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The Parmelia borreri Group (Lichenes) in Macaronesia

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Resumen

Parmelia borreri y especies afines (líquenes) en la Macaronesia: Este grupo de criptógamos está representado por 4 especies, como enumeradas en este trabajo. *Parmelia subrudecta* se cita por primera vez para estas islas.

In Europe south of Scandinavia the *Parmelia* species with punctiform laminal pseudocyphellae and simple rhizines are often met with. These species are usually referred to as the *Parmelia borreri* group and belong to subgenus *Parmelia,* section *Parmelia,* subsection *Simplices* (Hale & Kurokawa 1964).

During my one month lichenological field work mainly in the western Canary Islands in the spring 1972 I especially sought for representatives of the *P. borreri* group. However, a single specimen was found and members of the group are assumed to be rare in the Canary Islands.

Several publications on the taxonomy and nomenclature of the *P. borreri* group have appeared during the last two decades (cf. Culberson & Culberson 1956, W. L. Culberson 1962, Hale 1965, Targé & Lambinon 1965). Based on studies on type material Hale (1965) proposed several nomenclatural changes, but otherwise his species concept corresponds to that of W. L. Culberson (1962). The new taxonomic treatment of the *P. borreri* group has necessitated an examination of the previous records of its Macaronesian representatives.

Several records of members of the *P. borreri* group from

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Macaronesia have appeared in the literature. The specimens of the *P. borreri* group published by Steiner (1904) and Tavares (1952) have been examined. The specimen reported by Montagne (1840) has been sought for in vain. Nylander (1858-1860) and Stizenberger (1890) probably only quoted Montagne's report. The Macaronesian specimens of the *P. borreri* group deposited in BG, O, and UPS are also included.

All specimens have been studied chemically by thin-layer cromatography (TLC) according to the standard method given by C. F. Culberson (1972). By this method gyrophoric and lecanoric acids are not very well separated. To obtain better separation between these acids the plates were developed in ethyl ether-acetic acid (50:1, v/v) solution (C. F. Culberson 1969).

PARMELIA BORRERI (Sm.) Turn.

Parmelia borreri is recognized by its laminal soralia, the uniformly mineral gray upper side, and the dark brown to black under side. It is usually a corticolous species and contains atranorin and gyrophoric acid. Medulla C+ red. The world distribution of *P. borreri* has been summarized by W. L. Culberson (1960, as *P. pseudoborreri*) and Hale (1965), who also mapped its European distribution. According to Hale (1965: 38) *P. borreri* is a strongly oceanic species in Europe. However, it often occurs in areas with warm and dry summers, and it is lacking in the most oceanic parts of the European coast. The find of *P. borreri* from Macaronesia is from the arid southern part of Sto. Antao.

Macaronesian locality for *Parmelia borreri*:

CAPE VERDE ISLANDS; Sto. Antâo: Lombo le Figueria, 1200 m, epithytic on *Casuarina equisetifolia*. Sunding 1972 (O).

PARMELIA REDDENDA Stirt.

Parmelia reddenda is a corticolous species with laminal and marginal soralia which have a tendency to the formation of pseudoisidia. It also differs from *P. borreri* in its chemical properties; the medulla reacts C- and produces unidentified fatty acids.

According to Krog (1970) *P. reddenda* has a limited distribution in Europe known only from more or less coastal areas from southernmost Sweden to Bretagne. It is also

known from South Africa and America (Hale 1965). *P. reddenda* was first reported from Macaronesia (Madeira) by Tavares (1952) but exact localities were not given.

Macaronesian localities for *Parmelia reddenda*:
MADEIRA: Cha do Loiro, 500 m, on trunk of *Laurus* sp. Tavares 4447 (LISU, UPS); between Queimadas and Caldeirao Verde, 900 m, on mossy trunk. Tavares 4596 (LISU); 1 km NW of Caldeirao Verde, Lombo dos Pecegueiros, 975 m, on *Laurus azorica*. Tibell 3667 (UPS).

PARMELIA STICTICA (Duby) Nyl.

Parmelia stictica is recognized by its distinct brownish tinge and the saxicolous habitat. The pseudocyphellae and soralia are often somewhat elongated. It reacts C + red due to the presence of gyrophoric acid, and it is, like *P. borreri* and *P. reddenda*, dark brown to black underneath.

In Europe *P. stictica* is known from scattered localities in Central South Norway, France, Switzerland and the Iberian peninsula (Krog 1970). It is also known from Greenland (Dahl 1950, Krog 1970), South Africa and South America (Hale 1965). Tavares (1952) mentioned this species from Madeira as *Parmelia dubia* v. *stictica*.

Macaronesian locality for *Parmelia stictica*:
MADEIRA: Between Paul da Serra and Rabaçal, 1300 m, on stone. Tavares 4615 A (LISU).

PARMELIA SUBRUDECTA Nyl.

Parmelia subrudecta is characterized by a pale tan under surface and the presence of laminal and marginal soralia. It is regarded as a corticolous species. Two of the five Macaronesian finds were, however, made on stone. The medulla contains lecanoric acid and reacts C + red.

P. subrudecta is the commonest and most widely distributed representative of the *P. borreri* group. In Europe it is common south of Scandinavia, as well as in Africa (Tunis and the southern part of Africa), North America, and Australia (Hale 1965). The specimen Steiner (1904) reported from Gran Canaria as *P. dubia* represents *P. subrudecta* (WU).

Macaronesian localities for *Parmelia subrudecta*:
MADEIRA: Cha de Loiro, 500 m, on trunk of *Laurus* sp. Tavares 4447 (UPS); 0,5 km W of Bôca da Encumeada, 1075 m, on rocks. Tibell 3518 (UPS).
CANARY ISLANDS: Gran Canaria: Near Tafira, 400 m, Bornmüller 3184

(WU); Tenerife: Cruz de Afur, 700 m, on *Erica arborea*. Østhagen 2103 (O); Tenerife: Vina Grande, 50 m, on stone. Jørgensen 3106 (BG).

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Summary

The *Parmelia borreri* group is represented in Macaronesia by four species: *P. borreri* (Sm.) Turn. (the Cape Verde Islands), *P. reddenda* Stirt. (Madeira), *P. stictica* (Duby) Nyl. (Madeira) and *P. subrudecta* Nyl. (Madeira and the Canary Islands). *P. borreri* s. str. and *P. subrudecta* are reported from Macaronesia for the first time.

REFERENCES

CULBERSON, C. F. 1969. Chemical studies in the genus Lobaria and the occurrence of a new tridepside, 4-0-methyl-gyrophoric acid. *Bryologist* 72: 19-27.

CULBERSON, C. F. 1972. Improved conditions and new data for the identification of lichen products by a standardized thin-layer chromatographic method. *J. Cromat.* 72: 113-125.

CULBERSON, W. L. 1960. Parmelia pseudoborreri Asahina, lichen nouveau pour la flore d'Europe, et remarques sur les "especes chiminques" en lichenologie. *Rev. Bryol. Lichenol.* 29: 321-325.

CULBERSON, W. L. 1962. Some pseudocyphellate Parmeliae. *Nova Hedwigia* 4: 563-577.

CULBERSON, W. L. & CULBERSON, C. F. 1956. The systematics of the Parmelia dubia group in North America. *Amer. J. Bot.* 43: 678-687.

DAHL, E. 1950. Studies in the macrolichen flora of southwest Greenland. *Medd. Grønland* 150 (2): 1-176.

HALE, M. E. Jr. 1965. Studies on the Parmelia borreri group. *Svensk Bot. Tidskr.* 59: 37-48.

HALE, M. E. Jr. & KUROKAWA, S. 1964. Studies on Parmelia subgenus Parmelia. *Contr. U. S. Nat. Herb.* 36 (4): 119-191.

KROG, H. 1970. The Scandinavian members of the Parmelia borreri group. *Nytt Mag. Bot.* 17: 11-15.

MONTAGNE, C. 1840. Classis III, Algae. Familia I. Lichenes. pp. 93-126 in: Webb, P. & Berthelot, S., *Histoire naturelle des iles Canaries*. Tom. 3, part. 2, sect. 4.

NYLANDER, W. 1858-1860. *Synopsis metodica Lichenum* I. Parisiis. 430 pp.

STEINER, J. 1904 Flechten, auf Madeira und den Kanaren gesammelt von J. Bornmüller in den Jahren 1900 und 1901. *Österr. Bot. Z.* 54: 333-336, 351-365, 399-409, 446-448.

STIZENBERGER, E. 1890. *Lichenae Africana*. St. Gallen. 280 pp.

TARGE, A. & LAMBINON, J. 1965. Etude chimiotaxonomique du groupe de Parmelia borreri (Sm.) Turn. en Europe occidentale. *Bull. Soc. Roy. Bot. Belg.* 98. 295-306.

TAVARES, C. N. 1952. Contribution to the lichen flora of Macaronesia. I. Lichens from Madeira. *Portug. Acta Biol. Ser. B.* 3: 308-391.