

Preliminary checklist of the basidiomycetes from mediterranean inland dune ecosystems in Seville (Spain)

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Abstract—This contribution deals with a preliminary taxonomic list of those basidiomycetes growing in inland dune ecosystems in Seville (Spain). A total of 104 species constitute this first series.

Key words—taxonomy, mediterranean ecosystems

Introduction

Ortega (2003) has compiled the mycological data referred to the river Guadamar basin (provinces of Huelva and Seville), an area that in April 1998 suffered an important ecological damage, caused by the breaking of a mine pond (property of the Swedish-Canadian enterprise Boliden), which liberated massive quantities of toxic mineral wastes. This event led to the implementation of a research program named “Programa de Investigación del Corredor Verde del Guadamar”, e.g. PICOVER, aiming at the remediation of this environmental disaster.

One of the studied areas in Ortega’s work is located close to the sevillian town of Aznalcázar, where a plot of approximately 3 km² has been sampled during three consecutive years (2000-2002). This small area is dominated by typical mediterranean plant communities developing on sandy soils that belong to the plant association *Myrto communis-Querceto suberis halimietoso halimifolii* S., e.g., xero-psammophilous, thermomediterranean cork-oak open woodlands. This open “alcornocales” is often intermixed with *Pinus pinea* and *Quercus ilex* subsp. *ballota*, more rarely with *Eucalyptus* spp., with the presence of diverse shrubs, like the “lentisco” (*Pistacia lentiscus*), “mirto” (*Myrtus communis*) or the “jarales” (*Cistus* spp.) in somewhat more degraded areas (Cabezudo et al. 2003). This plot has been highly influenced by human activities (intentional or not), which led to the abundance of burned wood residues, rotten plant debris and cattle dung.

Biogeographically, the river Guadamar basin is included within the Chorological Province Gaditano-Onubo-Algarviense, Sector Gaditano-Onubense (Rivas-Martínez et al. 1997), which is circumscribed to the south and southeast of Huelva province, small areas of Seville province and the western litoral areas of Cadiz province. This sector is bioclimatologically considered within the

thermomediterranean dry to subhumid level (Valle et al. 2004). The plot which has been studied in Aznalcázar shows the following characteristics: altitude 60 m a.s.l., bioclimate oceanic lustrational, thermotype thermomediterranean superior (annual mean temperature 17°-17,9° C), and ombrotype dry (annual mean rainfall 504,5-597,6 mm) [Valle et al. 2004].

From a mycological point of view, two new species have been described previously from these localities, e.g. *Coprinus alcobae* A. Ortega (Ortega & Esteve-Raventós 2003) and *Mycena dunicola* (Esteve-Raventós et al. 2001), as well as contributions were made to the study of the genera *Macrolepiota* Singer (Migliozzi & Ortega 2001), and *Amanita* Pers. (Ortega & Contú 2003).

Materials and Methods

All collections were gathered in Aznalcázar (Seville, Spain) in a plot of approx. 3 km² located in Aznalcázar pine woodlands, along the road from Aznalcázar to Isla Mayor (km 5), where the type of vegetation was described above. The material has been deposited at GDA, and was collected by A. Ortega and L. Alcoba. Abbreviations of authors follow Kirk & Ansell (1992). We have considered the classification in Kirk et al. (2001) to organize the catalogue.

Results

Agaricales

- Agaricus gennadii* (Chatin & Boud.) P.D. Orton
Under *Eucalyptus* sp., 26.10.2001, GDA 47348.
- Agaricus impudicus* (Rea) Pilát
Under *Pinus pinea*, 26.10.2001, GDA 47349.
- Agaricus osecanus* Pilát
In open *Pinus pinea* woodland, 24.11.2001, GDA 47350.
- Agaricus xanthodermus* var. *lepiotoides* Maire
Under *Pinus pinea*, 31.03.2001, GDA 47351.
- Agrocybe pediades* (Fr.) Fayod [= *A. semiorbicularis* (Bull.) Fayod]
In open areas of *Pinus pinea* woodland, 18.11.2000, GDA 47353. *Ibidem*, 31.03.2001, GDA 47352. *Ibidem*, 19.10.2002, GDA 47354.
- Amanita boudieri* Barla
Under *Quercus ilex* subsp. *ballota* and *Cistus* sp., 31.03.2001, GDA 47355. *Ibidem*, under *Pinus pinea*, 31.03.2001, GDA 47356. *Idem*, GDA 47357.
- Amanita curtipes* E.-J. Gilbert
Under *Pinus pinaster*, 24.11.2001, GDA 47358. *Ibidem*, 30.11.2002, GDA 47359.
- Amanita gemmata* (Fr.) Gillet
Under *Pinus pinea* and *Quercus ilex* subsp. *ballota*, 26.10.2001, GDA 47360. *Idem*, GDA 47361.
- Amanita mairei* Foley
In burned soils under *Eucalyptus* sp., 26.10.2001, GDA 47320. *Ibidem*, under *Eucalyptus* and *Pinus pinea*, GDA 47321.
- Amanita verna* var. *decipiens* Trimbach
Under *Quercus ilex* subsp. *ballota* and *Pistacia lentiscus*, 31.03.2001, GDA 47362.
In mixed wood of *Pinus pinea* and *Quercus ilex* subsp. *ballota*, 26.04.2002, GDA 47363.
- Bovista aestivalis* (Bonord.) Demoulin

- Under *Pinus pinea*, 18.11.2000, GDA 47337.
- Clitocybe font-queri*** R. Heim
Under *Cistus sp.*, 18.11.2000, GDA 47364. *Ibidem*, 2.12.2000, GDA 47365. Under *Pinus pinea*, 30.11.2002, GDA 47366.
- Clitocybe inornata*** (Sowerby) Gillet
Under *Cistus sp.* and *Quercus ilex* subsp. *ballota*, 18.11.2000, GDA 47367.
- Clitocybe metachroa*** (Fr.) P. Kumm.
Under *Pinus pinea*, 2.12.2000, GDA 47368.
- Clitopilus scyphoides*** (Fr.) Singer
Under *Cistus monspeliensis*, 2.12.2000, GDA 47369. Obs.: GDA 47369 belongs to f. *omphaliformis* (Joss) Noordel.
- Contumyces vesuviana*** (V. Brig.) Redhead, Moncalvo, Vilgalys & Lutzoni
Among mosses under *Cistus sp.*, 18.11.2000, GDA 47454. In open areas on mosses, 26.10.2001, GDA 47455.
- Coprinus alcobae*** A. Ortega
Under *Pinus pinea*, 26.10.2001, GDA 45985.
- Coprinus schröeteri*** P. Karst. (= *C. nudiceps* P.D. Orton)
In soil of open *Pinus* woodland, 31.03.2001, GDA 47370. *Ibidem*, 19.10.2002, GDA 47371. *Idem*, GDA 47372.
- Cortinarius decipiens*** (Pers.) Fr.
Under *Quercus ilex* subsp. *ballota*, 2.12.2000, GDA 47373.
- Cortinarius scobinaceus*** Malençon & Bertault
Under *Cistus monspeliensis*, 2.12.2000, GDA 47374.
- Cyathus olla*** (Batsch) Pers.
On soil and among organic rotten debris, 19.01.2001, GDA 47339.
- Entoloma cistophilum*** Trimbach
In open areas under *Cistus sp.* with *Pinus pinea*, 19.01.2001, GDA 47375.
- Entoloma juncinum*** (Kühner & Romagn.) Noordel.
In open areas under *Cistus sp.*, 18.11.2000, GDA 47376. Under *Pinus pinea* mixed with *Quercus ilex* subsp. *ballota*, 2.12.2000, GDA 47377.
- Entoloma papillatum*** (Bres.) Dennis
Under *Quercus ilex* subsp. *ballota* and *Pinus pinea*, 2.12.2000, GDA 47378.
- Entoloma philocistus*** Hauskn. & Noordel.
Under *Cistus sp.*, 2.12.2000, GDA 47379.
- Entoloma serrulatum***, (Pers) Hesler
In open zones under *Eucalyptus sp.*, 19.01.2001, GDA 47380.
- Entoloma undatum*** (Fr.) M.M. Moser
Among mosses, 24.11.2001, GDA 47381.
- Flammulaster limulatus*** (Fr. ex Weinm.) Watling
Under *Cistus sp.* and *Pinus pinea*, 18.11.2000, GDA 47382. On rotten branches of *Pinus pinea*, 19.01.2001, GDA 47383.
- Gymnopilus arenophilus*** A. Ortega & Esteve-Rav.
On soil, sometimes attached to woody debris of *Pinus*, or directly on charcoal debris in sandy *Pinus* forests, 2.12.2000, GDA 47384. *Idem*, GDA 47385. *Idem*, GDA 47386. *Ibidem*, 19.01.2001, GDA 47387. *Ibidem*, 20.11.2002, GDA 47388.
- Gymnopilus junonius*** (Fr.) P.D. Orton
On wood of *Pinus pinea*, 19.01.2001, GDA 47389. In stump of *Eucalyptus sp.*, 24.11.2001, GDA 47390.
- Gymnopilus dryophilus*** (Bull.) Murrill
In humus under *Pinus pinea* and *Quercus ilex* subsp. *ballota*, 18.11.2000, GDA 47391. *Idem*, GDA 47393. *Ibidem*, 19.10.2002, GDA 47392. *Ibidem*, 30.11.2002, GDA 47394.
- Gymnopilus dryophilus*** var. *lanipes* (Malençon) A. Ortega, Antonín & Esteve-Rav.
Under *Pinus pinea*, 18.11.2000, GDA 44740. *Ibidem*, 31.03.2001, GDA 44741. *Ibidem*, 27.04.2002, GDA 47395.
- Gymnopilus fagiphilus*** (Velen.) Antonín, Halling & Noordel.

- Under *Quercus ilex* subsp. *ballota*, 18.11.2000, GDA 47396.
- Gymnopus fuscopurpureus* (Pers.) Antonín, Halling & Noordel.
Under *Cistus sp.*, 18.11.2000, GDA 47397.
- Gymnopus impudicus* (Fr.) Antonín, Halling & Noordel.
Under *Pinus pinea*, 2.12.2000, GDA 47398. *Ibidem*, 19.10.2002, GDA 47399.
- Gymnopus putillus* (Fr.) Antonín, Halling & Noordel.
Under *Pinus pinea*, 31.03.2001, GDA 47400.
- Hebeloma cistophilum*** Maire
Under *Cistus monspeliensis*, 18.11.2000, GDA 47401.
- Hebeloma cylindrosporum*** Romagn.
Under *Pinus pinea*, 2.12.2000, GDA 47402. *Ibidem*, 31.03.2001, GDA 47403.
Ibidem, 26.10.2001, GDA 47404. Under *Quercus ilex* subsp. *ballota* and *Pinus pinea*, 24.11.2001, GDA 47405.
- Inocybe cincinnata*** var. *major* (S. Petersen) Kuyper (= *I. obscura* s. auct.)
Under *Cistus monspeliensis*, 2.12.2000, GDA 47419. Under *Pinus pinea* and *Myrtus communis*, 19.01.2001, GDA 47420.
- Inocybe geophylla*** var. *lilacina* Gillet
Under *Pinus pinea*, 2.12.2000, GDA 47409. *Ibidem*, 19.01.2002, GDA 47410.
Ibidem, 31.03.2001, GDA 47493. *Ibidem*, 24.11.2001, GDA 47411.
- Inocybe lacera*** (Fr.) P. Kumm.
Under *Pinus pinea* and *Quercus ilex* subsp. *ballota*, 2.12.2000, GDA 47412. *Ibidem*, on naked and burned soils, 31.03.2001, GDA 47413. *Ibidem*, 26.10.2001, GDA 47414. Under *Pinus pinea*, 24.11.2001, GDA 47415.
- Inocybe mixtilis*** (Britzelm.) Sacc.
Under *Pinus pinea* and *Quercus ilex* subsp. *ballota*, 2.12.2000, GDA 47416. In open *Pinus pinea* forest, 31.03.2001, GDA 47417. *Ibidem*, 24.11.2001, GDA 47418.
- Laccaria fraterna*** (Cooke & Masee) Pegler
In open areas under *Pinus pinea*, 31.03.2001, GDA 47421.
- Laccaria proxima*** (Boud.) Pat.
Under *Pinus pinea*, 19.01.2001, GDA 47422.
- Lepiota locquinii*** Bon
Under *Cistus sp.*, 18.11.2000, GDA 47423.
- Lepiota tomentella*** J.E. Lange
Under *Pinus pinea* and *Quercus ilex* subsp. *ballota*, 2.12.2000, GDA 47424. Obs.: GDA 47424 belongs to f. *rubidella* Bon.
- Leucoagaricus erioderma*** (Malençon) Bon
Under *Pinus pinea* and *Quercus ilex* subsp. *ballota*, 2.12.2000, GDA 47425. Under *Cistus sp.* and *Quercus ilex* subsp. *ballota*, 30.11.2002, GDA 47426.
- Leucoagaricus melanoirichus*** (Malençon & Bertault) Trimbach
Under *Cistus monspeliensis*, 18.11.2000, GDA 47427. *Ibidem*, 2.12.2000, GDA 47428. Under *Cistus sp.* and *Pinus pinea*, 19.01.2001, GDA 47429. Under *Pinus pinea* and *Quercus ilex* subsp. *ballota*, 26.10.2001, GDA 47430. *Ibidem*, 24.11.2001, GDA 47431.
- Lycoperdon nigrescens*** Wahlenb.
In open areas of *Pinus pinea* woodlands, 26.04.2002, GDA 47340.
- Lycoperdon perlatum*** Pers.
Under *Cistus sp.*, 2.12.2000, GDA 47341. *Ibidem*, 19.01.2001, GDA 47342.
- Macrocyttidia cucumis*** (Pers.) Joss.
In open areas of *Pinus pinea* forest among grasses, 19.01.2001, GDA 47435.
Ibidem, 26.10.2001, GDA 47436. Obs.: GDA 47345 and 47436 belong to f. *latifolia* J.E. Lange.
- Macrolepiota excoriata*** (Schaeff.) M.M. Moser
Under *Pinus pinea* and *Cistus sp.*, 18.11.2000, GDA 47437. Obs.: GDA 47437 belongs to f. *barlae* Babos.
- Macrolepiota fuliginosquarrosa*** Malençon
Under *Pinus pinea* and *Cistus sp.*, 18.11.2000, GDA 47438.

- Macrolepiota phaeodisca* Bellù
In open areas of *Pinus pinea* woodland, 30.11.2002, GDA 47439. *Idem*, GDA 47440.
- Marasmius quercophilus* Pouzar
On dead leaves of *Quercus ilex* subsp. *ballota*, 18.11.2000, GDA 47441. *Ibidem*, 19.10.2002, GDA 47442.
- Melanoleuca polioleuca* (Fr.) Kühner & Maire
Under *Eucalyptus* sp., 2.12.2000, GDA 47443.
- Micromphale foetidum* (Sowerby) Singer
On rotten vegetal debris under *Pinus pinea* and *Quercus ilex* subsp. *ballota*, 2.12.2000, GDA 47444.
- Mycena acicula* (Schaeff.) P. Kumm.
On humus under *Cistus monspeliensis*, 2.12.2000, GDA 47445.
- Mycena capillaripes* Peck
On humus, 18.11.2000, GDA 47446. *Idem*, GDA 47447.
- Mycena citrinomarginata* Gillet
Under *Pinus pinea* and *Quercus ilex* subsp. *ballota*, 18.11.2000, GDA 47448.
- Mycena dunicola* Esteve-Rav., Barrasa, M. Villarreal & A. Ortega
Under *Pinus pinea*, on soil, 2.12.2000, GDA 43817.
- Mycena leucogala* (Cooke) Sacc.
In humus under *Eucalyptus* sp., 18.11.2000, GDA 47450.
- Mycena pura* (Pers.) Sacc.
Under *Pinus pinea*, 2.12.2000, GDA 47451. Obs.: GDA 47451 belongs to f. *ianthina* (Gillet) Maas Geest.
- Mycena sanguinolenta* (Alb. & Schwein.) P. Kumm.
On vegetal debris of *Quercus ilex* subsp. *ballota*, 18.11.2000, GDA 47452. On *Cistus* sp. debris, 2.12.2000, GDA 47453.
- Panaeolus campanulatus* (L.) Quél.
On horse dung, 24.11.2001, GDA 47456.
- Pholiota highlandensis* (Peck) Quadr. & Lunghini
On burned soils, 19.01.2001, GDA 47457. *Ibidem*, 30.11.2002, GDA 47458.
- Pluteus nanus* (Pers.) P. Kumm. (incl. *P. griseopus* P.D. Orton)
On soil under *Pinus pinea*, 18.11.2000, GDA 47459.
- Pluteus satur* Kühner & Romagn. (incl. *P. pallescens* P.D. Orton)
In open areas under *Cistus* sp., 18.11.2000, GDA 47460.
- Psathyrella candolleana* (Fr.) Maire
In open and grassy areas under *Pinus pinea*, 18.11.2000, GDA 47461. Under *Eucalyptus* sp., 2.12.2000, GDA 47462.
- Psathyrella flexispora* T.J. Wallace & P.D. Orton
In burned soils under *Pinus pinea*, 19.01.2001, GDA 47463.
- Psathyrella panaeoloides* (Maire) Arnolds
In open areas under *Pinus pinea*, 18.11.2000, GDA 47464.
- Psathyrella spadiceogrisea* (Schaeff.) Maire
In open areas under *Pinus pinea*, 31.03.2001, GDA 47465. Obs.: GDA 47465 belongs to f. *vernalis* (J.E. Lange) Kits van Wav.
- Psilocybe coprophila* (Bull.) P. Kumm.
On horse dung, 19.01.2001, GDA 47466.
- Rhodocollybia butyracea* (Bull.) Lennox
Under *Pinus pinea*, 2.12.2000, GDA 47467. Obs.: GDA 47467 belongs to f. *asema* (Fr.) Antonín, Halling & Noordel.
- Schizophyllum commune* Fr.
On *Pinus pinea* wood, 31.03.2001, GDA 47331.
- Tephroclybe anthracophila* (Lasch) P.D. Orton
In burned soils under *Cistus* sp. and *Pinus pinea*, 18.11.2000, GDA 47432. *Ibidem*, 2.12.2000, GDA 47433. *Ibidem*, 30.11.2002, GDA 47434.

- Torrendia pulchella*** Bres.
Under *Cistus sp.*, 2.12.2000, GDA 47345. *Ibidem*, among mosses, 2.12.2000, GDA 47346.
- Tubaria conspersa*** (Pers.) Fayod
Under *Cistus sp.*, 18.11.2000, GDA 47468.
- Vascellum pratense*** (Pers.) Kreisel
In open areas under *Cistus sp.*, 24.11.2001, GDA 47347.

Boletales

- Astraeus hygrometricus*** (Pers.) Morgan
Under *Cistus sp.*, 2.12.2000, GDA 47336. *Ibidem*, 30.11.2002, GDA 47492.
- Phylloporus rhodoxanthus*** (Schwein.) Bres.
Under *Cistus sp.*, with *Pinus pinea* and *Quercus ilex* subsp. *ballota*, 24.11.2001, GDA 47469. In open areas of *Pinus pinea* forest, 30.11.2002, GDA 47470.
- Pisolithus arhizus*** (Scop.) Rauschert
Under *Eucalyptus sp.*, 24.11.2001, GDA 47343.
- Scleroderma meridionale*** Demoulin & Malençon
In naked soils of open *Pinus pinea* woodland, 30.11.2002, GDA 47344.
- Xerocomus chrysenteron*** (Bull.) Quéf.
Under *Quercus ilex* subsp. *ballota*, 19.20.2002, GDA 47471.

Hymenochaetales

- Coltricia perennis*** (L.) Murrill
On burned soils under *Pinus pinea*, 26.10.2001, GDA 47325.
- Phellinus torulosus*** (Pers.) Bourdot & Galzin
On *Eucalyptus* stump, 24.11.2001, GDA 47328.
- Schizophora paradoxa*** (Schr.) Donk
On rotten and burned wood, 19.10.2002, GDA 47332.

Phallales

- Clathrus ruber*** P. Micheli
In open areas of *Pinus pinea* forest, 31.03.2001, GDA 47338.

Polyporales

- Polyporus meridionalis*** (A. David) H. Jahn
On *Cistus sp.* rotten wood, 2.12.2000, GDA 47329. *Ibidem*, on *Pinus pinea* rotten wood, 31.03.2001, GDA 47330.

Russulales

- Lactarius cistophilus*** Bon & Trimbach
Under *Cistus monspeliensis*, 2.12.2000, GDA 47472.
- Lactarius deliciosus*** (L.) Gray
Under *Pinus pinea*, 2.12.2000, GDA 47473.
- Lentinellus omphalodes*** (Fr.) P. Karst.
On organic debris of *Pinus pinea*, 18.11.2000, GDA 47326. On dead branches, 26.10.2001, GDA 47490. *Idem*, GDA 47327.
- Russula amoenolens*** Romagn.
Under *Pinus pinea* and *Quercus ilex* subsp. *ballota*, 2.12.2000, GDA 47474. Under *Quercus ilex* subsp. *ballota*, 26.10.2001, GDA 47475. Under *Quercus ilex* subsp. *ballota* and *Cistus sp.*, 24.11.2001, GDA 47476.

- Russula atropurpurea* (Krombh.) Britzelm.
Under *Pinus pinea* and *Quercus ilex* subsp. *ballota*, 2.12.2000, GDA 47477.
- Russula cessans* A. Pearson
Under *Pinus pinea*, 2.12.2000, GDA 47449. *Idem*, GDA 47478. *Ibidem*, 19.10.2002, GDA 47479. *Idem*, GDA 47480.
- Russula chloroides* (Krombh.) Bres.
Under *Quercus ilex* subsp. *ballota*, 19.10.2002, GDA 47481.
- Russula odorata* Romagn.
Under *Pinus pinea* and *Quercus ilex* subsp. *ballota*, 2.12.2000, GDA 47482.
- Russula seperina* var. *luteovirens* Bertault & Malençon
Under *Quercus ilex* subsp. *ballota*, 19.10.2002, GDA 47483.
- Russula tyrrhenica* Sarnari
Under *Quercus ilex* subsp. *ballota*, 26.10.2001, GDA 47484.
- Russula torulosa* Bres.
Under *Pinus pinea*, 24.11.2001, GDA 47485.
- Russula violeipes* Quél.
Under *Pinus pinea*, 2.12.2000, GDA 47486. Under *Pinus pinea* and *Quercus ilex* subsp. *ballota*, 26.10.2001. *Ibidem*, 19.10.2002, GDA 47488. *Idem*, GDA 47489.
Obs.: GDA 47489 belongs to f. *citrina* Quél.

Thelephorales

- Thelephora caryophyllea* (Schaeff.) Pers.
Under *Cistus* sp., 2.12.2000, GDA 47333. Under *Pinus pinea*, 24.11.2001, GDA 47491. In naked soil, 30.11.2002, GDA 47334.
- Thelephora terrestris* Ehrh.
In open *Pinus pinea* forest, on soil, 26.10.2001, GDA 47335.

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