

Myxomycete diversity from arid and semiarid zones of the Canary Islands (Spain)

E. BELTRÁN-TEJERA^{1*}, J. MOSQUERA¹ & C. LADO²
*ebeltran@ull.es

¹) *Department of Plant Biology (Botany). University of La Laguna, 38071 La Laguna Tenerife. Canary Islands, Spain*

² *Real Jardín Botánico, CSIC
Plaza de Murillo, 2. 28014 Madrid, Spain*

Abstract — A study of the myxomycetes recovered from the arid, semiarid and dry zones of the Canary Islands is presented herein. A total of sixty-three species, most growing on succulent plants, is reported. *Physarum bethelii*, *P. confertum*, and *Stemonitis herbatica* are cited for the first time from the Canaries, with additional new records from each island. The importance of the endemic plants such as *Euphorbia canariensis* as substrates for myxomycetes is analyzed. As reported from other arid zones of the world species belonging to the order *Physarales* and *Trichiales* dominate. *Badhamia melanospora*, commonly recorded from the deserts of America, was the most frequently recovered species from the Canaries. The parallel between the myxobiotas of the dry areas of the Americas and the Canary Islands is also discussed.

Key words — biodiversity inventory, Macaronesian bioregion, thermophilous habitats, xerophytic substrates

Introduction

The study of myxomycetes from the arid lands of the world is a subject of recent interest (Lado et al. 1999, 2009; Mosquera et al. 2000a,b, 2003; Wrigley de Basanta et al. 2008, 2009). Cacti and other succulent plants have been found to support a characteristic succulenticolous assemblage of species assemblage (Lado et al. 1999). Inventories of the myxomycetes from some deserts, especially from the Americas and other regions of the world, have been published in the last decades (Blackwell & Gilbertson 1980; Novozhilov et al. 2006; Lado et al. 2007a,b; Estrada-Torres et al. 2009) but information about the myxomycetes of insular arid lands is very scarce (Eliasson 1971, 1991, 2004).

The Canary Islands are a group of islands of volcanic origin located in the Atlantic Ocean, between 27°40'–29°30'N latitude and 13°25'–18°10'W longitude, approximately 100–500 km from the west African coast and the Sahara desert and on about the same latitude as Florida (USA). The Archipelago is composed of seven major islands (Hierro, La Palma, Gomera,

Tenerife, Gran Canaria, Fuerteventura, and Lanzarote) and a few smaller ones. Due to their volcanic nature the relief is very abrupt, and the elevation ranges from sea level to 3718 m, on the Tenerife Island. The considerable elevation gradient produces substantial environmental variation with respect to temperature and moisture across the islands.

The vegetation of the Canary Islands is highly stratified due to the influence of climatic factors, altitude, and exposure. From a bioclimatic point of view, there are six ombrotypes in the Canaries [1. Hyperarid: <50 mm of annual precipitation (only in Fuerteventura, Lanzarote and a few places of the south coast of Tenerife); 2. Arid: 50–200 mm; 3. Semiarid: 200–350 mm; 4. Dry: 350–550 mm; 5. Subhumid: 550–800 mm; and 6. Humid: > 800 mm]. From sea level to 200–400 m on their northern slopes and up to 600–1000 m on the southern side, there is an arid-semiarid-dry climate, characterized by high temperatures (18°–22°C) and low annual precipitation (50–350 mm). The vegetation of these zones represents a characteristic xerophytic scrubland (called “cardonal-tabaibal” in Spanish), with succulent plants and occasional aphyllous or spiny shrubs dominated by *Euphorbia* spp., with a high proportion of endemic plants (> 50%). Above the *Euphorbia* communities there are woodland and forest belts, followed by dry xerophytic summit vegetation represented only in the highest islands.

In the arid, semiarid and dry zones of the islands, two natural types of vegetation communities are represented: a) sweet spurge shrub, an *E. balsamifera* community called in Spanish “tabaibal dulce”, and b) cardón scrubland, an *E. canariensis* community called “cardonal”, and present in all the islands. In addition, there is another exclusive endemic cardón, *E. handiensis* in Fuerteventura Island.

Numerous endemic vascular plants also grow in the ecotone between the two communities mentioned above. Where these natural communities were disturbed by human action, another species of *Euphorbia* (*E. lamarckii*, *E. regis-jubae* or *E. berthelotii*, so called “bitter spurge”) appears on different islands and dominates all arid, semiarid and dry territories. Isolated individuals of *E. balsamifera* near sea level and *E. canariensis* at higher elevations can be observed in these bitter spurges. In several places, the natural vegetation was replaced by cultivated plots, and many exotic species such as *Opuntia* spp. and *Agave* spp., were introduced. Presently these disturbed formations form part of the Canary landscape. These are the anthropic plant communities.

The overall aim of our investigation was to study the myxomycetes associated with arid, semiarid, and dry zones. As a result, most of the sampled stations were located in the lower elevations of the islands, between sea level and 500 m.

Over the last years, we have carried out surveys of the succulenticolous and lignicolous myxomycetes from these habitats, principally in Tenerife, although we also sampled the other islands.

Material and methods

During eleven years (1994–2005), 72 localities were sampled at lower elevations (generally below 500 m) across seven of the Canary Islands. Several biotic and abiotic data (vegetation community associated, substrate, elevation, orientation, etc.) were taken, and all the localities were georeferenced with a GPS (Garmin 12 XL, datum WGS 84).

Most of the material was collected directly in the field on different decaying succulent and woody plants. However, 27 samples corresponding to 12 species were obtained from moist chamber cultures prepared with succulent substrates (*Agave*, *Euphorbia*, *Opuntia*, etc.). Several of these specimens have just been published (Lado et al. 1999, 2007b; Mosquera et al. 1999, 2000a,b, 2003). Herein these data are used for biodiversity and ecological analysis. In the Annotated list of species, the moist chamber cultures are indicated by "MC". Nomenclature largely follows that of Lado (2001).

The materials referred to herein have been deposited in the herbarium TFC Mic. with some duplicates deposited at MA-Fungi. All microscopic measurements were made from material directly mounted in Hoyer's medium. An Olympus BH-2 and a Zeiss Jenemad-2 achromatic phase contrast microscope were used in the identification of the specimens. For micro-measurements, a Wild (15x SK) ocular micrometer was used.

List of sampling localities

All seven of the Canary Islands have been explored in the lower parts and 72 localities were sampled, many biotic and abiotic data were taken, and all the localities were georeferenced with a GPS (Garmin 12 XL, datum WGS 84). The material has been sampled in the following localities. They are numerically arranged by the islands from west to east in the archipelago, and each one is represented by the beginning letter of the island following by the correspondent number (H: Hierro; P: La Palma; G: La Gomera; T: Tenerife; C: Gran Canaria; F: Fuerteventura; and L: Lanzarote), accompanied by a letter (a = "tabaibal dulce", b = "cardonal", c = "bitter spurge", d = anthropic communities, exotic species introduced such as *Opuntia* sp. or *Agave* sp.), that indicates the type of vegetation that characterizes each locality.

HIERRO: (H-1) Valverde, near to Timijiraque, 27°46'7"N 17°54'43"W, 50 m, very degraded *Euphorbia lamarckii* community (c); (H-2) Ibidem, near to the Roques de la Bonanza, 27°44'29"N 17°55'53"W, 100 m, (c); (H-3) Frontera, Punta de la Dehesa, near to Verodal beach, 27°45'13"N 18°8'57"W, 50 m, (c); (H-4) Ibidem, above Punta de la Dehesa, 27°45'12"N 18°8'39"W, 250 m, (c); (H-5) Ibidem, 27°44'42"N 18°8'31"W, 350 m, (c); (H-6) Ibidem, Punta de la Dehesa, 27°45'59"N 18°7'45"W, 35 m, (c); (H-7) Ibidem, El Golfo, Las Puntas, 27°47'6"N 17°59'37"W, 75 m, (d); (H-8) Ibidem, near to La Restinga, 27°38'26"N 17°59'59"W, 75 m, (c); (H-9) Valverde, Tamaduste, 27°48'51"N 17°53'34"W, 50 m, (a); (H-10) Ibidem, La Caleta, 27°48'19"N 17°53'33"W, 50 m, (a); (H-11) Ibidem, Echedo, near to the Montaña de las Salinas, 27°50'26"N 17°55'26"W, 80 m, (b); (H-12) Idem, near to Mocanal, 27°49'21"N 17°55'25"W, 550 m, (d).

LA PALMA: (P-1) Mazo, Montaña del Azufre, 28°33'23"N 17°46'12"W, 190 m, anthropic *Euphorbia lamarckii* community (c); (P-2) Puntallana, on the way to Martín Luis, 28°43'10"N 17°44'36"W, 150 m, (b); (P-3) Garafía, Santo Domingo, 28°48'51"N 17°57'40"W, 190 m, (a).



Map 1. The Canary Islands geographical location.

LA GOMERA: (G-1) Playa Santiago, Jerduñe, 28°5'19"N 17°12'30"W, 800 m, (a); (G-2) Ibidem, Las Toscas, 28°3'41"N 17°12'28"W, 525 m, degraded xerophitic brushwood of *Euphorbia berthelotii* (c); (G-3) Playa Santiago, Barranco de Santiago, 28°2'4"N 17°12'26"W, 75 m, (c); (G-4) Villa de San Sebastián, near to the Degollada de Peraza, 28°4'50"N 17°8'50"W, 550 m, (c); (G-6) Valle Gran Rey, Mirador de Granados, 28°6'49"N 17°19'52"W, 510 m, (c); (G-7) Chipude, La Dehesa, on the road to La Dama, 28°5'14"N 17°17'23"W, 900 m, (c).

TENERIFE: (T-0) La Orotava, Playa del Bollullo, 28°24'50"N 16°31'16"W, 5 m, (a, with *Tamarix canariensis*); (T-1) Valle de Guerra, La Barranquera, 28°31'57"N 16°24'0"W, 5 m, (a,d; with *Tamarix canariensis*); (T-2) San Miguel de Abona, Barranco de Orchilla, 28°2'34"N 16°36'26"W, 100 m, degraded xerophitic brushwood of *Euphorbia lamarckii* (c); (T-3) Ibidem, Las Chafiras, 28°3'6"N 16°37'40"W, 170 m, (b); (T-4) Vilaflor, Jama, 28°7'11"N 16°7'48"W, 1000 m, anthropic zone of *Euphorbia lamarckii* community with *Opuntia maxima* and pine forest elements (d); (T-5) Near Arafo village, 28°17'51"N 16°25'3"W, 659 m, similar anthropic *Euphorbia lamarckii* formation with *Agave americana*, *Opuntia maxima* (d); (T-6) La Laguna (Anaga), Jardina, 28°30'56"N 16°17'15"W, 850 m, anthropic zone with *Euphorbia lamarckii* and several alien plants in the disturbed laurel forest area (d); (T-7) Güímar, Malpaís de Güímar, 28°17'53"N 16°21'59"W, 40 m, (a,b); (T-8) Valle de Guerra, El Boquerón, 28°29'47"N 16°23'22"W, 525 m, ecotonic zone of termophilous community with *Euphorbia canariensis*; (T-9) San Juan de la Rambla, San José, 28°22'34"N 16°39'11"W, 475 m, (c,d); (T-10) Los Realejos, 28°23'9"N 16°36'8"W, 100 m, (c,d); (T-12) Buenavista, near to El Palmar, 28°21'20"N 16°50'48"W, 375 m, (c); (T-13) Santa Cruz de Tenerife (Anaga), Lomo Bermejo, Iguete de San Andrés, 28°32'5"N 16°9'17"W, 350 m, (c); (T-14) Ibidem, La Crucita, Iguete de San Andrés, 28°32'38"N 16°9'18"W, 250 m, (c); (T-16) Guía de Isora, near to Tamaimo, 28°7'17"N 16°48'44"W, 675 m, (c,d); (T-7) Guía de Isora, Barranco de Erque, 28°8'55"N 16°48'45"W, 100 m, (b); (T-18) Santa Úrsula, Barranco Hondo, 28°25'56"N 16°29'26"W, 140 m, (c); (T-19) San Miguel de Abona, Las Cuevitas, 28°5'48"N 16°37'43"W, 725 m, (c,d); (T-20) Ibidem, Montaña del Roque de Jama, 28°4'42"N 16°38'55"W, 600 m, (c,d); (T-21) Ibidem, Las Zocas, 28°4'44"N 16°36'28"W, 300 m, (c,d); (T-22) Arona, near to Valle de San Lorenzo, 28°5'13"N 16°40'45"W, 575 m, (c); (T-23) Granadilla de Abona, El Médano, Montaña Roja, 28°1'32"N 16°32'46"W, 50 m, (a); (T-24) Güímar, Ladera de Güímar, 28°17'19"N 16°24'26"W, 448 m, (c); (T-25) Arico, Icor, 28°7'32"N 16°27'58"W, 336 m, (c); (T-26) Arico, crossing of Arico with the railcar of the South, 28°9'43"N 16°26'46"W, 125 m, (a); (T-27) El Escobonal, crossing of El Escobonal with the railcar of the South, 28°14'4"N 16°24'23"W, 100 m, (a); (T-28) Fasnía, near to railcar of the South, 28°12'59"N 16°25'35"W, 100 m, (a); (T-29) Tacoronte, La Garañona, 28°28'40"N 16°26'25"W, 150 m, (c).

GRAN CANARIA: (C-1) Agaete, Barranco de Segura, 28°3'33"N 15°43'57"W, 150 m, *Euphorbia* spp. community very degraded with high presence of *Pennisetum setaceum*; (C-2) Aldea de San Nicolás, El Andén Verde, 28°2'27"N 15°47'36"W, 550 m, (a, b); (C-4) Galdar, Agazal, 28°6'17"N 15°39'42"W, 325 m, (c); (C-5) Agaete, El Vínculo, 28°4'7"N

15°40'18"W, 300 m, (d); (C-6) Ibidem, Barranco del Risco, 28°3'1"N 15°43'20"W, 100 m, (c); (C-7) Ibidem, Barranco de Guayedra, 28°4'6"N 15°42'7"W, 100 m, (c); (C-8) Galdar, Llano de Los Poleos, 28°6'17"N 15°39'42"W, 300 m, (c).

FUERTEVENTURA: (F-3) Pájara, Jandía, Playa de Cofete, 28°5'46"N 14°24'34"W, 100 m, (b); (F-4) Ibidem, Cofete, 28°5'46"N 14°25'11"W, 150 m, (b); (F-5) Ibidem, Valle de Los Mosquitos, 28°4'41"N 14°25'48"W, 170 m, *Euphorbia handiensi* community with *Kleinia neriifolia*; (F-6) La Oliva, Cotillo, "Coto de María Díaz", 28°42'59"N 13°59'10"W, 11 m, (a); (F-7) Ibidem, Malpaís del Cotillo, 28°1'30"N 14°58'10"W, 125 m, degraded *Euphorbia regis-jubae* community with *Lycium intricatum*, *Suaeda* sp., etc.; (F-8) Betancuria, around of village, 28°25'41"N 14°3'38"W, 429 m, (d); (F-9) Ibidem, Aula de la Naturaleza "Parra Medina", 28°24'4"N 14°3'38"W, 340 m, (c); (F-10) Tuineje, Montaña Cardón 1, 28°14'53"N 14°9'14"W, 310 m, (a,b); (F-11) Ibidem, Montaña Cardón 2, 28°14'53"N 14°9'14"W, 265 m, (c); (F-12) Betancuria, Vega de Río Palma, Presa de la Peña, 28°23'0"N 14°6'6"W, 240 m, left cultivated plots next to the dam (d); (F-13) Ibidem, Betancuria, Vega de Río Palma, 28°23'33"N 14°9'9"W, 258 m, edapho-hydro-halophitic *Tamarix canariensis* and *Phoenix canariensis* community on the little ravine; (F-14) Pájara, Jandía, Barranco de Vinamar 1, 28°4'40"N 14°20'55"W, 220 m, (c); (F-15) Ibidem, Barranco de Vinamar 2, 28°5'13"N 14°21'31"W, 355 m, (b).

LANZAROTE: (L-1) Haría, Arrita, near to Punta Mujeres, 29°7'36"N 13°28'6"W, 7 m, (a); (L-2) Ibidem next to the highway to the Jameos del Agua, 29°8'40"N 13°27'28"W, 75 m, (d); (L-3) Ibidem, Malpaís de la Corona, 29°9'12"N 13°26'50"W, 80 m, (a); (L-4) Ibidem, Volcán de la Corona near to the Ye village, 29°11'24"N 13°29'54"W, 380 m, degraded *Euphorbia regis-jubae* community with *Agave americana*, *Opuntia maxima*, (d).

Results

A total of 63 species of myxomycetes were recovered, of which *Physarum bethelii* T.Macbr. ex G.Lister, *P. confertum* T.Macbr., and *Stemonitis herbatica* Peck are reported for the first time from the Canaries. The following are contributed from each particular island: 17 new species from Hierro; 7 from Fuerteventura; 6 from Tenerife; 5 from Gomera; 4 from Lanzarote; and 2 from Gran Canaria and La Palma, respectively. The greatest number of new records were recovered from Hierro, since only one species (*Lycogala epidendrum*) had been previously recorded.

The taxa recovered were distributed across 21 genera, among which *Physarum* has the greatest representation with 15 species, followed by *Didymium* (12 species), and *Arcyria* (7). The remainder are less numerous

(*Badhamia* and *Perichaena*: 4; *Comatricha* and *Stemonitis*: 3; *Cribraria*: 2), or with a single species. Likewise, *Physarales* is the most abundant order (55.5%), followed by the *Trichiales* (20.6%).

The analysis of the substrates was based on a total of 463 samples, collected from 34 vascular plant species (Table 1), of which 14 are characterized by succulent biotypes, 19 are woody, and 1 herbaceous.

Table 1. The total number of different and accumulated species (N° d/a spp.) and collections (N° col.) recovered among various sampled substrate. Note * = Canarian endemism.

N° spp.	N° col.	Vascular plants substrates		N° col.	N° spp.
		14 Succulent species	20 Non succulent species		
5	6	* <i>Aeonium arboreum</i>	* <i>Argyranthemum frutescens</i>	1	1
1	1	* <i>Aeonium urbicum</i>	* <i>Artemisia thuscula</i>	4	3
6	13	* <i>Aeonium sp.</i>	<i>Arundo donax</i>	3	2
8	18	<i>Agave americana</i>	<i>Cistus monspeliensis</i>	2	2
2	4	* <i>Ceropegia fusca</i>	<i>Citrus aurantium</i>	2	2
12	18	* <i>Euphorbia balsamifera</i>	<i>Cynara horrida</i>	3	3
4	5	* <i>Euphorbia berthelotii</i>	<i>Eucalyptus globulus</i>	1	1
27	117	* <i>Euphorbia canariensis</i>	<i>Ficus carica</i>	3	2
1	4	* <i>Euphorbia handiensis</i>	<i>Musa sp.</i>	3	4
13	29	* <i>Euphorbia lamarckii</i>	<i>Nicotiana glauca</i>	4	3
4	12	* <i>Euphorbia regis-jubae</i>	<i>Periploca laevigata</i>	1	1
16	24	* <i>Kleinia nerifolia</i>	<i>Persea americana</i>	1	1
3	4	<i>Opuntia dillenii</i>	* <i>Pinus canariensis</i>	1	1
23	138	<i>Opuntia maxima</i>	* <i>Plocama pendula</i>	10	9
			<i>Ricinus communis</i>	5	4
			* <i>Rubia fruticosa</i>	1	1
			<i>Rubus inermis</i>	5	1
			* <i>Rumex lunaria</i>	10	9
			* <i>Tamarix canariensis</i>	3	1
			<i>Vitis sp.</i>	7	7
51/125	393			70	28/58
Total	Total			Total	Total
N°spp	N°col.			N°col.	N°spp.

Figure 1 illustrates the high proportion of myxomycete species collected on succulent substrates, related to woody substrates and leaf litter, which correlates directly with the specific data already commented. The greatest

number of myxomycete species (51 species, 80.9% of the total) was collected from succulent plants (Fig. 1). Of these 32 (50.8%) could be characterized as strictly **succulenticolous**, since they were only observed from this type of substrate, whereas the remaining species appeared on woody remains and/or leaf litter. Only 6 of the 21 observed species (9.5%), recovered from woody substrates could be characterized as strictly **lignicolous**. Similarly, only 6 of the 13 species (9.5%) recovered from litter substrates, were collected exclusively from fallen leaves, and could be characterized as **foliicolous**. In total 19 species (30.1%) were observed in more than one type of substrate.

Bitter spurge scrubland s.l. occupies a wide distribution across the lower elevations of the islands, as a consequence of the anthropic alterations across the landscape. As a result, most of the sampling stations (35 stations) were located in this community type (Fig. 2), followed by the sweet spurge scrub (12), and then by mixed communities of bitter spurge and cardoon shrubs (4), and only cardoon shrubs (4).

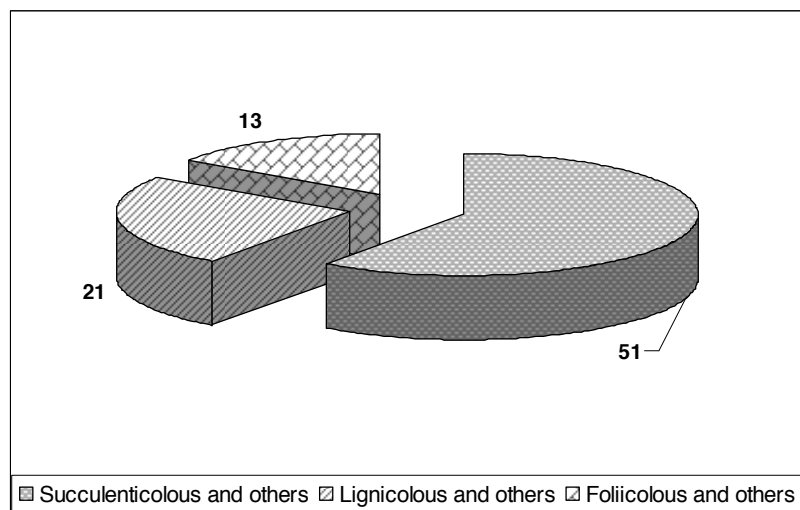


Fig. 1. The total number of myxomycete species collected, both obligate and facultative from each group of substrate.

Despite the low distribution of the cardoon scrublands, its characteristic species, *Euphorbia canariensis* (cardoon), was found to be the most productive substrate with respect to species richness among the endemic succulent species. Cardoon resulted in a total of 117 collections distributed

across 27 species of myxomycetes (Table 1). *Kleinia neriifolia* was the next most productive substrate, producing 24 samples collected, belonging to 16 species of myxomycetes; followed by *E. lamarckii* (bitter spurge), with 29 collections of 13 species and *E. balsamifera* (sweet spurge), with 18 samples belonging to 12 species of myxomycetes.

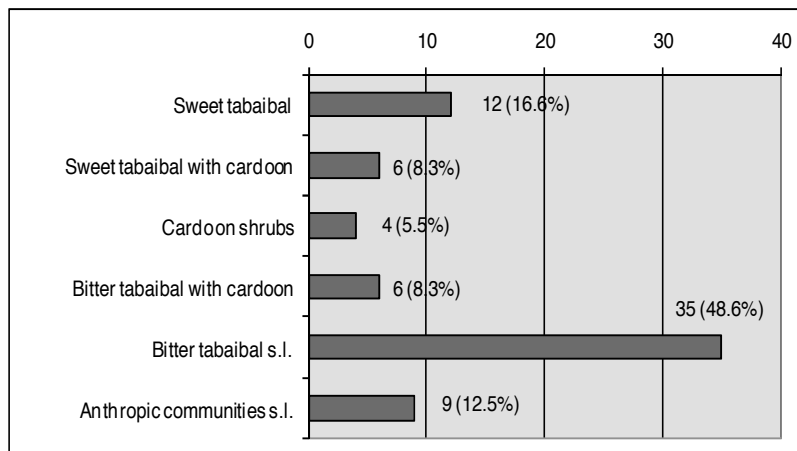


Fig. 2. Total number of sampled localities within each vegetal community (% respect the all of sampled stations: 72).

Opuntia maxima was the most productive substrate among the introduced succulent species, since 138 samples (Table 1) were collected on its decaying cladodia remains, belonging to 23 species of myxomycetes.

The sampling effort was not as uniform nor as intense across the other islands when compared to Tenerife; however, similarities with respect to the myxobiota of the various *Euphorbia* scrublands ("cardonal-tabaibal" s.l.), and the anthropic communities were apparent among the islands.

Physarum is the genus with the greatest frequency of appearance, the 15 species so far identified were present at 42 stations, followed by *Badhamia*, located at 38, *Arcyria* at 26, *Didymium* at 19, and *Perichaena* at 15. Nevertheless, *Badhamia* with only 4 species distributed in 38 localities, is the most frequent in regard to the relationship between localities and species by genus, and so *Physarum* occupying the fourth place, after *Perichaena* and *Arcyria* and followed by *Didymium*, with 12 species distributed over 32 stations.

Badhamia melanospora was the most abundant and extensively distributed species recovered across the habitats explored with 67 collections, recovered from 33 different localities. This species, described originally from cacti of South America (Spegazzini 1880), was found extensively in endemic substrates (*Euphorbia* spp., *Kleinia neriifolia*) and introduced species such as *Opuntia maxima*. This species appears to be effective at long-distance dispersion as evidenced by its widely reported association with succulent plants across the globe. This species has commonly been reported from the arid lands of the Americas, ranging from the United States and Mexico to Chile, but is also known from Morocco, Spain and France (Blackwell & Gilbertson 1980; Lado 1994; Lado et al. 2007a; Yamni & Meyer 2008; Estrada-Torres et al. 2009). However, it is also possible that the introduction in the 18th century of several *Opuntia* and *Agave* species to Canary Islands, North Africa and Southern Europe could have facilitated the dispersion of this species. The other species commonly recovered during the current study include *Physarum leucophaeum* (47 samples, of 25 stations, in 5 islands); *Trichia agaves* (20; 13; 5; respectively); *Perichaena corticalis* (33; 11; 3; respectively); followed by *Physarum bitectum*, *Stemonitis fusca*, *Arcyria pomiformis* and *Arcyria incarnata*.

Physarum leucophaeum was the species characterized by the widest ecological amplitude with regard to substrate specificity, it was collected from the decaying remnants of 18 vascular species (9 succulents), followed by *Badhamia melanospora*, collected from 11 species (10 succulents); *Didymium squamulosum*, from 10 species (3 succulents); *Comatricha nigra* and *Arcyria cinerea*, from 8 (5 succulents); and *Arcyria incarnata*, from 7 species (6 succulents).

The only myxomycetes collected exclusively from decaying succulent substrates were: *Arcyria affinis*, *A. ferruginea*, *Badhamia affinis*, *B. foliicola*, *Ceratiomyxa fruticulosa*, *Comatricha rigidireta*, *Craterium aureum*, *Cribraria zonatispora*, *Didymium bahiense*, *D. subreticulosporum*, *D. vaccinum*, *D. wildpretii*, *Fuligo septica*, *Hemitrichia minor*, *Licea succulenticola*, *Perichaena chrysosperma*, *P. depressa*, *P. vermicularis*, *Physarum bethelii*, *P. bogoriense*, *P. cinereum*, *P. oblatum*, *P. pusillum*, *P. spectabile*, *P. straminipes*, *Reticularia lycoperdon*, *Stemonitis herbatica*, *Stemonitopsis subcaespitosa* and *Trichia agaves*. According to the literature and personal data, most appear to be facultative succulenticolous species, since they also appeared on other substrates. Only *Cribraria zonatispora*, *Didymium subreticulosporum*, *D. wildpretii*, *Hemitrichia minor*, *Licea succulenticola* and *Trichia agaves* can be considered strictly succulenticolous species (Beltrán-Tejera & Mosquera 1997; Lado et al. 1999, 2007b; Mosquera et al. 1999, 2000a, 2000b, 2003).

This study was carried out in the same way as research on the myxomycetes of arid lands in Mexico (Estrada-Torres et al. 2009). Some of the results have been similar and have resulted in several taxa new to science (e.g. *Cribraria zonatispora*, *Trichia agaves*, *Licea succulenticola* and *Didymium wildpretii*) having been described based on material from both areas. Several centuries ago succulent plants and cacti from America were introduced to the Canary Islands to see whether they could become acclimated and be cultivated in Europe. Therefore, the similarity in the myxobiota of these areas could potentially have been influenced, as has been suggested previously (Lado et al. 2007b), by the introduction of these plants.

Annotated list of species

Genera and species are listed alphabetically. For each specimen we include location, substrate (normally decayed wood of lignicolous substrates rare on bark, or succulent plant remains. See Table 1), and TFC Mic. number (between parentheses). First records for the Canaries are marked with an asterisk (*) together to the species name, and for a particular island together to its initial.

Arcyria affinis Rostaf.

SPECIMEN EXAMINED — **T-9**, on decayed remains of *Opuntia maxima*, 21 Feb 1998 (8438).
OBSERVATIONS — Previously reported for T (Champion & Beltrán-Tejera 1980), P (Beltrán-Tejera et al. 2004b), and G (Beltrán-Tejera et al. 2004a), on different substrates and habitats.

Arcyria cinerea (Bull.) Pers.

SPECIMENS EXAMINED — ***H-1**, on decayed wood *Artemisia thuscula*, 28 Jan 2005 (15439). ***H-4**, on decayed remains of *Kleinia neriifolia*, 29 Jan 2005 (14999); Ibidem, on *Euphorbia lamarckii*, 29 Jan 2005 (15006). ***H-8**, on *Euphorbia lamarckii*, 30 Jan 2005 (15036). ***H-10**, on *Euphorbia balsamifera*, 30 Jan 2005 (15062). **T-3**, on *Euphorbia lamarckii*, 8 Nov 1997 (8108). **T-4**, on *Euphorbia lamarckii*, 22 Nov 1997 (8121). **T-7**, on *Euphorbia canariensis*, 19 Mar 2005 (15520). **T-13**, on *Arundo donax*, 2 Jan 1996 (7421). **T-24**, on *Aeonium arboreum* (decayed leaves), 5 Nov 2004 (14825); Ibidem, on *Euphorbia canariensis*, 25 Oct 2002 (15469). Ibidem, on decayed wood of *Rumex lunaria*, 25 Oct 2002 (12630). **T-25**, on *Rumex lunaria*, 5 Nov 2004 (14828). **T-26**, on decayed remains of *Euphorbia lamarckii*, 11 Dec 2004 (14853).
OBSERVATIONS — Previously reported for T (Champion & Beltrán-Tejera 1980), C (Lado & Moreno 1981), P (Bañares & Beltrán-Tejera 1987), G (Beltrán-Tejera et al. 2004a), on different substrates and habitats.

Arcyria ferruginea Saut.

SPECIMEN EXAMINED — ***H-4**, on *Kleinia neriifolia*, 29 Jan 2005 (14998). **T-26**, on *Euphorbia balsamifera*, 11 Dec 2004 (14852).
OBSERVATIONS — Previously reported for T (Champion & Beltrán-Tejera 1980), P (Dähncke 1998), G (Beltrán-Tejera et al. 2004a), on different substrates and habitats.

Arcyria incarnata (Pers. ex J.F. Gmel.) Pers.

SPECIMENS EXAMINED — ***H-5**, on *Euphorbia lamarckii*, 29 Jan 2005 (15005). ***H-6**, on *Euphorbia lamarckii*, 29 Jan 2005 (15017). **G-4**, on *Euphorbia berthelotii*, 18 Dec 2004

(14875). **G-6**, on *Kleinia neriifolia*, 19 Dec 2004 (14885). **T-13**, on *Euphorbia canariensis*, 2 Jan 1996 (7419). **T-18**, on *Artemisia thuscula*, 25 May 1999 (8834). **T-24**, on *Agave americana* (decayed leaves), 25 Oct 2002 (12628). ***F-6**, on *Euphorbia balsamifera*, 6 Feb 2005 (15105).

OBSERVATIONS — Previously reported for T (Champion & Beltrán-Tejera 1980), C (Lado & Moreno 1981), (Dähncke 1998), G (Beltrán-Tejera et al. 2004a), on different substrates and habitats.

***Arcyria insignis* Kalchbr. & Cooke**

SPECIMENS EXAMINED — ***H-10**, on *Euphorbia balsamifera*, 30 Jan 2005 (15441). ***G-3**, on *Plocama pendula*, 18 Dec 2004 (14868). ***P-3**, on *Euphorbia canariensis*, 8 Nov 1997 (8099).

OBSERVATIONS — Previously reported for T (Champion & Beltrán-Tejera 1980), on different substrate and habitat.

***Arcyria minuta* Buchet**

SPECIMENS EXAMINED — **T-0**, on *Tamarix canariensis*, 17 Feb 1977 (2060); Ibidem, 17 Nov 1977 (7567); Ibidem, 17 Dec 1977 (7570). **T-8**, on *Euphorbia canariensis*, 19 Mar 2005 (15517). **T-14**, on *Euphorbia canariensis*, 2 Apr 1996 (7621).

OBSERVATIONS — Previously reported for T (Champion & Beltrán-Tejera 1980), P (Beltrán-Tejera et al. 2004b), G (Beltrán-Tejera et al. 2004a), on different substrates and habitats.

***Arcyria pomiformis* (Leers) Rostaf.**

SPECIMENS EXAMINED — ***H-2**, on *Euphorbia lamarckii*, 28 Jan 2005 (14981, 14983, 14984). ***H-9**, on *Euphorbia lamarckii*, 30 Jan 2005 (15041). ***H-10**, on *Kleinia neriifolia*, 30 Jan 2005 (15056). **T-4**, on *Plocama pendula*, 22 Feb 1997 (8125). **T-7**, on *Euphorbia canariensis*, 26 Jan 1998 (8247). **T-8**, on *Euphorbia canariensis*, 26 Jan 1998 (8245). **T-13**, on *Euphorbia canariensis*, 2 Jan 1996 (7390). **T-19**, on *Rumex lunaria*, 31 Oct 2004 (14814).

OBSERVATIONS — Previously reported for T (Champion & Beltrán-Tejera 1980), C (Lado & Moreno 1981), (Dähncke 1998), G (Beltrán-Tejera et al. 2004a), on different substrates and habitats.

***Badhamia affinis* Rostaf.**

SPECIMENS EXAMINED — **P-3**, on *Euphorbia canariensis*, 10 Apr 1998 (15434). **T-1**, on *Euphorbia canariensis*, 25 Oct 1997 (8067, 8070, 8073, 8075, 8077, 8079). **T-19**, on *Opuntia maxima*, 27 Dec 2004 (14890, 14891). **T-20**, on *Opuntia maxima*, 30 Dec 2002 (15462).

OBSERVATIONS — Previously reported for T (Champion & Beltrán-Tejera 1980), P (Beltrán-Tejera et al. 2004b), on different substrates and habitats.

***Badhamia foliicola* Lister**

SPECIMENS EXAMINED — **T-13**, on *Euphorbia canariensis*, 2 Jan 1996 (7410, 7430). **T-26**, on *Euphorbia lamarckii*, 27 Dec 2004 (14900).

OBSERVATIONS — Previously reported for C (Lado & Moreno 1981), T (Champion 1983), P (Beltrán-Tejera et al. 2004b), G (Beltrán-Tejera et al. 2004a), on different substrates and habitats.

***Badhamia melanospora* Speg.**

[= *Badhamia gracilis* (T. Macbr.) T. Macbr.]

SPECIMENS EXAMINED — ***H-3**, on *Euphorbia lamarckii*, 29 Jan 2005 (14988, 14990). ***H-4**, on *Euphorbia lamarckii*, 29 Jan 2005 (15016). ***H-6**, on *Euphorbia lamarckii*, 29 Jan 2005 (15018). ***H-5**, on *Euphorbia lamarckii*, 29 Jan 2005 (15008). ***H-9**, on *Euphorbia lamarckii*, 30 Jan 2005 (15042). ***H-10**, on *Opuntia dilenii*, 30 Jan 2005 (15057). ***H-11**, on *Euphorbia canariensis*, 30 Jan 2005 (15068). ***P-2**, on *Opuntia maxima*, 8 Apr 1998 (15435). ***P-2**, on *Euphorbia canariensis*, 8 Oct 1997 (8093). ***G-2**, on *Kleinia neriifolia*, 18 Dec 2004 (15444). ***G-6**, on *Opuntia maxima*, 19 Dec 2004 (14882). **T-2**, on *Euphorbia*

canariensis, 8 Nov 1997 (8096, 8101, 8103, 8111, 8219). **T-3**, on *Opuntia maxima*, 8 Oct 1997 (8113). **T-7**, on *Ceropegia fusca*, 26 Jan 1998 (8234, 8235, 8236, 8244); *Ibidem*, on *Euphorbia canariensis*, 19 Mar 2005 (15505, 15519, 15521). **T-13**, on *Aeonium sp.* (decayed leaves), 2 Jan 1996 (7443, 7458). **T-14**, on *Aeonium sp.* (decayed leaves), 1 Apr 1996 (7654). **T-20**, on *Opuntia maxima*, 28 Dec 2004 (14906). **T-24**, on *Opuntia maxima*, 5 Nov 2004 (14822). **T-26**, on *Plocama pendula*, 11 Dec 2004 (14848); *Ibidem*, on *Euphorbia canariensis*, 11 Dec 2004 (14849); *Ibidem*, on *Opuntia maxima*, 27 Dec 2004 (14901, 14847). **C-1**, on *Euphorbia canariensis*, 5 Dec 2004 (14834); *Ibidem*, on *Kleinia neriifolia*, 5 Dec 2004 (14833). **C-2**, on *Euphorbia canariensis*, 5 Dec 2004 (14835, 14838); *Ibidem*, on *Kleinia neriifolia*, 5 Dec 2004 (14836). **C-4**, on *Euphorbia canariensis*, 5 Dec 2004 (14841). **C-6**, on *Euphorbia canariensis*, 1 Apr 1999 (8779). **C-7**, on *Opuntia maxima*, 2 Apr 1999 (8781). ***F-3**, on *Euphorbia canariensis*, 5 Feb 2005 (15093, 15094, 15095, 15096, 15097). ***F-5**, on *Euphorbia handiensis*, 5 Feb 2005 (15098, 15099, 15100, 15101). ***F-10**, on *Euphorbia canariensis*, 7 Feb 2005 (15128, 15129, 15130). ***F-11**, on *Euphorbia regis-jubae*, 7 Feb 2005 (15135); *Ibidem*, on *Kleinia neriifolia*, 7 Feb 2005 (15137). ***F-11**, on *Opuntia maxima*, 7 Feb 2005 (15139). ***L-1**, on *Opuntia maxima*, 14 Jan 2005 (14910); *Ibidem*, on *Euphorbia balsamifera*, 14 Jan 2005 (14911, 14913, 14917); *Ibidem*, on *Kleinia neriifolia*, 14 Jan 2005 (14914, 14915). ***L-2**, on *Euphorbia balsamifera*, 14 Jan 2005 (14923, 14931). ***L-3**, on *Opuntia maxima*, 14 Jan 2005 (14934).

OBSERVATIONS — Previously reported for Tenerife in arid zone, on *Opuntia sp.* (Champion & Beltrán-Tejera 1980), and for Gran Canaria in dry locality on *Opuntia dillenii* and *O. ficus-indica* (Lado & Moreno 1981). This succulenticolous species is associated with xerophytic habitats and vegetation communities, and it has often been reported on decaying succulent plants, in the same way that *Didymium vaccinum* (Lado & Moreno 1981).

***Badhamia utricularis* (Bull.) Berk.**

SPECIMENS EXAMINED — **G-3**, on *Plocama pendula*, 18 Dec 2004 (14869). **T-19**, on *Nicotiana glauca*, 11 Dec 2004 (14855).

OBSERVATIONS — Previously reported for T (Champion & Beltrán-Tejera 1980), P (Beltrán-Tejera & Mosquera 1997), G (Beltrán-Tejera et al. 2004a), on different substrates and habitats.

***Ceratiomyxa fruticulosa* (O.F.Müll.) T.Macbr.**

SPECIMENS EXAMINED — ***H-2**, on *Euphorbia lamarckii*, 28 Jan 2005 (14986).

OBSERVATIONS — Previously reported for T (Champion & Beltrán-Tejera 1980), C (Bañares et al. 1986), P (Dähncke 1998), G (Beltrán-Tejera et al. 2004a), on different substrates and habitats.

***Comatricha laxa* Rostaf.**

SPECIMENS EXAMINED — **T-1**, on *Euphorbia canariensis*, 25 Oct 1997 (8080). **T-2**, on *Kleinia neriifolia*, 8 Nov 1997 (8100). **T-4**, on *Kleinia neriifolia*, 8 Nov 1997 (8120). **T-7**, on *Euphorbia canariensis*, 26 Jan 1998 (8241). **T-8**, on *Euphorbia canariensis*, 26 Jan 1998 (8240). **T-17**, on *Opuntia maxima*, 30 May 1998 (15479). **T-24**, on *Agave americana*, 25 Oct 2002 (15473); *Ibidem*, on *Cistus monspeliensis*, 25 Oct 2002 (12626).

OBSERVATIONS — Previously reported for T (Champion & Beltrán-Tejera 1980), C (Lado & Moreno 1981), G (Beltrán-Tejera et al. 2004a), P (Beltrán-Tejera et al. 2004b), on different substrates and habitats.

***Comatricha nigra* (Pers. ex J.F.Gmel.) J. Schröt.**

SPECIMENS EXAMINED — ***H-1**, on *Artemisia thuscula*, 28 Jan 2005 (14950, 14951). ***H-2**, on *Periploca laevigata*, 19 Dec 2004 (14985). **G-6**, on *Kleinia neriifolia*, 19 Dec 2004 (14908). **T-24**, on *Agave americana*, 25 Oct 2002 (15472); *Ibidem*, on *Euphorbia canariensis*, 25 Oct 2002 (12627); *Ibidem*, on *Aeonium arboreum* (decayed leaves), 25 Oct 2002 (15474); *Ibidem*, on *Cistus monspeliensis*, 25 Oct 2002 (15475); *Ibidem*, on *Euphorbia lamarckii*, 11 Dec 2004 (15477).

OBSERVATIONS — Previously reported for T (Champion & Beltrán-Tejera 1980), C (Lado & Moreno 1981), P (Dähncke 1998), G (Beltrán-Tejera et al. 2004a), on different substrates and habitats.

Comatricha rigidireta Nann.-Bremek.

SPECIMENS EXAMINED — **T-13**, on *Euphorbia canariensis*, 26 Jan 1998 (7405, 7409, 7411).

OBSERVATIONS — Previously reported for T (Champion & Beltrán-Tejera 1980), on different substrate and habitat.

Craterium aureum (Schumach.) Rostaf.

SPECIMEN EXAMINED — **T-24**, on *Aeonium arboreum* (decayed leaves), 5 Nov 2004 (14827).

OBSERVATIONS— Previously reported T (Beltrán-Tejera & Mosquera 1997), G (Beltrán-Tejera et al. 2004a), on different substrates and habitats.

Cribraria violacea Rex

SPECIMENS EXAMINED — **T-5**, on *Opuntia maxima*, 30 Dec 1996 (7935). **T-24**, on *Rumex lunaria*, 25 Oct 2002 (12629).

OBSERVATIONS— Previously reported for T (Champion & Beltrán-Tejera 1980) and G (Beltrán-Tejera et al. 2004a), on different substrates and habitats.

Cribraria zonatispora Lado, Mosquera & Beltrán-Tej.

SPECIMENS EXAMINED — **T-4**, on *Opuntia maxima*, 10 Feb 1998 (8255). **T-5**, on *Opuntia maxima*, 25 Apr 1997 (8685, 8199 “MC”); Ibidem, on *Opuntia maxima*, 30 Dec 1996 (7930 *Typus*).

OBSERVATIONS— Succulenticolous species, at the moment only reported for Tenerife and Mexico, on the same substrate and habitat (Lado et al. 1999).

Diachea leucopodia (Bull.) Rostaf.

SPECIMENS EXAMINED — **T-6**, on *Eucalyptus globulus*, 18 Dec 1995 (7348). **T-29**, on *Rubus inermis*, 14 Nov 1994 (6878, 6878, 6879, 6880, 9830).

OBSERVATIONS — Previously reported for T (Beltrán-Tejera & Mosquera 1997), P (Dähncke 1998), G (Beltrán-Tejera et al. 2004a), on different substrates and habitats.

Dictydiaethalium plumbeum (Schumach.) Rostaf.

SPECIMEN EXAMINED — **T-21**, on *Vitis gr.vinifera*, 3 Mar 1996 (7539).

OBSERVATIONS— Previously reported for T (Beltrán-Tejera & Mosquera 1997) and G (Beltrán-Tejera et al. 2004a), on different substrates and habitats.

Diderma hemisphaericum (Bull.) Hornem.

SPECIMEN EXAMINED — **T-13**, on *Musa sp.* (dried leaves), 2 Jan 1996 (7455).

OBSERVATIONS — Previously reported for T (Beltrán-Tejera & Mosquera 1997), on different substrate and habitat.

Didymium anellus Morgan

SPECIMEN EXAMINED — **T-21**, on *Vitis gr.vinifera*, 1 Mar 1997 (8008).

OBSERVATIONS — Previously reported for T (Champion 1983), P (Beltrán-Tejera et al. 2004b), on different substrates and habitats.

Didymium bahiense Gottsb.

SPECIMEN EXAMINED — ***T-4**, on *Opuntia maxima*, 29 Dec 2002 (15466).

OBSERVATIONS — Previously reported for P (Dähncke 1998), on different substrate and habitat.

Didymium clavus (Alb. & Schwein.) Rabenh.

SPECIMENS EXAMINED — ***H-2**, on *Kleinia neriifolia*, 28 Jan 2005 (14980). **T-19**, on *Rumex lunaria* (in leaf litter), 29 Dec 2002 (15456).

OBSERVATIONS — Previously reported for T (Champion & Beltrán-Tejera 1980), C (Lado & Moreno 1981), P (Beltrán-Tejera et al. 2004b), G (Beltrán-Tejera et al. 2008), P,G,T,C, on different substrates and habitats.

Didymium difforme (Pers.) Gray

SPECIMEN EXAMINED — **T-21**, on *Vitis gr.vinifera*, 3 Mar 1996 (7527).

OBSERVATIONS — Previously reported for T (Champion 1983), G (Beltrán-Tejera et al. 2004a), on different substrates and habitats.

Didymium dubium Rostaf.

SPECIMEN EXAMINED — **T-13**, on *Ricinus communis* (dried leaves), 2 Jan 1996 (7369).

OBSERVATIONS — Previously reported for T (Champion 1983), G (Beltrán-Tejera et al. 2004a), P (Beltrán-Tejera et al. 2004b), on different substrates and habitats.

Didymium minus (Lister) Morgan

SPECIMENS EXAMINED — **G-4**, on *Cynara horrida* (leaf litter), 18 Dec 2004 (14878). ***L-2**, on *Opuntia maxima*, 14 Jan 2005 (14922).

OBSERVATIONS — Previously reported for P (Beltrán-Tejera et al. 2003) and G (Beltrán-Tejera et al. 2004a), on different substrates and habitats.

Didymium squamulosum (Alb. & Schwein.) Fr.

SPECIMENS EXAMINED — **G-7**, on *Rumex lunaria* (in leaf litter), 19 Dec 2004 (14886); Ibidem, on *Cynara horrida* (in leaf litter), 19 Dec 2004 (14887). **T-4**, on *Opuntia maxima*, 29 Dec 2002 (15467). **T-13**, on *Ricinus communis*, 2 Jan 1996 (15481); Ibidem, on *Euphorbia canariensis*, 2 Jan 1996 (7434). **T-14**, on *Opuntia maxima*, 25 Oct 1997 (7645). **T-19**, on *Ficus carica* (in leaf litter), 13 Nov 1994 (6875); Ibidem, on *Vitis sp.* (fallen leaves), 16 Mar 2003 (14165). **T-20**, on *Opuntia maxima*, 13 Nov 1994 (6968); Ibidem, on *Rumex lunaria* and *Carlina salicifolia* (in leaf litter), 27 Dec 2004 (14895). **T-21**, on *Citrus aurantium*, 3 Mar 1996 (7270); Ibidem, on *Euphorbia lamarkii*, 13 Nov 1994 (6970); Ibidem, on *Ficus carica*, 13 Nov 1994 (6877); Ibidem, on *Opuntia maxima*, 27 Dec 1995 (7269).

OBSERVATIONS — Previously reported for C (Urries 1957), T (Champion & Beltrán-Tejera 1980), G (Beltrán-Tejera et al. 2004a), P (Beltrán-Tejera et al. 2004b), on different substrates and habitats.

Didymium subreticulosporum Oltra, G. Moreno & Illana

SPECIMENS EXAMINED — **T-6**, on *Opuntia maxima*, 9 Dec 1995 (7200, 7302, 7303); Ibidem, 11 Dec 1995 (7282); Ibidem, 10 June 1996 (7525, 7526); Ibidem, 4 August 1996 (7837, 7825, 7832, 7833, 7836, 7838, 7840, 7847); Ibidem, 25 Nov 1996 (7915, 7918, 7927); Ibidem, 15 Feb 1997 (7988, 7989, 7990, 7993, 7994, 7995, 7998); Ibidem, 27 Apr 1997 (8126); Ibidem, 24 Jan 1998 (8205). **T-8**, on *Opuntia maxima*, 21 Feb 1998 (8420, 8421, 8423, 8424). **T-9**, on *Opuntia maxima*, 21 Feb 1998 (8432, 8433, 8435). **T-10**, on *Opuntia maxima*, 21 Feb 1998 (8439, 8440). **T-10**, on *Opuntia maxima*, 14 Mar 1998 (8592).

OBSERVATIONS — Succulenticolous species, previously reported for Tenerife, on the same substrates and habitats (Mosquera et al. 2000a), on *Opuntia máxima* in anthropic communities.

Didymium trachysporum G.Lister

SPECIMEN EXAMINED — **T-13**, on *Musa sp.* (dried leaves), 2 Jan 1996 (15482).

OBSERVATIONS — Previously reported for Tenerife on *Opuntia* (Champion & Beltrán-Tejera 1980).

Didymium vaccinum (Durieu & Mont.) Buchet

SPECIMENS EXAMINED — **T-4**, on *Opuntia maxima*, 29 Dec 2002 (15465). **T-5**, on *Agave americana* (decayed leaves), 5 Nov 2004 (14816). **T-19**, on *Opuntia maxima*, 27 Dec 2004 (14889, 15435). ***F-12**, on *Opuntia maxima*, 7 Feb 2005 (15138).

OBSERVATIONS — Previously reported for P,G,T,C, reported always on decaying cladodes of *Opuntia* in semiarid and dry zones (Champion & Beltrán-Tejera 1980; Lado & Moreno 1981; Beltrán-Tejera et al. 2004a, 2008).

Didymium verrucosporum A.L.Welden

SPECIMEN EXAMINED — **T-19**, on *Persea americana* (fallen leaves), 11 Dec 2004 (14856).

OBSERVATIONS — Previously reported for T (Champion & Beltrán-Tejera 1980), on bark of *Dracaena draco* in anthropic communities.

Didymium wildpretii Mosquera, Estrada, Beltrán-Tej., D. Wrigley & Lado

SPECIMENS EXAMINED — **T-3**, on *Opuntia maxima*, 8 Nov 1997 (8270 “MC”). **T-4**, on *Opuntia maxima*, 22 Nov 1997 (8537, 8564, 8567). **T-8**, on *Opuntia maxima*, 21 Feb 1998 (8572 “MC”, 8604, 8673, 8674). **T-9**, on *Opuntia maxima*, 21 Feb 1998 (8534 “MC”).

OBSERVATIONS — Previously reported for Tenerife on *Opuntia maxima*, and Mexico on different *Cactaceae* species (Lado et al. 2007b).

Fuligo septica (L.) F.H. Wigg.

SPECIMEN EXAMINED — **P-3**, on *Euphorbia balsamifera*, 8 Apr 1998 (14843).

OBSERVATIONS — Previously reported for T (Beltrán-Tejera & Mosquera 1997), P (Dähncke 1998), G (Beltrán-Tejera et al. 2004a), on different substrates and habitats.

Hemitrichia minor G. Lister

SPECIMENS EXAMINED — ***T-4**, on *Opuntia maxima*, 22 Nov 1997 (8218 “MC”). **T-6**, on *Opuntia maxima*, 1 Dec 1995 (7214 “MC”, 7217 “MC”, 7480); Ibidem, 10 Apr 1996 (7706, 7720, 7722); Ibidem, 4 Aug 1996 (7841, 7846). ***T-8**, on *Opuntia maxima*, 21 Feb 1998 (8429). ***T-9**, on *Opuntia maxima*, 21 Feb 1998 (8436). ***T-13**, on *Opuntia maxima*, 2 Jan 1996 (7416). ***T-14** on *Opuntia maxima*, 1 Apr 1996 (7644). ***T-28** on *Opuntia maxima*, 5 Jan 1996 (7957).

OBSERVATIONS — Previously reported for P (Beltrán-Tejera et al. 2004b), on decaying wood of pine and remains of *Opuntia maxima*.

Lamproderma scintillans (Berk. & Broome) Morgan

SPECIMEN EXAMINED — ***T-3**, on *Opuntia maxima*, 28 Feb 1998 (8522).

OBSERVATIONS — New record for Tenerife. Previously reported for P (Beltrán-Tejera et al. 2004b), on different substrate and habitat.

Licea succulenticola Mosquera, Lado, Estrada & Beltrán-Tej.

SPECIMENS EXAMINED — **T-2**, on *Euphorbia canariensis*, 23 Jan 1998 (8390 “MC”, 8406, 8553, 8556). Ibidem, 27 Jan 1998 (8578, 8581). **T-6**, on *Agave americana* (decayed leaves), 21 Dec 1995 (7319 “MC”, 7408 “MC”). **T-8**, on *Opuntia maxima*, 23 Mar 1998 (8623 “MC”). **T-13**, on *Aeonium sp.* (decayed leaves), 2 Jan 1996 (7410). **T-29**, on *Opuntia maxima*, 20 Jan 1998 (8224 “MC”, 8225 “MC”, 8226 “MC”).

OBSERVATIONS — Previously reported for Tenerife, on the same substrates; Mexico on decaying of different succulent plants, and New Jersey (USA) on decaying *Opuntia sp.* (Mosquera et al. 2003).

Perichaena chrysosperma (Curr.) Lister

SPECIMENS EXAMINED — **T-6**, on *Aeonium sp.* (decayed leaves), 15 Nov 1995 (7466). Ibidem, on *Agave americana* (decayed leaves), 22 Dec 1995 (7479). **T-7**, on *Agave americana* (decayed leaves), 15 Nov 1995 (7404 “MC”). **T-23**, on *Euphorbia balsamifera*, 21 Dec 1998 (8304 “MC”).

OBSERVATIONS — Previously reported for T (Champion & Beltrán-Tejera 1980), on bark of *Persea indica* in laurel forest.

Perichaena corticalis (Batsch) Rostaf.

SPECIMENS EXAMINED — **G-3**, on *Plocama pendula*, 18 Dec 2004 (14870). ***C-2**, on *Euphorbia canariensis*, 5 Dec 2004 (14837). ***C-6**, on *Euphorbia canariensis*, 1 Apr 1999 (8778). **T-1**, on *Euphorbia canariensis*, 25 Oct 1997 (8065, 8066, 8076, 8078). **T-6**, on *Aeonium sp.* (decayed leaves), 29 Dec 1995 (7477, 7478). **T-7**, on *Euphorbia canariensis*, 26 Jan 1998 (8246, 8247). **T-12**, on *Euphorbia canariensis*, 14 Mar 1998 (8633 “MC”); Ibidem, 30 May 1998 (8607 “MC”). **T-13**, on *Euphorbia canariensis*, 2 Jan 1998 (7483, 7473). **T-14**, on leaf litter, 1 Apr 1996 (7631). **T-17**, on *Euphorbia canariensis*, 30 May 1998 (8610 “MC”). **T-24**, on *Aeonium arboreum*, 5 Nov 2004 (14823, 14826).

OBSERVATIONS — Previously reported for Tenerife on bark of *Castanea sativa* and decayed wood of *Euphorbia canariensis* (Champion & Beltrán-Tejera 1980) and Gomera on decayed leaves of *Agave americana* (Beltrán-Tejera et al. 2008).

***Perichaena depressa* Lib.**

SPECIMENS EXAMINED — **T-6**, on *Aeonium* sp. (decayed leaves), 29 Dec 1995 (7422, 7424, 7525). **T-14**, on *Aeonium* sp. (decayed leaves), 1 Apr 1996 (7663). **T-23**, on *Euphorbia balsamifera*, 15 Dec 1997 (8211 “MC”).

OBSERVATIONS — Previously reported for T (Champion 1983), P (Beltrán-Tejera et al. 2004b), on different substrates and habitats.

***Perichaena vermicularis* (Schwein.) Rostaf.**

SPECIMENS EXAMINED — **T-2**, on *Euphorbia canariensis*, 8 Nov 1997 (8112, 8115). **T-2**, on *Euphorbia canariensis*, 2 Jan 1998 (8243, 8249).

OBSERVATIONS — Previously reported for T (Champion 1983), P (Beltrán-Tejera et al. 2004b), on different substrates and habitats.

****Physarum bethelii* T.Macbr. ex G.Lister**

SPECIMENS EXAMINED — ***G-4**, on decayed bark of *Euphorbia berthelotii*, 18 Dec 2004 (14876, 14877).

***Physarum bitectum* G.Lister**

SPECIMENS EXAMINED — ***H-11**, on *Euphorbia canariensis*, 31 Jan 2005 (15069, 15070); Ibidem, on *Kleinia neriifolia*, 31 Jan 2005 (15079). **G-1**, on *Opuntia maxima*, 18 Dec 2004 (14860). **G-2**, on *Euphorbia berthelotii*, 18 Dec 2004 (14863). **T-2**, on *Euphorbia canariensis*, 8 Nov 1997 (8220 “MC”). **T-14**, on branches of living *Kleinia neriifolia*, 1 Apr 1996 (7642). **T-20**, on *Ficus carica* (bark and fallen leaves), 13 Nov 1994 (6876). **T-24**, on *Aeonium arboreum*, 5 Nov 2004 (14824). **C-5**, on unidentified wood, 2 Apr 1999 (8773). **C-6**, on *Euphorbia canariensis*, 2 Apr 1999 (8780).

OBSERVATIONS — Previously reported for T (Champion & Beltrán-Tejera 1980), G (Beltrán-Tejera et al. 2004a), P (Beltrán-Tejera et al. 2004b), on different substrates and habitats.

***Physarum bogoriense* Racib.**

SPECIMENS EXAMINED — **T-13**, on *Aeonium* sp. (decayed leaves), 2 Jan 1996 (7523, 7442).

OBSERVATIONS — Previously reported for T (Beltrán-Tejera & Mosquera 1997), on the same substrate and habitat.

***Physarum braunianum* de Bary**

SPECIMEN EXAMINED — **T-13**, on *Rubia fruticosa* (leaf litter), 2 Jan 1996 (7462).

OBSERVATIONS — Previously reported for T (Beltrán-Tejera & Mosquera 1997), on the same substrate and habitat.

***Physarum cinereum* (Batsch) Pers.**

SPECIMENS EXAMINED — ***H-1**, on *Kleinia neriifolia*, 28 Jan 2005 (14954). **T-13**, on *Kleinia neriifolia*, 2 Jan 1997 (7420). ***F-7**, on *Euphorbia regis-jubae*, 6 Feb 2005 (15107).

OBSERVATIONS — Previously reported for T (Champion & Beltrán-Tejera 1980), G (Beltrán-Tejera et al. 2004a), P (Beltrán-Tejera et al. 2004b), on different substrates and habitats.

***Physarum compressum* Alb. & Schwein.**

SPECIMENS EXAMINED — ***H-10**, on *Opuntia dillenii*, 30 Jan 2005 (15059, 15060). **T-1**, on *Opuntia maxima*, 25 Oct 1997 (8217). **T-4**, on *Opuntia maxima*, 23 Jan 1998 (8690 “MC”). **T-13**, on *Musa* sp. (dried leaves), 2 Jan 1996 (7445). **T-21**, on *Opuntia maxima*, 13 Jan 1996 (6665). Ibidem, on *Vitis* sp., 3 Mar 1996 (7535 “MC”); Ibidem, on *Citrus aurantium*.

OBSERVATIONS, New record for Hierro. Previously reported for T (Farr 1959), G (Beltrán-Tejera et al. 2004a), P (Beltrán-Tejera et al. 2004b), on similar or different substrates and habitats.

****Physarum confertum* T.Macbr.**

SPECIMENS EXAMINED — *F-14, on *Opuntia dillenii*, 8 Feb 2005 (15150).

***Physarum leucophaeum* Fr.**

SPECIMENS EXAMINED — *H-1, on *Rumex lunaria*, 28 Jan 2005 (14952); Ibidem, on *Kleinia neriifolia*, 28 Jan 2005 (14953). *H-3, on *Euphorbia lamarckii*, 29 Jan 2005 (14989). *H-4, on *Euphorbia lamarckii*, 29 Jan 2005 (15027). *H-5, on *Euphorbia lamarckii*, 29 Jan 2005 (15007). *H-7, on *Opuntia maxima*, 30 Jan 2005 (15086). *H-10, on *Opuntia dillenii*, 30 Jan 2005 (15058). *H-11, on *Euphorbia canariensis*, 30 Jan 2005 (15073, 15078). G-2, on *Kleinia neriifolia*, 18 Dec 2004 (14861); Ibidem, on *Euphorbia berthelotii* (14862). G-3, on *Argyranthemum frutescens*, 18 Dec 2004 (14867); Ibidem, on *Plocama pendula* (14873). G-7, on *Rumex lunaria* (leaf litter), 18 Dec 2004 (14886). T-2, on *Euphorbia canariensis*, 8 Nov 1997 (8092, 8094, 8098). T-3, on *Euphorbia canariensis*, 28 Feb 1998 (8515). T-13, on *Arundo donax*, 2 Jan 1996 (7472); Ibidem, on *Ricinus communis* (7484); Ibidem, on *Opuntia maxima*, 25 May 1999 (8832). T-19, on *Aeonium urbicum* (decayed leaves), 30 Dec 2002 (15463); Ibidem, on *Vitis sp.*, 24 Dec 2004 (15455). T-24, on *Euphorbia canariensis*, 25 Oct 2002 (15471). T-24, on *Euphorbia lamarckii*, 25 Oct 2002 (14830). T-26, on *Euphorbia canariensis*, 11 Dec 2004 (14854). *F-3, on *Euphorbia canariensis*, 5 Feb 2005 (15064). *F-7, on *Euphorbia regis-jubae*, 6 Feb 2005 (15106). *F-11 on *Euphorbia regis-jubae*, 7 Feb 2005 (15136). *F-14 on *Euphorbia regis-jubae*, 8 Feb 2005 (15145, 15147, 15151, 15152); Ibidem, on *Nicotiana glauca* (15148, 15149). *L-1, on *Euphorbia regis-jubae*, 14 Jan 2005 (14909, 14918); Ibidem, on *Euphorbia balsamifera* (14916). *L-2, on *Euphorbia balsamifera*, 14 Jan 2005 (14924, 14926); Ibidem, on *Kleinia neriifolia* (14925).

OBSERVATIONS — Previously reported for T (Champion & Beltrán-Tejera 1980), C (Bañares et al. 1986), P (Beltrán-Tejera et al. 2003), G (Beltrán-Tejera et al. 2004a), P,G,T,C, on different substrates and habitats.

***Physarum licheniforme* (Schwein.) Lado**

SPECIMEN EXAMINED — T-13, on *Ricinus communis* (dried leaves), 2 Jan 996 (15480).

OBSERVATIONS — Previously reported for G,T,C (Beltrán-Tejera 2004), on different substrates and habitats.

***Physarum notabile* T.Macbr.**

SPECIMENS EXAMINED — *T-21, on *Vitis sp.* (dried leaves), 3 Mar 1996 (7546). *L-1, on *Euphorbia balsamifera*, 14 Jan 2005 (14912).

OBSERVATIONS — Previously reported for P (Beltrán-Tejera et al. 2004b), on different substrates and habitats.

***Physarum oblatum* T.Macbr.**

SPECIMEN EXAMINED — *T-2, on *Euphorbia canariensis*, 8 Nov 1997 (8239 “MC”).

OBSERVATIONS — Previously reported for P (Beltrán-Tejera et al. 2004b), on different substrate and habitat.

***Physarum pusillum* (Berk. & M.A.Curt.) G.Lister**

SPECIMENS EXAMINED — T-2, on *Euphorbia canariensis*, 8 Nov 1997 (8104, 8106). T-7, on *Ceropegia fusca*, 26 Jan 1998 (8237). T-13, on *Opuntia maxima*, 2 Jan 1996 (7463). T-16, on *Kleinia neriifolia*, 30 May 1998 (8615).

OBSERVATIONS — Previously reported for T (Champion & Beltrán-Tejera 1980), on different substrate and habitat.

***Physarum spectabile* Nann.-Bremek., Lado & G.Moreno**

SPECIMENS EXAMINED — *G-2, on *Agave americana* (decayed leaves), 18 Dec 2004 (14865). T-4, on *Opuntia maxima*, 29 Dec 2002 (15464). T-8, on *Opuntia maxima*, 21 Feb 1998 (8425). T-20, on *Opuntia maxima*, 6 Jan 2003 (15461,15459). T-24, on *Opuntia maxima*, 5 Nov 2004 (14821). T-26, on *Opuntia maxima*, 27 Dec 2004 (14899). *F-8, on *Agave americana* (decayed leaves), 6 Feb 2005 (15111).

OBSERVATIONS — Previously reported for Gran Canaria, on *Opuntia maxima* from its *loc.cl.* (Nannenga-Bremekamp et al. 1984); and on dead leaves of *Echium wildpretii* at 2.200 m.s.m. in Las Cañadas del Teide, the higher part of Tenerife island (Beltrán-Tejera &

Mosquera 1997). This species has been found in other regions, habitats and substrates (Spain, Mexico, Chile, etc.), mainly as succulenticolous.

Physarum straminipes Lister

SPECIMENS EXAMINED — *G-1, on *Opuntia maxima*, 18 Dec 2004 (14857). *G-6, on *Opuntia maxima*, 19 Dec 2004 (14883). T-4, on *Opuntia maxima*, 23 Jan 1998 (8414 “MC”). T-6, on *Opuntia maxima*, 25 Nov and 9 Dec 1995 (7304). T-14, on *Opuntia maxima*, 1 Apr 1996 (7639). T-20, on *Opuntia maxima*, 27 Dec 2004 (14892, 14904, 14905). T-23, on *Euphorbia canariensis*, 9 Mar 1998 (8531 “MC”).

OBSERVATIONS — It is a succulenticolous species previously reported for Tenerife on *Opuntia maxima*, in anthropic plant community (Beltrán-Tejera & Mosquera 1997).

Physarum viride (Bull.) Pers.

SPECIMENS EXAMINED — *H-2, on *Euphorbia lamarckii*, 28 Jan 2005 (14982). T-13, on *Plocama pendula*, 14 Mar 1998 (8593). T-19, on *Rumex lunaria* (fallen leaves), 31 Oct 2004 (14798).

OBSERVATIONS — Previously reported for T (Champion & Beltrán-Tejera 1980), C (Bañares & Beltrán-Tejera 1987), G (Beltrán-Tejera et al. 2004a), P (Beltrán-Tejera et al. 2004b), on different substrates and habits.

Reticularia lycoperdon Bull.

SPECIMEN EXAMINED — *C-4, on *Euphorbia lamarckii*, 5 Dec 2004 (14842).

OBSERVATIONS — Previously reported for (Champion & Beltrán-Tejera 1980), P (Beltrán-Tejera et al. 2003), G (Beltrán-Tejera et al. 2008), on different substrates and habitats.

Stemonitis fusca Roth

SPECIMENS EXAMINED — G-3, on *Plocama pendula*, 18 Dec 2004 (14871). T-1, on *Euphorbia canariensis*, 25 Oct 1997 (8060). T-2, on *Euphorbia canariensis*, 8 Nov 1997 (8109). T-4, on *Euphorbia canariensis*, 22 Nov 1997 (8123). T-7, on *Euphorbia canariensis*, 26 Jan 1998 (8251). T-14, on *Euphorbia canariensis*, 1 Apr 1996 (7628). T-19, on *Euphorbia lamarckii*, 31 Oct 2004 (14815). T-24, on *Euphorbia canariensis*, 11 Dec 2004 (14850). T-27, on *Euphorbia lamarckii*, 11 Dec 2004 (14846).

OBSERVATIONS — Previously reported for T (Montagne 1840), G (Beltrán-Tejera & Mosquera 1997), P (Beltrán-Tejera et al. 2004b), on different substrates and habitats.

****Stemonitis herbatica*** Peck

SPECIMENS EXAMINED — *T-12, on *Euphorbia canariensis*, 14 Mar 1998 (8589, 8591).

Stemonitis lignicola Nann.-Bremek.

SPECIMEN EXAMINED — G-3, on *Plocama pendula*, 18 Dec 2004 (14872).

OBSERVATIONS — Previously reported for G (Beltrán-Tejera et al. 2004a), P (Beltrán-Tejera et al. 2004b), on different substrates and habitats.

Stemonitopsis subcaespitosa (Peck) Nann.-Bremek.

SPECIMEN EXAMINED — *H-10, on *Euphorbia balsamifera*, 30 Jan 2005 (15061).

OBSERVATIONS — New record for Hierro. Previously reported for (Champion & Beltrán-Tejera, 1980), P (Beltrán-Tejera et al. 2004b), G (Beltrán-Tejera et al. 2008), on different substrates and habitats.

Trichia agaves (G. Moreno, Lizárraga & Illana) Mosquera, Lado, Estrada & Beltrán-Tej.

SPECIMENS EXAMINED — *H-7, on *Opuntia maxima*, 31 Jan 2005 (15087). *H-12, on *Agave americana* (decayed leaves), 31 Jan 2005 (15085). G-1, on *Opuntia maxima*, 18 Dec 2004 (14859). G-2, on *Agave americana*, 18 Dec 2004 (14864). G-6, on *Agave americana*, 19 Dec 2004 (14884). C-3, on *Agave americana* (decayed leaves), 5 Dec 2004 (14844). T-5, on *Opuntia maxima*, 30 Dec 1996 (7960). T-6, on *Agave americana* (decayed leaves), 9 Dec 1995 (7319, 7320, 7324, 7408 “MC”). T-8, on *Opuntia maxima*, 25 Febrero 1998 (8422, 8430, 8527, 8660 “MC”). T-19, on *Opuntia maxima*, 27 Dec 2004 (14892). T-20, on

Opuntia maxima, 6 Jan 2003 / 27 Dec 2004 (14894, 15460). **T-26**, on *Opuntia maxima*, 27 Dec 2004 (14898). **F-7**, on *Euphorbia regis-jubae*, 6 Feb 2005 (15109).

OBSERVATIONS — Previously reported for Gomera and Tenerife, on the same substrates and habitats. This species was described from decayed succulent plants of the Canary Islands, Iberian Peninsula, Balearic Islands and Mexico, as *Trichia perichaenoides* (Mosquera et al. 2000b).

Willkommangea reticulata (Alb. & Schwein.) Kuntze

SPECIMENS EXAMINED — **T-7**, on *Euphorbia balsamifera*, 19 Mar 2005 (15531). **T-26**, on *Euphorbia lamarckii*, 11 Dec 2004 (14851).

OBSERVATIONS — Previously reported for T (Champion & Beltrán-Tejera 1980), on bark of *Prunus* sp., in pine forest disturbed.

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