

Crossidium seriatum (Pottiaceae, Musci) New to Europe

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Abstract. *Crossidium seriatum* Crum & Steere is reported new to Europe on a specimen from Spain. The species is illustrated and notes are given on its ecology and distribution.

Seven of the species of the genus *Crossidium* Jur. (Pottiaceae) have leaves with many or few papillae: *Crossidium aberrans* Holz. & Bartr., known from North America (Mexico, Arizona, British Columbia) (Delgadillo 1975; Holzinger & Bartram 1924; McIntosh 1989), Europe (France, Spain) (Pierrot 1986; Ros & Guerra 1986), Southwestern Asia (Saudi Arabia and Jordan) (Frey & Kürschner 1988a); *C. asirensis* Frey & Kürschner, known from Saudi Arabia (Frey & Kürschner 1984); *C. davidai* Catchside, known from Australia (Catchside 1980); *C. rosei* Williams, known from South America (Peru) (Williams 1915) and Canada (British Columbia) (McIntosh 1989) and probably conspecific with the former (McIntosh 1989); *C. geheebii* (Broth.) Broth., known from New Zealand, Australia (Delgadillo 1975), and Southwestern Asia (Sinai) (Frey & Kürschner 1988a); *C. deserti* Frey & Kürschner, known from Saudi Arabia (Frey & Kürschner 1987), and *C. seriatum* Crum & Steere, known at the moment from California (Crum & Steere 1958) and Arizona (Zander 1977).

While studying material of this genus with the aim of carrying out a revision of the taxa in the Mediterranean region, we collected a sample in Albacete (Spain) that, based on its foliar morphology, was identified as *Crossidium seriatum*.

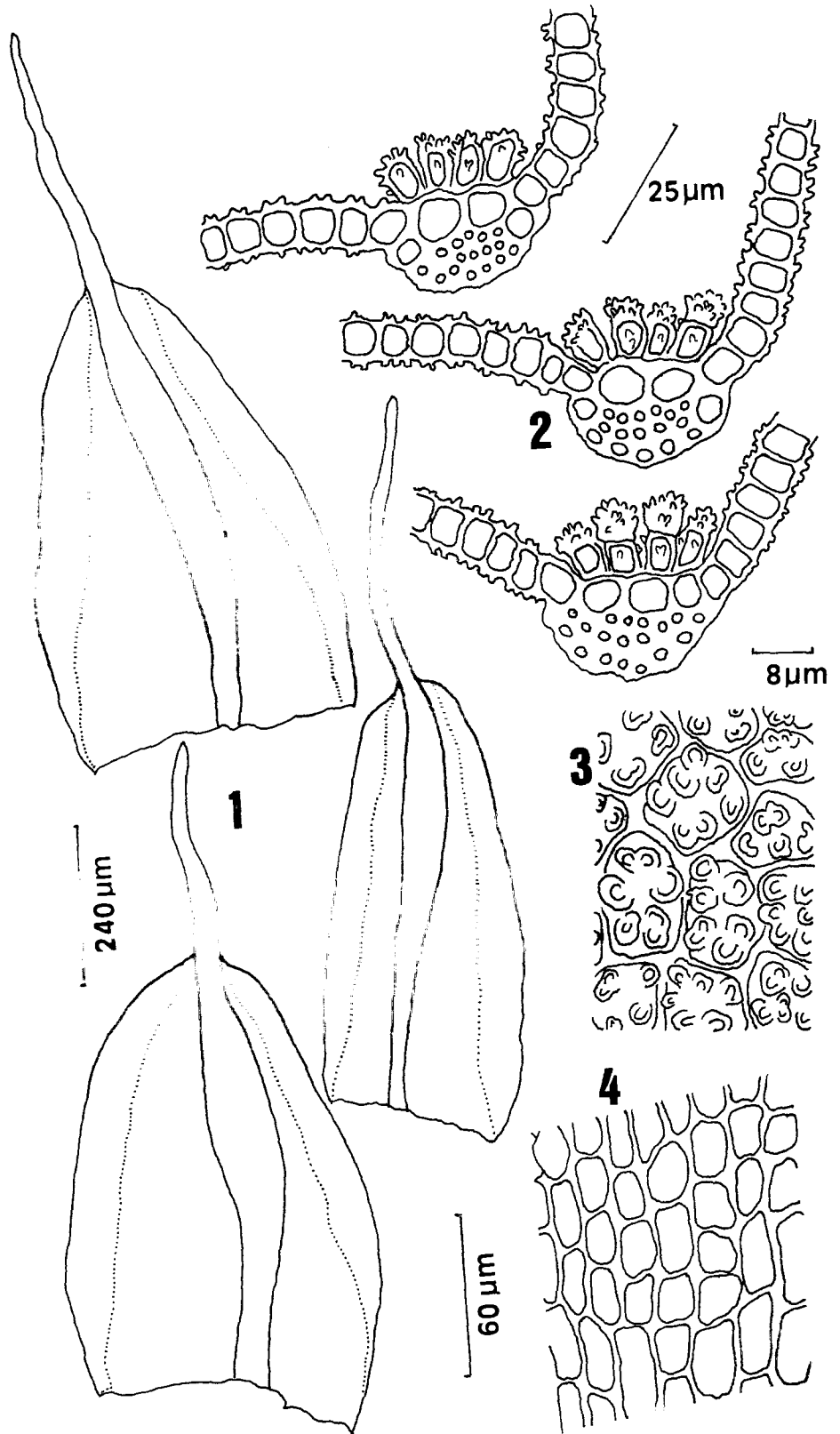
We have observed some morphological differences between the original description and the sample from Spain: plant size [stems 1.5(–2) mm in height]; cell size (upper lamina cells 8–20 μm in length; median cells 9–22 μm in length); and hyaline hair-point 0.16–0.88 mm in length (FIG. 1–12).

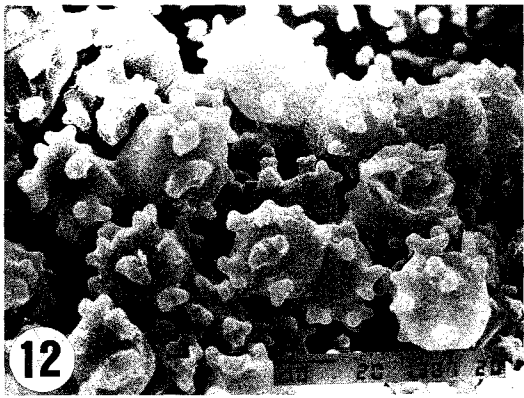
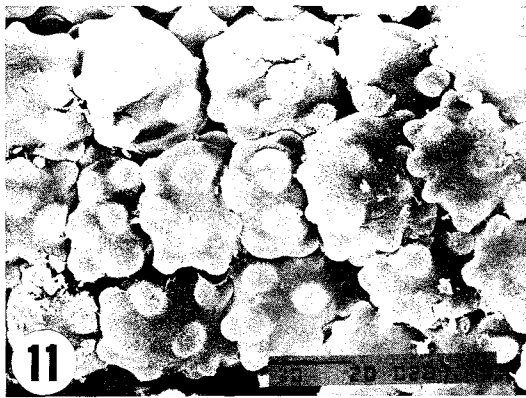
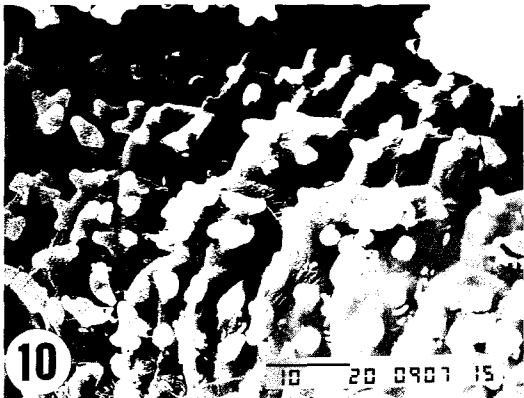
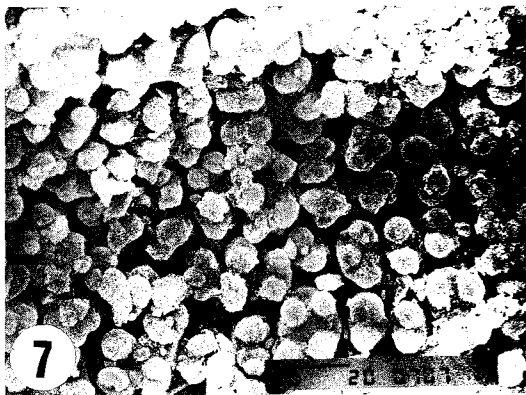
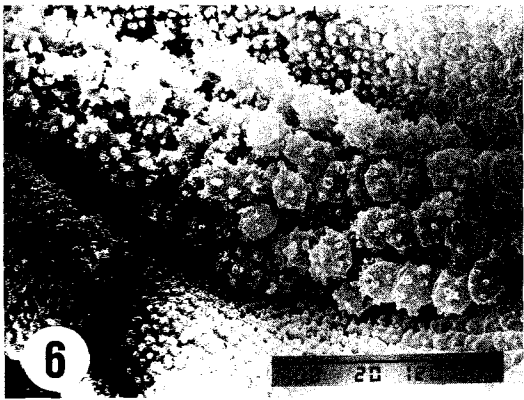
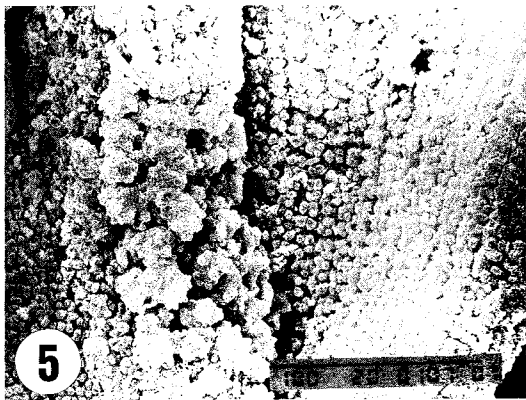
Studied material.—SPAIN. ALBACETE. Murcia—Albacete road, crossroads on the way to Agramon, UTM: XH2060, 19.IV.1991, Ros et al. (MUB 4265). We also studied isotypes of *C. seriatum* from DUKE, NY, and US.

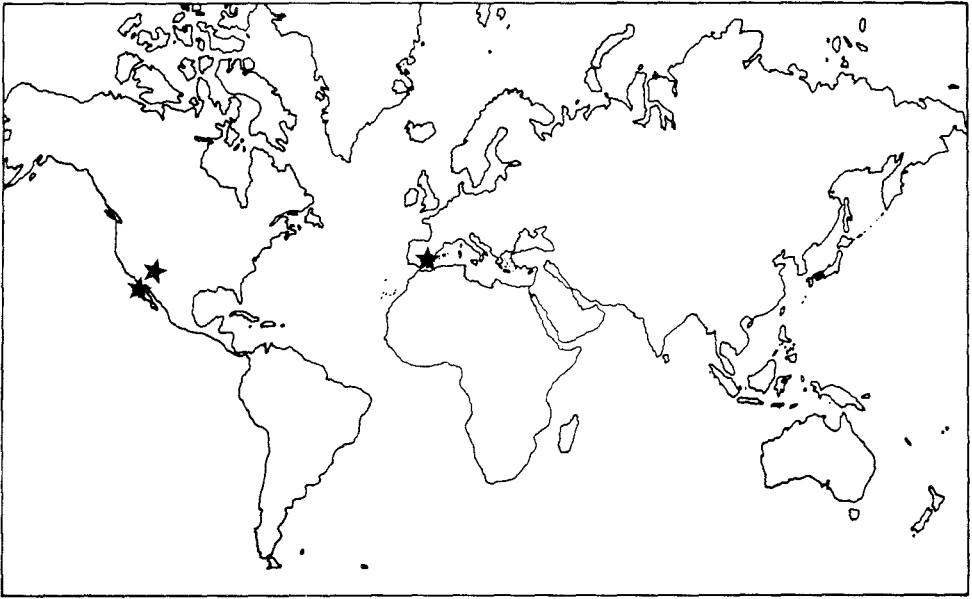
Habitat.—The sample collected in the Iberian Peninsula was found in very dry gypsiferous soil, with sparse nitrified grass vegetation, approximately 500 m above sea level. The major part of the taller vegetation of these soils consists of thickets with *Helianthemum squamatum*, *Herniaria fruticosa*, *Lepidium graminifolium*, *Lygeum spartum*, *Ononis tridentata*, and *Teucrium libanitis*. The average annual precipitation is approximately 300 mm and the average temperature 14.9°C, which corresponds to a semiarid ombroclimate (Alcaraz & Sánchez-Gómez 1988). *Crossidium seriatum* appears in these areas associated with *Aloina bifrons* (De Not.) Delg., *Crossidium crassinerve* (De Not.) Jur., *Didymodon aaronis* (Lor.) Guerra, and *Tortula revolvens* (Schimp.) G. Roth.

Distribution.—*Crossidium seriatum* might be considered a very rare species. However, it may be more frequent than is known at present and perhaps only seems to be rare due to its small size, hardly visible during the dry season. There are only two localities known in the American continent (Crum & Steere 1958; Zander 1977) and one in Europe (Spain), that reported here (Fig. 13). This type of specific disjunction between the Mediterranean region and the arid zones of southwestern North America is common among xerophytic mosses of arid and semiarid zones (steppe climates) of the Northern Hemisphere (Schofield 1988). The majority of these species grow in the short periods of rainfall and are elusive during the dry period. Like *C. seriatum*, there are numerous species of arid circummediterranean zones that show this type of disjunction—*Aloina bifrons* (De Not.) Delg., *Crossidium aberrans* Holz. & Bartr., *Desmatodon guelpinii* B. & S., *Phascum vlassovii* Laz., *Pseudocrossidium revolutum* (Brid.) Zander, and *Pterygoneurum koslovii* Laz.—and they all may be considered Triassic

FIGURES 1–4. *Crossidium seriatum*. — 1. Leaves. — 2. Leaf cross sections, showing costal variation. — 3. Median cells. — 4. Basal cells. (MUB 4265.)





FIGURE 13. Distribution of *Crossidium seriatum*.

relics of the old continent Pangaea that were separated by continental drift in the arid North American, Irano-Turanian, Saharo-Arabian, and Mediterranean regions (Frey & Kürschner 1983, 1988b).

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FIGURES 5-12. *Crossidium seriatum*. — 5-6. Adaxial surface of leaves. — 7-9. Median cells. — 10-11. Cells toward leaf apex. — 12. Supracostal filaments. (Fig. 5, 7, 9, and 11 from MUB 4265; 6, 8, 10, and 12 from isotype in DUKE.) Scales: 5-6, 100 μm ; 7-12, 10 μm .