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Nota corta

Asplenium trichomanes L. subsp. *coriaceifolium* and subsp. *trichomanes* (Pteridophyta: Aspleniaceae) in continental Portugal

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Abstract

Asplenium trichomanes subsp. *coriaceifolium* was recorded in Cascais municipality, Estremadura province, increasing its known distribution range in the Iberian Peninsula to Portugal. The occurrence of the subsp. *trichomanes* in Portugal is confirmed.

Key words: *Asplenium trichomanes* subsp. *coriaceifolium*, *Asplenium trichomanes* subsp. *trichomanes*, ferns, Portugal, Estremadura.

Resumen

Asplenium trichomanes *L. subsp.* coriaceifolium *y subsp.* trichomanes *(Pteridophyta: Aspleniaceae) en Portugal continental*

Se registró *Asplenium trichomanes* subsp. *coriaceifolium* en el municipio de Cascais, provincia de Estremadura, aumentando el rango de distribución conocido en la Península Ibérica hasta Portugal. Se confirma la ocurrencia de la subsp. *trichomanes* en Portugal.

Palabras clave: *Asplenium trichomanes* subsp. *coriaceifolium*, *Asplenium trichomanes* subsp. *trichomanes*, Estremadura, helechos, Portugal.

Introduction

Asplenium trichomanes L. is a subcosmopolitan species that occurs in all parts of the Iberian Peninsula (Tutin *et al.*, 1964; Nogueira & Ormonde, 1986). It has long been known, since the cytological work of Lovis (1964) that it is a cytotaxonomic complex and most modern treatments now accept several subspecies based on a combination of cytotype and differing genomic homologies, combined with more-or-less recognisable morphological differences. Some workers prefer to use only the specific rank for theoretical reasons, but we consider this to be less appropriate in a close-knit group such as this.

Among the calcicole tetraploid subspecies that are allied to, but differ from subsp. *quadrivalens* D.E.Mey., a taxon from S.W. Europe was described from the Balearic Islands as *Asplenium trichomanes* subsp. *coriaceifolium* H.Rasbach, K.Rasbach, Reichst. & Bennert (Rasbach *et al.*, 1990) and independently but almost simultaneously at the specific rank, as *A. azomanes* Rosselló, Cubas & Rebassa (Rosselló *et al.*, 1991). It was also found in southern mainland Spain and N. Africa (Rasbach *et al.*, 1990; Carine *et al.*, 2006; Moreno Saiz *et al.*, 2015; Anthos, 2021), but had not been noticed in Portugal until now.

Subsp. *coriaceifolium* is distinguished by its glossy, dark-green pinnae of a rectangular outline, and somewhat convex surface with margins turning slightly downwards, the pinnae usually have a noticeable acroscopic auricle and a rather strongly crenately-toothed distal margin. It occurs in crevices of limestone rock, but the fronds do not normally lie flat on the rock surface like some other subspecies. The spores are c. 36-40 µm in dimension (Rasbach *et al.*, 1990) and the subspecies is tetraploid and known to form a sterile tetraploid hybrid with subsp. *quadrivalens*, with considerable failing of bivalent formation at meiotic metaphase and some multivalents also present (Rasbach *et al.*, 1990, 1991; Roselló *et al.*, 1991).

Although the Portuguese material of the *A. trichomanes* aggregate contains forms that appear to correspond to different subspecies (Franco & Rocha Afonso, 1982), the treatment given in Portuguese Floras has been as *A. trichomanes* s.l. (e.g. Coutinho, 1939; Franco, 1971). When the genus was treated in *Flora iberica* (Nogueira & Ormonde 1986),

the authors stated that the subspecies that occurs in Portugal is *A. trichomanes* subsp. *quadrivalens* D.E.Mey. (Nogueira & Ormonde, 1986; Queirós & Ormonde, 1989). It is the only subspecies listed for continental Portugal by Sequeira *et al.* (2012). However this was likely to be an over-simplification and at least the diploid subsp. *trichomanes* could be expected on acidic rocks. The first author of this note reviewed the collections deposited in LISI herbarium (acronym according to Thiers, 2021; Arsénio *et al.*, 2021) and at least one specimen corresponds to subsp. *trichomanes* (LISI 808).

But rather unexpectedly it is a different subspecies of *A. trichomanes* that has recently been found by the first author, when exploring near his new home in Cascais, Portugal, *A. trichomanes* subsp. *coriaceifolium*. It was identified by the first author as subsp. *coriaceifolium*.

A. trichomanes subsp. *coriaceifolium* has now been observed and collected at the limestone area in low altitude not very far from the sea in Atlantic Central Portugal, in Cascais municipality south of and below the Serra de Sintra (Estremadura, following the provinces of *Flora iberica* delimitation). The Serra de Sintra is mostly composed of granites (Upper Cretaceous) and a later gabbro-syenite core and forms a higher acidic siliceous intrusion in the carbonated platform that constitutes most of Portuguese Estremadura province (Ribeiro, 1940). Several species of ferns reach their southern limit there as shown for *Dryopteris* by Fraser-Jenkins (1982), including the recently described *Dryopteris dilatata* (Hoffm.) A.Gray subsp. *lusitanica* Fraser-Jenk., Andreis & Vasco Silva (Fraser-Jenkins *et al.*, 2020). However *A. trichomanes* subsp. *coriaceifolium* is nearer its northern limits, being a West Mediterranean element.

Asplenium trichomanes L. subsp. ***trichomanes***, *Species Plantarum* 2: 1080 (1753)

PORTUGAL. Douro Litoral: entre Mesão Frio e Teixeiró, 29TNF95, *J.P. Lopes & J.G. Pedro*, 22-III-1941 (LISI 808).

Asplenium trichomanes L. subsp. ***coriaceifolium*** H.Rasbach, K.Rasbach, Reichst. & Bennert, *Willdenowia* 19: 471 (1990)
[Syn.: *Asplenium azomanes* Rosselló, Cubas & Rebassa, *Rivasgodaya* 6: 116 (1991)]
Range: Spain: Balearic Islands, Málaga, Jaén; Portugal: Estremadura, Algarve; N.W. Africa: Morocco.

PORTUGAL. Algarve: Loulé, Salir, estrada para Barranco Velho, Penedos Altos, 29SNB9124, *J. Malato-Beliz & J.A. Guerra*, 22-III-1979 (LISI 864). **Estremadura**: Cascais, Cobre, Ribeira das Vinhas, N.-facing limestone cliff below *Pinus*, on N.W. side of valley, above wooden footbridge across main stream gulley, opposite to Alvide, 38° 42.84' N, 9° 25.74' W, 40 m, *C.R. Fraser-Jenkins* 36093, 17-III-2019 (LISI s/n), 36207, 23-XII-2019 (LISI s/n) (Figures. 1 & 2); ditto, *C.R. Fraser-Jenkins & Vasco Silva* 36262, 20-VIII-2021 (LISI 32701).

Figure 1. *Asplenium trichomanes* subsp. *coriaceifolium* growing in the valley of the Ribeira das Vinhas, Cascais (Estremadura). Photograph: C.R. Fraser-Jenkins.
Figura 1. Asplenium trichomanes *subsp.* coriaceifolium *en el valle de la Ribeira das Vinhas, Cascais (Estremadura). Fotografía: C.R. Fraser-Jenkins.*

The population consists of about 20 plants or slightly more. It may be expected that other areas of semi-shaded low-lying calcareous rocks in the area may reveal further populations.

Figure 2. *Asplenium trichomanes* subsp. *coriaceifolium* at the Ribeira das Vinhas, Cascais (Estremadura). Photograph: C.R. Fraser-Jenkins.
Figura 2. Asplenium trichomanes *subsp.* coriaceifolium *en la Ribeira das Vinhas, Cascais (Estremadura). Fotografía: C.R. Fraser-Jenkins.*

The taxon has not so far been reported from Portugal, but we have subsequently found out that it has also been found in the Algarve province (at Faro district), according to Jacinto (2021), which we confirm here to be correct subsp. *coriaceifolium*. The first author has also identified a specimen deposited in LISI as subsp. *coriaceifolium* (LISI 864).

This taxon was first recognised and studied in great detail by the late Professor T. Reichstein, Basel, Switzerland, whose knowledge of *Asplenium* was unparalleled and included cultivation, detailed morphological study and cytological study along with genome-analysis from hybrids. Along with two hybrids they recognised, it was discovered in 1971 by Dr. W. Bennert during his detailed study of Mallorcan *Asplenium* and other collections in Herb. T. Reichstein (now taken to GENT) were collected there by J. Orell in 1965 and 1967, by Orell & Reichstein in 1977 and by Bennert in 1986, during detailed fern excursions. Bennert & Rasbach also collected it in Málaga in mainland Spain in 1988 and 1989.

It was subsequently collected at the same locality in Mallorca by J.A. Roselló *et al*. in 1988 and 1989 and was redescribed by them at the less appropriate specific rank, along with a redescription of one of the hybrids (Roselló *et al.*, 1991).

In some recent literature the synonym *A. azomanes* Rosselló, Cubas & Rebassa has been used (e.g. Casimiro-Soriguer *et al.*, 2020), though we prefer to treat this taxon at subspecific rank in keeping with the long-established and reasoned precedent set by Manton (1950), Lovis (1964) and in the many detailed papers of Reichstein on *Asplenium* (e.g. Reichstein, 1981). At subspecific rank the name subsp. *coriaceifolium* has nomenclatural priority, but if thought more appropriate to treat such highly cryptic and genomically related taxa of this highly reticulate group as species, *A. azomanes* would have priority.

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