

# Further New or Interesting Lichens and Lichenicolous Fungi of Tenerife (Canary Islands, Spain)

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**Abstract:** In the presented annotated list, 88 taxa of lichens and lichenicolous fungi are additional records for the island Tenerife, of which 19 are new to the Canary Islands: *Abrothallus* aff. *secedens*, *Anisomeridium robusta*, *Arthonia elegans*, *Buellia abstracta*, *B. fusca*, *Caloplaca phlogina*, *Endococcus pseudocarpus*, *Lecania brunonis*, *Lecanographa lyncea*, *Lecanora persimilis*, *L. subsaligna*, *Physcia atrostriata*, *P. sore-diosa*, *Plectocarpon nashii*, *Porina hoehneliana*, *Protopannaria pezizoides*, *Sarcopyrenia bacillosa*, *Scoliciosporum gallurae* and *Toninia talparum*. Furthermore *Bacidina pseudoisidiata* and *Micarea canariensis* are newly described.

**Zusammenfassung:** Eine annotierte Liste von 88 Flechten und lichenikolen Pilzen wird präsentiert mit weiteren Funden für die Insel Teneriffa, von denen 19 neu für die Kanarischen Inseln sind: *Abrothallus secedens*, *Anisomeridium robusta*, *Arthonia elegans*, *Buellia abstracta*, *B. fusca*, *Caloplaca phlogina*, *Endococcus pseudocarpus*, *Lecania brunonis*, *Lecanographa lyncea*, *Lecanora persimilis*, *L. subsaligna*, *Physcia atrostriata*, *P. sore-diosa*, *Plectocarpon nashii*, *Porina hoehneliana*, *Protopannaria pezizoides*, *Sarcopyrenia bacillosa*, *Scoliciosporum gallurae* und *Toninia talparum*. Weiters werden *Bacidina pseudoisidiata* und *Micarea canariensis* neu beschrieben.

**Key words:** diversity in lichens and lichenicolous fungi, new species, new records, ecology, Macaronesia.

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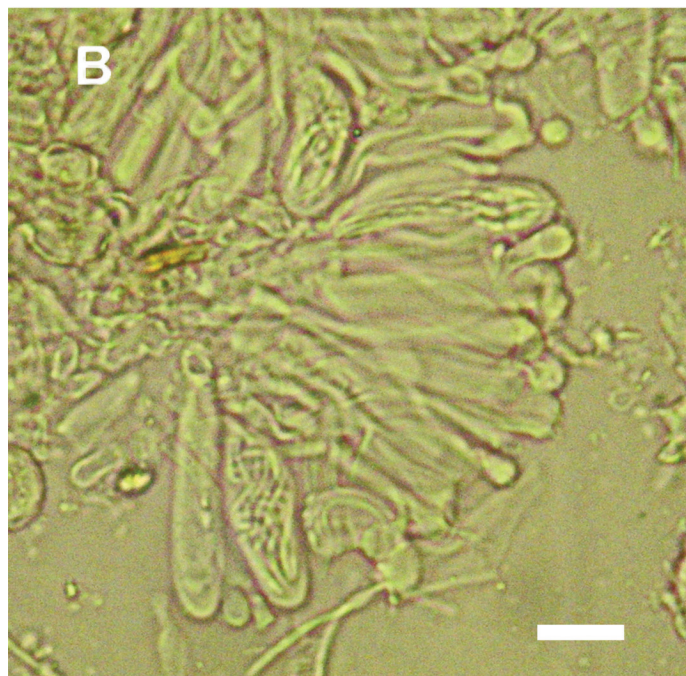
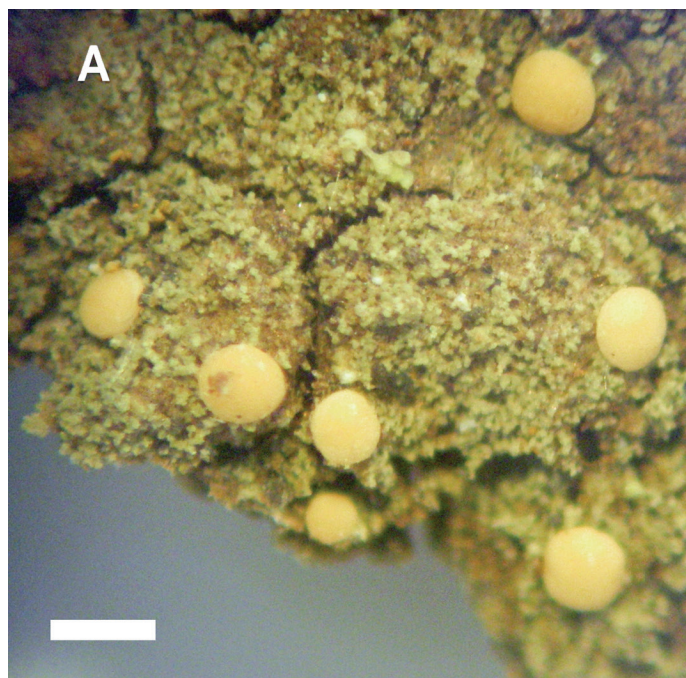
## Introduction

Following the most recent checklist for lichens and lichenicolous fungi of the Canary Islands (HERNÁNDEZ-PADRÓN 2009) many additional records for the island Tenerife appeared to be collected by the author and his wife in 2007 and 2011. It regards material collected from 37 localities. The total species diversity for Tenerife is significantly increased. In an annotated list below, 88 taxa are newly recorded for the island, including 19 first records to the Canary Islands. Two species, *Bacidina pseudoisidiata* and *Micarea canariensis* are newly described. As a result of these fieldtrips, several specimens are recently already published for Tenerife: *Buellia* specimens in GIRALT & VAN DEN BOOM (2011b), *Endohyalina* in GIRALT et al. (2010b), *Buellia tomnashiana* GIRALT & VAN DEN BOOM (GIRALT & VAN DEN BOOM 2011a), *Rinodina* in VAN DEN BOOM et al. (2009), *Rinodina lindingeri* (ERICHSEN) GIRALT & VAN DEN BOOM in GIRALT et al. (2010a), *Rinodina vandenboomii* GIRALT & BRAND (GIRALT et al. 2009)

and *Lecania falcata* VAN DEN BOOM, BRAND, COPPINS, MAGAIN & SÉRUS. (SÉRUSIAUX et al. 2012).

## Materials and Methods

Lichens and lichenicolous fungi were collected from volcanic rock, terricolous, epiphytic from trees and shrubs, from localities all over the island Tenerife (Canary Islands). More than 1000 collections were made by the author and his wife, from 37 spots. Specimens are deposited in the private herbarium of van den Boom, however isotype specimens are deposited in B. For each spot, a species list and ecological notes were made. Most of the data is data-based in access. Canary Islands in the text are recorded as: C (Gran Canaria), F (Fuerteventura), G (La Gomera), H (El Hierro), L (Lanzarote), P (La Palma) and T (Tenerife). Air-dried specimens were examined anatomically and morphologically with a stereo-microscope and a light microscope. The



**Fig. 1:** *Bacidina pseudoisidiata*. A= Thallus and mature apothecia; B= Asci with coiled ascospores and some paraphyses with capitate apices. Scale: A= 0.5 mm; B = 10  $\mu$ m.

standard microchemical methods have been used according ORANGE et al. (2001). The collected specimens have been studied mostly according WIRTH (1995) and SMITH et al. (2009). Nomenclature of lichens or lichenicolous fungi follows HERNANDEZ-PADRÓN (2009), SMITH et al. (2009), DIEDERICH & SÉRUSIAUX (2000), HAWKSWORTH (2003) and SANTESSON et al. (2004), with exception of some more recent nomenclatural changes. Lichenicolous fun-

gi are pointed out in the text with a # before the name. Species with \* are new to the Canary Islands. All species below are at least new to Tenerife. In the course of the survey, some specimens have been sent to specialists (see acknowledgements).

## New species

***Bacidina pseudoisidiata* VAN DEN BOOM, sp. nov.**  
(Mycobank No.: MB807072, Fig. 1)

Thallus very thin filmy, with goniocysts; goniocysts fine granulate to minutely filamentous, granules up to 50  $\mu$ m, dull greenish, slightly shiny; apothecia marginate to soon immarginate, pale yellow, to pale orange, up to 0.4 mm diam.; excipulum paraplectenchymatic; asci small cylindrical; ascospores baciliform, 0-3-septate, 25-35 x 1.1-1.8  $\mu$ m; pycnidia hyaline to pale brownish, up to 50  $\mu$ m wide; conidia filiform curved, 18-20 x 0.8  $\mu$ m.

Type: SPAIN, Canary Islands, Tenerife, N of Santiago del Teide, 1.5 km WSW of Erjos, path to Las Portelas, laurisilva, path in forest, rather shaded, with mainly *Laurus novocanariensis* and *Erica arborea*, 16°48.7'W-28°19.7'N, 1000 m, 8 May 2007, P. & B. van den Boom 37623 (hb. v.d. Boom-holotypus; B-isotypus).

Thallus effuse, as very thin filmy, weakly shiny layer, dull greenish, to grayish green, up to 40  $\mu$ m thick, thallus layer densely covered by goniocysts, becoming fine granular, granules up to 50  $\mu$ m diam., branched to coralloid, or sometimes minutely filamentous, becoming confluent, loosely aggregated. Prothallus sometimes present and blackish, visible among the thallus parts. Photobiont chlorococcoid, cells 4-10  $\mu$ m diam. Apothecia scattered, pale yellowish, pale orange, to yellowish orange, thinly marginate when young, becoming immarginate, up to 0.4 mm diam., weakly to strong convex; excipulum hyaline, without crystals, with paraplectenchymatic hyphae, 20-40  $\mu$ m wide, hyphae with thin walls (1.5-2.5  $\mu$ m between adjacent cell lumina), with isodiametric to ellipsoid lumina 6-8 x 2.5  $\mu$ m; epithecium hyaline, without crystals, K-, N-; hymenium up to 40  $\mu$ m high, without any pigment; hypothecium hyaline; hamathecium of paraphyses, relative thick, 1.5-2  $\mu$ m wide, septate, sometimes slightly branched, not anastomosed, mid-hymenium cells c. 7-9 x 1.5-2  $\mu$ m, tips often clearly widened, up to 5  $\mu$ m, not pigmented; asci small cylindrical to slightly clavate, 32-37 x 5-9  $\mu$ m, 8-spored, tholus rather wide; ocular chamber with a blunt body, surrounded by a rather small but strongly amyloid layer, not open at the apex; ascospores coiled in the ascus; ascospores acicular, hyaline, 0-3-septate, 25-35 x 1.1-1.8  $\mu$ m. Pycnidia c. 50  $\mu$ m wide, ostiole and margin hyaline to pale brownish, conidia filiform, weakly to strongly curved, 18-20 x 0.8  $\mu$ m.

Chemistry: K-, C-, P-, no chemical compounds detected.

**Habitat and distribution:** Known from two localities on Tenerife in laurisilva. In the type locality it was found as a healthy population, corticolous, on the base of a *Laurus novocanariensis* tree and the only two accompanying species growing nearby are *Helocarpon lesdainii* (ZAHLEBR.) BREUSS and *Leptogium teretiusculum* (WALLR.) ARNOLD.

**Notes:** In Ekman (1996) two *Bacidina* species, *B. varia* and *B. sp.1*, known from North America, of which the thallus consist of

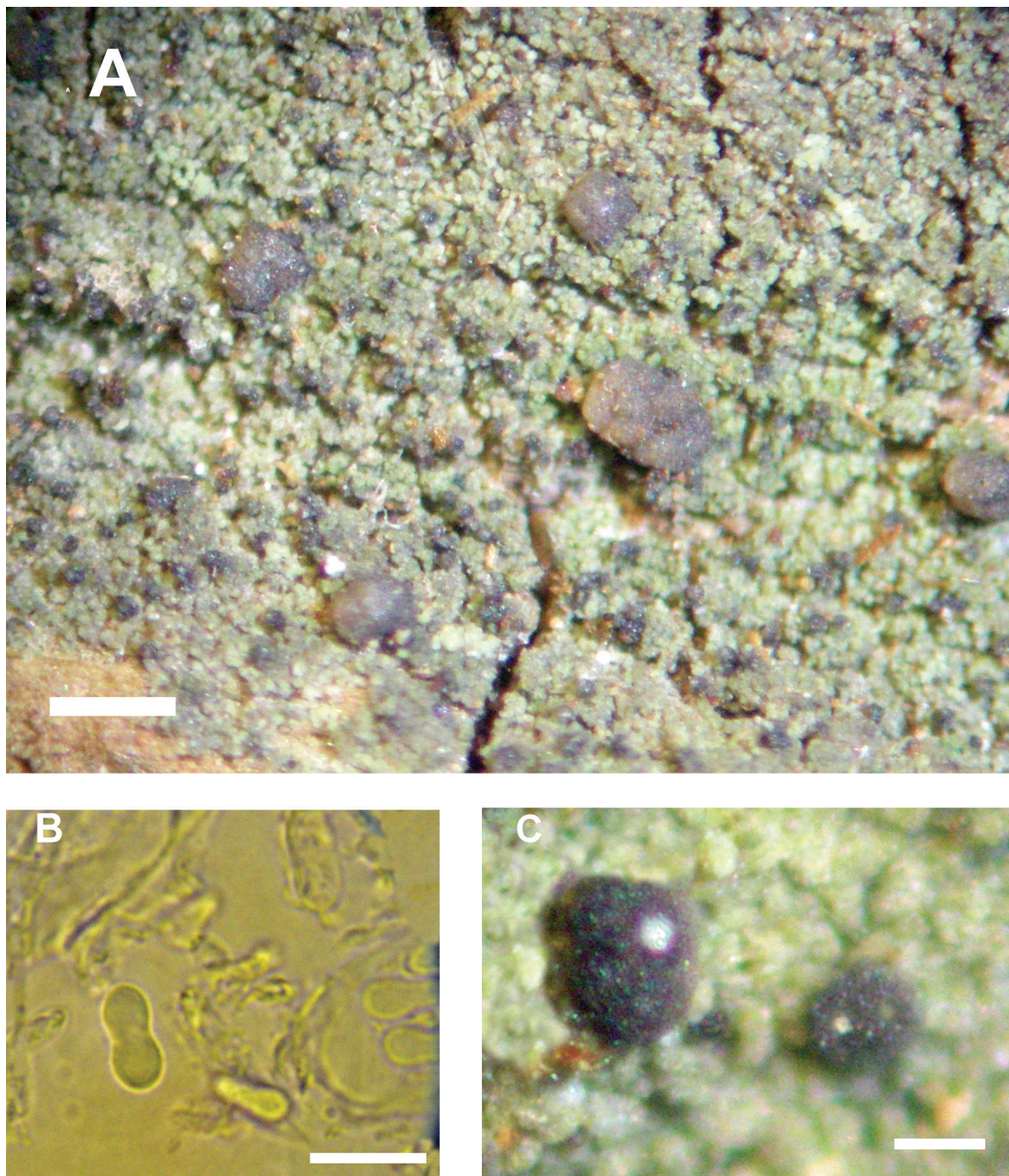


Fig. 2: *Micarea canariensis*. A= Habitus with many dark pycnidia, mainly at the lower part of the picture; B= Ascospores; C= Conical pycnidia, with a white blob. Scale: A= 0.5 mm; B= 10  $\mu$ m; C= 40  $\mu$ m.

goniocyts and the ascospores are 3-5 septate, could be related to the new species, but the conidia of these species are very long and septate, up to 55  $\mu$ m. Furthermore, *B. varia* has paraphyse tips of 1.6-2.7  $\mu$ m, ascospores of 23-41 x 1.7-2.4  $\mu$ m. *B. sp.1* has paraphyse tips of 3.2-3.3  $\mu$ m., ascospores, are c. 37 x 1.4  $\mu$ m. Material of this latter from the Dominican Republic has been compared with the new species.

It is also easily overlooked for a *Bacidina* such as *B. chlorotricula* (NYL.) VĚZDA & POELT, but this latter is a smaller species (apothecia up to 0.2 mm), a cellular excipulum with roundish cells of 5(-7)  $\mu$ m wide and a different thallus. A further corticolous species with goniocystose thallus is *Bacidina sulphurella* (SAMP.) M. HAUCK & V. WIRTH, but the apothecia have a relative thick margin and a dark hypothecium.

*Additional specimens examined:* **Spain:** Canary Islands, Tenerife, N of Santiago del Teide, 2.5 km WSW of Erjos, path to Las Portelas, laurisilva, path in forest, rather shaded, with mainly *Laurus novocanariensis*, *Erica arborea* and *Apollonias barbujana*, on a medium size *Laurus* trunk, 16°49.3'W-28°19.4'N, 1000 m, 17 May 2007, P. & B. van den Boom 38125 (hb. v.d. Boom).

*Bacidina* sp. #1. (EKMAN 1996, 125): **Dominican Republic:** SW of Santiago de los Caballeros, Parc National 'José Armando Bermudez', S of San José de las Matas, unpaved road (to Mata Grande), just S of Los Monotones, coffee plantation with some scattered rather high trees, 800 m, 70°55.76'W-19°14.57'N, 800 m, 31 January 2008, P. & B. van den Boom 39199 (hb. v.d. Boom).

***Micarea canariensis* VAN DEN BOOM, sp. nov.**  
(Mycobank No.: MB807074, Fig. 2)

Thallus pale greenish to pale greenish grey, ±effuse, rimose areolate, areoles up to 0.5 mm wide; apothecia immarginate, dull brownish to blackish; asci *Lecanora*-type; ascospores ellipsoid, strongly constricted at the central part, 0(-1)-septate, (8-)9-11 x (3.8-)4-5 µm; paraphyses c.1.5 µm wide, not capitate, micareoid; pycnidia abundantly present, stalked, top conical shaped, dark brown to black, 50-200 x 40-80 µm, K+ violet, microconidia 5-7 x 0.8-1 µm, bacilliform.

**Type:** SPAIN, Tenerife, Las Montanas de Anaga, Chamorga, centre, some scattered unidentified trees near parking lot, on a stump, 16°9.65'W-28°34.12'N, 485 m, 1 March 2011, P. & B. van den Boom 45698 (hb. v.d. Boom-holotypus; B-isotypus).

Thallus, effuse, minutely granulate, granules 30-80 µm wide, coalescing and forming a contiguous crust, sometimes rimose areolate, areoles up to 0.5 mm wide, greenish grey to pale greenish, matt to weakly shiny, up to 0.15 mm thick. Photobiont micareoid, algal cells globose, 4-8 µm diam. Apothecia moderately to dark dull brown, to grayish black, sometimes piebald, 0.1 to 0.3 mm diam., immarginate, ±flat to convex, or hemispherical, scattered, sometimes tuberculate and 0.4 to 0.6 mm wide; epithecium yellow brown to brown, K+violet, N-; hymenium hyaline; hypothecium hyaline; hamathecium of paraphyses (1-)1.5(-2) µm wide, septate, branched anastomosed, tips not or sometimes slightly widened and 2.5 µm wide, not pigmented; asci *Lecanora*-type, 30-40 x 10-14 µm, 8-spored; ascospores ellipsoid to oblong-ovoid, often strongly constricted at the central part, 0(-1)-septate, hyaline, (8-)9-11 x (3.8-)4-5 µm. Pycnidia abundantly present, stalked, wall olive brown, dark brown to blackish and weakly shiny, not tomentose, top conical shaped, with a small white blob at the top, 50-200 x 40-80 µm, K+violet pigmented, microconidia 5-7 x 0.8-1 µm, bacilliform.

Chemistry: thallus K-, C-, KC-, P-, micareic acid by tlc.

*Habitat and distribution:* *Micarea canariensis* is only known from the type locality, on rather soft wood, abundantly on a big stump among some small trees. It was found in a rather poor lichen community, with only *Placynthiella dasaea* (STIRT.) TØNSBERG and *Lepraria* sp. on the stump. With mainly young *Ramalina* sp. on the trunks and branches of the trees.

*Notes:* This new species resembles species in the genus *Micarea* with stalked pycnidia such as *M. hedlundii* COPPINS, which has tomentose pycnidia, *M. nigella* COPPINS, which has a mottled dark purplish

brown hypothecium, *M. botryoides* (NYL.) COPPINS, has a dark reddish brown hypothecium. Most comparable is *M. misella* (NYL.) HEDL., it has even a hyaline hypothecium, but the thallus is immersed, apothecia are always black, ascospores are smaller, (6.5-)7-9.5 x 2-3(-3.5), pycnidia have green brown walls, are bigger, 0.07-0.32 x 0.05-0.1 mm and the microconidia are smaller, 3.5-6 x 0.5-1 µm.

The new species is easily overlooked in the field for *Micarea prasina* FR. s.str., a species also occurring on Tenerife. This latter species has a different thallus, which is more granular, granules up to 60 µm diam. Asci are longer (25-55 µm), ascospores are smaller (2.3-)3-4(-5.5), not or rarely slightly constricted at septum, micro-pycnidia are mostly whitish, usually immersed, occasionally sessile, but not clearly stalked as in the new species. *Micarea nowakii* CZARNOTA & COPPINS has also stalked pycnidia but these are cylindrical and the ascospores are simple and ellipsoid, not restricted at the centre, it is known from hard exposed lignum (CZARNOTA 2007).

Although the author has collected *Micarea* material on all the Canary Islands and paid attention especially to that genus, the new species is collected only once.

*Additional specimens examined (Micarea prasina* s.str.) Tenerife (NW), N of Santiago del Teide, 1.5 km WSW of Erjos, path to Las Portelas, laurisilva, path in forest, rather shaded, with mainly *Laurus novocanariensis* and *Erica arborea*, on *Erica* and on stump, 1000 m, 8 May 2007, P. & B. van den Boom 37588,37652,37650 (hb. v.d. Boom).

## Annotated species list

**\*#*Abrothallus* aff. *secedens* WEDIN & R. SANT.**

Loc. 10, on *Erica*, on *Pseudocyphellaria aurata*. This species was previously only known from Argentina and Kenya (WEDIN 1994). The ascospores are somewhat wider, 7-8 µm, than in the original description (WEDIN 1994), so further study is needed to prove that this is a new taxon or not.

***Acarospora veronensis* A. MASSAL.**

Loc. 1, on volcanic rock, B37579.

***Agonimia opuntiella* (BUSCHARDT & POELT) VĚZDA**

Loc. 17, terricolous, among *Toninia tristis*, B45447; loc. 31, on volcanic rock, B45677.

***Agonimia tristicula* (NYL.) ZAHLBR.**

Loc. 10, on *Cytisus*, B37847; loc. 16, on *Laurus*, B38194.

***Alyxoria subelevata* (NYL.) ERTZ & TEHLER**

Loc. 27, on volcanic rock, B45604,45611.

***Anema prodigulum* (NYL.) HENSSEN**

Loc. 6, on volcanic rock, B37741.

***Anisomeridium polypori* (ELLIS & EVERH.) M.E. BARR**

Loc. 14, on an unidentified shrub, B37975; loc. 27, on volcanic rock, B45593.

**\**Anisomeridium robustum* ORANGE, COPPINS & APTROOT**

Loc. 29, on *Cupressus*, B45664, conformed by A. Orange. Recently, this species is described in COPPINS & APTROOT (2008) and so far it was known only from the western British Isles. It is related to *Anisomeridium polypori*, but ascomata are unknown, and the pycnidia are much larger than in the latter.

**\**Arthonia elegans* auct. brit. non (ACH.) ALMQ.**

Loc. 35, on *Laurus* twig, B45770. This is a species from mainly smooth bark, found in woodlands. It occurs in tem-

perate Europe. In Macaronesia it was previously only known from the Azores (SMITH et al. 2009).

***Arthonia muscigena* TH. FR.**

Loc. 2, on leaf of *Laurus*, B37603; loc. 14, on leaf of *Laurus*, B37995; loc. 16, on leaf of *Laurus*, B38097; loc. 26, on leaf, B45579.

**\**Buellia abstracta* (NYL.) H. OLIVIER**

Loc. 31, on volcanic outcrop, B45772, det. M. Giralt.

**\**Buellia fusca* (ANZI) KERNST.**

Loc. 17, on volcanic outcrop, B45455, det. M. Giralt.

**#*Buelliella physciicola* POELT & HAFELLNER**

Loc. 31, on volcanic outcrop, on *Phaeophyscia orbicularis*, B45686.

***Calicium glaucellum* ACH.**

Loc. 28, on *Erica*, B45638. Known from H and recent published in VAN DEN BOOM & ERTZ (2012).

***Caloplaca flavocitrina* (NYL.) H. OLIVIER**

Loc. 20, on mortar of wall, B45475.

***Caloplaca obscurella* (J. LAHM) TH. FR.**

Loc. 1, on *Ficus*, B37557; loc. 13, on *Malus*, B38031; loc. 29, on *Cupressus*, B45659, on an unidentified tree, B45668.

**\**Caloplaca phlogina* (ACH.) FLAGEY**

Loc. 29, on a dusty trunk of *Cupressus*, B45658. It occurs in temperate Europe, often on roadside and parkland trees. In Macaronesia it was previously only known from the Azores (SMITH et al. 2009).

***Candelaria crawfordii* (MÜLL. ARG.) P.M. JØRG. & D. GALLOWAY**

Loc. 25, on volcanic rock, B45557.

***Catillaria atomarioides* (MÜLL. ARG.) H. KILIAS**

Loc. 24, on volcanic rock, B45541.

***Catillaria lenticularis* (ACH.) TH. FR.**

Loc. 21, on volcanic rock, B45486.

***Cliostomum flavidulum* HAFELLNER & KALB**

Loc. 14, on *Laurus*, B37992.

***Coenogonium pineti* (ACH.) LÜCKING & LUMBSCH**

Loc. 16, on *Laurus*, B38119; loc. 26, on *Laurus*, B45577.

***Endocarpon loscosii* MÜLL. ARG.**

Loc. 6, B37740; loc. 15, B38064. [all on volcanic rock]

**\*#*Endococcus pseudocarpus* NYL.**

Loc. 6, on volcanic rock, on *Collema*, B37736; loc. 25, on volcanic rock, on *Leptogium*, B45529, det. by J. Etayo. Although both specimens have different hosts, the ascospores are rather the same, 12-16 x 2.5-3 µm, perithecia are 0.1-0.25 mm.

**#*Endococcus verrucosus* HAFELLNER**

Loc. 7, on volcanic rock, on *Aspicilia*, B37778.

***Enterographa crassa* (DC.) FÉE**

Loc. 27, on *Laurus*, B45600, on a fallen branch, B45619.

***Ephebe hispidula* (ACH.) HORW.**

Loc. 16, on volcanic rock, B38230.

***Fellhanera bouteillei* (DESM.) VĚZDA**

Loc. 16, on *Laurus* leaf, B38104. Previously only known from P.

***Fulvophyton sorediata* (SPARRIUS, P. JAMES & M.A. ALLEN) VAN DEN BOOM**

Loc. 27, on overhanging volcanic rock, B45610.

***Herteliana gagei* (SM.) J.R. LAUNDON**

Loc. 14, B37942,37999; loc. 19, B45466; loc. 28, B45652. [all on volcanic rock]

***Heterodermia speciosa* (WULFEN) TREV.**

Loc. 25, on volcanic rock, B45555.

***Ionaspis* aff. *lavata* H. MAGN.**

Loc. 27, shaded sloping outcrop, B45596. Published in VAN DEN BOOM (2007) from La Palma.

***Jamesiella anastomosans* (P. JAMES & VĚZDA) LÜCKING, SÉRUS. & VĚZDA**

Loc. 2, on *Laurus*, B37616; on *Erica*, B37656, both specimens are fertile.

**\**Lecania brunonis* (TUCK.) HERRE**

Loc. 6, on vertical west exposed volcanic rock, B37665. This species is treated in VAN DEN BOOM & RYAN (2004) and only known from coastal areas of southern California (USA) to Baja California Sur (Mexico).

***Lecania hutchinsiae* (NYL.) A.L. SM.**

Loc. 9, B37811; loc. 14, B38019; loc. 21, B45476,45477; loc. 27, B45595,45609,45612. [all on volcanic rock]

***Lecania spadicea* (FLOT.) ZAHLBR.**

Loc. 9, on volcanic rock, B37832.

***Lecania turicensis* (HEPP) MÜLL. ARG.**

Loc. 24, on calcareous stone of wall, B45532.

**\**Lecanographa lyncea* (SM.) EGEA & TORRENTE**

Loc. 9, on *Laurus*, B37815,37821; loc. 11, on *Pandanus utilis*, B37921.

***Lecanora argentata* (ACH.) MALME**

Loc. 6, on *Ficus*, B37734.

***Lecanora carpineae* (L.) VAIN.**

Loc. 1, on an unidentified shrub, B37584; loc. 3, on an unidentified fruit-tree, B38238,38241.

***Lecanora galactiniza* NYL.**

Loc. 6, B37737; loc. 17, B45454. [both on volcanic rock]

**\**Lecanora persimilis* (Th. Fr.) NYL.**

Loc. 3, on *Rubus*, B37679,38100.

***Lecanora strobilina* (SPRENG.) KIEFF.**

Loc. 35, on *Laurus*, B45731.

**\**Lecanora subsaligna* BRAND & VAN DEN BOOM**

Loc. 29, on unidentified tree (cf. *Rhamnus*), B45669.

***Lecidea adnata* VAN DEN BOOM & ERTZ**

Loc. 16, exposed roots over vertical outcrop, B38210,38216, on a stump, B38173. Recently described from H by VAN DEN BOOM & ERTZ (2012).

***Lecidella scabra* (TAYLOR) HERTEL & LEUCKERT**

Loc. 14, B38022; loc. 16, B38228. [both on volcanic rock]

***Leptogium imbricatum* P.M. JØRG.**

Loc. 13, terricolous, B38042; loc. 14, on volcanic rock, B38010; loc. 16, terricolous, B38172; loc. 17 terricolous, B45445.

***Leptogium schraderi* (ACH.) NYL.**

Loc. 6, on volcanic rock, B37735.

**#*Lichenostigma episulphurella* ETAYO & VAN DEN BOOM**

Loc. 17, B45448; loc. 25, B45545. [both on volcanic rock, on *Lecanora sulphurella*]

**#Lichenostigma aff. rupicolae** FDEZ.-BRIME & NAV.-ROS.

Loc. 1, B37582; loc 7, B37782 [both on volcanic rock on *Pertusaria*], Recently *Lichenostigma rupicolae* is described from Spain (mainland) growing on *Pertusaria rupicola*. It is a species highly selective of its host. These specimens are from a saxicolous sorediate *Pertusaria* cf. *albescens*, although the ascospores fit rather well with the description, further study is needed to prove that this is the same species.

**Megalospora tuberculosa** (FÉE) SIPMAN

Loc. 10, on *Laurus*, B37904.

**Micarea byssacea** (TH. FR.) CZARNOTA, GUZOW-KRZEMIŃSKA & COPPINS

Loc. 17, on a fallen trunk, B45706. In van den Boom & Ertz (2012) it is recorded as new to the Canary Islands from H.

**Micarea doliiformis** (COPPINS & P. JAMES) COPPINS & SÉRUS.

Loc. 2, on *Erica*, B37659; loc. 16, on exposed roots B38217. In VAN DEN BOOM & ERTZ (2012) it is recorded as new to the Canary Islands from H.

**Micarea micrococcum** (KÖRB.) TH. FR.

Loc. 2, B37662; loc. 14, B37958. [both on *Erica*]

**Micarea subviridescens** (NYL.) HEDL.

Loc. 13, on vertical facing sand, B38039. First recorded from the Canary Islands (El Hierro) in VAN DEN BOOM & ERTZ (2012).

**#Muellerella lichenicola** (SUMMERF.) D. HAWKSW.

Loc. 24, on stone of wall, on *Lecania*, B45535, already known from P and recently published from H (VAN DEN BOOM & ERTZ 2012).

**#Muellerella erratica** (A. MASSAL.) HAFELLNER & JOHN

Loc. 25, on volcanic rock, on *Aspicilia*, B45547.

**Naetrocymbe fraxini** (A. MASSAL.) R.C. HARRIS

Loc. 37, on *Myrica*, B45766.

**Opegrapha vermicellifera** (KUNZE) J.R. LAUNDON

Loc. 29, on an unidentified tree, B45667.

**Pannaria conoplea** (ACH.) BORY

Loc. 28, on *Erica*, B45649.

**Parmelinopsis minarum** (VAIN.) ELIX & HALE

Loc. 14, on *Erica*, B37948,37963.

**Peccania teretiuscula** (FLAGEY) HENSSEN

Loc. 6, on volcanic rock, B37742,37744. Recently, *P. teretiuscula* is recorded from G and L in SCHULTZ & VAN DEN BOOM (2007).

**Pertusaria ophthalmiza** (NYL.) NYL.

Loc. 22, on *Erica*, B45498.

**Petractis thelotremella** (BAGL.) VĚZDA

Loc. 9, on volcanic rock, B37827. Recorded as new to the Canary Islands, from C in VAN DEN BOOM (2010b).

**\*Physcia atrostriata** MOBERG

Loc. 25, B45564; loc. 27, B45605 [both on volcanic rock]. *P. atrostriata* is a common species in tropical areas and was known from Cape Verdean islands and the Azores, so it is not surprisingly to encounter it on the Canary Islands.

**\*Physcia solediosa** (VAIN.) LYNCE

Loc. 25, on volcanic rock, B45554, det. R. Moberg.

**Placynthiella dasaea** (STIRT.) TØNSBERG

Loc. 32, on a stump, B45697.

**\*#Plectocarpon nashii** HAFELLNER

Loc. 3, on an unidentified fruit tree, B37703,37706,37709; loc. 13 on *Erica*, B38044 [all on *Ramalina*], det. D. Ertz. According to Damien Ertz (pers. comm.) there is some hesitation in identification because of the different host species in our material. *P. nashii* is known from California (USA), growing on the related genus *Niebla*. In the specimens here, are the conspicuous pycnidia with the 1-septate macroconidia abundantly present, apothecia are rare, but the 3-septate ascospores are c. 17 x 7 µm with a perispoore, becoming brown when old, and that fits rather well with the description in ERTZ et al. (2005).

**\*Porina hoehneliana** (JAAP) R. SANT.

Loc. 22, B45493; loc 23, B45525. [both on leaves]

**\*Protopannaria pezizoides** (WEBER) P.M. JØRG. & S. EKMAN

Loc. 16, terricolous, B38180, on vertical outcrop, B38215.

**Protoparmelia hierrensis** VAN DEN BOOM & ERTZ

Loc. 7, on low outcrop, on horizontal surface, B37783, on N exposed vertical outcrop, B38250. This species is recently described from El Hierro by VAN DEN BOOM & ERTZ (2012).

**Pyrenula dermatodes** (BORRER) SCHAEER.

Loc. 10, on cf. *Ilex*, B37896,37897; loc. 10, on *Laurus*, B37905; loc. 33, on *Laurus*, B45712,45713; loc. 37, on *Erica*, B45763.

**Rinodina bilocolata** (NYL.) SHEARD

Loc. 2, on leaf of *Laurus*, B38251. This is the first foliicolous record of this species, det. M. Giralt.

**Sagiolechia atlantica** HENSSEN

Loc. 27, on volcanic rock, B45591. Teno, 1 km W of Pta Fraile, on N-facing vertical volcanic rock, 130 m, 15 April 1986, M. Brand 13786 (hb. Brand, hb. v.d. Boom 30149).

**\*#Sarcopyrenia bacillosa** (NYL. EX HASSE) NAV.-ROS. & HLA-DUN

Loc. 33, on volcanic rock, on *Lichinella stipatula*, B45457.

**\*Scoliciosporum galluræ** VĚZDA & POELT

Loc. 3, on an unidentified fruit-tree, on branches, B38240. This species is easily overlooked in the field for *S. chlorococcum* (Graewe ex Stenh.) Vězda, but the ascospores are much smaller (c. 3 µm wide) and 0-3-septate.

**Scoliciosporum pruinosum** (P. JAMES) VĚZDA

Loc. 2, on *Erica*, B37592,37635; loc. 14, on *Erica*, B37960, on *Apollonias*, B37970.

**#Sphaerellothecium aff. giraltiae** VAN DEN BOOM

Loc. 14, on volcanic rock, B38023; loc. 16, on volcanic rock on *Parmotrema reticulatum*, B38233. The specimens agree in morphology with the description in VAN DEN BOOM (2010b), but are from a different host genus. Further study is needed to prove that this is a new taxon or not. *S. giraltiae* is recently described and reported from C and L (VAN DEN BOOM 2010b).

**#Stigidium squamarinicola** CALAT. & TRIEBEL

Loc. 6, on volcanic rock on *Squamarina cartilaginea*, B37748. Mentioned in VAN DEN BOOM (2010b) from C.

**Strigula brevis** BRICAUD & CL. ROUX

Loc. 9, on *Ficus*, B37840. Previously only known from the Canary Island P, conf. E. Sérusiaux.

**Toninia mesoidea** (NYL.) ZAHLBR.

Loc. 9, B37802,37835; loc. 25, B45569. [all on volcanic rock]

**#Toninia subfuscae (ARNOLD) TIMDAL**

Loc. 25, on volcanic rock, on *Aspicilia*, B45544.

**\*#Toninia talparum TIMDAL**

Loc. 6, on volcanic rock, on *Lecania*, B37760.

**Trapeliopsis granulosa (HOFFM.) LUMBSCH**

Loc. 28, on a stump, B45625.

**Trapeliopsis wallrothii (FLÖRKE) HERTEL & GOTTH. SCHNEID.**

Loc. 16, terricolous, B38177, on volcanic rock, B38178.

**#Unguiculariopsis manriquei ETAYO**

Loc. 16, on *Laurus* on *Lobaria pulmonaria*, B38184.

**Verrucaria macrostoma DUFOR EX DC.**

Loc. 24, on stone of wall, B45530.

**#Vouauxiella lichenicola (LINDS.) PETR. & SYD.**

Loc. 13, on *Malus*, B38036; loc 27, on volcanic rock, B45608. [both on *Lecanora*]

**Localities****2007**

- 1 Tenerife (NW), E of Santiago del Teide, NW side of Montaña Bilma, Valle de Arriba, old quarry, along a small road, outcrops, shrubs and some trees, 16°48.04' W - 28°18.53' N, 1080 m, 8 May 2007.
- 2 Tenerife (NW), N of Santiago del Teide, 1.5 km WSW of Erjos, path to Las Portelas, laurisilva, path in forest, rather shaded, with mainly *Laurus novocanariensis* and *Erica arborea*, 16°48.70' W - 28°19.70' N, 1000 m, 8 May 2007.
- 3 Tenerife (NW), N of Santiago del Teide, 0.5-1 km WSW of Erjos, path to Las Portelas, along laurisilva, with gardens and scattered trees, some shrubs and outcrops, 16°48.62' W - 28°19.77' N, 1000 m, 8 May 2007.
- 4 Tenerife (NW), S of Santiago del Teide, NW of Tamaimo, path NE side of Montaña Guama, low exposed outcrops and vertical steep NW exposed outcrops in small valley, 16°49.14' W - 28°16.26' N, 630 m, 9 May 2007,
- 5 Tenerife, Parque Nacional del Teide, S side of Pico del Teide, Montaña de Roue, small hill near parking lot, exposed outcrops along trail, 16°37.81' W - 28°13.30' N, 2195 m, 9 May 2007.
- 6 Tenerife (NW), S of Santiago del Teide, Masca, deep valley with trail to playa de Masca, near area of El Mocanito, steep rock faces, big boulders, shrubs and some trees, 16°50.62' W - 28°18.37' N, 500 m, 10 May 2007.
- 7 Tenerife (NW), c. 0.5 km NW of Santiago del Teide, along road to Masca, mirador, hilly area with short trail, low rock faces, mainly N exposed outcrops, 16°49.44' W - 28°18.00' N, 1075 m, 10 May 2007.
- 8 Tenerife (NW), N of Santiago del Teide, trail S of Erjos to Grande de Gala, Cruz de Gala, area with shaded outcrops along path and scattered *Erica arborea*, very poor in lichens, 16°48.56' W - 28°18.69' N, 1150 m, 11 May 2007.
- 9 Tenerife (NW), S of Los Silos, Bco. de Cuevas Megras o del Agu, path S of village, to Las Cuevas Negras, mainly with walls of stones and acidic outcropping rocks, up to entrance of laurisilva, with different *Euphorbia* shrubs, 16°48.86' W - 28°21.11' N, 300 m, 11 May 2007.

10 Tenerife (NE), Parc Natural Anaga, path in laurisilva, from road TF-123 to El Draguillo, E of Chinobre to Anambra, forest with mainly acidic outcrops, *Erica arborea* and *Laurus novocanariensis*, 16°10.21' W - 28°33.71' N, 810 m, 12 May 2007.

11 Tenerife (N), Puerto de la Cruz, 'Jardin Botanico', Botanical Garden, origin from 1788, with many exotic trees and shrubs, 16°32.15' W - 28°24.58' N, 100 m, 14 May 2007.

12 Tenerife (N), N of road Icod de los Vinos, to Puerto de la Cruz, W of San Juan de la Rambla, N of Tierra de Costa, Las Rositas, among banana plantations, on small hilly outcrops and dead *Asperges*-like shrub, 16°40.14' W - 28°23.79' N, 80 m, 14 May 2007.

13 Tenerife (NW), N of Santiago del Teide, Bco. de Cuevas Megras o del Agu, path from Erjos to Los Silos, southern part, c. 0.5 km N of Erjos, open places with *Erica arborea*, mature *Pinus*, outcrops and walls of stones, 16°48.41' W - 28°19.99' N, 890 m, 15 May 2007.

14 Tenerife (NW), N of Santiago del Teide, Bco. de Cuevas Megras o del Agu, path from Erjos to Los Silos, central part, near the houses of Las Cuevas Negras, laurisilva, with *Erica arborea*, *Laurus novocanariensis* and *Apollonias barbujana*, outcrops and walls of stones, 16°48.61' W - 28°20.53' N, 590 m, 15 May 2007.

15 Tenerife (W), NNE of Playa de las Américas, N of Adeje, path (nr 6) to Taicho, Los Toscas, open field with shrubs, low or steep outcrops and walls of stones, 16°43.50' W - 28°07.50' N, 450 m, 16 May 2007.

16 Tenerife (NW), N of Santiago del Teide, 1.5-2.5 km WSW of Erjos, open path to Las Portelas, in laurisilva, with a.o. *Laurus novocanariensis*, *Erica arborea*, *Apollonias barbujana*, some shrubs and outcrops, including a by-path with young shrubs and trees and well-lit outcrops, 16°49.30' W - 28°19.40' N, 1000 m, 17 May 2007.

**2011**

17 Tenerife, ESE of Villa de Arico, along road TF 627, Barranco de los Ovejero, narrow valley, at upper rim, terricolous along N exposed rim of outcrops which are c. 0.5 m high, 16°28.99' W - 28°09.79' N, 345 m, 24 February 2011.

18 Tenerife, ENE of Fasnía, 0.5 km from road TF 28, small road to the coast, c. 1 km W of the coast, small narrow valley, at upper rim, on S exposed acidic outcrops, 16°25.45' W - 28°14.33' N, 295 m, 24 February 2011.

19 Tenerife, Las Montanas de Anaga, Monte de las Mercedes, Mirador the Jardina, on acidic outcrops close along the road and in a small cave a few meters from the road, 16°17.37' W - 28°31.45' N, 810 m, 25 February 2011,

20 Tenerife, Las Montanas de Anaga, Chinamada, near village, trail to Punta del Hidalgo, outcrops and stones of wall along small gardens, 16°17.53' W - 28°33.74' N, 595 m, 25 February 2011.

21 Tenerife, Las Montanas de Anaga, Chinamada, near village, trail to Mirador Aguaide, N and NE exposed sloping outcrops and vertical rocks of small cave, 16°17.76' W - 28°33.90' N, 600 m, 25 February 2011.

22 Tenerife, Las Montanas de Anaga, road TF145 from Taborno to Carboneras, near Montana Cruz de Taborno, trail to the

- west, to Batan, in laurisilva, 16°16,70' W - 28°32,39' N, 570 m, 25 February 2011.
- 23 Tenerife, Las Montanas de Anaga, near mirador 'Cruz del Carmen', first part of trail to Llano de los Loros, laurisilva with *Erica arborea* at the edge, 16°16,88' W - 28°31,83' N, 930 m, 25 February 2011.
- 24 Tenerife, ENE of Arafo, W side of village 'Camino Candelaria' trail to the west, neglected half builded house in field, on E slope. N side of wall of stones and wall with thick layer of cement, 16°26,42' W - 28°20,23' N, 880 m, 26 February 2011.
- 25 Tenerife, Las Montanas de Anaga, N of Igueste de San Andres, at the end of the small paved road, trail to north-west, Barranco de Igueste, on NE exposed volcanic outcrops, 16°09,34' W - 28°32,59' N, 235 m, 27 February 2011
- 26 Tenerife, Las Montanas de Anaga, Monte de las Mercedes, along road TF 12, picnic place in laurisilva, on trunks and branches of mainly *Laurus* trees, 16°17,11' W - 28°31,61' N, 810 m, 28 February 2011.
- 27 Tenerife, Las Montanas de Anaga, NE of Las Mercedes, N of Taborno, just outside the village, trail to the north(-west), in small *Laurus* forest on NW slope with acidic outcrops along the trail and open place with E exposed outcrops, 16°16,49' W - 28°33,35' N, 600 m, 28 February 2011.
- 28 Tenerife, Las Montanas de Anaga, S of Taborno, S of road TF114, trail to the south, from Pico del Ingles to Cabeza del Viento, in laurisilva, 16°15,29' W - 28°31,85' N, 880 m, 28 February 2011.
- 29 Tenerife, Las Montanas de Anaga, NE of las Mercedes, along road TF 12, to Mirador de Jardina, roadside trees, mainly mature *Cupressus* (up to 1 m diam.), 16°17,46' W - 28°31,52' N, 860 m, 1 March 2011.
- 30 Tenerife, Las Montanas de Anaga, SW of Chamorga, E of Las Piedras, first part of trail which starts at TF 123, to a small mirador and dead end trail, laurisilva with E to N exposed vertical outcrops, 16°10,19' W - 28°33,53' N, 775 m, 1 March 2011.
- 31 Tenerife, Las Montanas de Anaga, ENE of Chamorga, first part of barranco de Roque Bermej, SW exposed strong sloping outcrops along trail to the most north-eastern part of the island, 16°09,27' W - 28°34,29' N, 400 m, 1 March 2011.
- 32 Tenerife, Las Montanas de Anaga, Chamorga, centre, some scattered unidentified trees near parking lot, 16°09,65' W - 28°34,12' N, 485 m, 1 March 2011.
- 33 = Tenerife, Las Montanas de Anaga, ENE of Chamorga, trail to mirador Las Piedras Chinobre, at west side, in Laurisilva, 16°10,60' W - 28°33,49' N, 445 m, 1 March 2011.
- 34 Tenerife, Las Montanas de Anaga, WSW of Chamorga, along road TF 123, near El Pijaral, *Erica arborea* shrubs at rim of laurisilva, 16°11,06' W - 28°33,11' N, 830 m, 1 March 2011.
- 35 = Tenerife, Las Montanas de Anaga, road to Taganana, just N of crossing with road TF 123, picnic area, along road TF 134, scattered young *Laurus* trees in laurisilva, 16°12,26' W - 28°32,86' N, 580 m, 2 March 2011.
- 36 Tenerife, Las Montanas de Anaga, road to Chamorga, along road TF 123, N of Las Piedras, S of mirador Chinobre, *Laurus* trees at rim of Laurisilva, slightly shaded locality, 16°10,39' W - 28°33,43' N, 820 m, 2 March 2011.
- 37 Tenerife, Las Montanas de Anaga, SW of Chamorga, E of Las Piedras, small open area along trail which starts at road TF 123, to a small mirador and dead end trail, laurisilva with E to N exposed vertical outcrops, 16°10,11' W - 28°33,63' N, 780 m, 2 March 2011.

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