 15/2/2003.
- Salinelle, Lascari (PA); 2 m; *E. camaldulensis*; cart. ref. 596223; 29/1/2000, 17/11/2002.
- Sampieri, Scicli (RG); 5 m; *E. camaldulensis* and *A. saligna* mixed reforestation; cart. ref. 651423 - 651432; 14/2/2003.
- Santa Barbara, Godrano (PA); 730 m; *E. camaldulensis* reforestation; cart. ref. 608341; 5/2/2002.
- Santa Maria, Lascari (PA); 280 m; *E. camaldulensis*; 609114; 29/1/2000, 18/2/2001, 17/11/2002.
- Santuario di Gibilmanna, Cefalù (PA); 780; *E. camaldulensis*; 610444; 04/12/2002.
- Strada provinciale 9, Km 15, Collesano (PA); 550 m; *E. camaldulensis* reforestation; cart. ref. 609142; 4/12/2002.
- Trinità, Castelvetro (TP); 100 m; *E. camaldulensis* reforestation; 25/02/2003.
- Triscina, Castelvetro (TP); 3 m; *E. camaldulensis* and *A. saligna* mixed reforestation; cart. ref. 627411; 22/02/1998, 28/11/2000, 26/11/2001, 13/1/2002, 7/12/2002.

***Setchelliogaster tenuipes* (Setchell) Pouzar**

Setchelliogaster tenuipes la cui presenza in Sicilia era già nota (La Rocca & Anastase 1997; Venturella & al. 2000, 2001; Venturella, La Rocca & Saitta 2001), is the best distributed species, collected in 54 localities (Map 5), from the sea level to 780 m. altitude, in pure or mixed *Eucalyptus camaldulensis* and *Acacia saligna* reforestation from october to april. Anche in questo caso sono state riscontrate numerose raccolte in associazione ad *A. saligna*. La sua presenza in Italia è segnalata da Migliozi & Coccia (1987) per il Lazio e da Montecchi & Sarasini (2000) per Toscana e Sardegna.

RECORDS:

- Alcamo Marina, Alcamo (TP); 5 m; *E. camaldulensis* and *A. saligna* mixed reforestation; cart. ref. 593224; 15/2/1998, 6/3/1998, 16/01/1999, 19/2/1999, 1/2/2000, 11/12/2000, 5/1/2001, 9/2/2001, 7/3/2001.
- Allaura, Palermo; 130 m; *E. camaldulensis*; cart. ref. 595444; 28/12/2001.
- Bannata, Valguarnera (EN); 780 m; *E. camaldulensis* reforestation; cart. ref. 632334; 19/11/1999, 6/12/2000, 23/11/2001, 9/12/2001, 16/12/2002, 9/1/2003.
- Bivio Lupo, Corleone (PA); 550 m; *E. camaldulensis* reforestation; cart. ref. 608432; 10/3/1997, 23/11/1997, 27/11/1998, 5/1/1999, 19/11/1999, 12/12/1999, 3/1/2000, 23/2/2000, 20/12/2000, 31/1/2001, 27/2/2001, 13/3/2001.
- Bivio Lupotto, Godrano (PA); 600 m; *E. camaldulensis* reforestation; cart. ref. 608314; 10/3/1997, 23/11/1997, 27/11/1998, 5/1/1999, 19/11/1999, 12/12/1999, 3/1/2000, 23/2/2000, 20/12/2000, 31/1/2001, 27/2/2001, 13/3/2001.



Map 5. Distribution of *Setchelliogaster tenuipes* in Sicily.

- Bosco di Scorace, Buseto Palizzolo (TP); 500 m; *E. camaldulensis*; cart. ref. 606414; 30/12/1999.
- Capo Bianco, Cattolica Eraclea (AG); 5 m; *E. camaldulensis* and *A. saligna* mixed reforestation; cart. ref. 635114; 22/12/2001, 10/2/2002.
- Casa Bovo Marino, Cattolica Eraclea (AG); 5 m; *E. camaldulensis* and *A. saligna* mixed reforestation; cart. ref. 635111; 2/2/2000, 05/04/2000, 22/12/2001, 10/1/2002, 11/11/2002, 27/12/2002.
- Casa Canne Masche, Termini Imerese (PA); 3 m; *E. camaldulensis*; cart. ref. 609413; 11/12/1997, 03/02/1998, 29/1/2000, 17/11/2002.
- Casa Colomba, Buseto Palizzolo (TP); 450 m; *E. camaldulensis*; cart. ref. 593334; 21/11/2001.
- Casa Meccio, Piana degli Albanesi (PA); 700 m; *E. camaldulensis*; cart. ref. 594222; 25/11/2000, 9/2/2002.
- Casa Nuova, Corleone (PA); 700 m; *E. camaldulensis* reforestation; cart. ref. 608324; 15/11/2000, 13/2/2001, 20/11/2001, 9/12/2002.
- Chiaranda, Palermo; 550 m; *E. camaldulensis*; cart. ref. 595343; 13/12/2002, 14/1/2003.
- Comunelli, Butera (CL); 200 m; *E. camaldulensis* reforestation; cart. ref. 643134; 20/1/2002.
- Contrada Alzacuda, Mazzarino (CL); 550 m; *E. camaldulensis* reforestation; cart. ref. 638123; 20/1/2002.

- Contrada Lavanche, Corleone (PA); 700 m; *E. camaldulensis* reforestation; cart. ref. 608334; 15/11/2000, 13/2/2001, 20/11/2001, 9/12/2002.
- Contrada Stazzone, Casteldaccia (PA); 2 m; *E. camaldulensis*; cart. ref. 595242; 26/02/1998, 3/1/2001.
- Cozzo Montagnola, Marineo (PA); 500 m; *E. camaldulensis* reforestation; cart. ref. 608442; 15/12/2001, 19/1/2002.
- Fattoria Pace, Campofelice di Roccella (PA); 2 m; *E. camaldulensis*; cart. ref. 609144; 11/12/1997, 03/02/1998, 29/1/2000, 17/11/2002.
- Firrionello, Scillato (PA); 350 m; *E. camaldulensis* reforestation; cart. ref. 609213; 04/12/2002.
- Foce del Belice, Castelvetro (TP); 10 m; *E. camaldulensis* and *A. saligna* mixed reforestation; cart. ref. 627144; 30/11/1998, 16/01/1999, 11/12/1999, 26/11/2000, 18/12/2002, 25/02/2003.
- Gorgo del Drago, Godrano (PA); 675 m; *E. camaldulensis* reforestation; cart. ref. 608432; 22/1/2001.
- La Guglia, Corleone (PA); 600 m; *E. camaldulensis*; cart. ref. 608344, 608341; 4/4/1999, 12/12/1999, 11/1/2000, 3/4/2000, 23/12/2000, 22/1/2001, 5/2/2002, 23/11/2002, 16/12/2002, 04/01/2003.
- Lago Arancio, Sambuca di Sicilia (AG); 300 m; *E. camaldulensis* reforestation; 619331; 18/12/2002, 25/02/2003.
- Lago Scanzano, Corleone (PA); 500 m; *E. camaldulensis* reforestation; cart. ref. 608433 608432; 11/11/1995, 14/12/1997, 3/2/1998, 27/11/1998, 4/4/1999, 12/12/1999, 11/1/2000, 17/2/2000, 3/4/2000, 23/12/2000, 22/1/2001, 5/2/2002, 23/11/2002, 16/12/2002, 04/01/2003.
- Le Macchie, Balestrate (PA); 5 m; *E. camaldulensis* and *A. saligna* mixed reforestation; cart. ref. 593221; 06/03/1998, 27/10/98, 30/11/1998, 16/01/1999, 23/01/1999, 30/11/1999, 11/12/1999, 26/11/2000, 18/12/2002, 25/02/2003.
- Macconi, Butera (CL); 3 m; *A. saligna*; cart. ref. 643423; 13/2/2003.
- Madonna Ciavolo, Marsala (TP); 100 m; *E. camaldulensis* reforestation; cart. ref. 617143; 25/02/2003.
- Maganoce, S. Cristina Gela (PA); 650 m; *E. camaldulensis*; cart. ref. 607112; 8/12/2002.
- Manfria, Gela (CL); 10 m; *E. camaldulensis* and *A. saligna* mixed reforestation; cart. ref. 643311; 13/02/2003.
- Mangiagesso, Scicli (RG); 300 m; *E. camaldulensis* reforestation; cart. ref. 648333; 15/2/2003.
- Mastigarufi, San Cataldo (CL); 480 m; *E. camaldulensis* reforestation; cart. ref. 630124; 20/1/2002.
- Monte Dagariato, Misilmeri (PA); 350 m; *A. saligna* reforestation; cart. ref. 595322; 8/2/2001.
- Monte Pellegrino, Palermo; 480 m; *E. camaldulensis*; cart. ref. 595443; 2/12/2001, 7/3/2002, 6/12/2002, 5/1/2003.
- Monte Sara, Ribera (AG); 270 m; *E. camaldulensis*; cart. ref. 629343; 21/12/2002; 20/1/2003.
- Ponte Dingoli, Piana degli Albanesi (PA); 700 m; *E. camaldulensis*; cart. ref. 594222; 25/11/2000, 9/2/2002.

- Porto Palo, Menfi (AG); 15 m; *E. camaldulensis*; cart. ref. 627142; 27/12/1998, 6/1/2001, 26/11/2001.
- Pozzillo, Collesano (PA); 250; *E. camaldulensis* reforestation; cart. ref. 609142; 04/12/2002.
- Raffo Rosso, Mazzarino (CL); 380 m; *E. camaldulensis* reforestation; cart. ref. 639333; 20/1/2002.
- Rossomanno, Valguarnera (EN); 780 m; *E. camaldulensis* reforestation; cart. ref. 632343; 19/11/1999, 6/12/2000, 23/11/2001, 9/12/2001, 16/12/2002, 9/1/2003.
- S. Maria del Focallo, Ispica (RG); 4 m; *E. camaldulensis* and *A. saligna* mixed reforestation; cart. ref. 651123 651131; 15/2/2003.
- Salinelle, Lascari (PA); 3 m; *E. camaldulensis*; cart. ref. 596223; 11/12/1997, 03/02/1998, 18/2/1998, 14/12/1998, 23/12/1999, 29/1/2000, 18/2/2001, 9/3/2002, 17/11/2002.
- Sampieri, Scicli (RG); 5 m; *E. camaldulensis* and *A. saligna* mixed reforestation; cart. ref. 651423 - 651432; 14/2/2003.
- San Michele, Altavilla Milicia (PA); 180 m; *E. camaldulensis*; cart. ref. 595231; 3/1/2001.
- Santa Barbara, Godrano (PA); 730 m; *E. camaldulensis* reforestation; cart. ref. 608341; 23/11/2002, 16/12/2002, 04/01/2003.
- Santa Maria, Lascari (PA); 280 m; *E. camaldulensis* reforestation; cart. ref. 609114; 29/1/2000, 18/2/2001, 17/11/2002.
- Santuario di Gibilmanna, Cefalù (PA); 780 m; *E. camaldulensis*; cart. ref. 610444; 04/12/2002.
- Strada provinciale 9, Km 15 Collesano (PA); 550 m; *E. camaldulensis* reforestation; cart. ref. 609142; 4/12/2002.
- Trinità, Castelvetro (TP); 100 m; *E. camaldulensis* reforestation; 25/02/2003.
- Triscina, Castelvetro (TP); 3 m; *E. camaldulensis* and *A. saligna* mixed reforestation; cart. ref. 627411; 22/02/1998, 27/12/1998, 12/12/1999, 9/2/2000, 28/11/2000, 6/1/2001, 26/11/2001, 13/1/2002, 7/12/2002.
- Vallone di Rebuttone, Altofonte (PA); 600 m; *E. camaldulensis*; cart. ref. 594222; 25/11/2000, 9/2/2002.
- Vallone d'Agnese Godrano (PA); 650 m; *E. camaldulensis* reforestation; cart. ref. 608314; 23/12/2000.
- Vendicari, Noto (SR); 2 m; *E. camaldulensis* and *A. saligna* mixed reforestation; cart. ref. 652414 - 649323; 1/11/1999.
- Vivaio Forestale, Lampedusa (AG); 30 m; litter of *A. saligna*; rif. cart. 635; 10/11/95.

Conclusion

In conclusion, on the basis of the above field surveys, the hypogeous macromycetes occurring in the *Eucalyptus* and *Acacia* reforestation are: *Descomyces albus*, *Hydnangium carneum*, *Hysterangium inflatum*, *Labyrinthomyces donki* and *Setchelliogaster tenuipes*.

Distributive data show that *Hysterangium inflatum* seems to be more frequent in coastal

sand dunes and *Hydnangium carneum* best presence in the reforestation of the inland. *Setchelliogaster tenuipes* is the best-distributed species, really common in both *Eucalyptus* reforestation or under isolated trees.

Besides *Hydnangium carneum*, *Hysterangium inflatum* and *Setchelliogaster tenuipes* reported in literature as mycorrhizic taxa strictly linked to *Eucalyptus* genus. During field investigations we have frequently observed their occurrence linked to *Acacia saligna* in pure or mixed reforestation. According to Beaton & al. (1985) for Victoria State (Australia) and Contu (in litt.) for Sardinia, woody species of *Acacia* seems to replace *Eucalyptus* in mycorrhizic symbiotic relations with hypogeous and epigeal macromycetes.

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References

- Beaton, G., Pegler, D. N. & Young, T. W. K. 1985: Gasteroid Basidiomycota of Victoria State, Australia: 4. *Hysterangium*. — Kew Bull. **40(2)**: 435-444.
- Brotzu, R. 1983: Guida ai funghi della Sardegna. — Nuoro.
- Contu, M. & Dessì, A. 1997: *Descomyces albus* (Klotzsch in Dietrich) Bougher & Castellano 1993 in Sardegna. — Boll. Ass. Micol. Ecol. Romana **41-42**: 37-40.
- La Rocca, S. & Anastase, A. 1997: Un interessante gasteromicete agaricoide in Sicilia: *Setchelliogaster tenuipes* (Setchell) Pouzar. — Atti delle 4e giornate della Confederazione Europea di Micologia Mediterranea: 21-22.
- & — 2002: Contributo alla conoscenza della micoflora delle dune costiere della Sicilia: i macromiceti di contrada "Le Macchie" (Balestrate, Palermo). — Quad. Bot. Ambientale Appl., **12(2001)**: 3-12.
- Migliozzi, V. & Coccia, M. 1987: *Setchelliogaster tenuipes* (Setchell) Pouzar. — Boll. Ass. Micol. Ecol. Romana **12**: 4-10.
- Montecchi, A. & Sarasini, M. 2000: Funghi ipogei d'Europa. — Associazione Micologica Bresadola, Fondazione Centro Studi Micologici, Trento.
- Moser, M. 1980: Guida alla determinazione dei funghi, **1**. — Trento.
- Pacioni, G. 1987: Una specie australiana naturalizzata in sud-Europa: *Hysterangium inflatum*. — Micol. Veg. Medit. **2(1)**: 11-20.
- Padovan, F. 1994: Mappatura dei macromiceti in Italia. — Rivista Micol. **37(1)**: 59-69.
- Quadraccia, L. & Lunghini, D. 1990: Contributo alla conoscenza dei macromiceti della tenuta presidenziale di Castelporziano (micoflora del Lazio II). — Problemi attuali di scienza e di cultura. Sezione: missioni ed esplorazioni 11. Ricerche ecologiche, floristiche e faunistiche sulla fascia costiera mediotirrenica italiana, II. Accademia Nazionale dei Lincei **264**: 49-120.
- Venturella, G., La Rocca, S. & Saitta, A. 2001: Contributo alla conoscenza dei funghi ipogei delle dune litoranee in Sicilia. — Biogeographia **22**: 223-226.
- , Saitta, A. & La Rocca, S. 2000: A check-list of the mycological flora of Madonie Park (North Sicily). — Mycotaxon, Ltd., pp. 246.

- , —, — & Onofri, S. 2001: The mycological flora of Ficuzza Wood-Rocca Busambra territory (North Sicily, Italy). — *Mycotaxon*, Ltd., pp. 66.

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