

## ON CANARY ISLANDS POLYPORES: NEWS AND PROBLEMS

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## ABSTRACT

A total of 20 selected species of polypores recorded on the Canary Islands are characterized and commented. New biogeography and ecology data of polypores of Macaronesia are presented. Four species: *Antrodiella fissiliformis*, *Diplomitoporus flavescens*, *Haploporus odoratus* and *Skeletocutis albocrema* are proposed for exclusion from the Canary Islands mycobiota. Several species are confirmed for the first time: *Ceriporiopsis consobrina*, *Ceriporiopsis pseudogilvescens*, *Gloeophyllum* cf. *abietinum*, *Gloeophyllum trabeum*, *Perenniporia meridionalis*, *Porodaedalea* sp., *Sidera vulgaris*. Two new genera of polypores, *Gloeophyllum* and *Porodaedalea*, are recorded as new for Canary Islands. The results are based on the review of herbarium specimens and field research.

**Keywords:** biogeography; Macaronesia; Polyporales; taxonomy; wood-inhabiting fungi

## Introduction

The Canary Islands are a group of volcanic islands near the western coast of the North Africa; the nearest of them is situated only about 100 km from Africa. Due to the historical isolation of all archipelagos, a high degree of endemism has been documented in different groups of organisms (Arechavaleta et al. 2010; Beierkuhnlein et al. 2021). For example, 33% of plants are endemic species (Wells and Lindacher 1994). Biodiversity research has a long tradition here (e.g. Webb and Berthelot 1836–50; Wollaston 1864).

The species biodiversity in Fungi (including lichens) on the Canary Islands is the highest of all the Macaronesia islands and it reaches over 3000 species, which exceeds the number of plant species here (Beltrán-Tejera 2011). The greatest biodiversity of fungi is found on the western islands La Gomera, La Palma, and Tenerife, with more extensive cloud laurel forests (del Arco Aguilar et al. 2010). Maybe that mycologist have paid less attention to more eastern islands with specific dry biotopes, but there may be hidden diversity as was shown in *Euphorbia* scrubs on Tenerife (Kout et al. 2017; Quijada and Baral 2017).

The research of Canary Islands fungi started with Wolfredo Wildpret de la Torre (Wildpret et al. 1969) from the local university on the island of Tenerife, who has been however focused mainly on gilled fungi. The Aphylophoroid group was explored L. Ryvarden (1972, 1976) and the Canary Islands mycologists have followed him with many articles and books (e.g. Rodríguez-Armas and Beltrán-Tejera 1995). The last formal checklist of the species from the Canary Island mentions 89 polypores (in the sense of Ryvarden and Melo 2014) with high prevalence of white rot species (Arechavaleta et al. 2010), and some of them are critically reviewed in this article.

## Material and Methods

The selection of the presented species is based on studied specimens from mycological herbarium on Tenerife (TFC Mic.) and on specimens collected during field research on Tenerife between 29.11.–20.12.2013 and 15.10.–29.11.2014.

The polypores were determined as described in monographic books (e.g. Ryvarden and Melo 2014). The micromorphological features were evaluated in Melzer's reagent and Cotton blue using an Olympus BX 51 light microscope. The species names of the examined specimens are kept in the original designation of herbarium specimens (except *Obba* cf. *rivulosa*).

The checked specimens were compared with material collected in Europe (H, O, PRM, UPL) and they have been deposited in University of La Laguna, Tenerife (TFC Mic.) and duplicates (dupl.) in Mycological herbarium of Department of Biology, Geoscience and Environmental Education, University of West Bohemia (abbreviated UPL). For the abbreviations of herbaria, see Thiers (2023) (continuously updated). All the authors' names are abbreviated according to Index Fungorum (<http://www.indexfungorum.org/Names/AuthorsOfFungalNames.asp>).

Some specimens' determinations were confirmed by DNA sequences, which were deposited into GenBank (<https://www.ncbi.nlm.nih.gov/genbank/>). DNA work was based on previous publications (e.g. Vlasák and Kout 2011), the ITS region was amplified and sequenced with ITS5 and ITS4 primers (White et al. 1990).

## Results and Discussion

Twenty species of the polypores were reviewed from the Canary Islands and new distribution data are pre-

sented. Four species: *Antrodiella fissiliformis* (Pilát) Gilb. & Ryvarden, *Diplomitoporus flavescens* (Bres.) Domański, *Haploporus odoratus* (Sommerf.) Bondartsev & Singer and *Skeletocutis albocrema* A. David are proposed for exclusion from the Canary Islands checklist. All of them belong to the more northern species (Ryvarden and Melo 2014).

Seven species are confirmed for the first time: *Ceriporiopsis consobrina* (Bres.) Ryvarden, *Ceriporiopsis pseudogilvescens* (Pilát) Niemelä & Kinnunen, *Gloeophyllum* cf. *abietinum* (Bull.) P. Karst., *Gloeophyllum tra-beum* (Pers.) Murrill, *Perenniporia meridionalis* Decock & Stalpers, *Porodaedalea* Murrill sp., and *Sidera vulgaris* (Fr.) Miettinen. *Gloeophyllum* P. Karst. and *Porodaedalea* are reported as new genera for the Canary Islands.

*Boletopsis* Fayod sp. and *Obba rivulosa* (Berk. & M.A. Curtis) Miettinen & Rajchenb are discussed in terms of morphological variability and the presence of possible cryptic species.

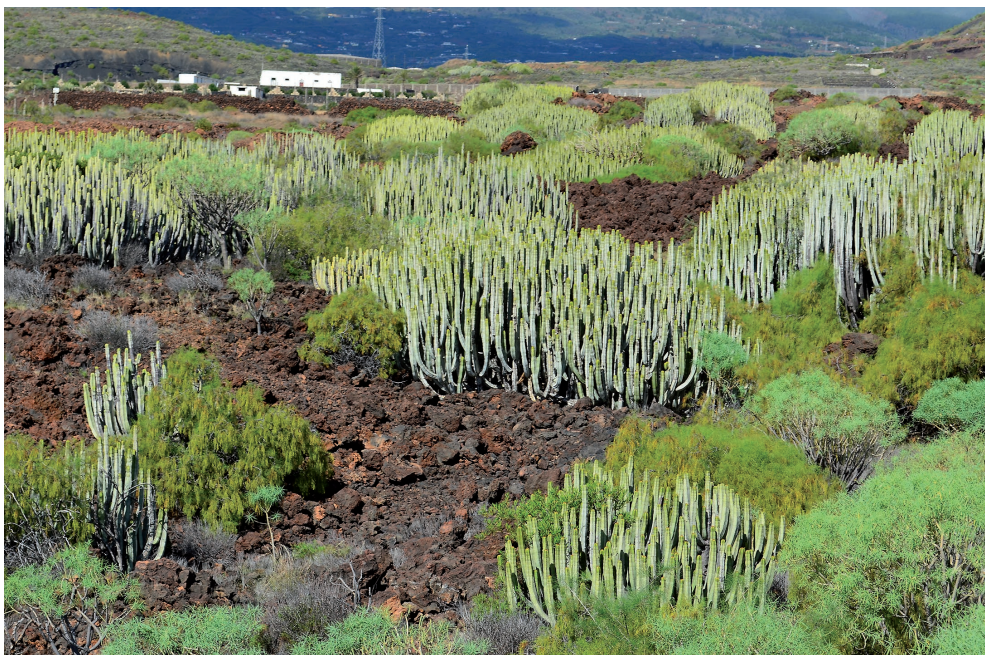
The rest of the species were recorded from new localities (islands) and biotopes, in some cases, significant taxonomic remarks are added. All species are commented below.

#### ***Antrodia tenerifensis* Kout & Vlasák**

Specimen – **Spain, Canary Islands, La Gomera:** Garajonay National Park, near Vivero de Meriga, on wood of *Eucalyptus*, 850 m a. s. l., 28 Apr. 2001, Beltrán-Tejera et al. (TFC Mic. 13064, dupl. UPL).



**Fig. 1** *Antrodia tenerifensis* Kout & Vlasák. Tenerife, Güímar, 22 Nov. 2014 [Kout, UPL (isotype)].



**Fig. 2** *Euphorbia* scrubs. Habitat of type locality of *Antrodia tenerifensis* Kout & Vlasák in Güímar (Tenerife).

Small, resupinate polypore of sordid whitish colour, which was recently described as a new species from *Euphorbia* scrubs on Tenerife (Kout et al. 2017, Figs 1, 2). It has not been found anywhere else yet, so it could be considered an endemic species of the Canary Islands. Some sterile specimens of *Antrodiella* sp. in the TFC Mic. herbarium with similar morphology indicate however wider distribution within the Canary Islands. TFC Mic. 13064 (dupl. UPL) from La Gomera (Garajonay National Park) with fayal brezal biotope expands the distribution area of *A. tenerifensis* to next island and new biotope, in my opinion. *Antrodiella tenerifensis* has been confirmed as a core species of the genus *Antrodiella* in current phylogeny of the brown-rot fungi (Liu et al. 2022).

### *Antrodiella fissiliformis* (Pilát) Gilb. & Ryvarden

Specimen – **Spain, Canary Islands, La Palma**: Caldera de Taburiente National Park, slope of Pico Bejenado, on the decayed wood of *Pinus canariensis*, 1325 m a. s. l., 06 Nov. 1999, Beltrán-Tejera et al. (TFC Mic. 9280, dupl. UPL).

*Additional specimen examined* – *Antrodiella mentschulensis* (Pilát ex Pilát) Ryvarden. **Czech Republic, Plzeň Region**: Chynínské buky Nature Reservation, on dead lying hardwood, approx. 760 m a. s. l., 05 Oct. 2014, J. Kout (TFC Mic. 24915).

TFC Mic. 9280 is a semipileate thin polypore with a whitish, hirsute pileus surface, not much reminiscent of more massive fruitbodies of *A. fissiliformis*. The record from *Pinus* [Beltrán-Tejera (ed.) 2004] seems to be improbable, too, because *A. fissiliformis* is a hardwood species (Ryvarden and Melo 2014).

The microscopical revision of TFC Mic. 9280 confirmed it as *Skeletocutis* sp., because of typical, tiny, allantoid spores and specific incrustations on hyphae. Most likely, it is *Skeletocutis amorpha* (Fr.) Kotl. & Pouzar collected recently also in Teide National Park (Beltrán-Tejera et al. 2019). Accordingly, *Antrodiella fissiliformis* is proposed to be removed from the Canary Islands mycobiota.

### *Boletopsis* Fayod sp.

Specimen – **Spain, Canary Islands, Tenerife**: above La Esperanza, Candelaria, Lomo Colorado, on the ground in humid pine woodland (*Pinus canariensis*), 1431 m a. s. l., 31 Oct. 2014, J. Kout et al. (UPL).

*Additional specimen examined* – **Slovakia, Žilina Region**: Liptovský Mikuláš Dist., under hill Hybica, on the ground under *Picea abies*, about 960 m a. s. l., 02 Oct. 2016, L. Hejl (UPL).

The species of *Boletopsis* Fayod has been mentioned from the Canary Islands as *Boletopsis subsquamosa* (L.) Kotl. & Pouzar for a long time. This name, however, is considered a synonym of *Boletopsis leucomellaena* Donk, and so was the species included in formal checklist (del Arco Aguilar et al. 2010). *Boletopsis leucomellaena* is known as a species from spruce forests (Niemelä and Saarenoksa 1989), but all records from the Canary Islands are from the pine forests (Ryvarden 1976; González Luis and Beltrán-Tejera 1987; Bañares Baudet 1988). Nevertheless, European pine forest species *Boletopsis grisea* (Peck) Bondartsev & Singer (Ryvarden and Gilbertson 1993) differs in several principal features from the checked Canary specimen, which does not correspond



**Fig. 3** *Ceriporia bresadolae* (Bourdot & Galzin) Donk. Tenerife, Chio, 24 Oct. 2014 [Kout, UPL]. Comparison of the same part of the fruitbody in fresh (top) and after several years in the herbarium (bottom).

to any known species (Zhou et al. 2022). The occurrence under an endemic tree *P. canariensis* may indicate an undescribed cryptic species of *Boletopsis*, and the work on this question is in progress.

#### ***Ceriporia bresadolae* (Bourdot & Galzin) Donk**

Specimens – **Spain, Canary Islands, La Palma:** Caldera de Taburiente National Park, Barranco Verduras, on the bark, 920 m a. s. l., 30 Apr. 2000, Beltrán-Tejera et al. (TFC Mic. 10324, dupl. UPL); *ibid.*, Lomo de Tacote, on pine wood without bark, 1059 m a. s. l., 26 Jan. 2001, Muñoz & Rebolé (TFC Mic. 12345, dupl. UPL). **Canary Islands, Tenerife:** Teide National Park, base of Pico Cabras, on wood of *Pinus canariensis* without bark, 1688 m a. s. l., 04 Apr. 2009 Beltrán-Tejera et al. (TFC Mic. 21922, dupl. UPL); Chio, on the fallen twigs of *Pinus canariensis* with and without bark, approx. 620 m a. s. l., 24 Oct. 2014, J. Kout et al. (UPL, Figs 3, 4).

*Ceriporia bresadolae* occurs mainly in the northern hemisphere on conifer substrates. It belongs to the *Ceriporia purpurea* (Fr.) Donk group and it has been not distinguished from *C. purpurea* for long time. The main distinguishing features are the larger pores of *C. bresadolae* against *C. purpurea* and its conifer ecology (Spirin et al. 2016). The whitish margin of fruitbody in *C. bresadolae* is also considered an important feature, which, however, becomes reddish in some specimens in herbarium. The older Canary Islands collections of *Ceriporia purpurea* from pines (Beltrán-Tejera et al. 2019) probably represent *C. bresadolae*. *Meruliopsis taxicola* (Pers.) Bondartsev is also similar, but can be well distinguished by careful microscopical examination (Ryvarden and Melo 2014).

*C. bresadolae* has been confirmed at Gran Canaria and the records from the Canary Islands are the southernmost in species distribution (Spirin et al. 2016).

#### ***Ceriporia spissa* (Schwein. ex Fr.) Rajchenb.**

This species has been regularly reported from laurel forests on the Canary Islands (e.g. Rodríguez-Armas and Beltrán-Tejera 1995; Rodríguez-Armas et al. 2003; Beltrán-Tejera et al. 2006). However, it was proven that *C. spissa* is North American species and bright orange *Ceriporia* Donk from laurel forests on the Canary Islands is a newly described taxon *Ceriporia triumphalis* Spirin & Kout (Spirin et al. 2016, Figs 5, 6). Its distribution clearly follows biotope of humid evergreen laurel forest where the species inhabits dead wood of hardwoods (Rodríguez-Armas and Beltrán-Tejera 1995).

*Additional specimens examined* – **Spain, Canary Islands, La Gomera:** Garajonay National Park, 900 m a. s. l., 13 Feb. 2000, Beltrán-Tejera & Rodríguez-Armas (TFC Mic. 9406, dupl. UPL); *ibid.*, 790 m a. s. l., 11 Nov. 2000, Beltrán-Tejera & González Martín (TFC Mic. 12791, dupl. UPL); *ibid.*, 800 m a. s. l., 12 Feb. 2001, Beltrán-Tejera et al. (TFC Mic. 12698, dupl. UPL); *ibid.*, 960 m a. s. l., 14 Feb. 2001, Beltrán-Tejera et al. (TFC Mic. 13280, dupl. UPL); *ibid.*, 925 m a. s. l., 29 Nov. 2002, Beltrán-Tejera et al. (TFC Mic. 14019, dupl. UPL).

#### ***Ceriporiopsis consobrina* (Bres.) Ryvarden**

Specimens – **Spain, Canary Islands, La Gomera:** Garajonay National Park (eastern border), 745 m a. s. l., 31 Feb. 2002, Beltrán-Tejera et al. (TFC Mic. 11833, dupl. UPL, Fig. 7); *ibid.*, 950 m a. s. l., 09 Dec. 2000, Beltrán-Tejera et al. (TFC Mic. 12863, dupl. UPL).



**Fig. 4** Biotop of *Ceriporia bresadolae* (Bourdot & Galzin) Donk with *Pinus canariensis* in Chio (Tenerife).



Fig. 5 *Ceriporia triumphalis* Spirin & Kout, young fruitbody in situ. Tenerife, Anaga Mts., near Pico del Inglés, 16 Nov. 2014 [Kout, UPL].



Fig. 6 *Ceriporia triumphalis* Spirin & Kout, herbarium specimen. Tenerife, Anaga Mts., 14 Dec. 2013 [Kout, UPL (isotype)].

*Additional specimen examined – Czech Republic, Plzeň Region:* Plzeň-City Dist., Chotíkovský forest, on branch of shrubby willow, 27 Nov. 2016, J. Kout (PRM 958938).

A resupinate species with whitish poroid to irpicoid hymenophore that is known mainly from *Salix* wood in Europe (Ryvarden and Melo 2014). Generally, the European records are scattered, and *C. consobrina* is considered a rare species, which may be due to unremarkable external appearance. It seems to be rare also in humid laurisilva on the Canary Islands, and it is for the first time recorded there. *C. consobrina* collections have to be inspected under microscope because there are more spe-

cies that may have a torn hymenophore, e.g. *Irpex lacteus* (Fr.) Fr. or *Schizopora paradoxa* (Schrad.) Donk reported from the Canary Islands (Arechavaleta et al. 2010).

#### ***Ceriporiopsis pseudogilvescens* (Pilát) Niemelä & Kinnunen**

Specimen – **Spain, Canary Islands, Tenerife:** Teide National Park, near Centro de visitantes de El Portillo, on dead wood of *Spartocytisus supranubius*, 05 Dec. 2013, J. Kout et al. (TFC Mic. 24868 – newly assigned number, dupl. UPL, GenBank OQ311334).

Beltrán-Tejera et al. (2019) mentioned this specimen as *Ceriporiopsis resinascens* (Romell) Domański. The distinction between *C. pseudogilvescens* and similar *C. resi-*



**Fig. 7** *Ceriporiopsis consobrina* (Bres.) Ryvarden. La Gomera, Garajonay National Park, Feb. 2002 [Beltrán-Tejera & al., TFC Mic. 11833].

*nascens* is not easy without sequencing (Tomšovský et al. 2010). Despite of the considerable similarity both mentioned species, their separated species identity has been repeatedly confirmed by molecular analysis (most recently in Chen et al. 2021). Therefore, this specimen from Teide National Park has been confirmed by ITS sequence with more than 99% identity with *C. pseudogilvescens* from China in GenBank (KU509523, MZ637069). The occurrence of *C. resinascens* on the Canary Islands is thus unclear.

#### ***Diplomitoporus flavescens* (Bres.) Domański**

Specimen – **Spain, Canary Islands, La Palma:** Fuen-caliente, by Montaña de los Faros, on burnt wood of *Pinus canariensis*, 1300 m a. s. l., 14 Feb. 1994, Beltrán-Tejera et al. (TFC Mic. 6816, dupl. UPL).

*Additional specimens examined* – **Czech Republic, Plzeň Region:** Petrovka Nature Reserve, on the wood of *Pinus sylvestris*, approx. 360 m a. s. l., 01 Dec. 2014, J. Kout (TFC Mic. 24922, 24923).

TFC Mic. 6816 is a resupinate specimen on burnt wood (Beltrán-Tejera et al. 2003) with sordid whitish colour mixed up by brownish spots. The unburnt wood is decayed by brown rot. TFC Mic. 6816 looks differently from yellowish polypore *D. flavescens*, which grows often on recently dead pines often covered by bark yet (Kout and Vlasák 2011). There are probably no records of *D. flavescens* from burnt wood (Vampola and Charvátová 2021) and *Diplomitoporus* Domański creates white rot (Domański 1970). The microscopical revision identified TFC Mic. 6816 as *Antrodia sinuosa* (Fr.) P. Karst., a common species in pine forests on the Canary Islands, often recorded there on burnt wood [Beltrán-Tejera (ed.) 2004]. *Diplomitoporus flavescens* remains unknown on

the Canary Islands archipelagos and probably is not occurring there, because its distribution area is limited to Europe (Ryvarden and Gilbertson 1993).

#### ***Gloeophyllum cf. abietinum* (Bull.) P. Karst.**

Specimens – **Spain, Canary Islands, La Gomera:** Garajonay National Park, Las Carboneras, 702 m a. s. l., 31 Jan. 2002, Beltrán-Tejera et al. (TFC Mic. 11933, TFC Mic. 11934, both dupl. UPL).

Both checked specimens of *Gloeophyllum* aff. *abietinum* show lamellate hymenophore and dark brown fruitbodies. Nevertheless, no spores were detected and characters of cystidia do not correspond to *Gloeophyllum abietinum*. The observed cystidia were dark brown, thick-walled, occasionally with bulbous apical part. Tropical *Gloeophyllum striatum* (Fr.) Murrill, the other lamellate species, known from the close Africa (Ryvarden et al. 2022), disagrees in microscopical features, too. Exact species identification is still open. In any case, the genus *Gloeophyllum* has not been known at Canary Islands to date. There is, however, a record of *G. abietinum* from Azores on non-native *Cryptomeria* within Macaronesia (Ryvarden and Spooner 2004).

#### ***Gloeophyllum trabeum* (Pers.) Murrill**

Specimens – **Spain, Canary Islands, La Palma:** Caldera de Taburiente National Park, Roque del Huso, 900 m a. s. l., 29 Apr. 2000, Beltrán-Tejera et al. (TFC Mic. 10173, dupl. UPL). **Canary Islands, Tenerife:** San Miguel, man-made wood of *Pinus radiata*, Dec. 2014, Beltrán-Tejera (UPL, Fig. 8, dupl. TFC Mic., GenBank OQ311335).

*Gloeophyllum trabeum* has never been recorded from the Canary Islands to date. The checked specimens are ochre brown with poroid hymenophore and species



**Fig. 8** *Gloeophyllum trabeum* (Pers.) Murrill. Tenerife, San Miguel, Dec. 2014 [Beltrán Tejera, UPL].

identity of specimen from Tenerife was confirmed by sequencing.

#### ***Hapalopilus rutilans* (Pers.) Murrill**

Common European polypore *Hapalopilus rutilans* was mentioned on La Palma and Tenerife (Arechavaleta et al. 2010). It seems to me that *Hapalopilus* P. Karst. is very rare on the Canary Islands, as I collected it only once in several months there, and the collection has been sequenced as very similar *Hapalopilus eupatorii* (P. Karst.) Spirin & Miettinen (Zíbarová et al. 2021). Then the spreading of *H. rutilans* on the Canary Islands is uncertain.

#### ***Haploporus odorus* (Sommerf.) Bondartsev & Singer**

Specimen – **Spain, Canary Islands, La Palma**: Caldera de Taburiente National Park, on burnt wood of *Pinus canariensis*, 1325 m a. s. l., 06 Nov. 1999, Beltrán-Tejera et al. (TFC Mic. 9285, dupl. UPL).

*Additional specimen examined* – **Finland, North Savo**: Pieksämäki, Jäppilä, on *Salix caprea*, 100 m a. s. l., 18. Jun 2004, V. Spirin (H 6006910, dupl. UPL).

*Haploporus odorus* in Macaronesia on *Pinus* (Beltrán-Tejera [ed.] 2004) is a biogeographical and ecological oddity, as this species is known from boreal area and mainly on willow. The collection was compared with the true *H. odorus* from Finland (H 6006910).

TFC Mic. 9285 is sterile, resupinate, spongy specimen with hyphae reminiscent of *Dichomitus* D.A. Reid. Thick-walled skeletal hyphae are abundant, richly branched with branches tapering to the end, whereas rarely branched skeletal hyphae in *H. odorus* have no tapering ends. This clear difference excludes *H. odorus*, and the species should be removed from the Canary Islands

checklist. Because of pine substrate and character of skeletal hyphae, it would be possible to assign TFC Mic. 9285 to *Dichomitus squalens* (P. Karst.) D.A. Reid, I believe.

#### ***Obba* cf. *rivulosa* (Berk. & M.A. Curtis) Miettinen & Rajchenb.**

Specimen – **Spain, Canary Islands, La Palma**: Fuen-caliente, Montaña de los Faros, on burnt wood of *Pinus canariensis*, 1300 m a. s. l., 14 Feb. 1994, Beltrán-Tejera et al. (TFC Mic. 6821, dupl. UPL, Figs 9, 10).

*Additional specimen examined* – **Italy, Emilia-Romagna**: Forlì-Cesena, Sasso Fratino Natural Reserve, *Abies*, 850 m a. s. l., 25 Sept. 2007, Bernicchia (8381, O).

*Obba rivulosa* (Berk. & M.A. Curtis) Miettinen & Rajchenb, previously as *Physisporinus rivulosus* (Berk. & M.A. Curtis) Ryvarden, belongs to the rare species (Ryvarden and Melo 2014). Checked specimen TFC Mic. 6821 corresponds to *P. rivulosus* by subglobose spores, pointed cystidiols and resinous layer in fruitbody. There are slight differences in dimensions of pores (2–4/mm), basidia (25–30 × 7–9 μm) and spores (5.5–7 × 4.5–5 μm). All of them are bigger than those of *P. rivulosus* (Kotiranta 1985). Later descriptions (Ren et al. 2017) also do not exactly correspond to this Canary Island specimen. It may be another cryptic species, and more collections are needed to be sure about its identity.

#### ***Perenniporia fulviseda* (Bres.) Dhanda**

Specimen – **Spain, Canary Islands, Tenerife**: Anaga, between Pico Inglés and Ermita Cruz del Carmen, north slope, in the hole after the coup of *Erica*, approx. 970 m a. s. l., 16 Nov. 2014, J. Kout (UPL).

Remarkable species with rhizomorphs and small spores, regularly under 5 μm in length, which is less than in most European species of *Perenniporia* Murrill (De-



**Fig. 9** *Obba* cf. *rivulosa* (Berk. & M.A. Curtis) Miettinen & Rajchenb. La Palma, Fuencaliente, 14 Feb. 1994 [Beltrán-Tejera & al., UPL].



**Fig. 10** Vertical section through fruitbody of *Obba* cf. *rivulosa* (Berk. & M.A. Curtis) Miettinen & Rajchenb. with visible resinous layer [Beltrán-Tejera & al., UPL].

cock and Stalpers 2006). *Perenniporia fulviseda* is missing in the checklist from 2010 (Arechavaleta et al. 2010), but it has been mentioned from Tenerife, Anaga Mountains, by Decock and Stalpers (2006). It is sparsely distributed there as shows only one record from my field work and no records from herbarium of the University of La Laguna, Tenerife. Not mentioned also in complex study of aphyllporoid fungi from laurel forests on the Canary Islands (Rodríguez-Armas and Beltrán-Tejera 1995).

#### ***Perenniporia meridionalis* Decock & Stalpers**

Specimens – **Spain, Canary Islands, Fuerteventura:** Jandía Natural Park, on *Asteriscus sericeus*, 770 m a. s. l., 05 Dec. 2007, Beltrán Tejera et al. (TFC Mic. 18733). **Canary Islands, La Palma:** Caldera de Taburiente National Park, 1200 m a. s. l., 25 Nov. 2000, Beltrán-Tejera et al.

(TFC Mic); *ibid.*, on *Ficus carica*, 1150 m a. s. l., 20 Oct. 2001, Beltrán-Tejera et al. (TFC Mic. 11214). **Canary Islands, Tenerife:** Chio, on dead wood with bark, 24 Oct. 2014, J. Kout et al. (UPL).

Specimens of *Perenniporia meridionalis* may be hidden under *Perenniporia medulla-panis* (Jacq.) Donk or *Perenniporia tenuis* (Schwein.) Ryvarden in herbaria because the species has been separated and described as new only in 2006 (Decock and Stalpers 2006). *Perenniporia meridionalis* distribution is limited to warmer parts of Europe where it seems to be not rare on various deciduous trees, shrubs and even conifers (Vampola and Charvátová 2021).

#### ***Porodaedalea* sp.**

Specimen – **Spain, Canary Islands, La Palma:** Caldera de Taburiente National Park, Refugio de la Punta de Los Roques, on living pine, 2069 m a. s. l., 31 Mar. 2001, González Martín et al. (TFC Mic. 12393, dupl. UPL, Fig. 11).

*Porodaedalea* Murrill is a genus of hymenochaetoid polypores separated from *Phellinus* Quél. that includes species with daedaleoid-poroid hymenophore and growing on conifers (Murrill 1905). Important features for the species resolution are number of pores per mm and host tree (Wu et al. 2019).

Canary Islands specimen of *Porodaedalea* was collected on pine; however, the morphological features do not correspond to the common *Porodaedalea pini* (Brot.) Murrill. The specimen is small, and it looks like *Porodaedalea cedrina* Pilát ex Tomšovský & Kout (Bernicchia and Gorjón 2020). Moreover, the altitude of the *Porodaedalea* collection on the Canary Islands is untypical for *P. pini*, which is a species from lower elevations (Tomšovský 2002).



**Fig. 11** *Porodaedalea* Murrill sp. La Palma, Caldera de Taburiente National Park, 31 Mar. 2001 [González Martín & al., UPL].

Unfortunately, the sequencing was not successful. It can be concluded that *Porodaedalea* is recorded on the Canary Islands for the first time. Exact species identification needs specimens in a fresh condition for the isolation of DNA.

#### ***Postia caesia* (Schrad.) P. Karst. s.l.**

Specimen – **Spain, Canary Islands, Tenerife:** Anaga, Cuadra de don Benito, approx. 870 m a. s. l., 14 Dec. 2013, J. Kout et al. (UPL).

Well-known bluish polypore *P. caesia* s.l. creates a complex of about 25 closely related species that are difficult to distinguish (Miettinen et al. 2018). There are more specimens from this species complex in the TFC herbarium (often under genus *Oligoporus* Bref.), but their detailed revision has not been done yet. New findings are expected, if only due to ecological irregularities of some specimens, e.g. *Oligoporus subcaesius* (A. David) Ryvar-den & Gilb. from *Pinus canariensis* (Rodríguez-Armas et al. 2003).

#### ***Sidera vulgaris* (Fr.) Miettinen**

Specimens – **Spain, Canary Islands, La Gomera:** Garajonay National Park, near Cruce de los Roques, 1150 m a. s. l., 12 Feb. 2000, Beltrán-Tejera et al. (TFC Mic. 101015, dupl. UPL); *ibid.*, near the border of national park, on the bark of *Myrica faya*, 1000 m a. s. l., 09 Dec. 2000, Beltrán-Tejera et al. (TFC Mic. 13030, dupl. UPL); *ibid.*, nearby Los Llanos de Crispín, on the wood of pine, 1060 m a. s. l., 19 Jan. 2001, Beltrán-Tejera et al. (TFC Mic. 13450, dupl. UPL); *ibid.*, near Pico Garajonay, on wood of *Erica* without bark, 1090 m a. s. l., 14 Feb. 2001, Beltrán-Tejera et al. (TFC Mic. 13734, dupl. UPL). **Canary Islands, Tenerife:** Anaga, M. Chamuscada, approx. 800 m

a. s. l., 30 Nov. 2013, J. Kout et al. (UPL); *ibid.*, Casa Forestal, on bark and wood of *Myrica faya*, approx. 930 m a. s. l., 02 Nov. 2014, J. Kout et al. (UPL, Fig. 12); *ibid.*, Pico Inglés, on decayed wood without bark, approx. 960 m a. s. l., 07 Nov. 2014, J. Kout (UPL).

White resupinate polypore with lunate basidiospores and stellate clusters of crystals on hyphae (Niemelä and Dai 1997) that has not yet been reported from the Canary Islands. It was hidden under the name of related species *Skeletocutis lenis* (P. Karst.) Niemelä in literature and herbaria (Rodríguez-Armas and Beltrán-Tejera 1995). However, specimens of *Sidera* Miettinen & K.H. Larss. can also be found under other names as *Schizopora* Velen. or *Skeletocutis*.

*Sidera vulgaris* seems to be a common species in laurisilva and fayal brezal biotope, contrary to *Sidera lenis* (P. Karst.) Miettinen (syn. *Skeletocutis lenis*), whose occurrence in Macaronesia is uncertain, as it is considered a boreal species. *S. vulgaris* was also recorded on the Azores islands in Macaronesia yet (Ryvarden and Spooner 2004).

#### ***Skeletocutis albocrema* A. David**

Specimen – **Spain, Canary Islands, Tenerife:** Pinar de La Esperanza, on *Pinus canariensis*, 14 Apr. 1997, J. Mosquera (TFC Mic. 8045, dupl. UPL).

This resupinate specimen is up to 4 mm thick which is hardly corresponding to the description where “less than 1mm thick” is stressed (Spirin 2005). The dimensions of spores do not agree too, and all features fit better to the *Skeletocutis stellae* (Pilát) Jean Keller. There is probably no other record of *S. albocrema* from the Canary Islands and so it should be removed from the checklist of fungi of the Canary Islands.



**Fig. 12** *Sidera vulgaris* (Fr.) Miettinen. Tenerife, Casa Forestal, 2 Nov. 2014 [J. Kout & al., UPL].

### ***Skeletocutis nivea* (Jungb.) R. Keller**

Specimens – **Spain, Canary Islands, La Gomera:** Garajonay National Park, 12 Feb. 2001, E. Beltrán-Tejera et al. (TFC Mic. 12714); *ibid.* 14 Feb. 2001, E. Beltrán-Tejera et al. (TFC Mic. 13603). **Canary Islands, Tenerife:** Vueltas de Taganana, 28 Dec. 1971, E. Beltrán (TFC Mic. 57); Anaga, Roque Negro, 17 Dec. 2013, J. Kout et al. (TFC Mic. 24893).

Regularly occurring polypore in laurel forests. Specimens are semipileate and correspond to how this species has been interpreted in the European area. However, molecular revision is needed. A recent treatment of *S. nivea* complex concluded that *S. nivea* is a species occurring in Asia – New Zealand region and in Europe, there are four other species, which are unidentifiable from morphological and ecological features (Korhonen et al. 2018).

Polypore species of the Canary Islands are mostly the same species as those occurring in the Central Europe, but there are some surprising differences. The most interesting is the absence of some common European species there, as the above discussed *H. rutilans* or only once recorded *Fomitopsis pinicola* (Sw.) P. Karst. (TFC Mic. 6178 from burned stump of *Pinus canariensis* with uncertain identification because there are no spores in specimen. Similarly, *Fomes fomentarius* (L.) Fr. is mentioned only from Tenerife, *Daedaleopsis confragosa* (Bolton) J. Schröt. from La Palma (Arechavaleta et al. 2010), and I have never seen these species there during my fieldwork.

Unique polypores of the Canary Islands mostly come from the biotopes that are unknown or limited in Europe as laurel forest, fayal brezal or specific dry habitats (del Arco Aguilar et al. 2010). Specific and endemic plant species play also undoubtedly a role. Still, endemic spe-

cies of polypores (*Antrodia tenerifensis*) are rare and their presence is not as remarkable as absence of wide-spread polypores of Europe.

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