

Özlem Tonguç Yayintaş

Schistidium agassizii (Grimmiaceae, Bryopsida) new to southern Turkey

Abstract

Yayintaş, Ö. T.: *Schistidium agassizii* (Grimmiaceae, Bryopsida) new to southern Turkey. — Fl. Medit. 18: 117-121. 2008. — ISSN 1120-4052.

Schistidium agassizii (Grimmiaceae, Bryopsida) is recorded for the first time in Turkey. The specimen was collected along the Harbiye waterfalls, Antakya (Hatay Province). The nearest localities to Turkey for this species are in Italy, Bulgaria, the Caucasus, and Iran. There are now 15 species of *Schistidium* occurring in Turkey.

Key words: *Schistidium agassizii*, bryophyte flora, Hatay province (Turkey).

Introduction

Schistidium Bruch & Schimp. is a large genus with about 120 species (Crosby & al. 2000) distributed throughout the world. The taxonomy of *Schistidium* is at present extremely unsettled. Bremer (1980a, 1980b, 1981) in a world revision of the genus reduced *Schistidium* to 12 species. In contrast, Blom (1996) in a revision of the *Schistidium apocarpum* (Hedw.) Bruch & Schimp. complex in Norway and Sweden recognized 31 species. Nearly all moss taxonomists agree that the genus is extremely complex and contains many more species than recognized by Bremer. Indeed, a recent molecular study (Goryunov & al. 2007) of eight *Schistidium* species from Russia and northwest Europe found strong support for the narrower species concepts of Blom. For many regions of the world, however, the number of *Schistidium* species present and the names associated with them remains an open question. The genus is perhaps best known in Europe where Hill & al. (2006) reported 42 species of *Schistidium* in Europe and Macaronesia. Blom (1998) and Smith (2004) divided European *Schistidium* into the following 5 groups and 3 subgroups: *Apocarpum* group (*Rivulare* subgroup, *Aporcarpum* subgroup, and *Strictum* subgroup), *Robustum* group, *Confertum* group, *Atrofusum* group, and *Umbrosum* group.

Kürschner & Erdağ (2005) reported 13 species of the genus *Schistidium* in Turkey. Townsend (2005) tentatively identified another species (*Schistidium submuticum* Zickendr. ex Blom) in the country. The following report of *S. agassizii* Sull. & Lesq. from Turkey increases the total number of species in that country to 15.

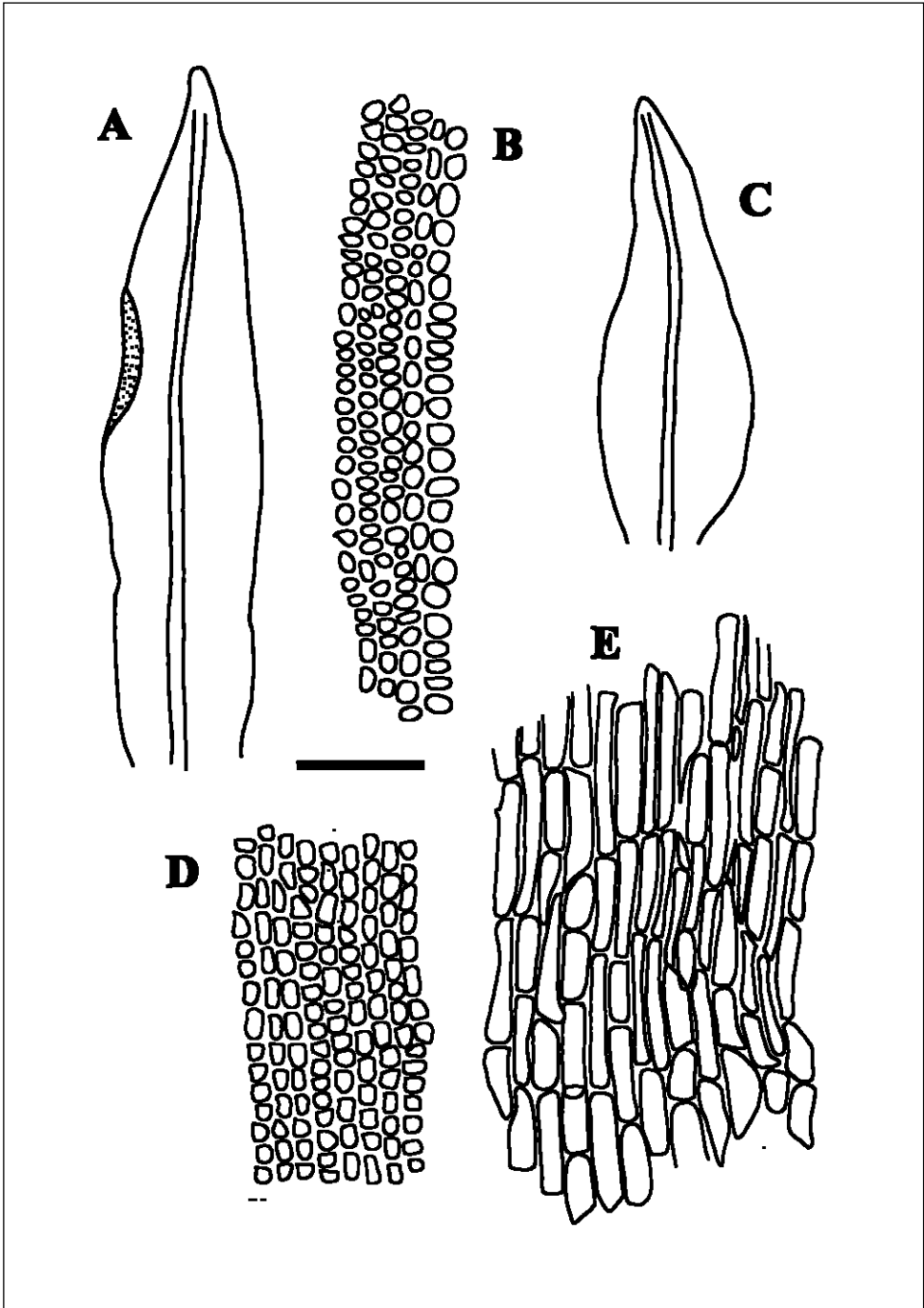


Fig 1. *Schistidium agassizii* Sull. & Lesq., A-C, Leaves; B, Upper leaf cells; D, Median leaf cells; E, Basal leaf cells. Scale in mm: bar = 0.4 (A-C); bar = 0.05 (B, D, E). (All from *Yayintas T 1302*, MO).

Specimen examined

Schistidium agassizii Sull. & Lesq. Turkey, Hatay: near Kozköykalesi, Yayladagi, Harbiye waterfalls, 36° 07' 46.15"N - 036° 08' 36.82"E, 350 m, 12 May 2003; Özlem Tonguç Yayintaş T 1302 (MO; herbarium of Çanakkale Onsekiz Mart University) Fig 1: A-E.

Plants small, 0.5–25 mm long, forming blackish to dark-green or brownish green cushions. Stems irregularly branched, central strand absent. Leaves contorted when dry, erect-spreading when moist, mostly flat, oblong-ligulate to linear-lanceolate, subacute to obtuse, mucous, $1.87\text{--}3.5 \times 0.62\text{--}0.87$ mm; leaf margins entire throughout, usually plane; costae ending just below apex, in upper and central parts 33–55 μm wide; laminae smooth, unistratose; upper cells small, irregularly rounded, 6–10 μm , median cells thick-walled, quadrate to shortly rectangular, 10–20 μm long, basal cells long-rectangular, 28–46 (–50) μm long. Setae about 1 mm long. Capsules yellowish, ovoid after opening, turbinate when dry, $0.85\text{--}1.0 \times 0.9\text{--}1.4$ mm; stomata absent; peristome teeth red and squarrose to revolute when dry.

Schistidium agassizii belongs to *Apocarpum* group *Rivulare* subgroup (Blom in Smith, 2004). It is a boreal species found throughout North America, the west and southern coast of Greenland, and across northern Eurasia as far as Siberia (Blom 1998, Bremer 1980; Crum & Anderson 1981; McIntosh 2007). The nearest stations for the species to Turkey

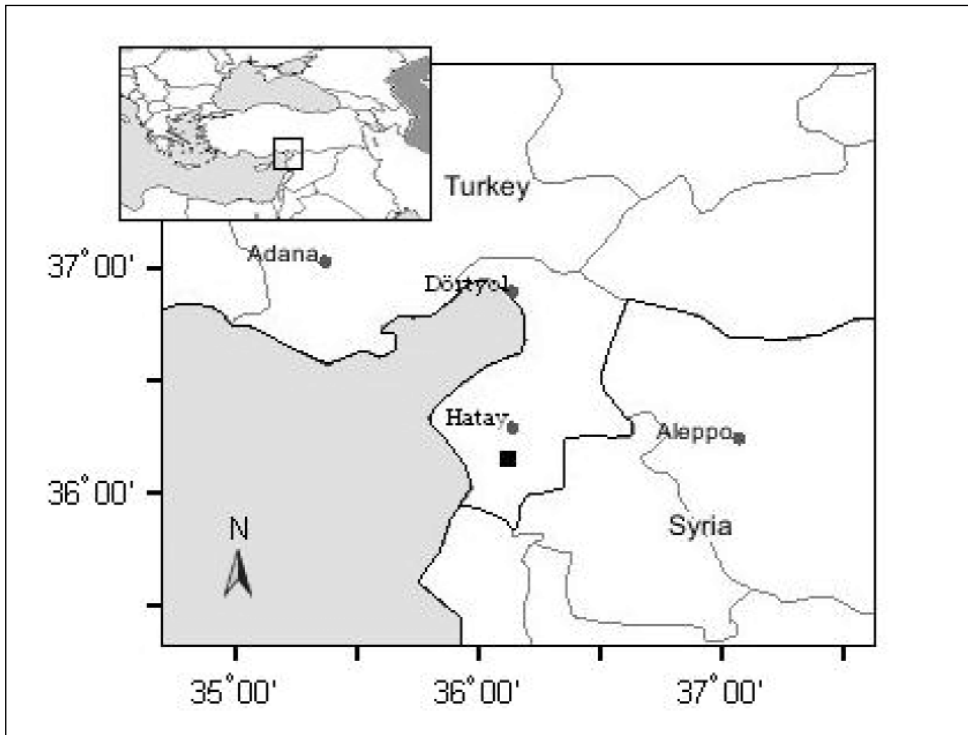


Fig. 2. (■) The locality of *Schistidium agassizii* in Turkey.

are Italy (Cortini Pedrotti 2001), Bulgaria (Natcheva & Ganeva 2005), the Caucasus region (Ignatov & Afonina 1992), and Iran (Kürschner 2008).

In Turkey *Schistidium agassizii* was collected in the Province of Hatay at the Harbiye waterfalls within grid square C13 (Fig. 2) of the system outlined by Henderson (1961). This area has a typical Mediterranean climate with annual average precipitation 1124 mm in Hatay, about 500 mm in Yayladagi, and very close to 937 mm in Samandag. This species was growing submerged in a stream an elevation of 350 meters.

Schistidium agassizii is similar to and can be confused with *S. rivulare* (Brid.) Podp. and *Grimmia unicolor* Hook. in Grev. which also are rheophytic species. It differs, however, from *S. rivulare* in having oblong-ligulate to linear-lanceolate, almost flat leaves with rounded or bluntly obtuse apices. *Schistidium rivulare* has ovate-lanceolate, strongly keeled leaves with acute to subobtuse apices. *Grimmia unicolor* and *S. agassizii* often have similarly shaped leaves. In *G. unicolor*, however, the leaves are concave with cucullate apices and multistratose upper margins. In contrast *S. agassizii* has flat leaves with plane apices and unistratose or irregularly bistratose margins (Yayintaş & Glime 2005).

Acknowledgement

Special thanks are due to Dr. B. Allen for confirming the determination of *S. agassizii* and language correction of the text. I am very grateful to the Missouri Botanical Garden for the use of their herbarium. Special thanks to Canakkale Onsekiz Mart University for supporting my sabbatical to the Missouri Botanical Garden, and Lynn Satterley for technical map support.

References

- Blom, H. H. 1996: A revision of the *Schistidium apocarpum* complex in Norway and Sweden. — Bryophyt. Biblioth. **49**: 1–333.
- 1998: *Schistidium*. — Pp. 287–330 in: Nyholm, E., Illustrated Flora of Nordic Mosses. Fasc. 4. *Aulacomniaceae – Meesiaceae – Catoscopiaceae – Bartramiaceae – Timmiaceae – Encalyptaceae – Grimmiaceae – Ptychomitriaceae – Hedwigiaceae – Orthotrichaceae* — Copenhagen & Lund.
- Bremer, B. 1980a: A taxonomic revision of *Schistidium* (Grimmiaceae, Bryophyta) **1**. — Lindbergia **6**: 1–16.
- 1980b: A taxonomic revision of *Schistidium* (Grimmiaceae, Bryophyta) **2**. — Lindbergia **6**: 89–117.
- 1981: A taxonomic revision of *Schistidium* (Grimmiaceae, Bryophyta) **3**. — Lindbergia **7**: 73–90.
- Cortini Pedrotti, C. 2001: New checklist of the mosses of Italy. — Flora Medit. **11**: 23–107.
- Crosby, M, Magill, R, Allen, B & He, S. 2000: A checklist of mosses. — St. Louis.
- Crum H. A & Anderson, L. E. 1981: Mosses of Eastern North America. — New York.
- Goryunov, D. V., E. A. Ignatova, M. S. Ignatov, I. A. Milyutina & A. V. Troitsky. 2007: Support from DNA data for a narrow species concept in *Schistidium* (Grimmiaceae, Musci). — J. Bryol. **29**: 98–103.
- Henderson, D. M. 1961: Contribution to the bryophyte flora of Turkey V: Summary of present knowledge. — Notes Roy. Bot. Gard. Edinburgh **23**: 279–301.
- Hill, M. O, N. Bell, M. A. Bruggeman-Nannenga, M. Brugués, M. J. Cano, J. Enroth, K. I. Flatberg, J.-P. Frahm, M. T. Gallego, R. Garilleti, J. Guerra, L. Hedenäs, D. T. Holyoak, J. Hyvönen, M. G. Ignatov, F. Lara, V. Mazimpaka, J. Muñoz & L. Söderström. 2006: An Annotated checklist

- of mosses of Europe and Macaronesia. — *J. Bryol.* **28**: 198–267.
- Ignatov, M. S. & O. M. Afonina (editors). 1992: Checklist of mosses of the former USSR. — *Arctoa* **1**: 1–85.
- Kürschner, H. 2008: A key to the acrocarpous mosses (Bryophytina *p.p.*, excl. Pottiaceae) of the Near and Middle East. Towards a bryophyte flora of the Near and Middle East, 7. — *Nova Hedwigia* **86**: 43–103, Stuttgart.
- & Erdağ, E. 2005: Bryophytes of Turkey: An Annotated Reference List of the Species with Synonyms from the Recent Literature and an Annotated List of Turkish Bryological Literature. — *Turkish J. Bot.* **29**: 95–154.
- McIntosh, T. T. 2007: *Schistidium*. — Pp. 207–225. in: Flora of North America North of Mexico, **27**.
- Natcheva, R. & A. Ganeva. 2005: Check-list of the bryophytes of Bulgaria. II. Musci. — *Cryptog. Bryol.* **26**: 209–232.
- Smith, A. J. E. 2004: The Moss Flora of Britain and Ireland. — Cambridge.
- Townsend, C. C. 2005: Mosses from the Caucasian region and eastern Turkey. — *J. Bryol.* **27**: 143–152.
- Yayintaş Tonguç, O & Glime, M J. 2005: Second record of *Grimmia unicolor* for Turkey. — *Lindbergia* **30**: 113–115.

Address of the author:

Current Mailing Address: Özlem Tonguç Yayintaş, Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri, 63166-0299, U.S.A (end of the July).
Biga Vocational College, Technical Program, Canakkale Onsekiz Mart University, 17200, Biga, Canakkale, Turkey, ozlemyayintas@hotmail.com

