

The genus *Kiaeria* in Spain, including *K. blyttii* (Bruch *et* Schimp.) Broth. new to Spain

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Abstract – During the study of the genus *Kiaeria* for Flora Briofítica Ibérica project, 2 specimens corresponding to *K. blyttii* were identified; this species has never been reported from Spain. The remaining samples corresponded to *K. starkei*. *Kiaeria falcata* is rejected from the Spanish checklist since all the records were erroneous or unidentifiable. The lectotype for *K. blyttii* has been designated. Diagnostic characters, summarized in a table, illustrations and the distribution of the Spanish *Kiaeria* species are given.

Distribution / *Kiaeria* / *Kiaeria blyttii* / Mosses / Taxonomy / Spain

INTRODUCTION

The genus *Kiaeria* consists of 6 species, 5 of them present in Europe. It is distributed in arctic, alpine or subalpine areas and occurs on acidic soils and rock. *Kiaeria* is distinguished by the strumose capsule, alar cells of leaf differentiated and the homogeneous structure of the nerve, without stereids and guide cells or nearly so.

The Spanish checklist (Casas, 1991) includes 2 *Kiaeria* species: *K. starkei* (F. Weber *et* D. Mohr) I. Hagen and *K. falcata* (Hedw.) I. Hagen. *K. starkei* has been reported from the Pyrenees, the Cantabrian Mountains and the Central Range in the north and centre of Spain (Allorge, 1928; Casas de Puig, 1951; Casas *et al.*, 1987; Elías Rivas, 1988; Fuertes *et al.*, 1998; Casas *et al.*, 2009). *K. falcata*, with very few records, has been reported from the Pyrenees, the Cantabrian Mountains and Sierra Nevada in the north and south of Spain (Casas de Puig, 1951; Gil García & Varo, 1973; Casas *et al.*, 2009).

NEW DATA ON KIAERIA IN SPAIN

During the study of *Kiaeria* for the Iberian Bryophyte Flora project, we have verified that this genus is mostly represented in Spain by *K. starkei* (Figs 1-6). About *K. falcata*, none of the studied collections corresponded to this

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Table 1. Main characters separating *Kiaeria* species cited in this work

	<i>Kiaeria starkei</i>	<i>Kiaeria blyttii</i>	<i>Kiaeria falcata</i>
Position of perigonia	Close below perichaetia	Terminal on separate branch or far below perichaetia	Close below perichaetia
Annulus	Deciduous, of large cells	Deciduous, of large cells	Persistent, of small cells
Exothecial cells	Thin-walled	Thin-walled	Thick-walled
Leaf subula	Nearly smooth or slightly dentate	Strongly mamillöse	Strongly mamillöse
Lamina cells	Rectangular	Shortly rectangular or quadrate	Quadrate to rectangular
Alar cells	Forming a well-differentiated group	Forming a scarcely differentiated group	Forming a scarcely differentiated group

taxon which, therefore, has to be excluded from the Spanish checklist. However, 2 samples were identified as *K. blyttii* (Bruch *et* Schimp.) Broth., a species new to Spain (Figs 7-14). *Kiaeria blyttii* has been reported from Sierra da Estrela in Portugal (Henriques, 1883; Jensen, 1998), therefore its discovery in the Spanish mountain ranges at high altitudes is not surprising.

The key characters separating the *Kiaeria* species reported here mainly concern sexual and sporophytic structures (Table 1). Namely, the perigonium position is a very distinctive character, as well as the annulus morphology. Vegetative characters can be of some help but only together with the sexual and sporophytic ones. The species in *Kiaeria* are impossible to distinguish when sterile, thus specimens without mature sexual organs nor sporophytes should be rejected.

Specimens examined and typification of *Kiaeria blyttii*

Since the 3 syntypes mentioned in the protologue were found in Schimper's Herbarium (BM), a lectotype was selected:

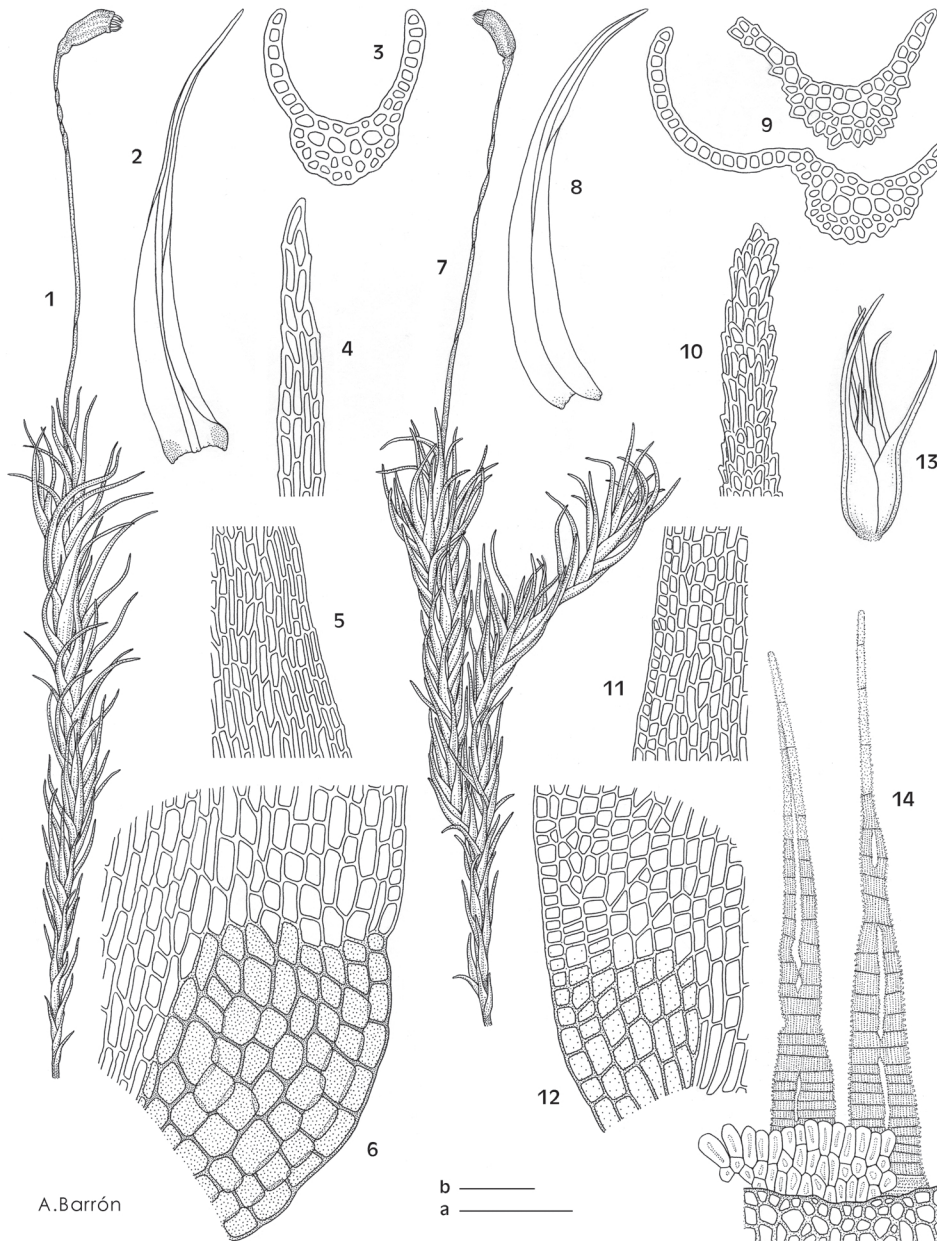
Kiaeria blyttii (Bruch *et* Schimp.) Broth., *Laubm. Fennoskand.* 87. 1923.

Basionym: *Dicranum blyttii* Bruch *et* Schimp., *Bryol. europ.* 1: 130. pl. 63 (fasc. 37-40. Monogr. 26. pl. 16). 1847. **Lectotype** (designated here): Switzerland, Simplon, *Schimper*, 1840 (BM 000661421!). Material of Schimper's other two syntypes has been also examined.

Specimens examined: **SPAIN. Asturias:** Leitariegos, Laguna de Arbás, *Casas*, 1977, BCB 3179 (sub. *K. falcata*). **Lleida:** Tavascan, Estany Romedo Inferior, *Casas*, 1988, BCB 33945 (sub. *K. starkei*).

Specimens examined of *Kiaeria starkei*

SPAIN. Ávila: Sierra de Béjar, Circo de las Lagunas del Trampal, *Eliás*, 1985, SALA 273. **Cantabria:** Poblaciones, vertiente Norte del Pico Tresmares, *Muñoz*, 1989, MA



Figs 1-14 - **1-6** *Kiaeria starkei* (F. Weber & D. Mohr) I. Hagen.: 1 habit; 2 leaf; 3 leaf transverse section; 4 leaf apex; 5 median and marginal leaf cells; 6 basal and alar leaf cells. **7-14** *Kiaeria blyttii* (Bruch & Schimp.) Broth.: 7 habit; 8 leaf; 9 transverse sections of leaf; 10 leaf apex; 11 median and marginal leaf cells; 12 basal and alar leaf cells; 13 perigonium; 14 portion of peristome and annulus. Scales: a – 2.6 mm (1, 7); b – 0.5 mm (2, 8, 13); b – 60 μ m (14); b – 50 μ m (3, 4, 5, 6, 9, 10, 11, 12).

17626; Vega de la Liébana, Peña Prieta, *Muñoz*, 1987, BCB 29553. **Huesca**: Balneario de Panticosa, *Infante et al.*, 2004, VIT 32825; Jaca, Astún, Ibón de Escalar, *Heras & Infante*, 1998, VIT 22362; La Renclusa, La Maladeta, sobre lago de Paderna, *Casas*, 1966, GDA 52369; Benasque, arroyo Estiba Freda, *Heras & Infante*, 1985, VIT; Bielsa, Ibón de Pinara, *Infante & Heras*, 2001, VIT 28253; Jaca, Astún, Ibón de Escalar, *Heras & Infante*, 1998, VIT 22362; Puerto de Formigal, *Casas*, 1983, GDAC 21107. **León**: Posada de Valdeón, monte Guildar, *Muñoz*, 1989, MA 17627; Boca de Huérgano, El Boquerón de Bobias, *Muñoz*, 1989, MA 17621; Puerto de Ancares, subiendo al Cuiña, *Casas*, 1984, BCB 30206. **Lleida**: Vall d'Aran, Pla de Beret, *Casas*, 1981, BCB 29466; Vall d'Aran, Pla de Vaqueira, *Casas*, 1973, BCB 6539; Vall d'Aran, Estanh Long de Liat, *Brugués et al.*, 1998, BCB 50212; Vall d'Aran, Barranc de Marimanya, *Lloret*, 1991, BCB 53849; Tredòs, Circ de Colomers, *Casas*, 1966, BCB 27689; Valarties, era Restanca, *Brugués et al.*, 1998, BCB 50122; Tavascan, Estany de Certascan, *Casas et al.*, 1988, BCB 25990; Tavascan, Estany Naorte, *Casas et al.*, 1969, BCB 10816; Ermita de Les Ares, Estany Gerber, *Casas*, 1961, BCB 7048; Vall de Sant Nicolau, Estany Llong, *Puig*, 1959, BCB 26316; Vall de Sant Nicolau, Portarró d'Espot, *Puig*, 1959, BCB 26315. **Palencia**: Peña Labra, *Losa & Montserrat*, 1949, BCB 15756; Bañosera, Valdecebollas, *Infante & Heras*, 2004, VIT 33305.

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