

Precisions on the ecology and chorology of *Schistostega pennata* (Hedw.) Webb & Mohr. in the Iberian Peninsula

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Abstract: Reinoso Franco, J., Rodríguez Oubiña, J. & Viera Benitez, M. C. *Precisions on the ecology and chorology of Schistostega pennata (Hedw.) Webb & Mohr. in the Iberian Peninsula. Lazaroa 14: 13-19 (1994).*

The presence of the moss *Schistostega pennata* (Hedw.) Webb & Mohr. was mentioned by different authors: Casares (1921) and Allorge (1927). Since then it has not been reported from Galicia (NW of Iberian Peninsula). The biogeographical interest of recent findings is discussed and new data is presented about the autecology of this interesting acidophilous moss, found in very scarce quantities in the Peninsula. The main chemical characteristics of the granite excavations where this taxon usually occurs are analyzed.

Resumen: Reinoso Franco, J., Rodríguez Oubiña, J. & Viera Benitez, M.C. *Precisiones sobre la ecología y corología de Schistostega pennata (Hedw.) Webb & Mohr. en la Península Ibérica. Lazaroa 14: 13-19 (1994).*

La presencia del musgo *Schistostega pennata* (Hedw.) Webb & Mohr. fué mencionada por diferentes autores: Casares (1921) y Allorge (1927). Desde entonces no se había vuelto a encontrar en Galicia (NW de la Península Ibérica). En esta nota se comenta el interés biogeográfico de los recientes hallazgos y se aportan nuevos datos sobre la autoecología de éste interesante musgo acidófilo muy poco representado en la brioflora peninsular. Se analizan las principales características químicas de las excavaciones graníticas donde se desarrolla típicamente éste taxon.

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INTRODUCTION

Although information about the presence of this species in Spain was the object of a study performed by CASAS (1978), we want to make some clarifications about it. The first news we have about the existence of this taxon in Spain is due to CASARES (1921) who, in a note published in the Boletín de la Real Sociedad Española de Historia Natural, refers to the shipment of a collection of *Schistostega pennata* made by BESCANSÀ, who had collected it in the district of Incio (Lugo, Galicia), in the cave of Las Choyas in an iron mine dating from the Roman times.

We are surprised that CASARES (*op. cit.*) had not given more importance at that time to Bescansà's find, as even that note has as its title the name of a hepatic that Casares observed on the protonema of *Schistostega pennata*.

Very much later, almost thirty years afterwards, BESCANSÀ (1948) himself gives notice of his initial find in Lugo at the same time as he announces the observation of protonema as well as sporophyte of *Schistostega pennata* in a small granite excavation on the seashore near the beach of Sabón (Arteixo, A Coruña, Galicia), stating that as in the aforementioned cave of Las Choyas it lives on ferrous soil. On this site the granite rock is stained with ferrous hydrate resulting from the decomposition of mica, observations of which he mentioned to the bryologists Allorge and Casares.

Finally ALLORGE (1927), tells about the field trips made in the North and Northwest of Spain. The collections that come from Galicia are mainly from the provinces of Lugo and A Coruña.

This author mentions the presence of *Schistostega pennata* in Puerto de Piedrafita (Lugo), at the entrance to a cave.

CHARACTERISTICS OF NEW GALICIAN LOCALITIES

The geographical (Fig.1) and ecological characteristics of the sites where we have recently collected this taxon in Galicia are indicated below.

GEOGRAPHICAL SITUATION

The locality of Xestido belongs to the district of Abadín (Lugo), 29TPJ2209, 610 m above sea level, 20 Km from the coast towards the NW and on acid substrate made up of biotite granites. With respect to its bioclimatology and chorology, this locality is situated in the colino superior horizon (colino belt) of the Galaico Asturiano septentrional subsector (Galaico Asturiano sector) of the Cantabroatlantica province (Eurosiberian region), according to the chorological synthesis made by RIVAS-MARTÍNEZ

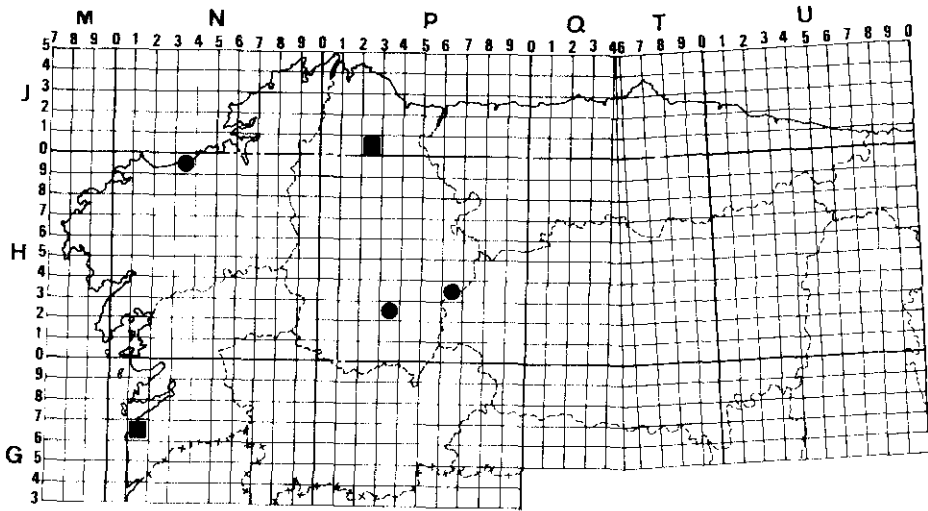


Fig. 1. Geographic distribution of *Schistostega pennata* in Galicia.

- before 1960
- new localities.

(1987). The climatophylic series is the *Blechno spicanti-Querceto roboris* sigmetum and, within it, predominate the heathers of the *Gentiano pneumonanthe-Ericetum mackaiana*, in which the *Erica mackaiana* is the dominant component.

The second coastal emplacement in Baiona, is situated in the district of the same name in the province of Pontevedra, 29TNG1163, about 10 m above sea level, on acid substrate made up of two mica granites. The area is located in the termocolino horizon (colino belt) of the Miñense subsector (Galaisco-Portugues sector) on the Cantabroatlantica province (Eurosiberian region), where the climatophylic series corresponds to the *Rusco aculeati-Querceto roboris* sigmetum and, due to the state of deterioration, the coastal heathers (*Cysto salvifolii-Ulicetum humilis*) exist in abundance.

ECOLOGY

In Xestido (Lugo), the site of the find is a small cave, open and lighted in its 1.5 m long entrance and poorly lighted inside, with a height of 50 cm and walls of granite rock. In its basal zone, with ascending slopes of 25 %, there is soil and some gravel. *Schistostega* was observed on the middle and internal floor areas, sporadically colonizing the lateral walls; its tends to occupy the most internal and hidden areas. The species mentioned (Table 1) were recognized as forming part of the community, *Calypogeia ar-*

Table n.º 1

List of bryophytes observed in the finding places of *Schistostega pennata*:
A: Xestido; B: Baiona

	A	B
<i>Schistostega pennata</i>	+	+
<i>Diplophyllum albicans</i>	+	+
<i>Calypogeia arguta</i>	+	.
<i>Isopterygium elegans</i>	+	.
<i>Mnium hornum</i>	+	.
<i>Mnium spinosum</i>	+	.
<i>Plagiothecium sylvaticum</i>	+	.
<i>Pterigynandrum filiforme</i>	+	.
<i>Calypogeia azurea</i>	.	+
<i>Fissidens curnowii</i>	.	+
<i>Pleuridium acuminatum</i>	.	+
<i>Pogonatum nanum</i>	.	+

Table n.º 2

Chemical data corresponding to the amorphous granite layers in the locality of Baiona
(obtained by X-ray diffraction)

% SiO ₂	% P ₂ O ₅	% Al ₂ O ₃	% Fe ₂ O ₃	% Na ₂ O
20-40	20-30	20-30	3-5	1-2

guta, *Isopterygium elegans* and *Diplophyllum albicans* being the most abundant.

In Baiona (Pontevedra), *Schistostega pennata* was found in a granite cave that was 20 m deep, 5 m high and approximately 3 m wide, the base of which has a descending slope with gradient of 10 %, facing NW (the sea-breeze comes in almost constantly), located on a cliff about 50 m from the sea. The interior has very little light and is permanently saturated due to the presence of water seeping from the walls and accumulating in the basal part. On these walls, above all, the presence of amorphous granite layers of a weakly acid pH (5.7) was frequently observed, where *Schistostega* is found. This substrate was studied in the laboratory by Dr. F. Guitián from the Departamento de Edafología y Química Agrícola (Universidad de Santiago) and results are shown (Table 2). The high percentage of phosphates found, possibly of an organic origin (MACÍAS & al. 1980), must be highlighted.

We would like to state that *Schistostega pennata* was observed colonizing the walls of this cave in Baiona especially in the middle area and its vi-

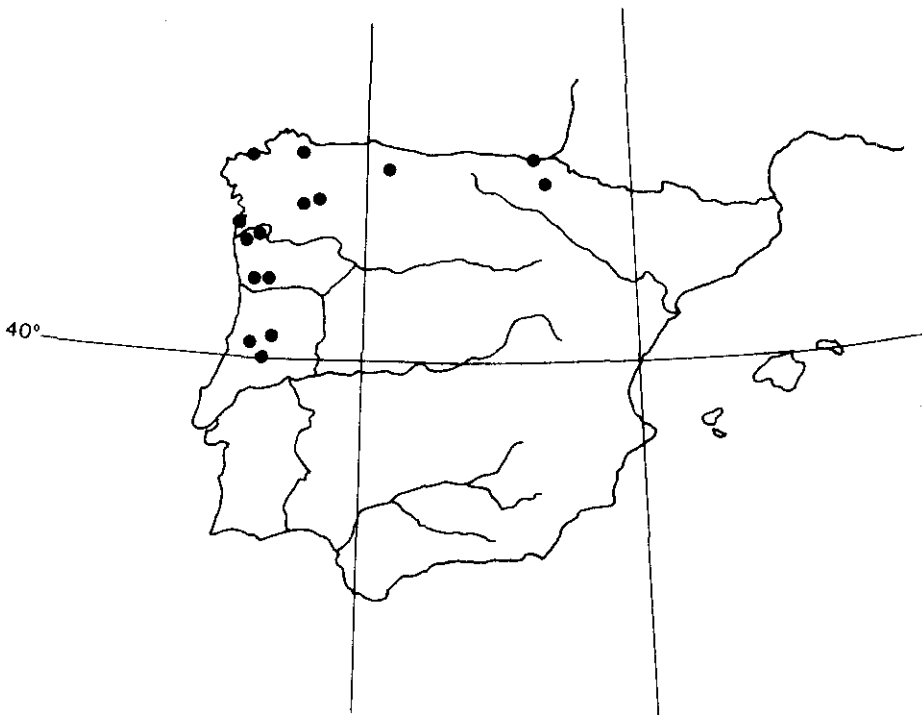


Fig. 2. Geographic distribution of *Schistostega pennata* in the Iberian Peninsula.

city, where formations originate in which this moss predominates almost exclusively. With respect to the bryoflora of the cave (Table 1), as one advances towards the interior and light decreases, formations dominated by the following species can be easily observed: *Pogonatum nanum* which is found on the sides and top part of the entrance, next, and on the less illuminated walls appears *Fissidens curnowii*, followed in the middle area, where lighting is very low, by extensive and dense populations of *Schistostega*, frequently mixed with *Calypogeia azurea*. Finally, at the bottom of the cave, with almost no about 10 m' in both walls, where the reflected emerald brightness, which is a typical characteristic of this moss, stands out.

DISTRIBUTION

The data on the presence of this species in the Iberian Peninsula that are considered to be valid are listed below and summarized.

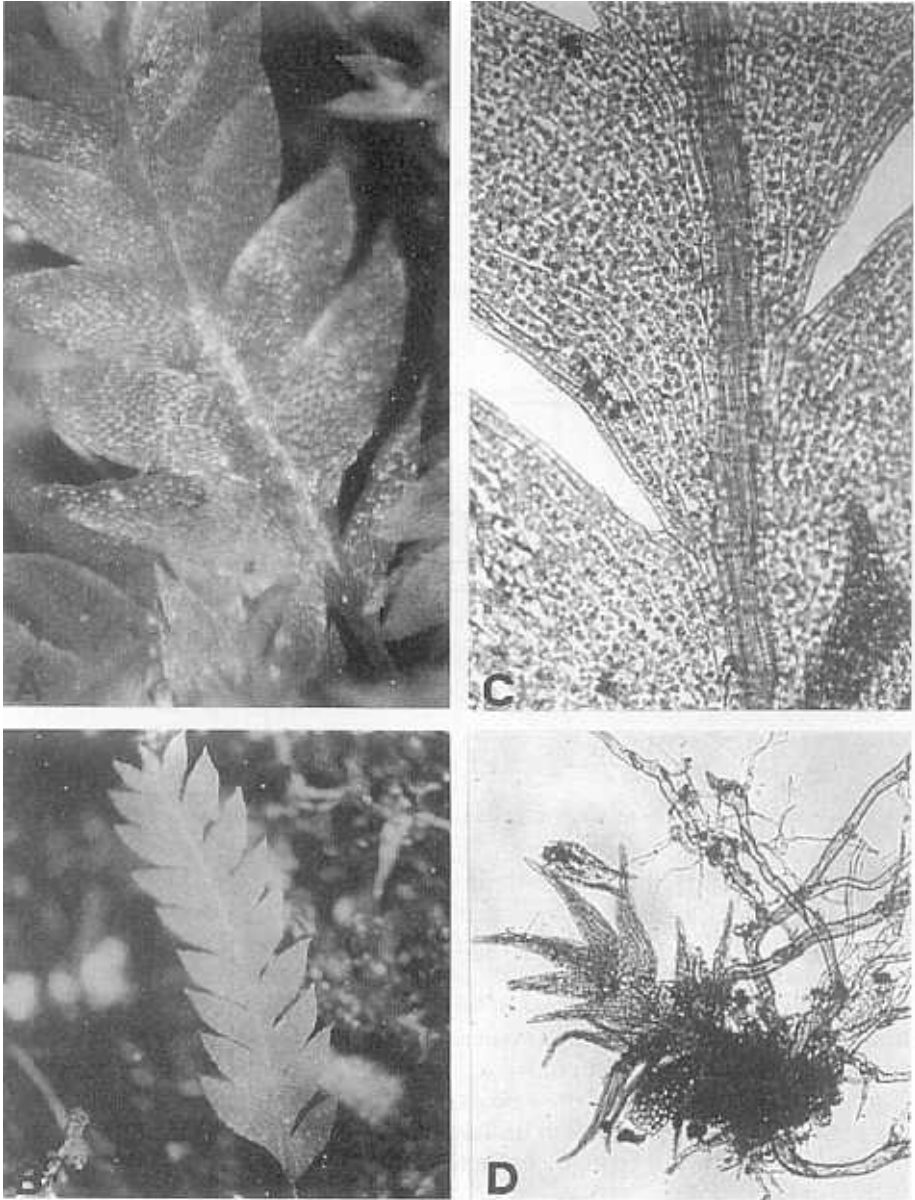


Fig. 3.—*Schistostega pennata*. A and B: detail of the gametophyte. C: Cellular grille. D: bud and rhizoids.

SPAIN: **Asturias:** Sama de Langreo, on an acidophilus and shadowed slope of the Las Precas road, alt. 200 m above sea level (Simó & al. 1978). **Guipuzcoa:** Monte Haya, small granite caves on the slopes, alt. 500 m, V. Allorge (1955) and P. Allorge (1935). **Lugo:** Las Choyas cave, Incio, Casares (1921); Bescansa (1948). Xestido, mire alt. 550 m, Brioteca Hispánica N.º 1123, J. Reinoso & J. Rodríguez (8-7-1987). **Navarra:** Lesako-Aiako-Harriak, hole in the granite wall alt. 775 m, Brioteca Hispánica N.º 923, I. Aizpura (5-2-1985). **Pontevedra:** Baiona, cave alt. 10 m, J. Reinoso & J. Rodríguez (3-5-1989).

PORTUGAL: Serra do Marao, A. Ervideira (1922). Poço do Inferno close to Manteigas, Serra da Estrela, P. Allorge (1931). Miño, Paredes de Couva, A. Machado (1918). Moledo do Minho, citania de Bríteiros, Serra da Penoita, between Peigas and Vila Mendo, Mina de Borralha, C. Tavares (1955).

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