

***Briza minor*, a new species for the Bulgarian flora**

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Abstract: *Briza minor* (Poaceae) is reported here as a new addition to the grass flora of Bulgaria. The species was recorded in two neighboring sites in the Bulgarian side of the Eastern Rhodope Mts., close to the national border with Greece. Brief information on its morphology, distribution, habitat characteristics, and site floristic composition is provided. It inhabits semi-open to closed grasslands with a high abundance of annuals and geophytes, related probably to the alliance *Romuleion graecae* (*Poetea bulbosae*). Additionally, an updated identification key for the genus *Briza* in Bulgaria is presented.

Keywords: *Briza*, identification key, lesser quaking-grass, Mediterranean element, new record, therophytic grasslands.

Introduction

The genus *Briza* L. comprises five species distributed across Eurasia and the Mediterranean region, namely *B. minor* L., *B. marcowiczii* Woronow, *B. maxima* L., *B. media* L. and *B. humilis* M. Bieb. (POWO 2025). Alternatively, phylogenetic studies based on nuclear and chloroplast DNA sequences support recognition of *Brizochloa humilis* (M. Bieb.) Chrtek & Hadač in the monospecific genus *Brizochloa* V. Jirásek & Chrtek apart from *Briza* (Persson & Rydin 2016; Essi et al. 2017). In this paper, we follow the treatment of *Briza* in Stoyanov et al. (2025), which is consistent with POWO (2025).

Up to now, the genus *Briza* in Bulgaria has been represented by three species: *B. media*, *B. maxima* and *B. humilis* (Stoyanov et al. 2025). *B. media* is the only perennial species among them. It is widespread throughout the country at altitudes ranging from 0 to 1800 m, where it occupies meso-xerophytic grasslands and mesophytic meadows, which are referred to as habitat 6520 (Mountain hay meadows) in Annex I of the Habitats Directive (Kavrakova et al. 2009). *B. maxima* and *B. humilis* are occasionally found in Bulgaria, at altitudes of up to 500 m in the southern regions influenced by a Mediterranean climate. The latter species have annual life cycles and inhabit dry, rocky open sites and forest gaps at the xerothermic oak forest belt (Kitanov 1963; Velchev 2002).

During phytosociological fieldwork held in the vegetation season of 2025, we have recorded *B. minor* in two sample plots near Fotinovo village, Kirkovo Municipality, Eastern Rhodope Mts. This is the first record of the species for Bulgaria.

The aim of the present text is to report *B. minor* as a new species to Bulgaria and to provide a concise description, focusing on the main distinguishing characters that separates the species from the rest of the representatives of the genus in the country and to comment its habitat requirements.

Materials and Methods

The study area is located in south-central Bulgaria, approximately 15 km from the Bulgarian-Greek border. The substrates are sandy (clay content is low) derived from sandstones, siltstones, and marlstones of Upper Eocene-Oligocene age (Kozhuharov & Boyanov 1989). The region falls within the continental-Mediterranean climate zone, distinguished by hot summers and mild winters (mean January temperatures exceed 0 °C at altitudes below 700 m), a relatively narrow annual temperature range, an autumn–winter precipitation maximum, and the absence of persistent annual snow cover outside mountainous areas (Velev 2002). The species identity and the proposed identification key are based on biometric characters and habitat data obtained from Bulgarian collections, label information from relevant exsiccates in the Herbarium of the Biological Faculty, Sofia University (SO), and published sources, including Tutin (1980), Davis (1985), and Essi et al. (2017). The taxonomic determination is further supported by comparisons with herbarium records (JACQ 2025), including the type specimen (LINN 88.1!) available through the website of the Linnaean Society (2025; <https://linnean.access.preservica.com>). Species collections have been deposited in the Herbarium of the Biological Faculty, Sofia University (SO 108431, 108432), the Herbarium of the Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences (SOM 179596), and the Herbarium of the National Museum of Natural History, Sofia (BNHM BG-NMNHS-BOT-00000006357, BG-NMNHS-BOT-00000006358). The acronyms of indexed herbarium institutions follow Thiers (2025). Phytosociological relevés were performed according to the Braun-Blanquet approach (Braun-Blanquet 1964; Westhoff & van der Maarel 1980) applying the transformed nine-grade scale by Barkman et al. (1964). Habitat

description is based on the authors' personal observations. The names of the associate taxa are given after Stoyanov et al. (2025).

Results and Discussion

Briza minor (Fig. 1) is easily recognized by its annual habit, slender appearance; culms usually solitary, erect, 8–30(–50) cm tall; leaves 2–4 mm broad; panicle open with patent lower branches; spikelets numerous, broadly ovate-deltoid, disarticulating above the glumes at maturity, 2.2–4.5 mm long, 3.0–4.8 mm broad, somewhat broader than long, usually pale green; pedicels much longer than spikelets (Tutin 1980; Davis 1985; Essi et al. 2017). To facilitate immediate recognition of the species within the genus in the field, we propose an update to the identification key for Bulgarian species of *Briza*:

1¹. Plants perennial – *B. media*. Species of mesic/xeromesic hay meadows, distributed usually over 500 m alt. of foothill or montane areas.

1². Plants annual – 2

2¹. Panicle branches usually pendent, spikelets up to 12, usually 10 mm or longer – *B. maxima*. Species of dry rocky grasslands and forest gaps, distributed up to 500 m alt.

2². Panicle branches patent to erect, spikelets usually more than 15, up to 7 mm long – 3

3¹. Leaves 1-2 mm broad, panicle compact, branches erect to ascending, spikelets ovate, apex acute, pedicels usually shorter to slightly longer than spikelets – *B. humilis*. Species of dry rocky grasslands, bare rocky cliffs and screes, distributed up to 500 m alt.

3². Leaves 2-4 mm broad, panicle open, branches patent to ascending, spikelets ovate-deltoid, apex obtuse, pedicels much longer than spikelets – *B. minor*. Species of seasonal mesic grasslands often characterized by an early spring synusia of bulbous ephemeroïds and therophytes, distributed up to 500 m alt.

The species was recorded in two sample plots (Fig. 2) during a phytocoenological study on early spring ephemeral therophytic grassland communities including *Romulea linairesii* subsp. *graeca* Bég. in Bulgaria. The following two samples can display the vascular plant diversity and species relative abundance at the single known sites of *Briza minor* in the country:

Sample plot 1: Zagorichane hamlet, Fotinovo village, Kirkovo Municipality, abandoned tobacco field utilized as pasture, coord.: 41.36635°N, 25.33859°E; plot area: 25 m²; alt.: 345 m; exp.: S; slope: 1°; total veg. cover: 95%; date: 12.06.2025.

Trifolium subterraneum 3, *Vulpia ciliata* 3, *Tuberaria guttata* 2b, *Linum bienne* 2a, *Aira elegantissima* 2a, *Silene gallica* 2a, *Trifolium nigrescens* 2a, *Briza minor* 2m, *Poa bulbosa* 2m, *Bothriochloa ischaemum* 2m, *Romulea linairesii* subsp. *graeca* 2m, *Daucus guttatus* 1, *Lotus angustissimus* 1, *Plantago lanceolata* 1, *Anthoxanthum odoratum* 1, *Parentucellia latifolia* 1, *Trifolium arvense* 1, *Trifolium strictum* 1, *Juncus bufonius* +, *Hypochaeris glabra* 1, *Crepis setosa* 1, *Apera spica-venti* 1, *Trifolium micranthum* 1, *Sanguisorba minor* 1, *Erodium botrys* +, *Plantago subulata* +, *Ononis arvensis* +, *Gypsophila muralis* +, *Filago gallica* +, *Orlaya grandiflora* +.

type of communities only provisionally as affiliated to the alliance *Romuleion graecae* Oberdorfer ex Terzi et al. 2024, in the class *Poetea bulbosae* Rivas Goday et Rivas-Martínez ex Navarro Andrés et Valle Gutiérrez 1984 (Čarni et al. 2014; Terzi et al. 2024).

Although xerophytes dominate the floristic composition of the studied communities, *Briza minor* was recorded in shallow depressions where rainwater persists for longer periods, indicating a preference for micro-mesic conditions. This species occurs in adjacent southern regions (e.g. Turkey, Greece) as part of its natural range, in similar habitats and under similar climatic influences (Davis 1985; Dimopoulos et al. 2024). Its occurrence in Bulgaria may reflect either (i) a native but previously overlooked population due to limited floristic surveys, or (ii) a recent immigrant resulting from climate-driven range expansion or stochastic dispersal. Determining whether the first or the second hypothesis is more relevant requires further study.

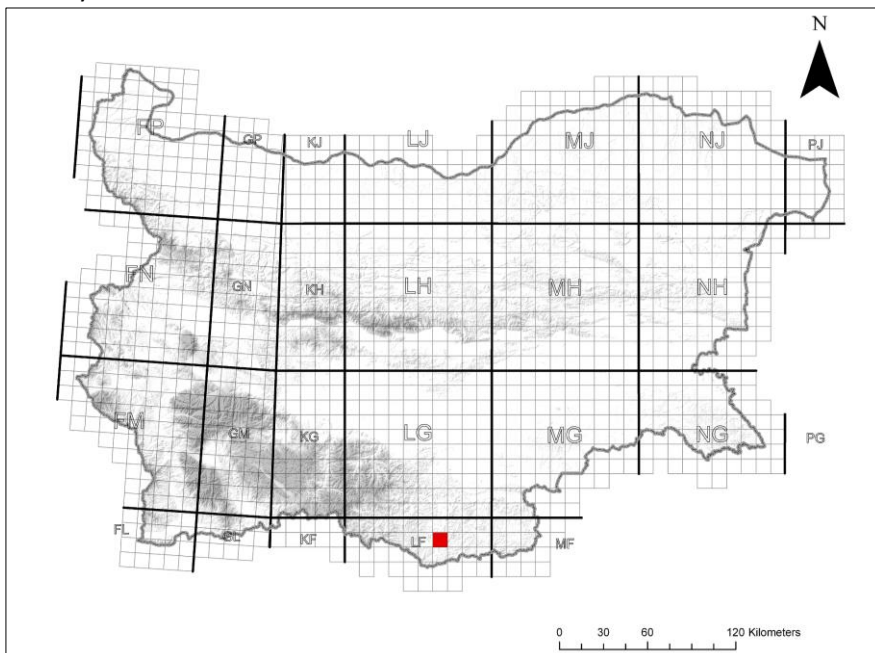


Fig. 2 Distribution of *Briza minor* in Bulgaria. The two recorded micropopulations fall within a single 10 × 10 km UTM grid square (LF68).

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