A new species in the lichen genus *Caloplaca* from the Canary Islands, including a key to all brown-black *Caloplaca sensu lato* species in Macaronesia

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Abstract:

*Caloplaca nigrocarpa* sp. nov. found on bark of canary willow from the Canary Islands is described as new to science. A description of the species is given together with notes on its chemistry, distribution, ecology and taxonomy. Related lichen taxa are discussed briefly and a key to the Macaronesian species of the genus *Caloplaca s.l.* with brown-black apothecia is also provided.

Key words: Biodiversity, Macaronesia, taxonomy, Teloschistaceae

Introduction

Teloschistaceae is a widespread and well delimited family of lichenized fungi, with considerable morphological and ecological heterogeneity across genera and species groups, and one of the largest families of lichens (Søchting & Lutzoni 2003, Gaya et al. 2008, Arup et al. 2013). The cosmopolitan *Caloplaca* Th. Fr. is the largest genus within Teloschistaceae and may comprise as many as 1000 or more species (Kärnefelt 1989; Arup 2006, Arup et al. 2013). It is a rather complex genus due to not only the great number of existing species, but also to the many characters used to distinguish them and our poor understanding of their variability. Several, more or less distinct groups of species can be recognized within the genus, although intermediate forms can occur (Clauzade & Roux 1985; Kärnefelt 1989; Kärnefelt et al. 2002). The subgenus *Pyrenodesmia* (A. Massal.) Boist. comprises species with brown or black apothecia, a thallus that is not orange unlike most other *Caloplaca* spp., and the absence of anthraquinones in all parts of the thallus (Clauzade & Roux 1985, Wetmore 1994). This group is artificial and not phylogenetically justified (Kärnefelt 1989, Wetmore 1994, Gaya et al. 2008, Muggia et al. 2008, Vondrák et al. 2012). These species, which are generally collected less frequently and more difficult to recognize in the field, nevertheless seem to be widespread and occur mainly on acidic and calcareous rocks in many regions (Khodosovtsev et al. 2002); some species in this group have endolithic thallus (Tetiarch & Muggia 2006, Muggia et al. 2008) and a few species are also corticolous (Wetmore 1994).

In the Canary Islands, we discovered a black-fruited *Caloplaca* restricted to a small willow forest in La Caldera de Taburiente National Park. It could not be assigned to any known taxon, and is therefore formally described here as a new species. Recently, Arup et al. (2013) published a new taxonomy of the family Teloschistaceae with 31 newly described or resurrected genera; *Pyrenodesmia* A. Massal. does not seem to be monophyletic. The authors maintain that the phylogeny around the core group of species in this group must be further studied. Also, there are still many groups and species related to the new circumscribed genus *Pyrenodesmia* to evaluate. Pending further information on molecular phylogenetic relationships around this group and the inclusion of more species, we prefer to keep its classical name and to describe this new species in the genus *Caloplaca*.

The Canaries form part of Macaronesia, one of the 25 World Biodiversity Hotspots (Myers et al. 2000), a phytogeographical region that includes five Atlantic volcanic archipelagoes (the Azores, the Madeiras, the Savages, the Canary Islands and the Cape Verde Islands), as well as the Macaronesian enclave on the African mainland (Báez & Sánchez-Pinto 1983; Jaén-Molina et al. 2009). The lichen and lichenicolous biota of the Canary Islands is very rich with more than 1600 species listed for an area of just 7447 km² (Hernández Padrón & Pérez-Vargas 2010). Neverthe-
6. Thallus immersed or almost absent .................................................................Pyrenodesmia alociza (=C. alociza) Thallus on surface, obvious ........................................................................................................ 7

7. Apothecia immersed in thallus at maturity, epihymenium K+ violet, isthmus 3–7 μm ... Pyrenodesmia chalybaea (=C. chalybaea) Apothecia sessile at maturity, epihymenium weakly K+ violet, isthmus 3–4 μm ................................................................................................................................................................ 8

8. Apothecia with pruinose thalloid margin; disc usually partly pruinose ......................... Pyrenodesmia variabilis (=C. variabilis) Apothecia with proper margin thin, epruinose, same color as disk, no thalloid margin; disc no pruinose ...... Caloplaca conversa

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