



# An annotated checklist of the macrofungi (Ascomycota, Basidiomycota, and Glomeromycota) from Quintana Roo, Mexico

Javier Isaac de la Fuente<sup>1,2</sup>, Jesús García-Jiménez<sup>3</sup>, Caribell Yuridia López<sup>4</sup>, Iván Oros-Ortega<sup>5</sup>, Reyna Yazuly Vela-Hernández<sup>5</sup>, Gonzalo Guevara-Guerrero<sup>3</sup>, Fortunato Garza-Ocañas<sup>6</sup>, Jesús Antonio Chay-Casanova<sup>4</sup>, León Esteban Ibarra-Garibay<sup>7</sup>, Víctor Manuel Bandala<sup>8</sup>

**1** Universidad de Quintana Roo, División de Ciencias de la Salud, Av. Erick Paolo Martínez S/N, Chetumal, Quintana Roo, CP 77039, México. **2** Instituto Wozniak, Calzada del centenario #590, CP 77019, Colonia del bosque, Chetumal, Quintana Roo, México. **3** Tecnológico Nacional de México. Instituto Tecnológico de Ciudad Victoria, Boulevard Emilio Portes Gil #1301, Cd Victoria, Tamaulipas, CP 87010, México. **4** Tecnológico Nacional de México, Instituto Tecnológico de Chetumal, Avenida Insurgentes # 330, Col. David G. Gutiérrez, Chetumal, Quintana Roo, CP 77013, México. **5** Tecnológico Nacional de México, Instituto Tecnológico de la Zona Maya, Carretera Chetumal-Escácerga, km 21.5, Juan Sarabia, Quintana Roo, CP 77965, México. **6** Universidad Autónoma de Nuevo León, Campus Linares, Facultad de Ciencias Forestales, Carretera Nacional km 145, Linares, Nuevo León, AP 41 67700, México. **7** Ecología de Artrópodos en Ambientes Extremos, Unidad Multidisciplinaria de Docencia e Investigación, Facultad de Ciencias, Universidad Nacional Autónoma de México campus Juriquilla, Boulevard Juriquilla 3001, Querétaro, Querétaro, CP 76230, México. **8** Instituto de Ecología, Carretera antigua a Coatepec 351, El Haya, Xalapa 91070, Veracruz, México.

**Corresponding author:** Jesús García-Jiménez, [jgarjim@yahoo.com.mx](mailto:jgarjim@yahoo.com.mx)

## Abstract

According to records available in the literature, 380 species of fungi and fungus-like organisms are known for the state of Quintana Roo on the Yucatán Peninsula of Mexico. We carried out mycological surveys in this state, following the classical methods for collecting, describing, and curating macrofungi. As a result of our research, 21 species are recorded for the first time for Quintana Roo, and *Amanita arenicola* O. K. Milller & Lodge, *Inocybe xerophytica* Pegler, and *Russula cremeolilacina* Pegler are recorded for the first time for Mexico. The distinctive characteristics and photographs are provided for the new records. As a result of this study, 401 species of macrofungi are known for Quintana Roo.

## Keywords

Diversity, funga, macrofungi, tropical fungi, Yucatán Peninsula.

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## Introduction

Mexico harbors a great fungal diversity, and its wide variety of geographical conditions, orography, and habitat promotes niches where fungal diversity thrives (Aguirre-Acosta et al. 2014). Guzmán (1998) estimated

that 200,000 fungal species might occur in Mexico but less than 10% have been studied. So far, most fungal research has been focused on fungi occurring in temperate forests. Until 2008, only 2135 species had been

recorded for Mexico mainly from temperate forest (Aguirre-Acosta et al. 2014). More than 900 species were recorded from tropical forest but studies regarding tropical fungi are still scarce (Guzmán et al. 1997).

The Mexican states of Quintana Roo, Campeche, and Yucatan, as well as a part of Belize and Guatemala in Central America make up the floristic province called Yucatan Peninsula. It is characterized by its deciduous, sub-deciduous, or evergreen forests. In the state of Quintana Roo, most of the arboreal species of the Yucatan Peninsula are represented, so the mycobiota of Quintana Roo is expected to be representative of the Yucatan Peninsula (Ibarra-Manríquez et al. 1995; Valdéz-Hernández and Islebe 2011).

The state of Quintana Roo has an interesting fungal diversity, which has been studied since the late 19th century by Millspaugh (Chío and Guzmán 1983). The studies of Chío and Guzmán (1982), Guzmán-Dávalos and Guzmán (1982), Guzmán (1983), San Martín and Rogers (1988), Pérez-Silva et al. (1992), Ryvardeen and Guzmán (1993), San Martín et al. (1995), San Martín et al. (1999), Guzmán (2003), and Pompa-González et al. (2011) have contributed knowledge on fungi for Quintana Roo by presenting the first checklist of macrofungi and describing several new species. As a result of those studies, 405 species of fungi and fungus like organisms (including lichenized fungi and myxomycetes) have been reported from the state of Quintana Roo (López et al. 2011).

Deforestation and land-use changes due to agricultural practices and new tourist developments are some of the main challenges for conservation of the fungal biodiversity in tropical forest in Quintana Roo (Valdéz-Hernández and Islebe 2011). Furthermore, loss of forest coverage may lead many fungal species to extinction, and some of them have not even been previously recorded nor described. On the other hand, there are taxonomic obstacles for correct identification, a paucity of trained mycologists, and few publications (Mueller and Schmit 2007). Furthermore, some forests, such as the forests in flooded lowlands and the pine savanna, have many interesting fungal species that are not yet formally recorded. The aim of this paper is to summarize and update information on current knowledge of macrofungi diversity from the forests of the state of Quintana Roo. To address this situation, we present our new data from our mycological studies, and we compile from the literature lists of species of fungal species collected in various ecosystems in Quintana Roo, Mexico.

## Methods

**Study area.** The state of Quintana Roo, where collections were made (Fig 1) is located in southeastern Mexican, on the Yucatan Peninsula. The most representative forests are evergreen tropical forest composed mainly of *Brosimum alicastrum* Sw., *Bursera simaruba* (L.) Sarg., *Manilkara zapota* (L.) van Royen, *Metopium brownei* (Jacq.) Urb., and *Vitex gaumeri* Greenm. Lowland

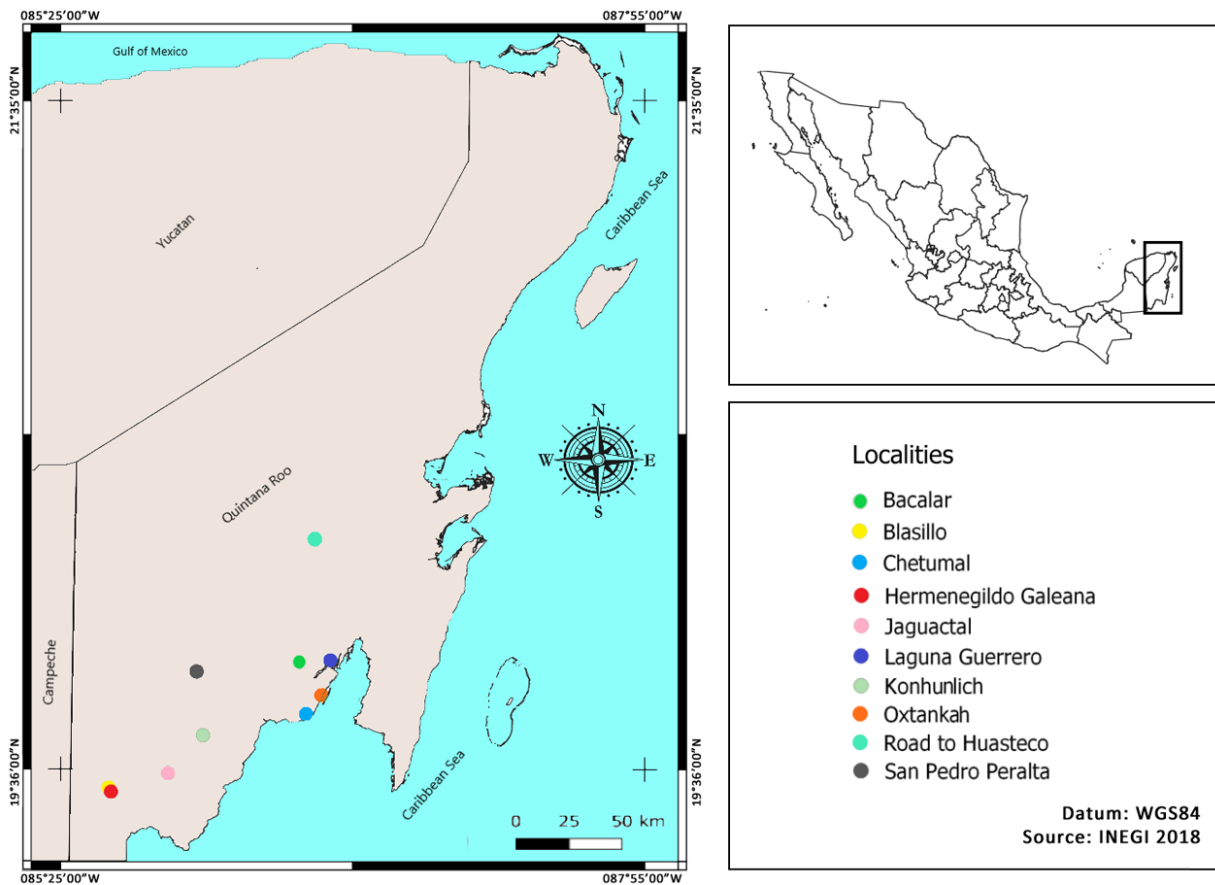
forest present *Cameraria latifolia* L., *Gymnopodium floribundum* Rolfe, *Haematoxylum campechianum* L., *M. brownei*, and *Terminalia buceras* (L.) C. Wright; coastal vegetation composed of *Chrysobalanus icaco* L., *Coccoloba uvifera* (L.) L., *Cordia sebestena* L., and *Pouteria campechiana* (Kunth) Baehni; pine savanna composed of *Pinus caribaea* Morelet, *H. campechianum*, *Byrsonima crassifolia* (L.) Kunth, *Curetella americana* L. and *Crescentia cujete* L.; and secondary vegetation composed of *Cecropia peltata* L., *Lysiloma latisiliquum* (L.) Benth. and *Piscidia piscipula* (L.) Sarg., among numerous other species (Macario-Sánchez and Sánchez 2011; Valdéz-Hernández and Islebe 2011).

**Fieldwork.** Sampling and collection of macrofungi specimens follow the methods presented by Lodge et al. (2004). Hand-cut sections were mounted in KOH 5% (potassium hydroxide) and Meltzer reagent in order to make microscopic observations of the species. The specimens were identified using specialized literature such as Pegler (1983), Webber and Smith (1985), Guzmán (2003), and other publications cited below. The specimens were deposited in the “José Castillo Tovar” herbarium at the Instituto Tecnológico de Ciudad Victoria (ITCV) and the mycological collection of the Instituto Tecnológico de la Zona Maya (ITZM).

**Literature review.** The literature-based checklist was based on specialized published literature to local, country, and world levels that cite macrofungi from Quintana Roo, which was found by consulting ISI Web of Knowledge, ResearchGate, and the UNITE database for molecular identification of fungi (<https://unite.ut.ee/>). Searches were made using the key words: Quintana Roo + basidiomycetes; Quintana Roo + macrofungi; Quintana Roo + Ascomycetes, and Yucatán Peninsula + Macrofungi. Published sources in journals, book chapters, scientific notes, and scientific books were considered for the check list; theses and congress results were not considered. Accepted names are according to Index Fungorum (<http://www.indexfungorum.org/names/names.asp>). The species are systematically classified according to Kirk et al. (2008).

**Table 1.** Collecting sites in Quintana Roo, Mexico.

Localities	Geographic coordinates	Vegetation type	Elevation a.s.l. (m)
Oxtankáh	18°36'N, 088°13'W	Secondary vegetation and evergreen tropical forest	14
Hermenegildo Galeana	18°10'N, 089°14'W	Evergreen tropical forest and lowland forest	229
Blasillo	18°09'N, 088°13'W	Lowland forest	213
Laguna Guerrero	18°45'N, 088°11'W	Lowland forest	9
Jaguactal	18°14'N, 088°57'W	Lowland forest and pine savanna	132
Chetumal	18°31'N, 088°18'W	Secondary vegetation and coastal vegetation	8
Road to El Huasteco	19°18'N, 088°16'W	Evergreen tropical forest	33
San Pedro Peralta	18°42'N, 088°49'W	Secondary vegetation	175
Kohunlich	18°25'N, 088°47'W	Secondary vegetation	120
Bacalar	18°45'N, 088°20'W	Secondary vegetation	19



**Figure 1.** Collecting sites in Quintana Roo, Mexico.

## Results

Among specimens of macrofungi that we collected in Quintana Roo, 77 species of macrofungi were identified. Among these, 21 species are new records for Quintana Roo (Figs 2, 3) and *Amanita arenicola* O. K. Miller & Lodge, *Inocybe xerophytica* Pegler, and *Russula cremeolilacina* Pegler are new records for Mexico. Most of the species belong to Basidiomycota (65 species), followed by Ascomycota (11 species) and Glomeromycota (1 species). Our analysis of literature records showed that there are 380 species previously known from Quintana Roo. The total list, 401 species, was checked and taxonomic names were updated according to Index Fungorum (<http://www.indexfungorum.org/names/names.asp>). Species newly recorded from Quintana Roo are marked with an asterisk (\*). Most of the species (317 species) belong to Basidiomycota, followed by Ascomycota (83 species) and Glomeromycota (1 species). The most representative families are Xylariaceae (44 species), Polyporaceae (41 species), and Agaricaceae (30 species) (Table 2).

### Checklist of macrofungi from Quintana Roo, Mexico

Species names marked with an asterisk (\*) are reported for the first time for Mexico. They are described in detail below. For photographs of selected species, see Figures 2–5.

### Ascomycota

#### Coronophorales

##### Nitschkiaceae

*Calyculosphaeria calyculus* (Mont.) Fitzp.

Literature: Medel et al. (1999).

#### Hypocreales

##### Ophiocordycipitaceae

\**Ophiocordyceps melolonthae* (Tul. & C. Tul.) G.H.

Sung, J.M. Sung, Hywel-Jones & Spatafora. Fig. 2A.

#### Nectriaceae

*Nectria aurantiaca* (Tul. & C. Tul.) Jacz.

Literature: Guzmán (2003).

**Table 2.** Most common taxa of macrofungi known from Quintana Roo, Mexico, ranked according to numbers of species reported per family.

Phylum	Order	Family	Genera	Species
Ascomycota	Xylariales	Xylariaceae	4	44
Basidiomycota	Polyporales	Polyporaceae	14	41
Basidiomycota	Agaricales	Agaricaceae	11	30
Ascomycota	Xylariales	Hypoxylaceae	5	28
Basidiomycota	Hymenochaetales	Hymenochaetaceae	10	24
Basidiomycota	Agaricales	Marasmiaceae	11	22
Basidiomycota	Agaricales	Entolomataceae	1	13
Basidiomycota	Agaricales	Psathyrellaceae	3	12
Basidiomycota	Polyporales	Ganodermataceae	3	11
Basidiomycota	Agaricales	Geastraceae	2	10
Basidiomycota	Agaricales	Tricholomataceae	8	9

**Hysteriales****Hysteriaceae**

*Hysterium angustatum* Alb. & Schwein. Literature:  
Guzmán (1983).

**Pezizales****Sarcoscyphaceae**

*Cookeina speciosa* (Fr.) Dennis.

Literature: Guzmán (2003).

*Cookeina sulcipes* (Berk.) Kuntze.

Literature: Guzmán (1983).

*Cookeina tricholoma* (Mont.) Kuntze.

Literature: Guzmán (1983), Guzmán (2003). Fig. 4A

\**Geodina guanacastensis* Denison.

Fig. 2B.

*Phillipsia crispata* (Berk. & M.A. Curtis).

Literature: Tun-Cano (2018).

*Phillipsia domingensis* (Berk.) Berk. ex Denison

Literature: Guzmán (1983), Guzmán (2003). Fig. 4B.

*Phillipsia hartmannii* (W. Phillips) Rifai.

Literature: Guzmán (1983), Medel et al. (1999).

**Xylariales****Hypoxylaceae**

*Annulohypoxylon archeri* (Berk.) Y.M. Ju, J.D. Rogers &  
H.M. Hsieh.

Literature: Medel et al. (1999), Medel (2002).

*Annulohypoxylon moriforme* (Henn.) Y.M. Ju, J.D.

Rogers & H.M. Hsieh.

Literature: Medel et al. (1999), San Martín et al. (1999).

*Annulohypoxylon pseudostipitatum* (Y.M. Ju & J.D.

Rogers) Y.M. Ju, J.D. Rogers & H.M. Hsieh.

Literature: Medel et al. (1999), San Martín et al. (1999).

*Annulohypoxylon stygium* (Lév.) Y.M. Ju, J.D. Rogers &

H.M. Hsieh.

Literature: San Martín et al. (1999).

*Annulohypoxylon truncatum* (Starbäck) Y.M. Ju, J.D.

Rogers & H.M. Hsieh.

Literature: Medel et al. (1999), San Martín et al.

(1999), Medel (2002).

*Daldinia brachysperma* F. San Martín, Y.M. Ju & J.D.

Rogers.

Literature: Ju et al. (1997).

*Daldinia concentrica* (Bolton) Ces. & De Not.

Literature: Guzmán (1983), Pompa-González et al.

(2011).

*Daldinia eschscholtzii* (Ehrenb.) Rehm.

Literature: Guzmán (1983), Ju et al. (1997), Medel

(2002), Pompa-González et al. (2011). Fig. 4C.

*Hypoxylon aerginosum* J.H. Mill.

Literature: Medel et al. (1999), San Martín et al. (1999).

*Hypoxylon croceoplum* Berk. & M.A. Curtis.

Literature: Medel et al. (1999), San Martín et al.

(1999), Medel (2002).

*Hypoxylon dieckmannii* Theiss.

Literature: San Martín et al. (1999).

*Hypoxylon duranii* J.D. Rogers.

Literature: San Martín et al. (1999).

*Hypoxylon erythrostroma* J.H. Mill.

Literature: San Martín et al. (1999).

*Hypoxylon fendleri* Berk. ex Cooke.

Literature: Medel et al. (1999), San Martín et al. (1999).

*Hypoxylon haematostroma* Mont.

Literature: Guzmán (1983), San Martín et al. (1999),

Medel (2002).

*Hypoxylon hypomiltum* Mont.

Literature: Guzmán (1983), Ju and Rogers (1997),

Medel et al. (1999), Medel (2002).

*Hypoxylon lenormandii* Berk. & M.A. Curtis.

Literature: San Martín et al. (1999).

*Hypoxylon lividipigmentum* F. San Martín, Y.M. Ju &

J.D. Rogers.

Literature: Medel et al. (1999), San Martín et al. (1999).

*Hypoxylon macrocarpum* Pouzar.

Literature: San Martín et al. (1999).

*Hypoxylon monticulosum* Mont.

Literature: Medel et al. (1999), San Martín (1999).

*Hypoxylon polyporus* (Starbäck) Y.M. Ju & J.D. Rogers.

Literature: San Martín et al. (1999).

*Hypoxylon rubiginosum* (Pers.) Fr.

Literature: Guzmán (1983), Medel (2002).

*Hypoxylon sublimbatum* (Durieu & Mont.) P.M.D. Martin.

Literature: Medel et al. (1999).

*Hypoxylon subrutulum* Starbäck.

Literature: San Martín et al. (1999).

*Phylacia globosa* Lév.

Literature: Guzmán (1983), Pompa-González et al.

(2011).

*Phylacia poculiformis* (Mont.) Mont.

Literature: Chay-Casanova and Medel (2000),

Guzmán (2003), Pompa-González et al. (2011).

*Phylacia turbinata* (Berk.) Dennis.

Literature: Guzmán (1983), Chay-Casanova and

Medel (2000).

*Thuemenella cubispora* (Ellis & Holw.) Boedijn.

Literature: Medel (2001).

**Xylariaceae**

*Biscogniauxia capnodes* (Berk.) Y.M. Ju & J.D. Rogers.

Literature: Medel et al. (1999).

*Biscogniauxia nummularia* (Bull.) Kuntze.

Literature: Pérez-Silva et al. (1992).

*Kretzschmaria cetrarioides* (Welw. & Curr.) Sacc.

Literature: San Martín and Rogers (1993).

*Poronia oedipus* (Mont.) Mont.

Literature: Guzmán (2003).

*Xylaria allantoidea* (Berk.) Fr.

Literature: San Martín and Rogers (1989), San

Martín et al. (1995), Medel et al. (1999).

*Xylaria anisopleura* (Mont.) Fr.

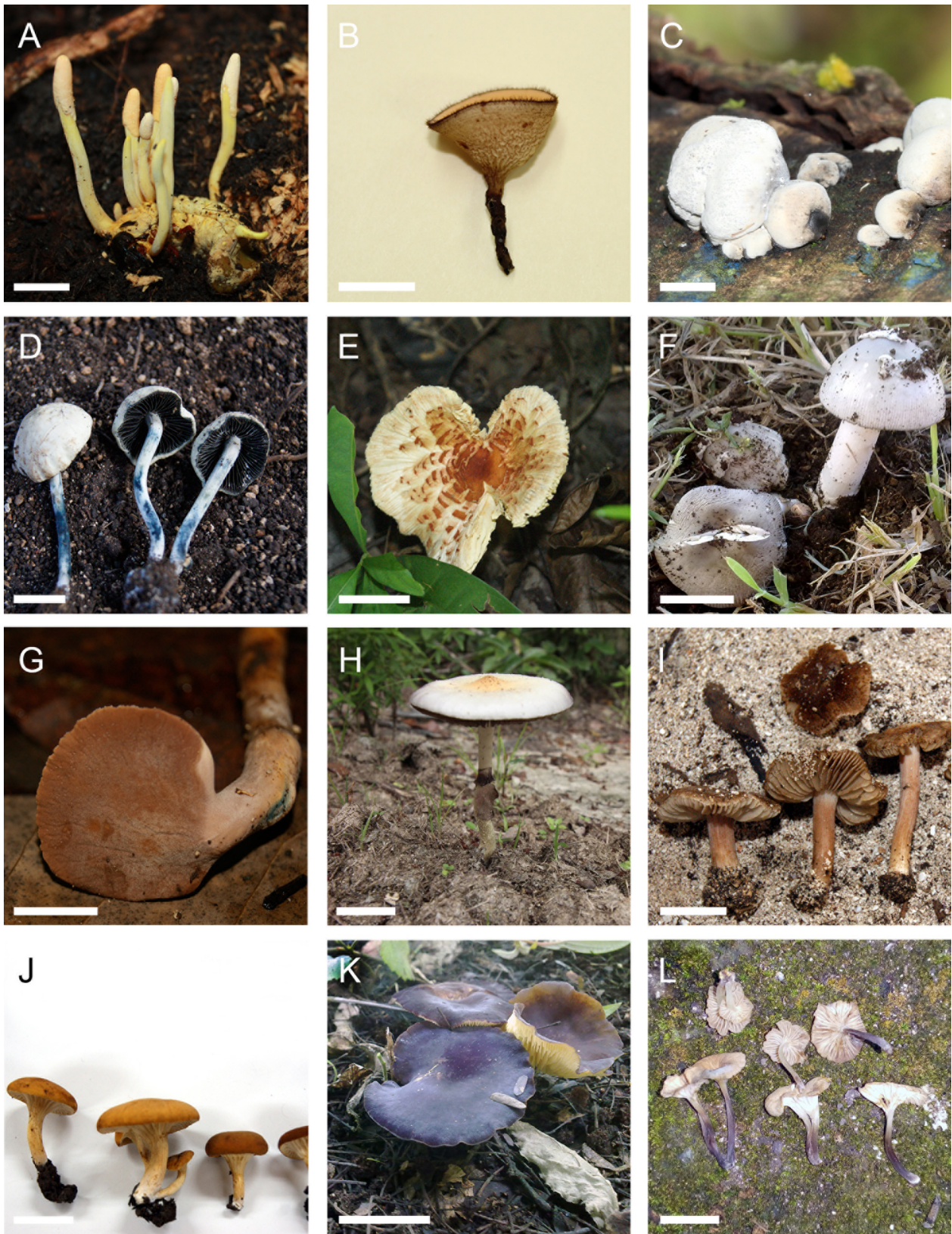
Literature: San Martín and Rogers (1989), San

Martín et al. (1995), Medel et al. (1999).

*Xylaria arbuscula* Sacc.

Literature: San Martín and Rogers (1989), San

Martín et al. (1995).



**Figure 2.** New records from Quintana Roo. **A.** *Ophiocordyceps melolonthae*. **B.** *Geodina guanacastensis*. **C.** *Xylaria mesenterica*. **D.** *Paneolus cyanescens*. **E.** *Rugosopora ochraceobadia*. **F.** *Amanita arenicola*. **G.** *Pseudofistulina radicata*. **H.** *Psilocybe cubensis*. **I.** *Inocybe xerophytica*. **J.** *Neopaxillus dominicanus*. **K.** *Calocybe cyanea*. **L.** *Gerronema bryogeton*. Scale bars = 10 mm.

*Xylaria bamboensis* Lloyd.

Literature: San Martín and Rogers (1989), Medel et al. (1999), Guzmán (2003).

*Xylaria brachiata* Sacc.

Literature: San Martín et al. (1995), Medel et al. (1999).

*Xylaria coccophora* Mont.

Literature: San Martín and Rogers (1989),



**Figure 3.** New records from Quintana Roo. **A.** *Hydrops nigrita*. **B.** *Macrocybe titans*. **C.** *Mucilopilus mexicanus*. **D.** *Gyrodontium sacchari*. **E.** *Cantharellus coccolobae*. **F.** *Laternea dringii*. **G.** *Lactifluus nebulosus*. **H.** *Russula cremeolilacina*. **J.** *Tremella fusiformis*. Scale bars = 10 mm.

Pérez-Silva et al. (1992), San Martín et al. (1995), Medel et al. (1999), Guzmán (2003).

*Xylaria corniformis* (Fr.) Fr.

Literature: San Martín et al. (1995).

*Xylaria cubensis* (Mont.) Fr.

Literature: San Martín and Rogers (1989), Guzmán (1983), San Martín et al. (1995).

*Xylaria delicatula* Starbäck.

Literature: San Martín et al. (1995), Medel et al. (1999).

*Xylaria dichotoma* (Mont.) Mont.

Literature: San Martín et al. (1995), Medel et al. (1999).

*Xylaria feejeensis* (Berk.) Fr.

Literature: San Martín et al. (1995).

*Xylaria fockei* (Miq.) Cooke.

Literature: Guzmán (1983).

*Xylaria gracillima* (Fr.) Fr.

Literature: San Martín and Rogers (1989), San

Martín et al. (1995), Medel et al. (1999).

*Xylaria guianensis* (Mont.) Fr.

Literature: Chío and Guzmán (1982), Chay-Casanova and Medel (2000).

*Xylaria hypoxylon* (L.) Grev.

Literature: Guzmán (1983), San Martín et al. (1995), Medel et al. (1999), Pompa-González et al. (2011).

*Xylaria ianthinovelutina* (Mont.) Fr.

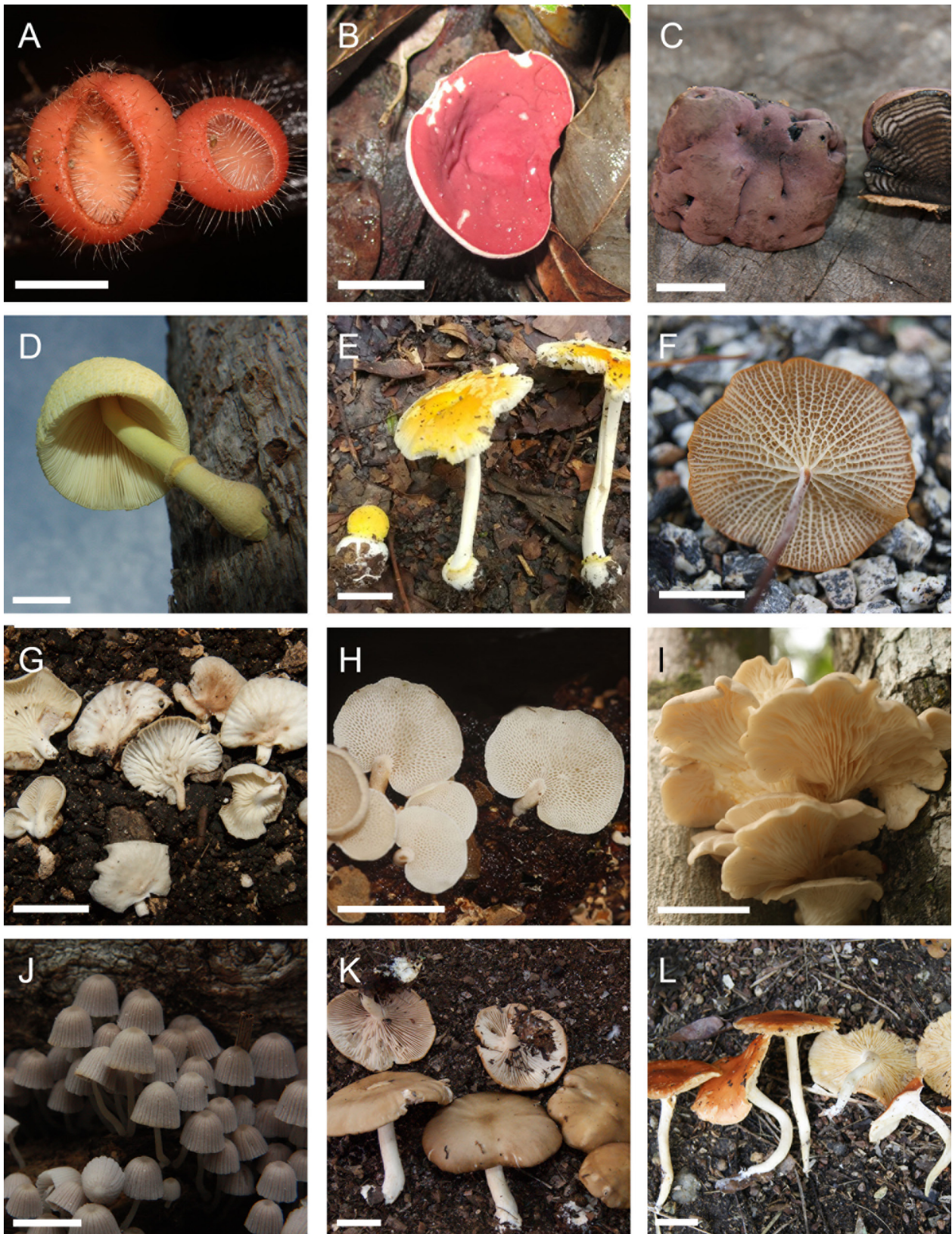
Literature: San Martín and Rogers (1989), Pérez-Silva et al. (1992), San Martín et al. (1995), Medel et al. (1999).

*Xylaria inaequalis* Berk. & M.A. Curtis.

Literature: San Martín and Rogers (1989), San Martín et al. (1995), Medel et al. (1999).

*Xylaria juniperus* Starbäck.

Literature: San Martín et al. (1995).



**Figure 4.** Representative fungi from Quintana Roo. **A.** *Cookeina tricholoma* **B.** *Phillipsia domingensis*. **C.** *Daldinia eschscholtzii*. **D.** *Leucocoprinus birnbaumii*. **E.** *Amanita silvatica*. **F.** *Marasmius cladophyllus*. **G.** *Nothopanus eugrammus*. **H.** *Panellus pusillus*. **I.** *Pleurotus djamor*. **J.** *Coprinellus disseminatus*. **K.** *Lepista yucatanensis*. **L.** *Leucopaxillus gracillimus*. Scale bars = 10 mm.

*Xylaria juruensis* Henn.

Literature: San Martín and Rogers (1989), Medel et al. (1995).

*Xylaria laevis* Lloyd.

Literature: San Martín et al. (1995), Medel et al. (1999).

*Xylaria lancea* Lloyd.

Literature: San Martín et al. (1995), Medel et al. (1999).

*Xylaria magniannulata* F. San Martín & J.D. Rogers.

- Literature: San Martín and Rogers (1988), San Martín et al. (1995), Medel et al. (1999).
- \**Xylaria mesenterica* (Möller) M. Stadler, Læssøe & J. Fourn. Fig. 2C.
- Xylaria microceras* (Mont.) Berk.  
Literature: San Martín et al. (1995).
- Xylaria montagnei* Hamme & Guerrero.  
Literature: San Martín et al. (1995), Medel et al. (1999).
- Xylaria multiplex* (Kunze) Fr.  
Literature: Guzmán (1983), San Martín and Rogers (1989), San Martín et al. (1995).
- Xylaria muscula* Lloyd.  
Literature: San Martín and Rogers (1989), Medel et al. (1995).
- Xylaria musooriensis* Dargan.  
Literature: San Martín et al. (1995), Medel et al. (1999).
- Xylaria olobapha* Berk.  
Literature: San Martín et al. (1995).
- Xylaria oxyacanthae* Tul. & C. Tul.  
Literature: San Martín et al. (1995).
- Xylaria pallide-ostiolata* Henn.  
Literature: San Martín and Rogers (1988), San Martín et al. (1995), Medel et al. (1999).
- Xylaria phyllocharis* Mont.  
Literature: San Martín and Rogers (1989), San Martín et al. (1995), Guzmán (2003).
- Xylaria poitei* (Lév.) Fr.  
Literature: San Martín (1995).
- Xylaria polymorpha* (Pers.) Grev.  
Literature: San Martín and Rogers (1989), San Martín et al. (1995), Guzmán (2003).
- Xylaria rhizomorpha* (Mont.) Mont.  
Literature: San Martín et al. (1995).
- Xylaria scabriscavula* F. San Martín & J.D. Rogers.  
Literature: San Martín and Rogers (1989), San Martín et al. (1995).
- Xylaria scopiformis* Mont. ex Berk. & Broome.  
Literature: San Martín et al. (1995).
- Xylaria scruposa* (Fr.) Fr.  
Literature: San Martín et al. (1995).
- Xylaria squamulosa* F. San Martín & J.D. Rogers.  
Literature: San Martín and Rogers (1989), San Martín et al. (1995).
- Xylaria uniapiculata* F. San Martín & J.D. Rogers.  
Literature: San Martín et al. (1995).

## Basidiomycota

### Incerta caedis

- Cotylidia aurantiaca* (Pat.) A.L. Welden.  
Literature: Pérez-Silva et al. (1992), Guzmán (2003).
- Cotylidia diaphana* (Cooke) Lentz.  
Literature: Pérez-Silva et al. (1992).

### Agaricales

#### Incertae sedis

- Panaeolus antillarum* (Fr.) Dennis.  
Literature: Guzmán (1983), Chay-Casanova and

- Medel (2000), Guzmán (2003).
- \**Panaeolus cyanescens* Sacc. Fig. 2D.
- Panaeolus papilionaceus* (Bull.) Quél.  
Literature: Guzmán (1983).
- Panaeolus variabilis* Overh.  
Literature: Guzmán (1983).
- Mesophelliopsis pernambucensis* Bat. & A.F. Vital.  
Literature: Guzmán (2003).

### Agaricaceae

- Agaricus benzodorus* Heinem. & Gooss.-Font.  
Literature: Guzmán (1983), Chay-Casanova and Medel (2000).
- Agaricus dennisii* Heinem.  
Literature: Guzmán (1983), Chay-Casanova and Medel (2000).
- Agaricus dulcidulus* Schulzer F.H. Møller.  
Literature: Guzmán (1983), Chay-Casanova and Medel (2000).
- Agaricus endoxanthus* Berk. & Broome.  
Literature: Guzmán (1983), Chay-Casanova and Medel (2000).
- Agaricus singeri* Heinem.  
Literature: Guzmán (1983), Chay-Casanova and Medel (2000).
- Agaricus trinitatensis* R.E.D. Baker & W.T. Dale.  
Literature: Guzmán (1983), Chay-Casanova and Medel (2000).
- Agaricus xanthodermus* Genev.  
Literature: Pérez-Silva et al. (1992), Chay-Casanova and Medel (2000).
- Chlorophyllum molybdites* (G. Mey.) Masee.  
Literature: Guzmán (2003).
- Cyathia intermedia* (Mont.) V.S. White.  
Literature: Chío and Guzmán (1982).
- Cyathus colensoi* Berk.  
Literature: Guzmán (2003), Pompa-González et al. (2011).
- Cyathus limbatus* Tul. & C. Tul.  
Literature: Guzmán (1983).
- Cyathus pallidus* Berk. & M.A. Curtis.  
Literature: Guzmán (1983).
- Lepiota cigroensis* Guzm.-Dáv. & Guzmán.  
Literature: Guzmán-Dávalos and Guzmán (1982).
- Lepiota microcystidiata* Guzm.-Dáv. & Guzmán.  
Literature: Guzmán-Dávalos and Guzmán (1982).
- Lepiota montagnei* (Kalchbr.) Sacc.  
Literature: Guzmán-Dávalos and Guzmán (1982).
- Lepiota mucronata* Guzm.-Dáv. & Guzmán.  
Literature: Guzmán-Dávalos and Guzmán (1982), Chay-Casanova & Medel (2000).
- Lepiota phaeosticta* Morgan.  
Literature: Guzmán-Dávalos and Guzmán (1982).
- Lepiota pseudoroseola* Dennis.  
Literature: Guzmán-Dávalos and Guzmán (1982).
- Lepiota quintanaroensis* Guzm.-Dáv. & Guzmán.  
Literature: Guzmán-Dávalos and Guzmán (1982), Chay-Casanova and Medel (2000).



*Lepiota spiculata* Pegler.

Literature: Singer and García (1988).

*Lepiota termitomyces* Guzm.-Dáv. & Guzmán.

Literature: Guzmán-Dávalos and Guzmán (1982).

*Lepiota vascularis* Pegler.

Literature: Guzmán-Dávalos and Guzmán (1982).

*Leucoagaricus lilaceus* Singer.

Literature: de la Fuente et al. (2018b).

*Leucocoprinus badhamii* (Berk. & Broome) Locq.

Literature: Pérez-Silva et al. (1992).

*Leucocoprinus birnbaumii* (Corda) Singer.

Literature: Chío and Guzmán (1982), Pompa-González et al. (2011). Fig. 4D.

*Leucocoprinus cepistipes* (Sowerby) Pat.

Literature: Guzmán (1983).

*Lycogalopsis solmsii* E. Fisch.

Literature: Guzmán (2003).

*Lycoperdon subincarnatum* Peck.

Literature: Guzmán (1983).

\**Rugospora ochraceobadia* (Beeli) Heinem. Fig. 2E.

*Tulostoma brumale* Pers.

Literature: Pérez-Silva et al. (1992).

#### **Amanitaceae**

\**Amanita arenicola* O. Ok Mill. & Lodge. Fig. 2F.

*Amanita gemmata* (Fr.) Bertill.

Literature: Pérez-Silva et al. (1992).

*Amanita silvatica* Guzmán.

Literature: Guzmán (1982), Guzmán (2006). Fig. 4E.

*Amanita vaginata* (Bull.) Lam.

Literature: Pérez-Silva et al. (1992).

*Amanita yucatanensis* Guzmán.

Literature: Guzmán (1982).

#### **Bolbitaceae**

*Conocybe apala* (Fr.) Arnolds.

Literature: Pérez-Silva et al. (1992).

#### **Entolomataceae**

*Entoloma atropileatum* Dennis.

Literature: Guzmán (1983).

*Entoloma bakeri* Dennis.

Literature: Guzmán (1983).

*Entoloma guatopoanum* (Dennis) E. Horak.

Literature: Guzmán (1983).

*Entoloma howellii* (Peck) Dennis.

Literature: Guzmán (1983).

*Entoloma lisalense* (Beeli) Noordel. & Co-David.

Literature: Guzmán (1983).

*Entoloma naranjanum* Dennis.

Literature: Guzmán (1983).

*Entoloma obscurum* Dennis.

Literature: Guzmán (1983).

*Entoloma sericellum* (Fr.) P. Kumm.

Literature: Guzmán (1983).

*Entoloma stylophorum* (Berk. & Broome) Sacc.

Literature: Guzmán (1983).

*Entoloma umbilicatum* Dennis.

Literature: Guzmán (1983).

*Entoloma underwoodii* Dennis.

Literature: Guzmán (1983).

*Entoloma venezuelanum* (Dennis) E. Horak.

Literature: Guzmán (1983).

*Entoloma violaceum* Murrill.

Literature: Guzmán (1983).

#### **Fistulinaceae**

\**Pseudofistulina radicata* (Schwein.) Burds. Fig. 2G.

#### **Hygrophoraceae**

*Hygrocybe earlei* Murrill.

Literature: Guzmán (1983).

*Hygrocybe firma* (Berk. & Broome) Singer.

Literature: Guzmán (1983).

*Hygrocybe hypohaemacta* (Corner) Pegler.

Literature: Guzmán (1983).

*Hygrophorus buccinulus* (Speg.) Dennis.

Literature: Guzmán (1983).

#### **Hymenogastraceae**

*Deconica coprophila* (Bull.) P. Karst.

Literature: Guzmán (1983).

*Gymnopilus lepidotus* Hesler.

Literature: Guzmán (2003).

*Hebeloma vatricosum* (Fr.) Murrill.

Literature: Pérez-Silva et al. (1992).

\**Psilocybe cubensis* (Earle) Singer. Fig. 2H.

#### **Inocybaceae**

*Crepidotus decipiens* Singer.

Literature: Guzmán (1983).

*Inocybe tropicalis* Guzmán.

Literature: Guzmán (1982), Guzmán (2003).

\**Inocybe xerophytica* Pegler. Fig. 2I.

*Neopaxillus echinospermus* (Speg.) Singer.

Literature: Guzmán (1983), Chay-Casanova and Medel (2000).

\**Neopaxillus dominicanus* Angelini & Vizzini. Fig. 2J.

#### **Lycoperdaceae**

*Apioperdon pyriforme* (Schaeff) Vizzini.

Literature: Guzmán (1983).

#### **Lyophyllaceae**

\**Calocybe cyanea* Singer ex Redhead & Singer. Fig. 2K.

#### **Marasmiaceae**

*Baeospora pleurotoides* (Dennis) Singer.

Literature: Guzmán (1983).

*Campanella junghuhnii* (Mont.) Singer.

Literature: Guzmán (1983).

*Clitocybula omphaliiformis* Pegler.

Literature: Guzmán (1983).

*Crinipellis actinophora* (Berk. & Broome) Singer.

Literature: Guzmán (2003).

\**Gerronema bryogeton* Singer. Fig. 2L.

*Hemimycena longicystis* R. Heim.

Literature: Guzmán (1983).

\**Hydropus nigrita* (Berk. & M.A. Curtis) Singer. Fig. 3A.

*Lactocollybia epia* (Berk. & Broome) Pegler.

Literature: Guzmán (1983).

*Marasmius aciculiformis* Berk. & M.A. Curtis.

Literature: Guzmán (1982), Chay-Casanova and Medel (2000).

*Marasmius berteroi* (Lév.) Murrill.

Literature: Guzmán (1983), Chay-Casanova and Medel (2000).

*Marasmius cladophyllus* Berk.

Literature: Guzmán (2003). Fig. 4F.

*Marasmius crinis-equi* F. Muell. ex Kalchbr.

Literature: Pompa-González et al. (2011).

*Marasmius edwallianus* Henn.

Literature: Guzmán (1983).

*Marasmius ferrugineus* Berk.

Literature: Guzmán (1983), Chay-Casanova and Medel (2000).

*Marasmius foliicola* Singer.

Literature: Guzmán (1983).

*Marasmius fulvoferrugineus* Gilliam.

Literature: Pérez-Silva et al. (1992), Chay-Casanova and Medel (2000).

*Marasmius haematocephalus* (Mont.) Fr.

Literature: Guzmán (1983).

*Marasmius jalapensis* Murrill.

Literature: Guzmán (1983), Guzmán (2003).

*Marasmius pulcherripes* Peck.

Literature: Pompa-González et al. (2011).

*Nothopanus eugrammus* (Mont.) Singer.

Literature: Guzmán (1983), Guzmán (2003). Fig. 4G.

*Trogia buccinalis* (Mont.) Pat.

Literature: Guzmán (2003).

*Trogia cantharelloides* (Mont.) Pat.

Literature: Guzmán (1983), Guzmán (2003).

### **Mycenaceae**

*Favolaschia fendleri* Singer.

Literature: Guzmán (2003).

*Filoboletus clypeatus* (Pat.) Singer.

Literature: Guzmán (1983).

*Filoboletus gracilis* (Klotzsch ex Berk.) Singer.

Literature: Guzmán (2003).

*Mycena albostrigata* Dennis.

Literature: Guzmán (1983).

*Mycena holoporphyra* (Berk. & M.A. Curtis) Singer.

Literature: Guzmán (1983).

*Mycena plectophylla* (Mont.) Dennis.

Literature: Guzmán (1983).

*Mycena pura* (Pers.) P. Kumm.

Literature: Guzmán (1983).

*Mycena tessellata* (Mont.) Dennis.

Literature: Guzmán (1983).

*Panellus pusillus* (Pers. ex Lév.) Burds. & O.K. Mill.

Literature: Guzmán (1983), Chay-Casanova and Medel (2000), Guzmán (2003). Fig. 4H.

*Xeromphalina tenuipes* (Schwein.) A.H. Sm.

Literature: Pérez-Silva et al. (1992), Chay-Casanova and Medel (2000).

### **Niaceae**

*Merismodes ochracea* (Hoffm.) D.A. Reid.

Literature: Guzmán (1983), Chay-Casanova and Medel (2000).

### **Omphallotaceae**

*Connopus acervatus* (Fr.) K.W. Hughes, Mather & R.H. Petersen.

Literature: Guzmán (1983).

*Gymnopus confluens* (Pers.) Antonín, Halling & Noordel.

Literature: Guzmán (1983).

*Gymnopus omphalodes* (Berk.) Halling & J.L. Mata.

Literature: Guzmán (1983).

*Gymnopus polyphyllus* (Peck) Halling.

Literature: Guzmán (1983).

*Marasmiellus catephes* (Berk.) Singer.

Literature: Guzmán (1983).

*Marasmiellus cubensis* (Berk. & M.A. Curtis) Singer.

Literature: Guzmán (2003).

*Marasmiellus inoderma* (Berk.) Singer.

Literature: Guzmán (1983), Chay-Casanova and Medel (2000).

*Marasmiellus roseipallens* (Murrill) Singer.

Literature: Guzmán (1983).

*Neonothopanus hygrophanus* (Mont.) De Kesel & Degreef.

Literature: Guzmán (1983), Chay-Casanova and Medel (2000).

### **Pleurotaceae**

*Pleurotus djamor* (Rumph. ex Fr.) Boedijn.

Literature: Guzmán (2003), Pompa-González et al. (2011). Fig. 4I.

*Pleurotus ostreatus* (Jacq.) P. Kumm.

Literature: Guzmán (1983), Pérez-Silva et al. (1992), Chay-Casanova and Medel (2000).

### **Pluteaceae**

*Pluteus oligocystis* Singer.

Literature: Guzmán (1983), Rodríguez (2013).

*Pluteus podospileus* Sacc. & Cub.

Literature: Pérez-Silva et al. (1992), Chay-Casanova and Medel (2000).

*Pluteus pulverulentus* Murrill.

Literature: Guzmán (1983), Rodríguez (2013).

*Volvariella bakeri* (Murrill) Shaffer.

Literature: Guzmán (1993).

*Volvariella bombycina* (Schaeff.) Singer.

Literature: Guzmán (2003).

*Volvariella lepiotospora* Singer.

Literature: Guzmán (1983).

*Volvariella pseudovolvacea* (Berk. & Broome) Singer.

Literature: Guzmán (2003).

*Volvariella volvacea* (Bull.) Singer.

Literature: Guzmán (2003).

### **Psathyrellaceae**

*Coprinellus radians* (Fr.) Vilgalys, Hopple & Jacq. Johnson.

- Literature: Guzmán (2003).  
*Coprinellus disseminatus* (Pers.) J.E. Lange.  
 Literature: Tun-Cano (2018). Fig. 4J.  
*Coprinopsis echinospora* (Buller) Redhead, Vilgalys & Moncalvo.  
 Literature: Guzmán (1983), Guzmán (2003).  
*Coprinopsis lagopus* (Fr.) Redhead, Vilgalys & Moncalvo.  
 Literature: Pompa-González et al. (2011).  
*Psathyrella albocapitata* Dennis.  
 Literature: Guzmán (1983), Guzmán et al. (1988).  
*Psathyrella ammophila* (Durieu & Lév.) P.D. Orton.  
 Literature: Guzmán (1983), Guzmán et al. (1988).  
*Psathyrella araguana* Dennis.  
 Literature: Guzmán (1983), Guzmán et al. (1988).  
*Psathyrella candolleana* (Fr.) Maire.  
 Literature: Guzmán (1983), Guzmán et al. (1988).  
*Psathyrella copriniceps* (Berk. & M.A. Curtis) Dennis.  
 Literature: Guzmán (1983), Guzmán et al. (1988).  
*Psathyrella erinensis* Dennis.  
 Literature: Guzmán (1983), Guzmán et al. (1988).  
*Psathyrella mundiliformis* (Dennis) Dennis.  
 Literature: Guzmán (1983), Guzmán et al. (1988).  
*Psathyrella subnuda* (P. Karst.) A.H. Sm.  
 Literature: Guzmán (1983), Guzmán et al. (1988).

#### Pterulaceae

- Pterula plumosa* (Schwein.) Fr.  
 Literature: Guzmán (2003).

#### Schizophyllaceae

- Schizophyllum commune* Fr.  
 Literature: Chío and Guzmán (1982), Chay-Casanova and Medel (2000), Pompa-González et al. (2011).  
*Schizophyllum fasciatum* Pat.  
 Literature: Guzmán (1983), Pérez-Silva et al. (1992), Chay-Casanova and Medel (2000).  
*Schizophyllum umbrinum* Berk.  
 Literature: Guzmán (1983), Chay-Casanova and Medel (2000).

#### Strophariaceae

- Agrocybe praecox* (Pers.) Fayod.  
 Literature: Pérez-Silva et al. (1992).  
*Agrocybe retigera* (Speg.) Singer.  
 Literature: Guzmán (1983), Guzmán (2003).

#### Tricholomataceae

- Arrhenia epichysium* (Pers.) Redhead, Lutzoni, Moncalvo & Vilgalys.  
 Literature: Guzmán (1983).  
*Clitocybe jalapensis* (Murrill) Singer.  
 Literature: Guzmán (1983).  
*Collybia trinitatis* Dennis.  
 Literature: Guzmán (2003).  
*Collybia zonata* (Peck.) Sacc.  
 Literature: Pérez-Silva et al. (1992).  
*Lepista yukatanensis* Guzmán & Bon.  
 Literature: Guzmán (1982), Guzmán (2003). Fig. 4K.  
*Leucopaxillus gracillimus* Singer & A.H. Sm.

- Literature: Guzmán (2003). Fig. 4L.  
 \**Macrocybe titans* (H.E. Bigelow & Kimbr.) Pegler, Lodge & Nakasone. Fig. 3B.  
*Melanoleuca yucatanensis* Pegler.  
 Literature: Guzmán (1983), Chay-Casanova and Medel (2000), Pompa-González et al. (2011), Sánchez-García et al. (2013).  
*Tricholomopsis tropica* Dennis.  
 Literature: Guzmán (1983).

#### Auriculariales

##### Auriculariaceae

- Auricularia cornea* Ehrenb.  
 Literature: Guzmán (2003).  
*Auricularia delicata* (Mont. ex Fr.) Henn.  
 Literature: Guzmán (2003).  
*Auricularia fuscossuccinea* (Mont.) Henn.  
 Literature: Guzmán (2003); Pompa-González et al. (2011). Fig. 5A.  
*Auricularia mesenterica* (Dicks.) Pers.  
 Literature: Guzmán (2003), Pompa-González et al. (2011).  
*Auricularia nigricans* (Sw.) Birkebak, Looney & Sánchez-García.  
 Literature: Guzmán (1983), Pompa-González et al. (2011).

#### Boletales

##### Boletaceae

- Boletellus cubensis* (Berk. & M.A. Curtis) Singer.  
 Literature: Singer et al. (1993), de la Fuente et al. (2018a).  
 \**Mucilopilus mexicanus* (Guzmán) Wolfe. Fig. 3C.  
*Octaviania cigroensis* Guzmán.  
 Literature: Guzmán (1982), de la Fuente et al. (2018a).  
*Pulveroboletus aberrans* Heinem. & Gooss.-Font.  
 Literature: Guzmán (1983).  
*Xerocomus coccolobae* Pegler.  
 Literature: de la Fuente et al. (2018a).  
*Xerocomus caeruleonigrescens* Pegler.  
 Literature: García-Jiménez (1999), García-Jiménez and Garza-Ocañas (2001), de la Fuente et al. (2018a).  
*Xerocomus cuneipes* Pegler.  
 Literature: García-Jiménez (1999), García-Jiménez and Garza-Ocañas (2001), de la Fuente et al. (2018a).

##### Boletinellaceae

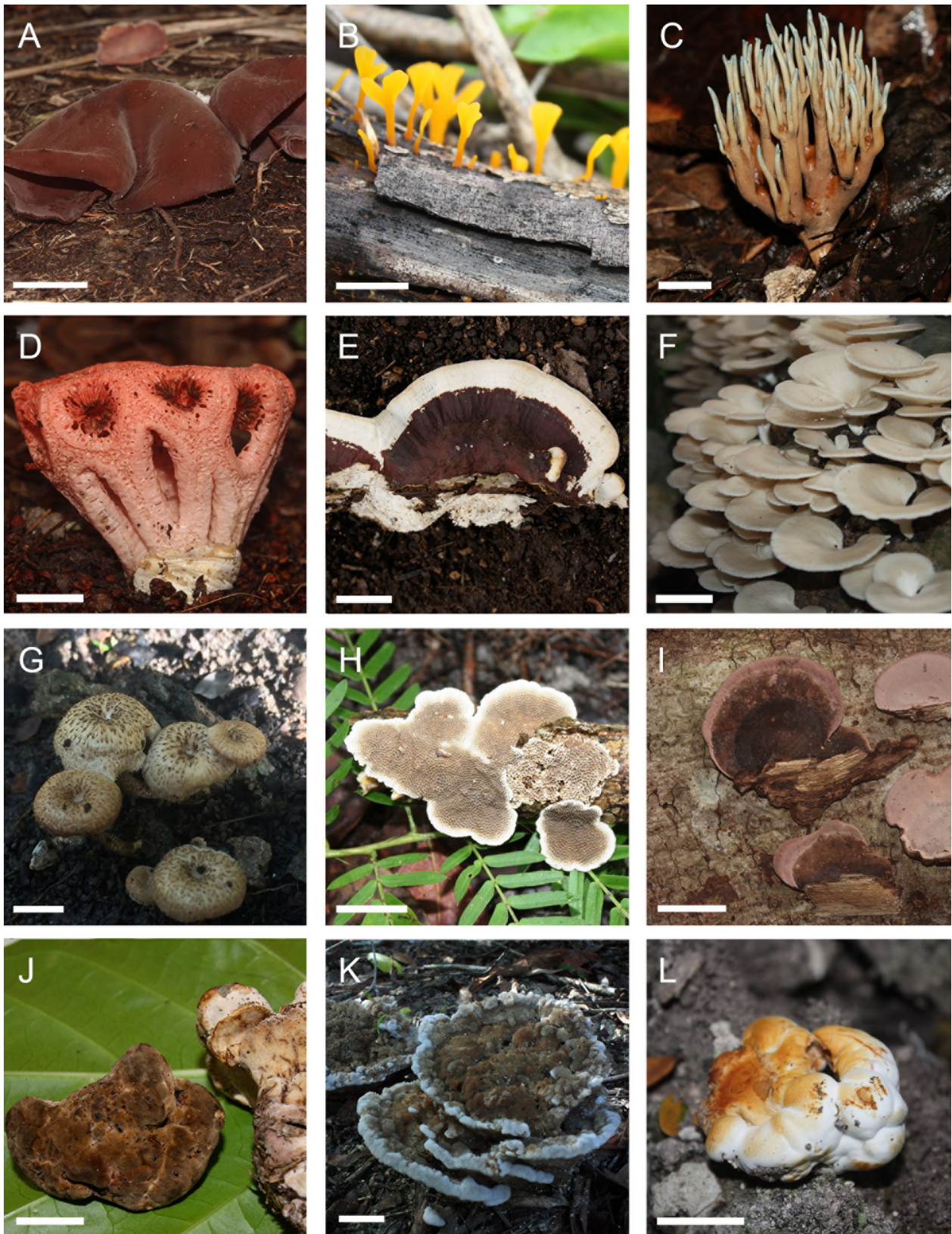
- Phlebopus brasiliensis* Singer.  
 Literature: de la Fuente et al. (2018a).  
*Phlebopus colossus* (R. Heim) Singer.  
 Literature: Guzmán (1983), Guzmán (2003), de la Fuente et al. (2018a).

##### Coniophoraceae

- \**Gyrodontium sacchari* (Spreng.) Hjortstam. Fig. 3D.

##### Sclerodermataceae

- Scleroderma albidum* Pat. & Trab.  
 Literature: Guzmán et al. (2014), de la Fuente et al. (2018a).



**Figure 5.** Representative fungi from Quintana Roo. **A.** *Auricularia fuscusuccinea*. **B.** *Dacryopinax spatularia*. **C.** *Phaeoclavulina cyanocephala*. **D.** *Clathrus crispus*. **E.** *Earliella scabrosa*. **F.** *Favolus tenuiculus*. **G.** *Lentinus tigrinus*. **H.** *Trametes villosa*. **I.** *Rhodofomitopsis feei*. **J.** *Amylosporopus campbellii*. **K.** *Tremelloscypha gelatinosa*. **L.** *Redeckera fulva*. Scale bars = 10 mm.

*Scleroderma areolatum* Ehrenb.

Literature: Pérez-Silva et al. (1992), Guzmán et al. (2014), de la Fuente et al. (2018a).

*Scleroderma bermudense* Coker.

Literature: Guzmán (1983), Guzmán et al. (2014), de la Fuente et al. (2018a).

*Scleroderma nitidum* Berk.

Literature: de la Fuente et al. (2018a).

*Scleroderma sinnamariense* Mont.

Literature: Chay-Casanova and Medel (2000), Pompa-González et al. (2011), de la Fuente et al. (2018a).

### **Paxillaceae**

*Gyrodon intermedius* (Pat.) Singer.

Literature: Chío and Guzmán (1982), de la Fuente et al. (2018a).

### **Suillaceae**

*Suillus decipiens* (Peck) Kuntze.

Literature: de la Fuente et al. (2018a).

### **Cantharellales**

#### **Cantharellaceae**

\**Cantharellus coccolobae* Buyck, P.-A. Moreau & Courtec. Fig. 3E.

### **Dacrymycetales**

#### **Dacrymycetaceae**

*Calocera cornea* (Batsch) Fr.

Literature: Guzmán (2003), Pompa-González et al. (2011).

*Calocera macrospora* Brasf.

Literature: Guzmán (2003).

*Cerinomyces lagerheimii* (Pat.) McNabb.

Literature: Sierra and Cifuentes (2008).

*Dacryopinax elegans* (Berk. & M.A. Curtis) G.W. Martin.

Literature: Pérez-Silva et al. (1992), Guzmán (2003). Fig.5B.

*Dacryopinax spathularia* (Schwein) G. W. Martin.

Literature: Pérez-Silva et al. (1992), Guzmán (2003), Pompa-González et al. (2011).

*Ditiola radicata* (Alb. & Schwein.) Fr.

Literature: Guzmán (1983).

### **Gastrales**

#### **Gastraceae**

*Gastrum campestre* Morgan.

Literature: Guzmán (2003).

*Gastrum coronatum* Pers.

Literature: Pérez-Silva et al. (1999).

*Gastrum fimbriatum* Fr.

Literature: Guzmán (2003).

*Gastrum fuscogleba* (Zeller) Jeppson & E. Larss.

Literature: Pérez-Silva et al. (1993).

*Gastrum mirabile* Mont.

Literature: Pérez-Silva et al. (1993).

*Gastrum pectinatum* Pers.

Literature: Guzmán (1983).

*Gastrum saccatum* Fr.

Literature: Pérez-Silva et al. (1999), Guzmán (2003).

*Gastrum schweinitzii* (Berk. & M.A. Curtis) Zeller.

Literature: Guzmán (1983), Guzmán (2003).

*Gastrum subiculosum* Cooke & Masee.

Literature: Guzmán (1983).

*Gastrum triplex* Jungh.

Literature: Guzmán (1983).

*Myriostoma coliforme* (Dicks.) Corda.

Literature: Guzmán (1983), Chay-Casanova and Medel (2000), Guzmán (2003).

Gloeophyllales

Gloeophyllaceae

*Gloeophyllum striatum* (Fr.) Murrill.

Literature: Guzmán (1983), Bandala et al. (1993), Pompa-González et al. (2011).

### **Gomphales**

#### **Gomphaceae**

*Gomphus brunneus* (Heinem.) Corner.

Literature: Guzmán (1983).

*Phaeoclavulina articulotea* (R. H. Petersen) Giachini.

Literature: González-Ávila et al. (2013).

*Phaeoclavulina cyanocephala* (Berk. & M.A. Curtis) Giachini.

Literature: Guzmán (1983), Chay-Casanova and Medel (2000), Guzmán (2003), González-Ávila et al. (2013). Fig. 5C.

*Phaeoclavulina guyanensis* (Pat.) Giachini.

Literature: Guzmán (1983).

*Phaeoclavulina zippeli* (Lév.) Overeem.

Literature: González-Ávila et al. (2013).

*Terenodon serenus* Maas Geest.

Literature: Guzmán (1983).

### **Lentariaceae**

*Lentaria surculus* (Berk.) Corner.

Literature: Guzmán (2003).

### **Hymenochaetales**

Incertae cedis

*Trichaptum biforme* (Fr.) Ryvarden.

Literature: Guzmán (1983), Bandala et al. (1993), Guzmán (2003).

*Trichaptum byssogenum* (Jungh.) Ryvarden.

Literature: Bandala et al. (1993).

*Trichaptum fumosoavellaneum* (Romell) Rajchenb. & Bianchin.

Literature: Bandala et al. (1993).

*Trichaptum perrottetii* (Lév.) Ryvarden.

Literature: Pérez-Silva et al. (1992), Bandala et al. (1993), Guzmán (2003).

*Trichaptum sector* (Ehrenb.) Kreisel.

Literature: Pérez-Silva et al. (1992), Chay-Casanova and Medel (2000), Pompa-González et al. (2011).

*Trichaptum trichomallum* (Berk. & Mont.) Murrill.

Literature: Chío and Guzmán (1982).

### **Hymenochaetaceae**

*Fomitiporia robusta* (P. Karst.) Fiasson & Niemelä.

Literature: Guzmán (1983).

*Fulvifomes rhytiphloeus* (Mont.) Camp.-Sant. & Robledo.

Literature: Ryvarden and Guzmán (1993), Bandala et al. (1993).

*Fuscoporia contigua* (Pers.) G. Cunn.

Literature: Ryvarden and Guzmán (1993), Raymundo et al. (2013).

*Hymenochaete luteobadia* (Fr.) Höhn. & Litsch.

Literature: Tapia et al. (2016).

*Hymenochaete rheicolor* (Mont.) Lév.

Literature: Pérez-Silva et al. (1992).

*Inocutis porrecta* (Murrill) Baltazar.

Literature: Pompa-González et al. (2011).

*Inonotus luteoumbrius* (Romell) Ryvarden.

Literature: Ryvarden and Guzmán (1993), Bandala et al. (1993), Guzmán (2003), Pompa-González et al. (2011).

*Inonotus tabacinus* (Mont.) G. Cunn.

Literature: Bandala et al. (1993).

*Phellinus crocatus* (Fr.) Ryvarden.

Literature: Chío and Guzmán (1982), Guzmán (1983).

*Phellinus fastuosus* (Lév.) S. Ahmad.

Literature: Guzmán (1983), Chay-Casanova and Medel (2000), Pompa-González et al. (2011).

*Phellinus ferrugineovelutinus* (Henn.) Ryvarden.

Literature: Ryvarden and Guzmán (1993), Chay-Casanova and Medel (2000).

*Phellinus gilvus* (Schwein.) Pat.

Literature: Guzmán (1983), Pérez-Silva et al. (1992), Bandala et al. (1993), Guzmán (2003), Pompa-González et al. (2011), Raymundo et al. (2013).

*Phellinus grenadensis* (Murrill) Ryvarden.

Literature: Ryvarden and Guzmán (1993).

*Phellinus nilgheriensis* (Mont.) G. Cunn.

Literature: Bandala et al. (1993), Pompa-González et al. (2011).

*Phellinus rimosus* (Berk.) Pilát.

Literature: Pérez-Silva et al. (1992), Chay-Casanova and Medel (2000), Guzmán (2003), Pompa-González et al. (2011).

*Phellinus robinie* (Murrill) A. Ames.

Literature: Bandala et al. (1993).

*Phellinus roseocinereus* (Murrill) D.A. Reid.

Literature: Guzmán (1983), Bandala et al. (1993), Chay-Casanova and Medel (2000).

*Phellinus swieteniae* (Murrill) S. Herrera & Bondartseva.

Literature: Chío and Guzmán (1982), Bandala et al. (1993).

*Phylloporia chrysites* (Berk.) Ryvarden.

Literature: Guzmán (2003), Pompa-González et al. (2011).

*Phylloporia pectinata* (Klotzsch) Ryvarden.

Literature: Guzmán (1983).

*Phylloporia spathulata* (Hook.) Ryvarden.

Literature: Guzmán (1983), Pérez-Silva et al. (1992), Ryvarden and Guzmán (1993), Chay-Casanova and Medel (2000), Guzmán (2003).

*Phylloporia verae-crucis* (Berk. ex Sacc.) Ryvarden.

Literature: Ryvarden and Guzmán (1993), Bandala et al. (1993), Guzmán (2003), Guzmán (2004).

*Sanguangporus weirianus* (Bres.) L.W. Zhou & Y.C. Dai.

Literature: Bandala et al. (1993).

*Tropicoporus linteus* (Berk. & M.A. Curtis) L.W. Zhou & Y.C. Dai.

Literature: Guzmán (1983), Bandala et al. (1993),

Chay-Casanova and Medel (2000), Guzmán (2003),

Pompa-González et al. (2011), Valenzuela et al. (2013).

### Repetobasidiaceae

*Sidera lenis* (P. Karst.) Miettinen.

Literature: Ryvarden and Guzmán (1993).

### Phallales

#### Phallaceae

*Clathrus crispus* Turpin.

Literature: Guzmán (2003), Pompa-González et al. (2011).

*Clathrus ruber* P. Micheli ex Pers.

Literature: Pompa-González et al. (2011).

\**Laternea dringii* A. López, D. Martínez & J. García.  
Fig. 3F.

*Phallus indusiatus* Schldtl. Literatura: Guzmán et al. (1990).

### Polyporales

#### Ganodermataceae

*Amauroderma camerarium* (Berk.) J.S. Furtado.

Literature: Bandala et al. (1993), Ryvarden and Guzmán (1993), Guzmán (2003).

*Ganoderma australe* (Fr.) Pat.

Literature: Guzmán (2003).

*Ganoderma colossus* (Fr.) C.F. Baker.

Literature: Guzmán (1983), Bandala et al. (1993), Guzmán (2003), Torres-Torres et al. (2015).

*Ganoderma curtisii* (Berk.) Murrill.

Literature: Guzmán (1983), Bandala et al. (1993).

*Ganoderma fornicatum* (Fr.) Pat.

Literature: Guzmán (1983), Bandala et al. (1993).

*Ganoderma lobatum* (Cooke) G.F. Atk.

Literature: Pérez-Silva et al. (1993).

*Ganoderma lucidum* (Curtis) P. Karst.

Literature: Pérez-Silva et al. (1992), Bandala et al. (1993), Guzmán (2003).

*Ganoderma resinaceum* Boud.

Literature: Bandala et al. (1993).

*Ganoderma sessile* Murrill.

Literature: Guzmán (1983).

*Ganoderma weberianum* (Bres. & Henn. ex Sacc.) Steyaert.

Literature: Guzmán (1983).

*Humphreya coffeata* (Berk.) Steyaert.

Literature: Ryvarden and Guzmán (1993), Guzmán (2003), Pompa-González et al. (2011).

### Phanerochaetaceae

*Antrodiella versicutis* (Berk. & M.A. Curtis) Gilb. & Ryvarden.

Literature: Bandala et al. (1993), Ryvarden and Guzmán (1993), Guzmán (2003), Pompa-González et al. (2011).

### Meripilaceae

*Rigidoporus microporus* (Sw.) Overeem.

Literature: Guzmán (1983), Bandala et al. (1993).

*Rigidoporus vinctus* (Berk.) Ryvarden.

Literature: Ryvarden and Guzmán (1993), Bandala et al. (1993), Guzmán (2003).

### Meruliaceae

*Bjerkandera adusta* (Willd.) P. Karst.

Literature: Bandala et al. (1993), Chío and Guzmán (1982).

*Cymatoderma caperatum* (Berk. & Mont.) D.A. Reid.

Literature: Guzmán (2003).

*Flavodon flavus* (Klotzsch) Ryvarden.

Literature: Ryvarden and Guzmán (1993), Guzmán (2003), Pompa-González et al. (2011), Tapia et al. (2016).

*Junghuhnia nitida* (Pers.) Ryvarden.

Literature: Ryvarden and Guzmán (1993), Bandala et al. (1993), Guzmán (2003), Tapia et al. (2016).

### Polyporaceae

*Cerioporus varius* (Pers.) Zmitr. & Kovalenko.

Literature: Bandala et al. (1993), Ryvarden and Guzmán (1993).

*Corioloopsis brunneoleuca* (Berk.) Ryvarden.

Literature: Pérez-Silva et al. (1992), Pompa-González et al. (2011).

*Corioloopsis byrsina* (Mont.) Ryvarden.

Literature: Bandala et al. (1993), Pompa-González et al. (2011).

*Corioloopsis occidentalis* (Klotzsch) Murrill.

Literature: Chío and Guzmán (1982).

*Earliella scabrosa* (Pers.) Gilb. & Ryvarden.

Literature: Chío and Guzmán (1982), Guzmán (1983), Pérez-Silva et al. (1992), Guzmán (2003), Pompa-González et al. (2011). Fig. 5E.

*Favolus grammocephalus* (Berk.) Imazeki.

Literature: Bandala et al. (1993), Pompa-González et al. (2011).

*Favolus tenuiculus* P. Beauv.

Literature: Chío and Guzmán (1982), Guzmán (1983), Chay-Casanova and Medel (2000), Guzmán (2003), Pompa-González et al. (2011). Fig. 5F.

*Fomes endotheius* (Berk.) Sacc.

Literature: Chío and Guzmán (1982), Bandala et al. (1993).

*Fomes extensus* (Lév.) Cooke.

Literature: Guzmán (1983), Bandala et al. (1993).

*Fomes fasciatus* (Sw.) Cooke.

Literature: Guzmán (1983).

*Fomes meliae* (Underw.) Murrill.

Literature: Ryvarden and Guzmán (1993), Bandala et al. (1993).

*Funalia caperata* (Berk.) Zmitr. & Malysheva.

Literature: Chío and Guzmán (1982), Pérez-Silva et al. (1992), Ryvarden and Guzmán (1993), Guzmán (2003).

*Funalia floccosa* (Jungh.) Zmitr. & Malysheva.

Literature: Ryvarden and Guzmán (1993), Bandala et al. (1993).

*Grammothele fuligo* (Berk. & Broome) Ryvarden.

Literature: Ryvarden and Guzmán (1993), Guzmán (2003).

*Lentinus arcularius* (Batsch) Zmitr.

Literature: Pompa-González et al. (2011).

*Lentinus badius* (Berk.) Berk.

Literature: Chío & Guzmán (1982), Pompa-González et al. (2011).

*Lentinus berteroi* (Fr.) Fr.

Literature: Pompa-González et al. (2011).

*Lentinus crinitus* (L.) Fr.

Literature: Chío and Guzmán (1982), Guzmán (2003), Pompa-González et al. (2011).

*Lentinus scleropus* (Pers.) Fr.

Literature: Pérez-Silva et al. (1992).

*Lentinus tigrinus* (Bull.) Fr.

Literature: Pérez-Silva et al. (1992). Fig. 5G.

*Lentinus tricholoma* (Mont.) Zmitr.

Literature: Chío and Guzmán (1982), Bandala et al. (1993), Chay-Casanova and Medel (2000), Guzmán (2003), Pompa-González et al. (2011).

*Lentinus velutinus* Fr.

Literature: Guzmán (2003), Pompa-González et al. (2011).

*Microporellus obovatus* (Jungh.) Ryvarden.

Literature: Ryvarden and Guzmán (1993), Bandala et al. (1993), Chay-Casanova and Medel (2000).

*Panus rudis* Fr.

Literature: Chío and Guzmán (1982).

*Perenniporia ohimensis* (Berk.) Ryvarden.

Literature: Ryvarden and Guzmán (1993), Bandala et al. (1993), Chay-Casanova and Medel (2000).

*Polyporus albiceps* Peck.

Literature: Guzmán (1983).

*Polyporus guianensis* Mont.

Literature: Guzmán (1983), Bandala et al. (1993), Guzmán (2003), Pompa et al. (2011).

*Polyporus leprieuri* Mont.

Literature: Guzmán (1983), Bandala et al. (1993).

*Pycnoporus sanguineus* (L.) Murrill.

Literature: Guzmán (1983), Bandala et al. (1993), Chay-Casanova and Medel (2000), Pompa-González et al. (2011).

*Trametes elegans* (Spreng.) Fr.

Literature: Guzmán (1983), Bandala et al. (1993), Chay-Casanova and Medel (2000), Pompa-González et al. (2011).

*Trametes hirsuta* (Wulfen) Lloyd.

Literature: Guzmán (1983).

*Trametes hirta* (P. Beauv.) Zmitr., Wasser & Ezhov.

Literature: Chío and Guzmán (1982), Bandala et al. (1993).

*Trametes hydroides* (Sw.) M. Fidalgo.

Literature: Guzmán (1983), Bandala et al. (1993), Guzmán (2003), Pompa-González et al. (2011).

*Trametes maxima* (Mont.) A. David & Rajchenb.

Literature: Chío and Guzmán (1982), Pérez-Silva et

- al (1992), Bandala et al. (1993), Chay-Casanova and Medel (2000), Pompa-González et al. (2011).
- Trametes membranacea* (Sw.) Kreisel.  
Literature: Guzmán (1983), Pérez-Silva et al. (1992), Bandala et al. (1993), Chay-Casanova and Medel (2000).
- Trametes modesta* (Kunze ex Fr.) Ryvarden.  
Literature: Chío and Guzmán (1982).
- Trametes pavonia* (Berk.) Fr.  
Literature: Pérez-Silva et al. (1992), Chay-Casanova and Medel (2000), Pompa-González et al. (2011).
- Trametes polyzona* (Pers.) Justo.  
Literature: Bandala et al. (1993), Chay-Casanova and Medel (2000), Pompa-González et al. (2011).
- Trametes tenuis* (Fr.) Ryvarden.  
Literature: Bandala et al. (1993), Guzmán (2003).
- Trametes variegata* (Berk.) Zmitr., Wasser & Ezhov.  
Literature: Guzmán (1983), Bandala et al. (1993), Chay-Casanova and Medel (2000), Guzmán (2003), Pompa-González et al. (2011).
- Trametes villosa* (Sw.) Kreisel.  
Literature: Guzmán (1983), Pérez-Silva et al. (1992), Bandala et al. (1993), Chay-Casanova and Medel (2000), Pompa-González et al. (2011). Fig. 5H.

#### Fomitopsidaceae

- Daedalea microsticta* Cooke.  
Literature: Ryvarden and Guzmán (1993), Bandala et al. (1993), Guzmán (2003).
- Phaeodaedalea incerta* (Curr.) Tura, Zmitr., Wasser & Spirin.  
Literature: Guzmán (1983), Chay-Casanova and Medel (2000), Bandala et al. (1993), Guzmán (2003), Pompa-González et al. (2011).
- Postia caesia* (Schrad.) P. Karst.  
Literature: Guzmán (1983), Bandala et al. (1993).
- Rhodofomitopsis feei* (Fr.) B.K. Cui, M.L. Han & Y.C. Dai.  
Literature: Chío and Guzmán (1982), Guzmán (1983), Bandala et al. (1993), Chay-Casanova and Medel (2000), Guzmán (2003), Pompa-González et al. (2011). Fig. 5I.

#### Phanerochaetaceae

- Ceriporiopsis mucida* (Pers.) Gilb. & Ryvarden.  
Literature: Tapia et al. (2016).

#### Russulales

##### Bondarzewiaceae

- Amylosporus campbellii* (Berk.) Ryvarden.  
Literature: Ryvarden and Guzmán (1993), Pompa-González et al. (2011). Fig. 5J.
- Stecchericium seriatum* (Lloyd) Maas Geest.  
Literature: Guzmán (1983), Chay-Casanova and Medel (2000), Tapia et al. (2016).

##### Russulaceae

- \**Lactifluus nebulosus* (Pegler) De Crop. Fig. 3G.  
\**Russula cremeoilacina* Pegler. Fig. 3H.

#### Stephanosporaceae

- Mayamontana coccolobae* Castellano, Trappe & Lodge.  
Literature: de la Fuente et al. 2018.
- Stephanospora mayana* de la Fuente, García-Jiménez, Guevara-Guerrero & Oros-Ortega.  
Literature: de la Fuente et al. 2019.

#### Stereaceae

- Xylobolus subpileatus* (Berk. & M.A. Curtis) Boidin.  
Literature: Pérez-Silva et al. (1992).

#### Sebacinales

##### Sebacinaceae

- Sebacina confusa* R. Kirschner & Oberw.  
Literature: Guzmán (1983), Guzmán (2003).
- Tremelloscypha gelatinosa* (Murrill) Oberw. & K. Wells.  
Literature: Guzmán (2003). Fig. 5K.

#### Thelephorales

##### Thelephoraceae

- Thelephora pseudoterrestris* Corner.  
Literature: Guzmán (2003).

#### Trechisporales

##### Hydnodontaceae

- Hydnodon thelephorus* (Lév.) Banker.  
Literature: Guzmán (2003).

#### Tremellales

##### Tremellaceae

- \**Tremella fuciformis* Berk. Fig. 3I.
- Tremella mesenterica* Retz.  
Literature: Guzmán (1983), Chay and Medel (2000).
- Tremella rubromaculata* Lowy.  
Literature: Guzmán (1983), Guzmán (2003), Pompa-González et al. (2011).
- Tremella wrightii* Berk. & M.A. Curtis.  
Literature: Guzmán (2003).

#### Glomeromycota

#### Diversisporales

##### Diversisporaceae

- Redeckera fulvum* (Berk. & Broome) C. Walker & A. Schüßler.  
Literature: Guzmán (2003), Pompa-González et al. (2011). Fig. 5L.

#### New records of macrofungi for Quintana Roo, Mexico

##### *Ophiocordyceps melolonthae* (Tul. & C. Tul.) G.H. Sung, J.M. Sung, Hywel-Jones & Spatafora

**Material studied.** MEXICO - Quintana Roo • J.I. de la Fuente 73 (ITCV); Hermenegildo Galeana; 18°10'N, 089°14'W; alt. 229 m; 12 Oct. 2014.

**Habit and habitat.** Scattered on larvae of Coleoptera in evergreen tropical forest.

**Identification.** This species is characterized by scattered, clavate, yellowish ascomata, 1–5 cm long, filiform ascospores reaching up to 200 µm, fragmenting into



small segments, and the parasitic habit on coleopteran caterpillars. Our material agrees with the descriptions provided by Webber and Smith (1985) and Pérez-Silva et al. (1977).

***Geodina guanacastensis* Denison**

**Material studied.** MEXICO - Quintana Roo • J.I. de la Fuente 362 (ITCV); Chetumal; 18°31'N, 088°18'W; alt. 8 m; 18 Oct. 2019.

**Habit and habitat.** Caespitose or solitary on humus in lowland forest.

**Identification.** This species can easily be recognized by orange cup-shaped ascomata covered by brownish hairs and a pseudostipe. Microscopically, this species can be recognized by reticulate spores of 24–35 × 12–17 µm. Our material agrees with the description provided by Ortega-López et al. (2019). Our material is morphologically similar to *G. salmonicolor* Angelini & Medardi from the Dominican Republic (Angelini et al. 2018), which was considered as a synonym of *G. guanacastensis* by Pfister et al. (2020).

***Xylaria mesenterica* (Möller) M. Stadler, Læssøe & J. Fourn.**

**Material studied.** MEXICO - Quintana Roo • J.I. de la Fuente 68 (ITCV); Jaguactal; 18°14'N, 088°57'W; alt. 132 m; 12 Oct. 2014.

**Habit and habitat.** Caespitose on fallen logs in evergreen tropical forest.

**Identification.** This species can be recognized by the globose and gelatinose stroma with greyish hues and the dark ellipsoid ascospores of 11–14 × 5–6 µm. Our material agrees with the description provided by San Martín and Lavín (1997) described for *Entonaema pallidum* G.W. Martin. This species differs from similar species, such as *E. globosum* R. Heim. and *E. liquescens* Möller, by the greyish colour of the stromata. *Entonaema pallidum* was transferred to *Xylaria mesenterica* based on molecular and morphological evidence (Stadler et al. 2008).

***Panaeolus cyanescens* Sacc.**

**Material studied.** MEXICO - Quintana Roo • J.I. de la Fuente and Aragón 310 (ITCV); Chetumal; 18°31'N, 088°18'W; alt. 8 m; 27 Sep. 2017.

**Habitat and habit.** Scattered on humus on secondary vegetation.

**Identification.** This species can be recognized by the whitish pileus, greyish lamellae, bluish reaction when cut, and subglobose, dark brown basidiospores of 9–12 × 6–9 µm. The material agrees with the description provided by Pegler (1983). It differs from *P. antillarum* (Fr.) Dennis by the bluish reaction (negative in *P. antillarum*) the size of the basidioma and the lack of metuloid cystidia (absent in *P. antillarum*).

***Rugospora ochraceobadia* (Beeli) Heinem.**

**Material studied.** MEXICO - Quintana Roo • J.I. de la Fuente 159 (ITCV); Oxtankáh; 18°36'N, 088°13'W; alt. 14 m; 17 Oct. 2016.

**Habit and habitat.** Scattered on humus in evergreen tropical forest.

**Identification.** This species can be recognized by a white pileus with orange scales, the free white lamellulae, the whitish stipe, and the rough spores of 9–13 × 6–7 µm. Our material agrees with the descriptions provided by from Ferreira and Cortez (2011) and Bautista-Hernández and Aguirre-Acosta (2004). *Rugospora ochraceobadia* differs from *R. pseudorubiginosa* (Cifuentes & Guzmán) Guzmán & Bandala by the reticulate spores.

***Amanita arenicola* O. K. Miller & Lodge**

**Material studied.** MEXICO - Quintana Roo • J.I. de la Fuente 427 (ITCV); Chetumal; 18°31'N, 088°18'W; alt. 8 m; 14 Oct. 2018.

**Habit and habitat.** Scattered under *Coccoloba uvifera* in coastal vegetation.

**Identification.** This species can be recognized by the grey pileus with white patches that are the remains of the volva, white and free lamellulae, a whitish pileus sometimes with conspicuous white scales on the base, the small saccate volva, which sometimes remains underground, and the ellipsoid basidiospores of 8–10 × 6–8 µm. Our specimen from Quintana Roo agrees with the description provided by Miller et al. (2000), but it presents slightly shorter spores. *Amanita aglutinata* (Berk. & M.A. Curtis) Lloyd is a similar species but differs by the presence of a ring on the stipe (Pegler 1983).

***Pseudofistulina radicata* (Schwein.) Burds.**

**Material studied.** MEXICO - Quintana Roo • J.I. de la Fuente 351 (ITCV); Oxtankáh; 18°36'N, 088°13'W; alt. 14 m; 24 Oct. 2017.

**Habit and habitat.** Solitary on underground rotten logs in evergreen tropical forest.

**Identification.** This species can be recognized by the petaloid to reniform pileus, the small whitish rounded pores, and the lateral stipe inserted on the substrate, the subglobose basidiospores of 3–5 µm, and the clavate and diverticulate acanthophyses. Our material agrees with the description provided by Guzmán (1987). This species is consumed by the Maya people in Guatemala (Guzmán 1987).

***Psilocybe cubensis* (Earle) Singer**

**Material studied.** MEXICO - Quintana Roo • J.I. de la Fuente 173 (ITCV); Blasillo; 18°09'N, 088°57'W; alt. 132 m; 11 Dec. 2017.

**Habit and habitat.** Solitary or scattered on cow dung in secondary vegetation.

**Identification.** This species is recognized by the mamillate pileus, whitish with yellowish tints and small scales, the free greyish lamellae, the whitish stipe with a dark glutinose ring, the bluish reaction when cut, and the thick-walled, brownish, ellipsoid spores of  $10\text{--}15 \times 6\text{--}9 \mu\text{m}$ . Our material agrees with the descriptions provided by Pegler (1983) and Pulido (1983).

***Neopaxillus dominicanus* Angelini & Vizzini**

**Material studied.** MEXICO - Quintana Roo • J.I. de la Fuente 38 (ITCV); San Pedro Peralta;  $18^{\circ}42'N$ ,  $088^{\circ}49'W$ ; alt. 175 m; 14 Oct. 2014.

**Habit and habitat.** Scattered on humus in secondary vegetation.

**Identification.** This species can be recognized by the pale brown to orange pileus, the whitish decurrent lamellae, and the echinulate rounded spores of  $10\text{--}13 \mu\text{m}$  in diameter. Our material agrees with the description provided by Vizzini et al. (2011). *Neopaxillus echinospermus* (Speg.) Singer is a similar species, but it differs from *N. dominicanus* by having an umbilicate pileus.

***Calocybe cyanea* Singer ex Redhead & Singer**

**Material studied.** MEXICO - Quintana Roo • J.I. de la Fuente and Yuridia López 72 (ITCV); Chetumal;  $18^{\circ}31'N$ ,  $088^{\circ}18'W$ ; alt. 8 m; 05 Oct. 2011.

**Habit and habitat.** Scattered on humus in secondary vegetation.

**Identification.** This species can be identified by the purple pileus and the free yellowish lamellae, the greyish stipe, microscopically shows globose spores  $3\text{--}5 \times 2\text{--}4 \mu\text{m}$ , hyaline in KOH without cystidia. Our material agrees with the descriptions provided by Guevara-Guerrero et al. (1985) and Baroni et al. (1999), but our material has more intensely yellow lamellae. *Calocybe cyanocephala* (Pat.) Pegler is a similar species but with lilac lamellae. *Calocybe cyanella* Singer ex Redhead & Singer also has a purple pileus but its lamellae are white (Baroni et al. 1999).

***Gerronema bryogeton* Singer**

**Material studied.** MEXICO - Quintana Roo • J.I. de la Fuente 430 (ITCV); road to El Huasteco;  $19^{\circ}18'N$ ,  $088^{\circ}16'W$ ; alt. 33 m; 08 Jan. 2019.

**Habit and habitat.** Scattered on fallen logs in evergreen tropical forest.

**Identification.** This species can be identified by a small depressed pileus with greyish tones, whitish lamellae, a dark stipe, and ellipsoid spores of  $6\text{--}9 \times 3\text{--}5 \mu\text{m}$ . Our material agrees with the description provided by Pegler (1983). *Gerronema cyathiforme* (Berk. & M.A. Curtis) is a similar species but differs from *G. bryogeton* by having a reddish to olivaceous brown stipe (Pegler 1983).

***Inocybe xerophytica* Pegler**

**Material studied.** MEXICO - Quintana Roo • J.I. de la

Fuente 317 (ITCV); Chetumal;  $18^{\circ}31'N$ ,  $088^{\circ}18'W$ ; alt. 8 m; 06 Oct. 2017.

**Habit and Habitat.** Scattered under *Coccoloba uvifera* in coastal and secondary vegetation.

**Identification.** This species can be identified by the flat pileus covered by brown scales, the pale brown lamellae, the pale brown, pruinose stipe without volva, and the subglobose, angulose to verrucose basidiospores of  $7\text{--}9 \times 5\text{--}7 \mu\text{m}$ . Our material agrees with the description provided by Pegler (1983). *Inocybe paralanuginosa* Pegler is a similar species that differs by having a smooth stipe.

***Hydropus nigrita* (Berk. & M.A. Curtis) Singer**

**Material studied.** MEXICO - Quintana Roo • J.I. de la Fuente 266 (ITCV); Laguna Guerrero;  $18^{\circ}45'N$ ,  $088^{\circ}11'W$ ; alt. 9 m; 11 Jan. 2017.

**Habit and habitat.** Scattered on fallen logs in lowland forest.

**Identification.** This species can easily be identified by the olive-greenish pileus with black spots and the cream context that when cut stains black and sometimes exudes a latex-like substance. The material agrees with the description provided by Pegler (1983). The blackening context distinguishes this species from all other tropical *Hydropus* species.

***Macrocybe titans* (H.E. Bigelow & Kimbr.) Pegler, Lodge & Nakasone**

**Material studied.** MEXICO - Quintana Roo • J.I. de la Fuente and Quintal Palomo 299 (ITCV); Kohunlich;  $18^{\circ}25'N$ ,  $088^{\circ}47'W$ ; alt. 120 m; 12 Sep. 2017.

**Habit and habitat.** Caespitose on humus in evergreen tropical forest.

**Identification.** This species can be identified by the big size of its basidiomata, the caespitose habit, the crowded white lamellae, and the thick stipe with brown scales. Microscopically it is distinguished by the globose spores,  $5.9\text{--}8.3 \times 4.3\text{--}5.9 \mu\text{m}$ , the ventricose cheilocystidia, the lack of pleurocystidia, and the presence of clamp-connections. Our material agrees with the description provided by Guzmán and Piepenbring (2011) but presents smaller cystidia.

***Gyrodontium sacchari* (Spreng.) Hjortstam**

**Material studied.** MEXICO - Quintana Roo • J.I. de la Fuente 298 (ITCV); Chetumal;  $18^{\circ}31'N$ ,  $088^{\circ}18'W$ ; alt. 8 m; 17 Jan. 2017.

**Habit and habitat.** Resupinate on dead trees in secondary vegetation.

**Identification.** This species can be recognized by the resupinate basidiomata with brownish colours, the hymenia composed by truncate spines, which are yellowish when young, becoming olive brown when aged, and the globose, brown spores,  $4.0\text{--}5.0 \times 2.5\text{--}3.6 \mu\text{m}$ . Our material agrees with the descriptions provided by from Valenzuela et al. (2014) and Hembrom et al. (2014).

***Mucilopilus mexicanus* (Guzmán) Rolfe**

**Material studied.** MEXICO - Quintana Roo • J.I. de la Fuente 29 (ITCV); Hermenegildo Galeana; 18°10'N, 089°14'W; alt. 229 m; 29 Aug. 2014.

**Habit and habitat.** Solitary or scattered in lowland forest and pine savanna, sometimes associated with *Coccoloba* or *Gymnoponium* species.

**Identification.** This species can be recognized by the greyish pileus, slightly tomentose when young, viscid when aged, the pinkish pores which become grey when aged, the viscid stipe, the fusoid spores  $8.1\text{--}12.2 \times 4.1\text{--}5.9 \mu\text{m}$ , and the clavate cystidia. The specimen agrees with the description provided by Guzmán (1974). This species resembles *Fistulinella gloeocarpa* Pegler in having the basidioma viscid, but it differs from that species by the spore size and the ampullaceous cystidia which has a long slender neck (Pegler 1983).

***Cantharellus coccolobae* Buyck, P.A. Moreau & Courtec.**

**Material studied.** MEXICO - Quintana Roo • J.I. de la Fuente 422 (ITCV); Chetumal; 18°31'N, 088°18'W; alt. 8 m; 08 Oct. 2018.

**Habit and habitat.** Scattered under *Coccoloba uvifera* in coastal vegetation.

**Identification.** This species can be distinguished by the orange basidiomata, the whitish context which becomes slightly yellowish at the base, slightly peppery flavor, and the ellipsoid basidiospores of  $7\text{--}11 \times 4\text{--}6 \mu\text{m}$ . Our material agrees with the description provided by Buyck et al. (2016). *Cantharellus cinabarinus* (Schwein.) Schwein is a similar species, but it differs by its wider spores and elements of the pileipellis (Pegler 1983; Buyck et al. 2016).

***Laternea dringii* A. López, D. Martínez & J. García.**

**Material studied.** MEXICO - Quintana Roo • R.Y. Vela 105 (ITZM); San Pedro Peralta; 18°42'N, 088°49'W; alt. 175 m; 10 May 2018.

**Habit and habitat.** Solitary on humus in evergreen tropical forest.

**Identification.** This species can be distinguished by small basidiomata reaching 2 cm in length, composed of 3 or 4 yellowish to orange branches, the subtropical distribution, and the small bacillate basidiospores of  $4\text{--}5 \times 1\text{--}1.5 \mu\text{m}$ . Our material agrees with the description provided by López et al. (1981). *Laternea pusilla* Berk. & M.A. Curtis is a tropical to subtropical species, which differs by having a reddish basidiomata (Trierweiler-Pereira et al. 2019).

***Lactifluus nebulosus* (Pegler) De Crop.**

**Material studied.** MEXICO - Quintana Roo • J.I. de la Fuente 210 (ITCV); Hermenegildo Galeana; 18°10'N, 089°14'W; alt. 229 m; 25 Jan 2016.

**Habit and habitat.** Scattered on humus under *Gymnopodium floribundum* and *Coccolobadiversifolia* in lowland forest.

**Identification.** This species can be identified by the greyish to cream pileus, slightly wrinkled when aged, the whitish lamellae which stain brown when touched, the peppery white latex, and the ovoid basidiospores  $8\text{--}11 \times 6\text{--}9 \mu\text{m}$  with small verrucae, not reticulated. Our material agrees with the descriptions provided by Pegler and Fiard (1979) and Pegler (1983). *Lactifluus caribaeus* (Pegler) Verbeken has a similar pileus coloration, but it has a remarkably bad odour (Pegler and Fiard 1979). *Lactifluus chiapanensis* (Montoya, Bandala & Guzmán) De Crop also grows under *G. floribundum* but has smaller spores ( $8\text{--}8.8 \mu\text{m}$ ) (Montolla-Bello 1994).

***Russula cremeolilacina* Pegler**

**Material studied.** MEXICO - Quintana Roo • J.I. de la Fuente 82 (ITCV); Chetumal; 18°31'N, 088°18'W; alt. 8 m; 01 Jul. 2014.

**Habit and habitat.** Scattered under *Coccoloba uvifera* in coastal vegetation.

**Identification.** This species can be recognized by the cream pileus that becomes lilac towards the margin, the white, fragile lamellae without lamellulae, the association with *Coccoloba* species, and the verrucose, subreticulate, subglobose basidiospores of  $6\text{--}8 \times 5\text{--}6.5 \mu\text{m}$ . Our material agrees with the description provided by Pegler (1983) but presents paler basidiomata. *Russula diversicolor* Pegler is a tropical species but it differs in having a yellowish basidioma (Pegler 1983).

***Tremella fuciformis* Berk.**

**Material studied.** MEXICO - Quintana Roo • J.I. de la Fuente 308 (ITCV); Bacalar; 18°45'N, 088°20'W; alt. 19 m; 15 Sep. 2017.

**Habit and habitat.** Resupinate on dead logs in evergreen tropical forest.

**Identification.** This species is characterized by gelatinose basidiomata with whitish tones, foliose lobules, a slightly yellowish base, and ovoid to subglobose basidiospores of  $5\text{--}7 \times 3.5\text{--}5.5 \mu\text{m}$ . Our material agrees with the description provided by Weber and Smith (1986). It differs from other *Tremella* species present in Quintana Roo, like *T. rubromaculata* Lowy and *T. wrightii* Berk. & M.A. Curtis, by the whitish basidioma (Guzmán 2003).

## Discussion

As a result of our fieldwork, which added 21 species for Quintana Roo, 401 species of macrofungi and fungus-like organisms are now known for this state. From the literature, 380 species were previously known.

Most species studied here show affinity to fungi of the Neotropical region. They are similar to those previously

recorded for tropical forests of northern Mexico (García and Valenzuela 2005), the Pacific coast (Bautista-Hernández and Aguirre-Acosta 2004; Ramírez-López et al. 2012), southern Mexico (Villarruel-Ordáz et al. 2015, López-Guzmán et al. 2017), Central America (Singer et al. 1983; Ortiz-Santana et al. 2007), and the Antilles (Pegler and Fiard 1979; Pegler 1983; Guzmán 1988; Miller et al. 2000; Séne et al. 2012). Some species have wide geographic distributions and occur in Asia and elsewhere in the Americas. For example, *Gyrodontium sacchari* is found in Asia, South America, and reaches its northernmost distribution in Sonora, Mexico (Hembrom et al. 2014; Robledo et al. 2014; Valenzuela et al. 2014), *Cookeina tricholoma* and *Cookeina speciosa*, are pantropical (Denison 1969, 1970; Beug et al. 2013), and *Leucoagaricus lilaceus* is common in South America (Singer and Digilio 1954; Rother and da Silveira 2009), occurring north to the tropical forests of Tamaulipas (de la Fuente et al. 2018c).

Most species recorded for Quintana Roo are saprobic and very few mycorrhizal species can be found, mostly associated with Polygonaceae and Pinaceae. The most representative species are *Amanita arenicola*, *Cantharellus coccolobae*, *Inocybe xerophytica*, and *Russula cremeolilacina*, which are associated with *Coccoloba uvifera* trees in Mexico and the Antilles (Pegler 1983; de la Fuente et al. 2018a); *Lactarius nebulosus*, associated with Polygonaceae trees in the Antilles and northern Mexico (Pegler and Fiard 1979; García and Valenzuela 2005); *Boletellus cubensis*, associated with Fabaceae and Polygonaceae (Singer et al. 1993; Ortiz-Santana et al. 2007) and *Suillus decipiens*, very common in Central America, Cuba, and Florida (Singer 1949; Singer et al. 1983; Kropp 2001; Ortiz-Santana et al. 2007) and also in Quintana Roo (de la Fuente et al. 2018a).

The saprobic species are common in the six vegetation types studied here. Most species develop on dead logs, branches, leaves, or humus and belong to the orders Agaricales, Polyporales, and Xylariales; these orders are the most common in the Mexican tropical forest (Ramírez-López et al. 2012). The most representative species are *Pycnoporus sanguineus*, *Schizophyllum commune*, *Trogia cantharelloides*, *Trametes villosa*, *Trametes hydnoides*, and numerous species of *Geastrum*, *Hypoxylon*, *Marasmius*, and *Xylaria*. Parasitic macrofungi are less abundant, but some species of *Ganoderma*, *Phellinus*, and *Phylloporia* grow on Fabaceae trees, mainly on *Lysiloma latisiliquum*.

The fungal endemism of Quintana Roo has been little discussed (López et al. 2011). However, in this work we present some species that could be endemic to the Yucatan Peninsula. Although the species of *Lepiota* are very common in tropical forests, some species such as *L. ciquoensis*, *L. microcystidiata*, *L. mucronata*, *L. quintanaroensis*, and *L. termitomyces* are only known from Quintana Roo (Guzmán-Dávalos and Guzmán 1982; Chay and Medel 2000). *Amanita silvatica* has only been reported for Quintana Roo by Guzmán (1983), Guzmán

(2003), and in this work. *Mucilopilus mexicanus* has been reported once by Guzmán (1974) in Campeche and in this study. *Amanita silvatica* and *Mucilopilus mexicanus* are restricted to lowland forests, possibly associated with *Coccoloba* or *Gymnopodium* trees. Three truffle-like fungal species show restricted distribution: *Mayamontana coccolobae* is only known from Belize and southern parts of Campeche and Quintana Roo (Castellano et al. 2007; de la Fuente et al. 2018b). The recently described *Stephanospora mayana* is reported from Quintana Roo and Campeche growing in lowland forest and pine savanna (de la Fuente et al. 2019). *Octaviania ciquoensis* is only known from the type collection from northern Quintana Roo (Guzmán 1982). More fieldwork is needed to know the real distribution of these species.

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## Authors' Contributions

JIF, JACC, RVH and LEIG collected the specimens, FGO, JGJ, GGG, VMB and JIF identified the species. CYL, GGG, JIF, IOO and JACC wrote the article. LEIG made the figures. All the authors revised the manuscript.

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