

## Rust fungi in the Canary Islands

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**ABSTRACT:** Among the 65 rust taxa dealt with in this paper three are new to the flora of Macaronesia, viz. *Uromyces dianthi* on *Dianthus caryophyllus* (cult.), *U. ferulae* on *Ferula linkii*, and *U. savulescui* on *Limonium* cf. *sinuatum* (cult.). Two taxa are new to the flora of the Canary Islands, viz. *Puccinia brachypodii* var. *arrhenatheri* on *Arrhenatherum elatius* and *Uromyces graminis* on *Melica canariensis*. Hosts previously unknown to some of the rust taxa, or new to some taxa in Macaronesia, in the Canarian archipelago, or for the different Canarian islands, are given.

**Keywords:** Uredinales, Canary Islands.

**RESUMEN:** Se citan sesenta y cinco táxones de roya de los cuales tres son nuevos para Macaronesia: *Uromyces dianthi* sobre *Dianthus caryophyllus* (cult.), *U. ferulae* sobre *Ferula linkii* y *U. savulescui* sobre *Limonium* cf. *sinuatum* (cult.). Dos táxones son nuevos para las Islas Canarias: *Puccinia brachypodii* var. *arrhenatheri* sobre *Arrhenatherum elatius* y *Uromyces graminis* sobre *Melica canariensis*. Se dan huéspedes previamente desconocidos para algunos táxones de royas, algunos nuevos para Macaronesia, el Archipiélago Canario o para diferentes islas.

**Palabras clave:** Uredinales, Islas Canarias.

### INTRODUCTION

Since MONTAGNE (1840) made the first publication on rust fungi from The Canary Islands, several mycologists have contributed to the knowledge of the rust flora of this archipelago. JØRSTAD (1959), in his comprehensive work on the Canarian rusts, reviewed what was known up to that date. Later he added hosts and new localities in two more papers (JØRSTAD 1962, 1966). GJÆRUM (1970, 1974), CALONGE (1974) and BELTRÁN TEJERA (1976, 1980) have also contributed to this

topic. A short review of all groups of fungi was given by GJÆRUM (1976).

In his first paper, JØRSTAD (1959) after having discussed the distribution of the rust species on the different islands, said that "This gives an indication of how inadequately investigated the Canaries still are with respect to rust". When the staff of the Botanical Museum at the University of Oslo decided to continue the work initiated by Johs. Lid and I. Jørstad, I was invited to participate in this work, especially with the rust fungi.

Most of the material presented in this paper has been collected by myself on four fortnight excursions to the Canary Islands, viz. in

1973, 01.07. - 01.20. - Gran Canaria,  
1974, 03.18. - 03.30. - Tenerife and La Palma,  
1975, 11.19. - 12.01. - Tenerife, Gomera and Hierro,  
1978, 03.31. - 04.13. - Tenerife, Hierro and Lanzarote.

So far I have had no opportunity to visit Fuerteventura which is the less investigated island.

Valuable material has been given to me by other botanists of the group, and some specimens have been picked out from the phanerogam collections in Oslo (herb. O) and Copenhagen (herb. C).

The rust species concept follows mainly that used by Jørstad in his three publications mentioned above, but some of the host and rust names have been changed according to recent investigations. The nomenclature of the host species follows HANSEN & SUNDING (1985).

My own collections, cited only with the localities, will be preserved in the Botanical Museum in Oslo. For other specimens collectors and collecting dates are given together with the herbaria where they are preserved.

For new rust species and hosts their distribution is briefly summarized. For other rust species and hosts see JØRSTAD (1959).

#### ENUMERATION OF SPECIES

Cerotelium fici (Butl.) Arth., Bull. Torrey Bot. Club 44: 509, 1917.

On Ficus carica L.

Tenerife. Bco. de Cuevas Negras, II.

La Palma. Bco. del Agua, 9 km N of Santa Cruz de La Palma, II.

Hierro. Above Frontera, II.

The fig rust is also known from Gomera. Only uredinia have been found in the Canaries.

Coleosporium tussilaginis (Pers.) Berk., Outl. Brit. Fung. p. 333, 1960.

On Dittrichia viscosa (L.) Greuter (syn. Inula viscosa (L.) Ait.)

Gran Canaria. Ca. two km above San Mateo on road to Valsequillo and between Valsequillo and Telde; near Pagador on road to Moya; Bco. de Moya, at Los Tilos; Tafira Alta; Bco. near San Roque; bco. W of Bco. de Moya; on road from San Mateo to Teror, at the junction on road to Arinez; all finds only II.

Tenerife. Bco. de Las Mercedes, 740 m; Valle de San Andrés, 460 m; above Valle Arriba, 1117 m; Bco. del Infierno; Masca; all finds only II.

La Palma. Bco. del Agua, near Santa Lucía, II.

Gomera. Chorros de Epina, II.

On Kleinia neriifolia Haw.

Lanzarote. Just S of Arriche, II; Jameos del Agua, II; Orzola, II; Cueva de Los Verdes, II + III; Guinate, II + III; Guatifaya, II.

Gran Canaria. Berrazales, near the hotel, II; below Caldera de Bandama, on road from Tafira Alta, II; Mirador del Helechal, near

Valsequillo, II + III; bco. below La Atalaya, II.  
 Tenerife. Taganana; Masca; both finds only II.  
 La Palma. Above Santa Cruz de La Palma, II; El Pedregal, II; on road Santa Cruz - Barlovento at the junction on road to Espindola, II; Bco. del Agua, near Santa Lucía, II; N of the Airport, II; on the road Fuencaliente - Las Caletas, II; Bco. de Carmen Dorador, II; Bco. above Las Toscas, II + III.  
 Hierro. Above Restinga, II; below Taibique, II; Bco. Valverde, below Valverde town, II; between Frontera and Sabinosa, II; above Sabinosa, II; between Mocanal and Tenesaite, II + III; Las Puntillas, II; below Isora, II + III; between Isora and El Lance, II.  
 On Pericallis appendiculata (L. fil.) B. Nord. (syn. Senecio appendiculatus (L.fil.) Sch. Bip.)  
 Tenerife. Bco. Teguigo, 500-600 m, II.  
 On Pericallis cruenta (L'Hér.) Bolle (syn. Senecio cruentus (L'Hér.) DC.)  
 Tenerife. Bco. de La Calera, above Realejo Alto, II + III, Bco. Teguigo, 500-600 m, II + III; small bco. E of Bco. de La Suerte, 900 m, II + III; Icod del Alto, II + III; Bco. de La Aquilla, II.  
 On Pericallis cf. cruenta (L'Hér.) Bolle  
 Gomera. Montaña de La Zarza, II.  
 On Pericallis echinata (L. fil.) B. Nord. (syn. Senecio echinatus (L.fil.) DC.)  
 Tenerife. Tanque, 480 m; between Riugomet and Cruz Grande; both finds II + III.  
 On Pericallis lanata (L'Hér.) B. Nord. (syn. Senecio heritierii DC.)  
 Tenerife. Masca, II + III.  
 On Pericallis murrayi (Bornm.) B. Nord. (syn. Senecio murrayi Bornm.)  
 Hierro. Above the road Frontera - Sabinosa, II; above Sabinosa, II + III; km 31 on road up from Frontera, II + III; Mirador de La Peña, II + III; El Golfo, below Jinama, II + III; Bco. Valverde, below Valverde town, II + III; Isora, II + III.  
 On Pericallis papyracea (DC.) B. Nord. (syn. Senecio papyraceus DC.)  
 La Palma. On road between Santa Cruz and Breña Alta; Bco. del Agua, 9 km N of Santa Cruz de La Palma; El Pedregal; Malpaís, 600 m; Bco. del Carmen Dorador; Bco. del Río de Las Nieves; Barlovento; Los Moraditas, km 13 W of Barlovento, 800 m; on border between Barlovento and Vila de Garafía; all finds II + III.  
 On Pericallis steetzii (Bolle) B. Nord. (syn. Senecio steetzii Bolle)  
 Gomera. Degollado del Bailadero N of Roque de Ojila, 850 m, 15.04.1978, leg. P. Sunding (4256B, O), II + III.  
 On Pericallis cf. steetzii (Bolle) B. Nord.  
 Gomera. Chorros de Epina, II.  
 On Pericallis tussilaginis (L'Hér.) D. Don in Sweet (syn. Senecio tussilaginis (L'Hér.) Lindl.)  
 Tenerife. Valle Guerra, 530 m, III; Bco. del Río Tomadero, II; Buenos Aires, II; km 8 on road Orotava - Las Cañadas, II + III; NE coast, in the Cruz de Afur area, in the direction of Taganana, 25.03.1972, leg. Liv Borgen (1135, O), II; near Taganana, II + III.  
 On Pericallis sp.  
 Tenerife. Taganana road on the SO side of the tunnel, c. 700 m; above Erjos, 1117 m; both finds II + III.  
 On Senecio mikanoides Otto ex Walp.  
 Tenerife. Above Agua Garcia, on N slope of Montaña de la Haya, 980 m; Icod del Alto; both finds II.  
 On Senecio teneriffae Sch. Bip.  
 Gran Canaria. Bco. between Cambalud and Buen Lugar, II.

The specimens reported by JØRSTAD (1959) as Senecio vulgaris L. have been revised and found to be S. teneriffae. The species reported here as Pericallis spp. were reported by Jørstad under Senecio spp. The rust is new to Fuerteventura, now found on K. neriifolia.

P. lanata, endemic to Tenerife, seems to be rarely infected with rust. P. cruenta is a new host for the rust in Gomera. Other Canarian hosts mentioned by Jørstad are Allagopappus dichotomus (L. fil.) Cass. and Pericallis webbii (Sch. Bip.) Bolle (syn. Senecio webbii (Sch. Bip.) Christ). Beltrán Tejera (1980) reported this rust on S. bollei Sund. & Kunk. var. bollei from Lanzarote.

Dicheirinia canariensis Urries, Anal. Lab. Bot. Cavanilles, Madrid, 12(1953): 535, 1954.

On Chamaecytisus proliferus (L. fil.) Link s. lat. (syn. Cytisus proliferus L. fil.)

La Palma. El Riachuelo, 980 m, II.

On Teline canariensis (L.) Webb & Berth.

Tenerife. Bco. de Las Mercedes, 740 m, II.

This rust was described from Gran Canaria and later reported from several localities by URRIES (1957) on C. proliferus and by JØRSTAD (1959) on Cytisus perezii Hutch. (= Ch. proliferus var. perezii (Hutch.) Kunk.). GJÆRUM (1974) reported it on var. perezii, but as this var. is not known from Tenerife, there is probably a misidentification of the host (cfr. BELTRÁN TEJERA 1976).

Melampsora epitea Thuem., Mitth. forstl. Verswes. Oesterr. 2: 38 and 40, 1879.

On Salix canariensis Chr. Sm. ex Link

Gran Canaria. Bco. near San Roque; Bco. de Tirajana, near Santa Lucía; both finds II.

Tenerife. Lomo Alto below Taborno, II.

The rust is also known in La Palma and Gomera. Telia has been reported only once, viz. from Gomera (JØRSTAD 1959).

Melampsora euphorbiae (Schub.) Cast., Obs. Pl. Acotyl. 2: 18, 1843.

On Euphorbia anachoreta Svent.

Gran Canaria. Between Tafira Baja and Tafira Alta, cultivated in the Botanical Garden, 24.04.1983, J. Jevningen & O. Skifte, and 01.02.1985, O. Skifte (TROM), II.

On Euphorbia atropurpurea (Brouss.) Webb & Berth.

Tenerife. Above Santiago del Teide and at Masca, II.

On Euphorbia obtusifolia Poir.

Lanzarote. Montanas de Famara, 0.5 km W of Peñas del Chaché, 600 m; Orzola; Guinate, 450 m; all finds only II.

Tenerife. Punta del Hidalgo; Fraile; Teno; Masca; all finds only II.

La Palma. Bco. del Agua, near Santa Lucía, II; between Fuencaliente and Las Caletas, II; Malpaís 600 m, II; Bco. del Carmen Dorador, II; Bco. above Las Toscas, II + III.

Gomera. 2.5 km N of Alajero, 1100 m, 16.04.1978, P. Sunding (4288), II.

Hierro. Above Restinga; Mirador de La Pena; both with II only.

On Euphorbia pepplus L.

Gran Canaria. Bco. de Moya, at Los Tilos; just below Jardín Canario; both finds only II.

Tenerife. Taganana, II.

La Palma. Bco. del Río de Las Nieves, II; Bco. del Agua, near Santa Lucía, II + III; Bco. del Carmen Dorador, II + III.

Hierro. W of El Parque, II + III; Isora, II; El Lance, II.

On Ricinus communis L.

Fuerteventura. Betancuria, 05.04.1985, A. Hansen (C), II.

Gran Canaria. Near Valsequillo on road to Las Vegas; Tafira Alta; Berrazales, near the hotel; just below Jardín Canario; Bco. Jacomar near Tamaraceite on road to Arucas; all finds only II.

Tenerife. Valle Guerra, 530 m; Taganana; both finds only II.

La Palma. Bco. above Las Toscas, II.

Hierro. Just W of Sabinosa, II.

E. atropurpurea, a new host for this rust, is endemic in the Canaries, known only from Tenerife and La Palma. E. anachoreta is a new host for the rust on Gran Canaria, and E. obtusifolia for the rust in Lanzarote. On R. communis the rust is new to Fuerteventura. For other host species in the Canarian Archipelago see JØRSTAD (1959).

Melampsora hypericorum Wint. in Rabh. Krypt.-Fl. Ed. 2, I, 1: 241, 1882.

On Hypericum canariense L.

Tenerife. Bco. Teiguigo, 500-600 m, I.

La Palma. Bco. del Agua near Santa Lucía, I + III.

Hierro. Above Frontera, I.

On Hypericum grandifolium Choisy (syn. H. elatum Ait.)

Gran Canaria. Ca. 2 km above San Mateo, I + III; Bco. de Moya, at Los Tilos, I + III; bco. down to Juncalillo, I; road junction Valleseco - San Mateo, I; on road San Mateo - Teror, on the ridge with the road to Arines, I; near Teror on road to San Mateo, I + III.

Tenerife. Km 11 on road Puerto de La Cruz - Las Cañadas, 700 m, II; Bco. de Las Mercedes, 740 m, I + III; Bco. Teunigo, 500-600 m, I; Taganana road, on the SE side of the tunnel, ca. 700 m, I; small bco. E of Bco. de La Suerte, 900 m, I; Lomo Alto below Taborno, I; Roque de Los Pasos, 850 m, I; El Bailadero, I; 2.5 km above Aguamansa, I.

La Palma. Bco. del Río de Las Nieves, I; Los Moraditas, km 13 W of Barlovento, 800 m, I; Bco. de Las Palmas, 1.5 km S of Jedey, 700 m, I; Bco. del Agua, near Santa Lucía, 9 km N of Santa Cruz de La Palma, I + III.

Gomera. Cerco de Armas; Montaña de La Zarza; both finds only I.

On Hypericum cf. glandulosum Ait.

La Palma. Bco. del Agua, 9 km N of Santa Cruz de La Palma, I.

The rust is common especially on H. grandifolium. It is new to La Palma, but it is still not found in Fuerteventura.

Other Canarian hosts are H. humifusum L. and H. reflexum L.

Melampsora populnea (Pers.) Karst., Bidr. Känn. Finl. Nat. Folk 39: 53, 1879.

On Populus alba L.

Gran Canaria. Zucamal, II.

This rust is new to Gran Canaria, previously known from Gomera and La Palma.

Miyagia pseudosphaeria (Mont.) Jørst., Nytt Mag. Bot. 9: 78, 1962.

Syn. Peristenma pseudosphaeria (Mont.) Jørst., Friesia 5: 280, 1956.

On Sonchus acaulis Dum.-Cours.

Gran Canaria. Bco. down to Juncalillo, II.

On Sonchus brachylobus Webb & Berth.

Gran Canaria. Bco. W of Bco. de Moya, II.

On Sonchus congestus Willd.

Tenerife. Bco. del Dornajo; small bco. E of Bco. de La Suerte; Bco. de La Aquila; km 11 on road from Puerto de La Cruz to Las Cañadas, 700 m; all finds II + III.

On Sonchus hierrensis (Pit.) Boulos

Hierro. Road junction E of Mala; km 28 on road up from Frontera; Ermita Virgen de La Peña; El Golfo, below Jinama; Isora; all finds II + III.

On Sonchus oleraceus L.

Hierro. Isora, II; El Golfo, below Jinama, II.

On Sonchus palmensis (Sch. Bip.) Boulos

La Palma. Breña Alta, 21.03.1974, P. Sunding, II.

On Sonchus sp.

Tenerife. Roque de Los Pasos, II + III.

La Palma. Near km 12 on road Barlovento - Garafía, II; El Riachuelo, 930 m, II + III.

Hierro. El Lance, II + III.

On Taeckholmia pinnata (L. fil.) Boulos

Gran Canaria. Edge of Caldera de Bandama, 450 m; near Buen Lugar; below Caldera de Bandama; all finds only II.

S. acaulis and T. pinnata are new hosts for this rust. Both are endemic, occurring in Gran Canaria and Tenerife, the latter also in Fuerteventura.

Phragmidium bulbosum (Str.) Schlecht., Fl. Berol., 2: 156, 1824.

On Rubus inermis Pourr. (syn. R. ulmifolius Schott s.lat.)

Gran Canaria. Bco. de Tenoya, just below Teror, II; above Teror on road to San Mateo, II (+ III); El Palmar, II.

Tenerife. Bco. de La Calera, above Realejo Alto, II.

This rust is new to Gran Canaria.

Phragmidium mucronatum (Pers.) Schlecht., Fl. Berol. 2: 156, 1824.

On Rosa sp.

La Palma. Cumbre Nueva, near the tunnel, 03.09.1972, A. Hansen, (210, C), (II +) III.

Teliospores slightly tapering towards the base and with up to 9 cells. The rust is known also from Gomera and Hierro.

Phragmidium sanguisorbae (DC.) Schroet. in Cohn, Pilze Schles., III, 1: 352.

On Sanguisorba minor Scop. ssp. magnolii (Spach) Briq.

Gran Canaria. Ca. 2 km from San Mateo on road to Valsequillo, II + III; near Valsequillo, II; bco. near San Roque, II; El Palmar, II; above Tenteniguada, 18.04.1973, P. Sunding & A.-E. Torkelsen, II + III.

La Palma. On road Santa Cruz - Breña Alta, 250 m; ca. 5.5 W of Barlovento on road to Garafía; bco. above Las Toscas; all finds only II.

On Marcetella moquiniana (Webb & Berth.) Svent.

Tenerife. Bco. de Cuevas Negras, 23.11.1975, R. Elven & Gj., II.

On the latter host the urediniospores are obovoid to subglobose or globose, 16-22 x (13-)15-19  $\mu\text{m}$ , wall ca. 1  $\mu\text{m}$  thick, echinulate, hyaline and with 7-8 scattered pores.

No rust has previously been reported on this host, endemic to Gran Canaria, Tenerife and Gomera. The urediniospores are similar to those on Sanguisorba minor, but somewhat smaller. Another rust, Phragmidium bencomiae H. Syd. on Bencomia caudata (Ait.) Webb has urediniospores of about the same size as those on Marcetella, but the wall thickness is not given in the diagnosis. As Marcetella is closely related to Sanguisorba, I tentatively place the rust specimen in question with Ph. sanguisorbae, but a study of more material from both Bencomia and Marcetella is necessary for solving the problem.

On S. minor ssp. magnolii this rust is known from all the large Canarian islands but Fuerteventura and Lanzarote.

Phragmidium violaceum (C.F. Schultz) Wint., Hedwigia 19: 54, 1880.

On Rubus inermis Pourr. (syn. R. ulmifolius Schott s.lat.)  
Gran Canaria. Bco. de Moya, at Los Tilos, II; Balcón de Zamara,  
above Teror, II; bco. on road San Mateo - Teror, at the junction  
with road from Arinez, II; Tafira Alta, II; Berrazales, II.  
Tenerife. Bco. de Las Mercedes, 740 m, II; Valle Guerra, 460 m, II;  
El Roquillo, 850 m, II; Roque Suarez, 700 m, II; above Las Mercedes,  
II; Lomo Alto below Taborno, II + III; El Bailadero, II + III;  
Masca, II.

La Palma. Bco. del Agua, near Santa Lucía, II, II + III.  
Gomera. Tunel de Goblada de La Cumbre, II; Tamargada, II + III;  
Chorros de Epina, II + III; E of Vallehermoso, below Roque Cano, 300  
m, 16.04.1978, P. Sunding (O), II.

Hierro. El Golfo, ca. 400 m, II + III; Valverde, II + III; Bco.  
Valverde, below Valverde town, II; above Sabinosa, II.

Ph. violaceum has not yet been found in Lanzarote and Fuerte-  
ventura, but it seems to be fairly common in the other Canarian  
islands.

Puccinia acetosae Krn., Hedwigia 15: 184, 1876.

On Rumex acetosella L. ssp. angiocarpus (Murb.) Murb.

Gran Canaria. Balcón de Zamara, II.

Tenerife. Montaña Cruz de Taborno, 1000 m, II.

This rust, also known from La Palma, seems not to be common in  
the Canaries.

Puccinia allii Rud., Linnaea 4: 392, 1829.

Syn. P. porri Wint. in Rabh. Krypt.-Fl. Ed. 2, I, 1: 200, 1882.

On Allium ampeloprasum L.

Lanzarote. Montañas de Famara, 0.5 km W of Peñas del Chaché, 600 m,  
II + III.

La Palma. Santa Lucía N of Santa Cruz, 02.09.1972, A. Hansen, (105,  
C), III.

Hierro. Isora, (II +) III.

On Allium roseum L.

Gran Canaria. Above Cambalud, II + III.

On Allium subhirsutum L. (syn. A. trifoliatum Cyr.)

Lanzarote. Montañas de Famara, 0.5 km W of Peñas del Chaché, 600 m,  
III; above Haria, 10.04.1978, A. Hansen, (197, C), III.

Gran Canaria. Tamadaba, 1100 m, 23.03.1966 and Cresa los Teves  
27.01.1967, both finds G. Kunkel (8952 and 9947, resp., C), III.

Tenerife. Santiago del Teide, 1000 m, III.

La Palma. 1.5 km S of El Paso, 670 m, III.

On Allium sp.

Tenerife. Ca. 2 km above Orotava on road to Las Cañadas, 510 m, II +  
III; Valle Guerra, 530 m, III; Bco. de La Calera, above Realejo  
Alto; Taganana, II + III.

La Palma. Breña Alta, II + III; on the border between Barlovento and  
Villa de Garafía, II + III; Malpaís, 600 m, II + III; Bco. del  
Carmen Dorador, III.

A. ampeloprasum is a new host for the rust in Hierro and A.  
subhirsutum for the rust in Tenerife and La Palma. P. allii is here  
taken in a wide sense. P. porri is often considered as a separate  
species, having slightly larger urediniospores.

Puccinia asphodeli Moug. ex Duby, Bot. Gall., p. 891, 1830.

On Asphodelus aestivus Brot.

Gran Canaria. Above Teror on road to San Mateo, 17.01.1973, Borghild  
Gjærum, 0 + I.

Tenerife. On road Buenavista - El Palmar, III; ca. 3 km S of Buena-  
vista, 480 m, III; Santiago del Teide, 1000 m, I + III; Valle de San

Andrés, III; near Bco. de La Suerte, 900 m, III.  
La Palma. Bco. del Carmen Dorador, III.  
Hierro. W. of El Parque, III; Mirador de La Pena, III; on road  
Sabinosa-Frontera, 0 + I + III.

P. asphodeli is also reported from Gomera. Another host for  
this rust is A. fistulosus L., reported from Gran Canaria by  
MONTAGNE (1840) and from Tenerife by BELTRÁN TEJERA (1976).

Puccinia behenis Otth, Mitth. naturf. Ges. Bern, 1870: 113, 1871.

On Silene vulgaris (Moench) Garcke  
Lanzarote. Montañas del Famara, 0.5 km W of Peñas del Chaché, 600 m,  
II.  
Gran Canaria. Agaete valley, 11.09.1970, B. Hammer (C), II.  
Tenerife. Valle Guerra, 530 m, II.  
Hierro. Below Taibique, II; Los Gramales, 640 m, II; Valverde, II +  
III.

The rust is a new record for the rust flora of Lanzarote.

Puccinia brachypodii Otth, Mitth. naturf. Ges. Bern. 1861: 82, var.  
brachypodii.

On Brachypodium sylvaticum (Huds.) PB.  
Gran Canaria. Bco. de Moya, at Los Tilos, II + III.  
Tenerife. Above Las Mercedes, II; Roque de Los Pasos, 850 m, II.  
La Palma. Bco. del Agua, II.  
On Trachynia distachya (Hasselq. ex L.) Link  
Lanzarote. Montañas de Famara, 0.5 km W of Peñas de Chaché, 600 m,  
II.

This var. of P. brachypodii is new to the rust flora of Lanza-  
rote.

Puccinia brachypodii Otth var. arrhenatheri (Kleb.) Cumm. & H.C.  
Greene, Mycologia 59: 709, 1966.

Syn. P. perplexans Plowr. f. arrhenatheri Klev., Abh. Naturw.  
Ver. Bremen 12: 366, 1892.

On Arrhenatherum elatius (L.) PB. ssp. bulbosum (Willd.) Schübl. &  
Mart.  
Tenerife. Icod del Alto, II + III.

Uredinia with capitate, thick-walled paraphyses. Urediniospores  
pale yellowish and with scattered pores. Telia loculate, paraphyses  
brown.

The var. arrhenatheri of this rust is new to the Canary  
Islands, and the host is new in Macaronesia. It is previously repor-  
ted on Hordeum ? bulbosum L. from the Azores. MAJEWSKI (1979) kept  
this taxon as a separate species under the name of P. magelhaenica  
Peyr. The aecidial stage on Berberis spp. has not been found in  
Macaronesia. JØRSTAD (1959) reported P. coronata Cda. on the same  
host from Tenerife and La Palma.

Puccinia calcitrapae DC., Fl. Fr. 2: 221, 1805.

Syn. P. centaurea DC., Fl. Fr. 6: 59, 1815, P. carduorum Jacky,  
Zschr. Pflkrankh. 9: 288, 1899.

On Carduus clavulatus Link  
Tenerife. Valle Guerra, 530 m, II + III.  
La Palma. Bco. del Puente, 02.09.1972, A. Hansen (125, C), II + III.  
On Carduus cf. clavulatus Link  
Tenerife. Bco. de La Aguila, II.  
On Carduus tenuiflorus Curt.  
Tenerife. Puerto de La Cruz, near Jardín Botánico, II.  
Hierro. Degollado Bailadero, II + III; Isora, II + III; Jinama, II +



III; caldera N of El Risco de Los Herreños, (II+) III.

On Carlina salicifolia (L.fil.) Cav.

Tenerife. Tanque, 480 m, II.

On Cheirolophus canariensis (Brouss. ex Willd.) Holub

(syn. Centaurea canariensis Brouss. ex Willd.)

Tenerife. Punta del Teno, Gj. & R. Elven, II + III.

On Volutaria lippii (L.) Cass. (syn. Centaurea lippii L.)

Lanzarote. Between El Golfo and Yaiza, II + III.

C. salicifolia, Ch. canariensis and V. lippii are all new hosts for the rust. C. salicifolia is endemic to the Canary Islands and Madeira while Ch. canariensis is known only from Tenerife. V. lippii is known in south-eastern Spain, N. Africa from Morocco to Egypt and also in SW Asia.

Puccinia cnici-oleracei Pers. ex Desm., Cat. Pl. Omis. p. 24, 1823.

On Artemisia thuscula Cav. (syn. A. canariensis (Bess.) Less.)

La Palma. Bco. del Río de Las Nieves, III.

Hierro. Mirador de La Peña, II; Ermita de La Pena, III.

On Galactites tomentosa Moench

Gran Canaria. Bco. de Moya, at Los Tilos, III.

Tenerife. Valle Guerra, 500 m, III; El Roquillo, 850 m, III; Bco. de

La Calera, above Realejo Alto, III; Buenos Aires, III; ca. 2 km SO

of La Esperanza, 750 m, III; La Portezuela, III; Masca, III.

La Palma. Bco. del Río de Las Nieves; Barlovento, III; El Pedregal;

Bco. del Agua near Santa Lucía, III; Malpaís, III.

Hierro. Above Sabinosa, III; W of El Parque; Mirador de La Peña,

III; Ermita Virgen de La Pena, III.

A. thuscula, endemic to the five western islands in the Canarian Archipelago, is a new host for this rust. On G. tomentosa it is new to Gran Canaria.

Puccinia coronata Cda., Icon. Fung. 1: 6, 1873.

On Avena barbata Pott. ex Link

Hierro. Valverde, II.

On Avena cf. barbata Pott. ex Link

Lanzarote. Montañas de Famara, 0.5 km W of Peñas del Chaché, 600 m, II.

Tenerife. Masca, II.

On Avena cf. occidentalis Dur. (syn. A. fatua L.)

Lanzarote. Montañas de Famara, 0.5 km W of Peñas del Chaché, 600 m, and Ermita de Las Nieves, II.

On Avena sterilis L.

Lanzarote. Road junction S of Haria (to Tabayesco), II.

La Palma. El Pedregal, II.

Hierro. Between Mocanal and Tenesaite, II + III.

On Holcus lanatus L.

Gran Canaria. Bco. down to Juncalillo, II.

On Lamarckia aurea (L.) Moench

Lanzarote. Montañas de Famara, 0.5 km W of Peñas de Chaché, 600 m, II.

On Lolium multiflorum Lam.

Hierro. Valverde town, II.

On Phalaris caerulescens Desf.

Lanzarote. Montañas de Famara, 0.5 km W of Peñas del Chaché and Ermita de Las Nieves, both only II.

On Phalaris minor Retz.

Lanzarote. Ermita de Las Nieves, II.

On Polygono viridis (Gouan) Breistr. (syn. T. semiverticillatus (Forssk.) Hyl.)

Gomera. Tamargaça, II.

JØRSTAD (1959) reported this rust from several host species in

the Canary Islands. Avena sterilis and Ph. minor are new hosts for the rust in Macaronesia. Except for A. barbata which is a new host in Lanzarote, the other hosts are new to the rust in the islands mentioned.

Puccinia crepidis Schroet. in Cohn, Krypt.-Fl. Schles. III, 1: 319, 1887.

On Crepis canariensis (Sch. Bip.) Babc.

Lanzarote. Montañas de Famara, 0.5 km W of Peñas del Chaché, 600 m, (II +) III; Ermita de Las Nieves, II + III.

On Crepis coronopifolia Desf. (syn. Tolpis coronopifolia (Desf.) Bivona)

La Palma. La Galega, 02.09.1977, A.Hansen (156, C), II.

C. canariensis, a new host for this rust, is endemic in the Canary Islands, occurring also on Fuerteventura and Gran Canaria. C. coronopifolia is a new host for the rust in La Palma, previously known from Tenerife and Gran Canaria.

Puccinia difformis Kze. & Sch., Myk. Hefte 1: 71, 1817.

On Galium aparine L.

Gran Canaria. Bco. de Moya, at Los Tilos, I; bco. near San Roque, I. Tenerife. Roque Suarez, 700 m, I; Masca, I + III.

La Palma. El Pedregal, I + III.

Hierro. Isora; El Golfo, below Jinama; both only with I.

JØRSTAD (1959) reported this rust from the same islands.

Puccinia frankeniae Link, Obs. Ord. Plant. 2: 30, 1816.

On Frankenia sp.

Tenerife. Puerto de Güimar, II + III.

Hierro. El Golfo, between Jinama and Frontera, ca. 1000 m, and on road junction E of Mata, both finds III.

The rust is new to Hierro. It is previously reported on F. ericifolia Schr. ex DC. from La Palma and Gomera, and on F. pulverulenta L. from Gran Canaria and Tenerife.

Puccinia heldreichiana Diet., Hedwigia 28: 184, 1889.

Syn. P. barbeyi P. Magn., Bot. Ztg. 41: 115, 1883.

On Asphodelus tenuifolius Cav.

Lanzarote. Femés; Bco. de Horca; Ermita de Las Nieves; all finds I + III.

The rust is also known from Fuerteventura, Gran Canaria and Gomera.

Puccinia hieracii Mart., Prodr. Fl. Mosq. Ed. 2. p. 227, 1817, var. hieracii.

Syn. P. taraxaci Plowr., Monogr. Brit. Ured. Ustil. p. 186, 1889; P. leontodontis Jacky, Zsch. PflKrankh. 9: 339, 1899.

On Leontodon taraxacoides (Vill.) Mèrat (syn. L. nudicaulis (L.) Banks)

Tenerife. Near Taganana, II + III.

On Taraxacum sp.

Gran Canaria. Just outside Tamaraceite on road to San Lorenzo, II.

The var. hieracii was reported by Bornmüller (1903) from Tenerife on Taraxacum officinalis Web. On Gran Canaria it is new to this genus. It is known on Cichorium endivia L. ssp. divaricatum (Schousb.) Sell (syn. C. pumilum L.) from Tenerife, Palma and Gomera, on Hyoseris radiata L. from Gran Canaria, and on L. taraxacoides also from Palma.

Puccinia hieracii Mart. var. chlorocrepididis (Jacky) Jørst., Skr. norske Vidensk-Akad. Oslo. 1. Mat.-naturv-Kl. 1958, 2: 63, 1958.

On Andryala pinnatifida Ait.

Tenerife. Masca, II.

Hierro. Near Mt. Tambargena, II.

This var. is a new rust taxon in Hierro.

Puccinia hieracii Mart. var. hypochoeridis (Oud.) Jørst., K. norske Vidensk. Selsk. Skr. 1935, 38: 27, 1936.

On Hypochoeris glabra L.

Tenerife. Tanque, 480 m, II + III.

La Palma. Bco. del Río de Las Nieves, Lomo de Las Chozas, 1250 m, and Malpaís, 600 m, II; on road from Fuencaliente to Las Caletas, (II+) III.

Hierro. Road junction E of Mata, above Sabinosa, and below Ermita Virgen de La Peña, II + III.

On Hypochoeris radicata L.

Hierro. El Golfo, below Jinama, II.

On Hypochoeris sp.

Tenerife. Teno, III.

On Launaea nudicaulis (L.) Hook. fil.

Lanzarote. Vega Quintín, near San Bartolomé, II.

Fuerteventura. (No locality given), G. Kunkel (C), II.

This var. of P. hieracii is new to the flora of Fuerteventura, and H. radicata is a new host for the rust in the Canary Islands.

Puccinia hordei Otth, Mitth. naturf. Ges. Bern. 1870: 114, 1871.

Syn. P. schismi Bub., Ann. Naturhist. Hofmus. Wien 28: 193, 1914, P. hordei-murini Buchw., Annls mycol. 41: 308, 1943.

On Hordeum murinum L. ssp. leporinum (Link) A. & Gr.

Hierro. Isora and Bco. Valverde, below Valverde town, both with II only.

On Hordeum vulgare L.

Lanzarote. 1 km N of Femés, II; just S of Arriche, II; 2 km E of Teguise, II + III.

On Lolium multiflorum Lam.

La Palma. Malpaís, 600 m, II + III.

Hierro. Valverde, II + III.

In his first paper on the Canarian rusts, JØRSTAD (1959) placed the rust on Hordeum vulgare within P. hordei and that on H. murinum L. within P. hordei-murini Buchw., but he pointed out that they could hardly be separated on morphological criteria. A rust on species of Koeleria, Lolium, Trisetum, and Vulpia was described under P. schismi. However, CUMMINS (1971) united these three species together with several others under P. hordei "a "complex" more or less like the P. recondita complex", but differs "because of paler urediniospores and broader teliospores". He also included P. triseti Eriks. which he said is probably not synonymous.

Puccinia hyparrheniicola Jørst. & Cumm. in Cumm., Bull. Torrey Bot. Club 83: 227, 1956.

On Hyparrhenia hirta (L.) Stapf

Gran Canaria. Between Valsequillo and Telde, II; Bco. de Moya, at Los Tilos, II; near Tamaraceite on road to San Lorenzo, II; near Pagador on road to Moya, II; pine forest above Cambalud, II.  
Tenerife. Masca, II.

La Palma. Above Santa Cruz de La Palma, II.

The two other rust species P. andropogonis-hirti Beltr. and P. eritraensis Paz. on this host can hardly be separated from P. hyparrheniicola when only uredinia are present. The former is recognized as a Mediterranean species while the latter is reported from

Africa to Australia, and also in Honduras (cfr. CUMMINS 1971).

Puccinia jasmini DC., Fl. Fr. 2: 219, 1805.

On Jasminum odoratissimum L.

Comera. Montes sobre Vallehermoso, 600 m, 05.06.1975, G. Kunkel, III.

Hierro. El Golfo, 450-500 m, III.

P. jasmini is new to the rust flora of Comera and Hierro, previously known from Tenerife and La Palma in the Canary Islands.

Puccinia lagenophorae Cooke, Grevillea 13: 6, 1884.

On Senecio crassifolius Willd.

Lanzarote. Jameos del Agua, I + III.

On Senecio glaucus L. ssp. coronopifolius (Maire) Alexander

Lanzarote. Tinguatón, I (+ III); 3 km N of Tahiche, I + III, Guinate, 450 m, I + III; Playa Famara, I + III.

On Senecio sp.

Lanzarote. Orzola, I + III; Guinate, I.

P. lagenophorae, an Australian rust, was reported on S. rhombifolius Bolle (= S. bollei Sund. & Kunk.) from Fuerteventura (GJÆRUM 1970). S. glaucus ssp. coronopifolius is a new host for the rust while S. crassifolius is a new host for the rust in the Canaries, previously reported from Tunis by VIENNOT-BOURGIN (1964).

Puccinia lojkaiana Thuem., Oesterr. bot. Zschr. 26: 183, 1876.

On Liliaceae

Gran Canaria. Berrazales and Bco. de Tenoya, just below Teror, III.

JØRSTAD (1959) published this rust on Ornithogalum cf. narbonense L. from Gran Canaria. Its only host genera are Ornithogalum and Muscari. The two specimens mentioned above were both sterile, and nothing more can be said about the host identity.

Puccinia malvacearum Bert. & Mont. in C. Gay, Hist. Fis. Polit. Chile 8: 43, 1852.

On Abutilon grandifolium (Willd.) Sweet

Hierro. W of El Parque.

On Malva parviflora L.

Tenerife. Punta del Hidalgo; El Roquillo, 850 m; Icod; Taganana.

La Palma. Breña Alta; El Pedregal; Bco. del Agua, near Santa Lucía; on road from Fuencaliente to Las Caletas; bco. above Las Toscas.

Hierro. Below Valverde town.

On Malva sp.

Hierro. Above Sabinosa; W of El Parque; Mirador de La Peña; Virgen de La Peña; Isora.

On Malvaceae

Hierro. Road junction E of Mata.

A. grandifolium, a S. American species, but naturalized in Canary Islands, is a new host for this rust, and it also represents a new host genus for this rust in Macaronesia. To my knowledge P. malvacearum, worldwide distributed and occurring on many malvaceous genera, is reported on Abutilon only from Argentina and Uruguay.

Puccinia menthae Pers., Syn. Meth. Fung. p. 227, 1801.

On Bystropogon canariensis (L.) L'Hér.

Tenerife. Aguamansa, ca. 1000 m, 05.09.1972, A. Hansen (46, C), II.

On Bystropogon plumosus (L.fil.) L'Hér.

Hierro. El Lance, II.

On Calamintha sylvatica Bromf. ssp. ascendens (Jord.) P. W. Ball

(syn. Satureja calamintha (L.) Scheele)  
Tenerife. Between Las Mercedes and Bailadero, Anaga Hills,  
20.10.1971, A. Hansen, (113, C), II; Roche Suarez, II.  
La Palma. At the Tunel de La Galga, 02.09.1972, A. Hansen, (136, C),  
II.

On Mentha longifolia (L.) Huds.

Tenerife, Vilaflor, 22.10.1969, A. Hansen (C), II.

On Mentha x piperita L. var. citrada (Ehrh.) Briq.

Tenerife. Tejina, 18.10.1971, A. Hansen, (43, C), II.

On Micromeria hyssopifolia Webb & Benth. var. hyssopifolia

Hierro. Road junction E of Mata, III.

On Micromeria varia Benth. ssp. hierrensis Pérez

Hierro. El Golfo between Jinama and Frontera, ca. 1000 m, I + III;  
just below Jinama, III.

On Origanum vulgare L.

Tenerife. Bco. de La Calera above Realejo Alto, and small bco. E of  
Bco. de La Suerte, 900 m, both finds II.

La Palma. Bco. del Agua, 9 km N of Santa Cruz de La Palma, and Bco.  
del Río de Las Nieves, both finds II.

B. plumosus, a new host for this rust, is endemic in the Canary  
Islands. JØRSTAD (1959) reported it on the same host, but later he  
(JØRSTAD 1962) corrected it to be B. origanifolius L'Hér. M. x pipe-  
rita var. citrada, is also a new host for the mint rust in the  
Archipelago.

The teliospores on Micromeria spp. are more coarsely verrucose  
than the teliospores on other hosts mentioned, and they are more  
verrucose on upper cells than on the lower. The spores measured 28-  
31 x 21-24 µm.

P. menthae has previously not been reported on Micromeria from  
Macaronesia, and both hosts which are new to the rust, are endemic  
to the Canary Islands.

On Micromeria spp. the rust in question is known in Spain,  
Greece, Crimea in USSR, Israel, Asia Minor and Nepal, and also in N.  
and C. America from Br. Columbia to Mexico and Guatemala.

Puccinia obscura Schroet. in Pass., N. Giorn. Bot. Ital. 9: 256,  
1877.

On Luzula forsteri (Sm.) DC.

Tenerife. Bco. de La Calera above Realejo Alto and small bco. E of  
Bco. de La Suerte; both II only.

JØRSTAD (1959) reported this rust from several localities in  
Tenerife, the only island in the archipelago where L. forsteri  
occurs. He also found only uredinia.

Puccinia oxalidis Diet. & Ell., Hedwigia 34: 291, 1895.

On Oxalis sp.

Tenerife. Puerto de La Cruz, Jardín Botánico, II.

This rust was reported from Jardín de la Universidad de La  
Laguna on O. purpurea L. by BELTRÁN TEJERA (1976).

Puccinia pelargonii-zonalis Doidge, Bothalia 2: 98, 1926.

On Pelargonium x hortorum Bailey

Lanzarote. Valle del Malpaso, 3 km S of Haria, II; Guinate, 450 m,  
II.

Gran Canaria. Near San Mateo on road to Tejeda, II; Balcon de  
Zamora, above Teror, II, Montaña de Arucas, II (+ III); on road  
Valsequillo - Telde, II; Tenoya, II; 2 km from San Mateo on road to  
Valsequillo, II; Mirador de Bandama, 569 m, II; on road Caldera de  
Bandama - Mirador de Bandama, II; Tafira Alta, II + III; Berrazales,  
near the hotel, II; bco. W. of Bco. de Moya, II; Juan Grande, II;

Miraflor, II; below Caldera de Bandama on road to Tafira Alta, II; El Palmar, II; La Atalaya, 16.01.1973, F.-E. Eckblad, II; Zucamar, II.

Tenerife. Km 11 on road Puerte de La Cruz - Las Cañadas, 700 m, II; Punta del Hidalgo, II; on road Buenavista - El Palmar, 280 m, III; Taganana, II; Iquete, II; Buenavista, II, below Benijos, II; Puerto de La Cruz, II.

La Palma. Breña Alta; Bco. del Río de Las Nieves; El Pedregal; on road Santa Cruz - Barlovento, at the junction on road to Espindola; Fuencaliente; all finds only with II.

Gomera. San Sebastian, at the Parador, II.

Hierro. Montaña de Afosa, near road junction to Taibique; Virgen de La Peña; Isora; all finds only with II.

The Pelargonium rust, described from S. Africa, is now widespread in Europe, and it is also found in North America. In the Canaries it is found on all islands but Fuerteventura, previously reported by CALONGE (1974) and BELTRÁN TEJERA (1976, 1980). It is more common in the northern parts of Gran Canaria and Tenerife than in the southern parts, no doubt due to a more humid climate. As in Europe telia are rarely seen.

Puccinia purpurea Cke., Grevillea 8: 15, 1876.

On Sorghum halepense (L.) Pers.

Tenerife. Punta Brava near Puerto de La Cruz, 20.10.1974, leg. A. Hansen (1001, C), II + III.

It is also known from Gran Canaria and La Palma.

Puccinia recondita Rob. ex Desm., Bull. Soc. Bot. Fr. 4: 798, 1857.

Syn. P. bromina Eriks., Ann. Sci. Bot. VIII, 9: 271, 1899; P. triticina Eriks., Ibid. VIII, 9: 270, 1899.

On Bromus lanceolatus Roth

Lanzarote. Montañas de Famara, 0,5 km W of Peñas del Chaché, 600 m, II.

On Bromus madritensis L.

Lanzarote. At Restaurante Helechos; Montañas de Famara, 0.5 km W of Peñas del Chaché, 600 m; Ermita de Las Nieves; all finds with II + III.

La Palma. Malpaís, 600 m, II.

Hierro. Near road junction E of Mata, II + III; Bco. Valverde, below Valverde town, II; above Restinga, ca. 400 m, II + III.

On Bromus rigidus Roth

Tenerife. El Roquillo, 850 m, II.

La Palma. Barlovento, II.

Hierro. Mirador de La Peña, II.

On Bromus tectorum L.

Tenerife. La Portezuela, II.

On Triticum aestivum L.

Lanzarote. 2 km E of Teguse, II.

B. lanceolatus and B. tectorum are new hosts for the rust in Macaronesia and B. madritensis for the rust in Lanzarote, La Palma and Hierro.

Other host genera in the Canary Islands are Aegilops, Agropyron, and Secale. Its aecial stage has been found on Cynoglossum pictum Soland in Tenerife (JØRSTAD 1959).

Puccinia rubiivora P. Magn., Ber. dt. bot. Ges. 19: 297, 1901.

On Rubia fruticosa Ait.

Tenerife. Teno, I + III.

Hierro. W of Sabinosa, I (+ III); between Mocanal and Tenesaite, I.

BORNMÜLLER (1903) found this rust in Gran Canaria and LINDINGER

(1926) found it in Tenerife. It is new to the rust flora of Hierro.

Puccinia rumicis-scutati Wint., Hedwigia 19: 43, 1880 (nom. nud.), in Rabh. Krypt.-Fl. Ed. 2, I, 1: 187, 1882.

On Rumex maderensis Lowe

Tenerife. Tanque, 480 m, II + III; above Tanque, II; between km 21-22 on road Orotava - Las Cañadas, II; Teno Mts., El Palmar, 22.10.1971, A. Hansen, (160), II.

Hierro. S slope of Mt. Chamuscada, 1020 m, II.

JØRSTAD (1959) reported only uredinia from Tenerife. It is new to Hierro.

Puccinia striiformis West., Bull. R. Acad. Belg. 21, 2: 235, 1854.

On Triticum aestivum L.

Lanzarote. 2 km E of Teguisse, II + III.

The host is new to the rust in Macaronesia, in the Canary Islands known only on Bromus rigidus Roth from Tenerife.

Puccinia tanaceti DC., Fl. Fr. 2: 222, 1805.

Syn. P. gonospermi Magn., Ber. dt. bot. Ges. 19: 293, 1901, P. chrysanthemicola, C., O. & L., Agronomia lusit. 2: 348, 1940.

On Argyranthemum callichrysum (Svent.) Humphr.

Gomera. Ancon de Las Palmas, near Valle Erquito, 1050 m, 20.07.1972, Liv Borgen (1041-43,0), II.

On Argyranthemum frutescens (L.) Sch. Bip.

Tenerife. Near Taganana, II.

Hierro. Between Dehesa and Sabinosa, II + III.

On Argyranthemum hierrense Humphr.

Hierro. Mirador de La Peña, II.

On Argyranthemum sp.

Hierro. Above Sabinosa, II + III.

On Artemisia thuscula Cav. (syn. A. canariensis (Less.)

Tenerife. Gúimar, II + III; Roque de Enmedio, II + III.

La Palma. Fuencaliente, II.

Hierro. Between Sabinosa and Los Marillos, II.

On Gonospermum elegans (Cass.) DC.

Hierro. Between Mocanal and Tenesaite, II + III.

On Gonospermum fruticosum (Buch.) Liss.

Tenerife. Taganana, II + III.

On Gonospermum gomerae Bolle.

Gomera. E of Vallehermoso, below Roque Cano, 16.04.1978, P. Sunding (4318B, O), II + III.

For the species concept see JØRSTAD (1959).

A. callichrysum, A. hierrense, G. elegans and G. gomerae are new hosts to the rust, all endemic to the Canary Islands.

A. frutescens is a new host for the rust in Hierro.

Puccinia unica Holw. var. bottomleyae (Doidge) Cumm. & Husain, Bull. Torrey Bot. Club 93: 66, 1966.

Syn. P. bottomleyae Doidge, Bothalia 3: 498, 1939.

On Aristida adscensionis L.

Hierro. Las Esperillas, II.

This rust is new to Hierro, previously reported from Tenerife and Gomera.

Puccinia venosa Syd. in H. Syd. & Werderm., Annls mycol. 22: 183, 1924.

On Scilla haemorrhoidalis Webb & Berth.

Tenerife. Valle Guerra, 460 m, 0 + I + II + III; Valle Guerra 550 m, 19.03.1974, Bj. Eidissen (O), III; 4 km NO of San Andrés on road to Igueste, 0 + I + II + III.

On S. haemorrhoidalis the rust species is reported from Gran Canaria, on S. latifolia Wild. also from Lanzarote.

Puccinia vincae Berk. in Smith, Engl. Fl. V, 2: 364, 1836.

On Vinca major L.

Gran Canaria. Balcón de Zamora; Bco. de Moya, at Los Tilos, 16.04.1973, P. Sunding (O); both finds with II + III.

The rust is also known from the other Canarian islands but Fuerteventura.

Puccinia violae DC., Fl. Fr. 6: 62, 1815.

On Viola odorata L. var. maderensis (Lowe) Webb

Tenerife. Small bco. E of Bco. de La Suerte, 900 m, II.

On Viola riviniana Rchb.

Tenerife. 7-8 km from Cruz de Las Mercedes on road to Taganana, 900 m, 31.03.1971, Liv Borgen (635), II.

Gomera. Monte de Agulo, 23.03.1975, G. Kunkel (17703, C), II.

In the Gomera specimen a few urediniospores have 3 equatorial pores.

V. reichenbachiana Jord., reported by JØRSTAD (1959), is now recognized belonging to V. riviniana.

Tranzschelia discolor (Fuck.) Tranz. & Litv., Bot. Zh. 24: 248, 1939.

On Prunus persica (L.) Batsch.

Lanzarote. 3 km W of San Bartolomé (km 10 on road to Mardache), II.

Tenerife. Bco. de La Calera, above Realejo Alto, II.

Hierro. Mt. Colorada, 21.11.1975, R. Elven (O), II.

On P. persica the rust is previously reported only from Gomera and La Palma. Other Canarian hosts are P. domestica L. and P. dulcis (Mill.) D.A. Webb (syn. P. communis (L.) Fritsch.).

Uredo marmoxiaiae Speg., An. Mus. nac. Hist. nat. B. Aires 26: 121, 1915.

On Patellifolia patellaris (Moq.) S., F.-L. & W.

Lanzarote. Puerto del Carmen; Arrieta, km 11 between Mala and Guatiza; 1 km N of Fêmes, Fêmes, El Papagayo; 2 km S of Laguna de Janubio; Tinguatón; 3 km N of Tahiche, just S of Arriche; Orzola; just S of Teguisse; Playa de Famara; Bco. de Horca; Guinate, 450 m; La Caleta, 09.09.1978, A. Hansen (C).

Fuerteventura. Corralejo, 02.04.1985, and near the lava-stream W of Punta del Bajo, 05.04.1985, A. Hansen (C).

Gran Canaria. Tenoya; La Caleta; Maspalomas; Aldea Blanca; Bco. Jacomar near Tamaraceite on road to Arucas; Juan Grande; 1 km N of Aero Club Runway.

Tenerife. Tenó; Bco. Galeneta 07.01.1971, J. Lid (O).

Gomera. 2 km NE of La Rajita, 500 m, 16.04.1978, P. Sunding (4289, O).

Hierro. Punta de Tosca Amarella; between La Galga and Punta de Feo.

The occurrence of this uredinial stage on P. procumbens (Chr. Sm. ex Hornem.) S., P.-L. & W. (syn. Beta procumbens Chr. Sm. ex Hornem.) was questioned by JØRSTAD (1959). However, BELTRÁN TEJERA (1980) reported P. procumbens as a host from Lanzarote.

Uromyces anthyllidis Schroet., Hedwigia 14: 162, 1875.



Syn. U. lupini Sacc., N. Giorn. Ital. 5: 274, 1873.

On Astragalus hamosus L.

Lanzarote. Vega Quintero near San Bartolomé, II.

On Lotus campylocladus Webb & Berth.

Tenerife. El Roquillo, II.

On Lotus cf. dumetorum Webb ex Murr.

Tenerife. Valle de San Andrés, II.

On Lotus glaucus Ait.

Fuerteventura. Corralejo, 02.04.1985, A. Hansen (73, C), II + III.

On Lotus glinoides Delarb.

Lanzarote. Playa Famara; Puerto del Carmen; between El Golfo and Yaiza; all finds II + III.

Fuerteventura. Corralejo, near the harbour, 01.04.1985, II + III, and SW of Corralejo, along the road to Lajares, 02.04.1985, II, A. Hansen (5 and 49, C).

On Lotus hillebrandii Christ

La Palma. On road Fuencaliente to Las Caletas, II.

On Lotus lancerottensis Webb & Berth.

Lanzarote. Puerto del Carmen, II + III; Montañas del Famara, 0.5 km W of Peñas del Chaché, 600 m, II; Peñas del Chaché, II + III; between El Golfo and Yaiza, II + III; Tinguatón, II + III; Vega Quintero near San Bartolomé, (II +) III; Orzola, II + III; Mirador del Río, II; just S of Teguisse, II + III; Playa Famara, II + III; Bco. de Horca, II + III; Ermita de Las Nieves, II; La Caleta, 09.03.1978, A. Hansen (168, C), III.

Fuerteventura. Above Betancuria, 04.04.1985, A. Hansen (126, C), II.

On Lotus sessilifolius DC.

Hierro. El Lance and Punta Dehesa; both II only.

On Lotus cf. sessilifolius DC.

Tenerife. Between km 3 and 4 above Las Canteras on road to Las Mercedes, II.

On Lotus sp.

Tenerife. Above Las Mercedes, II.

On Lupinus albus L.

Tenerife. Icod del Alto, II + III.

On Medicago laciniata (L.) Mill.

Lanzarote. 2 km S of Laguna de Janubio; 3 km W of San Bartolomé; both with III only.

On Medicago minima L.

Lanzarote. Puerto del Carmen, II + III.

On Medicago orbicularis (L.) Bartal.

Gran Canaria. Near Moya, 500 m, 22.04.1971, G. Kunkel (14143, C), II + III.

On Ononis natrix L. var. ramosissima (Desf.) Batt.

Lanzarote. Playa Mujeres, II.

L. dumetorum and L. hillebrandii, both endemic in the Canary Islands, and O. natrix var. ramosissima are new hosts for the rusts. L. dumetorum occurs in Tenerife and La Palma and L. hillebrandii only in La Palma. L. glaucus is a new host for the rust in Fuerteventura and L. sessilifolius for the rust in Hierro.

JØRSTAD (1959) reported this rust on Cicer arietinus L., Ononis laxiflora Desf. and Trigonella stellata Forssk. He also reported spermogonia and aecia on Euphorbia peplus L.

Uromyces behenis (DC.) Unger, *Einfl. d. Bodens* p. 216, 1836.

On Silene vulgaris (Moench) Garcke

Gran Canaria. Bco. Tenoya, below Teror, 0 + I; near Bandama on road from Tafira Alta, I; bco. near San Roque, 0 + I.

Tenerife. Bco. de La Calera, above Realejo Alto, I; ca. 2 km S of La Esperanza, 750 m, I; near Taganana, I + III.

La Palma. El Riachuelo (below the Caldera), 1110 m, I.

Hierro. Road junction E of Mata, 0 + I + III; above Sabinosa, I +

III; W of El Parque, I; below Ermita Virgen de La Pena, I + III; Isora, 0 + I.

This rust seems to be fairly common in the western islands of the Canaries, but it is not reported from Lanzarote and Fuerteventura.

Uromyces bidenticola Arth., Mycologia 9: 71, 1917.

On Bidens pilosa L.

Gran Canaria. Bco. de Moya, at Los Tilos; Balcón de Zamora, above Teror; below Caldera de Bandama, along the road from Tafira Alta; W of Bco. de Moya; near Jardín Canario; bco. near San Roque.

Tenerife. Bco. de Las Mercedes, 740 m; El Roquillo, 850 m; on road Buenavista - El Palmar; Masca.

La Palma. El Pedregal; Malpaís, 600 m.

All finds only with II. B. pilosa is commonly infected with this rust, but telia are rarely seen outside the Americas.

In the Canaries the rust is also known from Gomera and Hierro.

Uromyces dianthi Niessl, Verh. Naturf. Ver. Brünn 10: 162, 1872.

Syn. Uromyces caryophyllinus Wint., Hedwigia 19: 35, 1880 (III not described); in Rabh. Krypt.-Fl., Ed. 2, I, 1: 149, 1882.

On Dianthus caryophyllus L. (cult.)

Tenerife. 03.1985, II.

Uredinia brown, in greyish brown, necrotic leaf spots.

The fungus was found on imported cut flowers in a routine inspection by the Norwegian Plant Protection Service. It is widespread on cultivated carnation, but to my knowledge not reported previously from Macaronesia.

Uromyces ervi West., Bull. R. Acad. Belg. 21, 2: 234, 1854.

On Vicia disperma DC.

Tenerife. Bco. de Las Mercedes, 740 m, I; km 21-22 on road Orotava - Las Cañadas, I + II + III; Bco. Tequigo (500-600 m), I + III.

La Palma. El Riachuelo, I + III; 1.5 km S of El Paso, 670 m, I + III; Bco. de Las Palmas, 1.5 km S of Jedey, 700 m, I (+ II); Malpaís, 600 m, I + II + III; Bco. de Las Toscas, I + III.

Hierro. Ermita Virgen de La Peña, I.

On Vicia hirsuta (L.) S.F. Gray

Hierro. Road junction E of Mata, I (+ II) + III.

V. hirsuta is a new host for the rust in Hierro, but is previously known from Tenerife. On V. disperma it is also known from Gomera and Hierro.

Uromyces ferulae Juel, Bull. Soc. Myc. Fr. 17: 259, 1901.

On Ferula linkii Webb

Tenerife. Km 8 on road Orotava - Las Cañadas, I + III.

U. ferulae, a Mediterranean rust species, is new to the flora of Macaronesia, and the host, endemic in the Canaries, is a new host to the rust.

Uromyces graminis (Niessl) Deit., Mitth. Thuring. Bot. Ver., Neue Folge 2: 18, 1892.

On Melica canariensis Hempel.

Lanzarote. Montañas de Famara, 0.5 km W of Peñas del Chaché, II + III.

Urediniospores yellowish brown, pores scattered with distinct caps. Teliospores chestnut-brown with pedicels up to 60  $\mu$ m long.

U. graminis is a new rust in the Canary Islands, in Macaronesia

previously reported on M. ciliata L. from Madeira. It is known in Morocco and Algeria, and in Europe from Portugal eastwards to Kazakhstan, Kirghizia and Iran on several species of Melica of which M. ciliata L. is the main host. M. canariensis is a new host for the rust, endemic in Madeira and Canary Islands. The asexual stage which occur on several host genera belonging to Apiaceae.

Uromyces laburni (DC.) Otth, Mitth. naturf. Ges. Bern 1863 p. 87.

On Teline canariensis (L.) Webb & Berth.

Tenerife. Km 21-22 on road Orotava - Las Cañadas, II.

The rust is known only from Tenerife.

T. canariensis, endemic in Gran Canaria and Tenerife, is a new host for this rust, in the Canaries previously recorded on Chamaecytisus proliferus (L.fil.) Link and T. stenopetala (Webb & Berth.) Webb & Berth.

Uromyces limonii (DC.) Berk. in Orbigny, Dict. Univ. Hist. Nat. 12: 786, 1849.

On Limonium pectinatum (Ait.) O. Kuntze

Hierro. Between Dehesa and Sabinosa; Punta de La Dehesa; both finds II + III.

U. limonii is known on the same host from Tenerife, and also on L. macrophyllum (Brouss.) O. Kuntze, probably from the same island (MONTAGNE 1840, cf. also JØRSTAD 1959).

Uromyces polygoni-avicularis (Pers.) Karst., Bidr. Känn. Finl. Nat. Folk 4: 12, 1879.

On Rumex acetosella L. ssp. angiocarpus (Murb.) Murb.

Tenerife. Lomo Alto below Taborno, II.

This rust is previously known on this host in Tenerife.

Puccinia acetosae Körn. on the same host is easily separated from U. polygoni-avicularis. The former species has 3-4 equatorial pores in the urediniospores while the latter has 2 superequatorial ones.

On R. pulcher L. the rust is known from several Canarian islands.

Uromyces rumicis (Schum.) Wint., Hedwigia 19: 37, 1880.

On Rumex pulcher L.

Gran Canaria. Bco. de Moya, at Los Tilos, II.

Tenerife. Bco. de Las Mercedes, 740 m, II; ca. 2 km SO of La Esperanza, 750 m, II.

Gomera. Tunel de Gallado de La Cumbre, II.

On Rumex cf. pulcher L.

Tenerife. El Roquillo, 850 m,

In Tenerife R. pulcher seems to be commonly infected with this rust, and it is also known from La Palma and Gomera. Another host in Tenerife is R. crispus L.

Uromyces savulescui T. Rayss in "Hommage au Professeur E.C. Teodor-esco", Bucuresti 1937 p. 9.

Syn. U. nattrassii Cumm., Bull. Torrey Bot. Club 70: 529, 1943.

On Limonium cf. sinuatum (L.) Mill.

Tenerife. Telde, 02.1978.

Light yellow-brown, later white (germinated) teleutosori in violet spots especially on the wings on the stems and on leaves, scattered, in rings or in irregular streaks. Spores ovoid, oblong or obovoid, wall 1-1.5  $\mu$ m thick, at apex thickened to 10  $\mu$ m, hyaline.

This rust species, previously not reported from the Macaronesia, was found in a routine inspection by the Norwegian Plant Inspection Service on imported cut flowers.

U. savulescui was described on L. sinuatum from Israel. Later Pesante (1952, 1957) reported it from Italy and pointed out that U. natrassii described from Cyprus on Statice spicatum (Willd.) O. Kuntze was identical with U. savulescui.

Uromyces setariae-italicae Yosh., Bot. Mag. Tokyo 20: 247, 1906.

Syn. U. leptodermus H. & P. Syd. in H. & P. Sydow & Butler, Annls mycol. 4: 430, 1906.

On Setaria glauca (L.) P.B.

Tenerife. Buenavista, 21.10.1969, A. Hansen (C), II.

The rust is also known on the same host from La Palma.

Uromyces thellungii Maire, Bull. Soc. Hist. nat. Afr. N. 8: 147, 1917.

On Rumex vesicarius L.

Lanzarote. Playa Famara; Bco. de Horca; both finds with II + III.

The rust is known also from Tenerife and Gomera. A collection made 18.06.1977 by G. Kunkel (C), II, is without locality.

Uromyces tingitanus Henn., Annu. Conserv. Jard. bot. Genève 1903-04: 243, 1904.

On Rumex bipinnatus L: fil.

Lanzarote, 1978, P. Sunding (4232, O), II + III.

R. bipinnatus has previously been found infected with this rust in Lanzarote.

Uromyces vicia-fabae (Pers.) Schroet., Hedwigia 1: 161, 1875.

On Lens culinaris Med.

Lanzarote. Guatifaya, II + III.

In addition to the above mentioned host, the rust has been found on several Vicia spp., especially on V. faba L., on which it has been recorded from all the Canarian islands but Fuerteventura.

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