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The Tiny Pleurocarpous Moss *Platydictya jungermannioides* (Brid.) H. A. Crum in Türkiye

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Abstract

In this study, *Platydictya jungermannioides*, a rare moss species, was recorded for the second time from Türkiye and reported for the third time from Southwest Asia. The present study provides a detailed description of the species, collected from the Bolkar Mountains, along with photographs. Additionally, the ecology and distribution of *Platydictya jungermannioides* in Türkiye are discussed.

Keywords: Bolkar Mountains, Bryophytes, Moss, Pleurocarpous, Türkiye.

Türkiye'deki Küçük Pleurokarp Yapraklı Karayosunu *Platydictya jungermannioides* (Brid.) H.A.Crum

Öz

Bu çalışmada, *Platydictya jungermannioides* Türkiye'den ikinci kez kaydedilmiş olup Güneybatı Asya'dan da üçüncü kaydı rapor edilmiştir. Bolkar Dağları'ndan toplanan türün detaylı tanımı fotoğraflarla birlikte verilmiş olup, ekolojisi ve Türkiye'deki yayılışı detaylı olarak anlatılmıştır.

Anahtar kelimeler: Bolkar Dağları, Briyofitler, Karayosunu, Pleurokarp, Türkiye.

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1. Introduction

The bryophytes are land plants that constitute the second most diverse group of the plant kingdom on the earth (Goffinet and Shaw, 2009). The pleurocarpous moss family Plagiotheciaceae which have complanate-foliate shoots and leaves with a short double costa, comprises nine genera according to the recent classification (*Herzogiella* Broth., *Isopterygiopsis* Z.Iwats., *Myurella* Bruch & Schimp., *Orthothecium* Schimp., *Plagiothecium* Bruch & Schimp., *Ortholimonium* Dixon, *Platydictya* Berk., *Pseudotaxiphyllum* Z.Iwats., and *Struckia* Müll.Hal.). (Huttunen et al., 2013; Hodgetts et al., 2020). Among them, the genus *Platydictya* Berk. is characterised by its small size and filamentous appearance. Therefore, members of the genus, consisting of three species (*P. jungermannioides*, *P. minutissima* (Sull. & Lesq.) H.A. Crum, and *P. densissima* (Cardot.) H. Rob.), are easily recognised. However, the classification of *Platydictya* is still controversial (Ochyra 1999; Guo et al., 2023). This genus was included in Hypnaceae, Plagiotheciaceae and Amblystegiaceae families respectively (Crum and Anderson, 1981; Vitt, 1984; Huttunen et al., 2013; Crum and Hedenäs, 2014). According to Hodgetts et al. (2020) *Platydictya* is included in Plagiotheciaceae. In the present paper, *Platydictya* is classified within the family Plagiotheciaceae according to the latest literatures.

In Türkiye, the previously existing species of *Platydictya* were transferred to the genera

Pseudoamblystegium Vanderp. & Hedenäs and *Serpoleskea* (Limpr.) Loeske. Therefore, the genus was removed in the bryoflora. Then, with the addition of *P. jungermannioides* from Ardahan by Batan et al. (2017), it took its place in the Turkish bryoflora again (Erdağ and Kürschner, 2018). However, in the study of Batan et al. (2017) the species is only given in the floristic list and detailed information about the description, ecology and distribution in Türkiye is not given. In this study, the detailed description, ecology and distribution of the *P. jungermannioides*, which is recorded for the second time from Türkiye, are given together with photographs and will contribute to the book titled “Bryophyte Flora of Türkiye”, which is planned to be written in the future.

2. Material and Methods

2.1. Study area

Bolkar Mountains are located at the intersection of phytogeographic regions Mediterranean and Irano-Turanian in Türkiye and forms the eastern parts of the Central Taurus Mountains (Figure 1). The highest point is Medetsiz (3524 m). Covering an area of approximately 1290 km², the Bolkar Mountains has quite a variety of habitats such as mixed or pure forests of coniferous and broad-leaved trees, steppe, lake, rivers and streams. Microhabitats, especially in the alpine zone, show great changes due to the interactions between soil moisture, temperature and bedrock, which change depending on the effects of the sun and wind (Atay et al., 2009).



Figure 1. Topographic map of the Bolkar Mountains

The geological structure of the Bolkar Mountains forms in large part permo-carboniferous limestones (Ünaldı and Kömüşcü, 2007). Most parts of the study area are covered with steppe and rock vegetation type. Maquis shrublands and conifer forest which is typical vegetation of the Mediterranean climate are seen in the south of the study area (Kürschner, 1984; Gemici, 1992). The climatic diversity in the Bolkar Mountains is easily distinguished. While, according to data from the Mersin Meteorology Station (southern part of the study area), it has low rainy-genial Mediterranean climate, according to data from the Ulukışla Meteorology Station (northern part of study area), it has a semi-arid and cold Mediterranean climate (Akman, 2011).

2.2. Data source

This study is based on specimens collected from the Bolkar Mountains in June 2023 (Figure 1) and currently stored in the special bryophyte collection of Prof. Dr. Tülay EZER and Niğde Ömer Halisdemir University Herbarium. Specimens were identified using relevant literature (Ochyra 1999; Smith 2004; Cortini-Pedrotti 2006; Crum and Hedenäs, 2014; Lüth 2019).

3. Results and Discussions

Platydictya jungermannioides (Brid.) H.A. Crum. The Michigan Botanist 3(2): 60. 1964.

Basionym: *Hypnum jungermannioides* Brid.

Specimen examined: Türkiye: Central Anatolia: Niğde: Bolkar Mountains, On the pathway between Meydan Plateau and Karagöl Lake, on limestone rock, alt. c. 2550 m, (37° 24' 30" N, 34° 33' 57" E), Ezer 2453, 20 July 2023 (Herbarium of Niğde Ömer Halisdemir University).

Description of the Turkish specimens:

Plants very slender, delicate, soft, silky, light green or yellowish green, glossy, in loosely caespitose mats. **Stems** prostrate, irregularly branched. **Leaves** minute, erect-spreading to somewhat widely spreading, ovate-lanceolate or lanceolate, sometimes slightly subsecund, 0.1-0.3 mm, margins serrulate to sinuate, acuminate at apex. **Costa**

absent or indistinct. **Basal leaf cells** shortly rectangular. **Median leaf cells** rhomboidal, 6-8 μm \times 15-28 μm . **Alar cells** slightly differentiated, few, quadrate or rectangular. **Axillar rhizoids** purple-brown, granular-papillose. **Asexual propagules** clustered in leaf axils on stems and branches, 2-4-cellular, smooth, elongate, obtuse. Plants sterile, sporophytes not seen at Turkish species (Figure 2).

Ecology and distribution: *Platydictya jungermannioides* was growing on wet limestone rock surface and crevices together with *Pohlia cruda* (Hedw.) Lindb., *Pseudoleskeella catenulata* (Brid. ex Schrad.) Kindb., *Syntrichia norvegica* F.Weber, and *Homalothecium philippeanum* (Spruce) Schimp. in Bolkar Mountains. *P. jungermannioides* is easily recognized by its very small size, ecostate leaves, asexual propagules and axillary rhizoids. Especially axillary rhizoids differentiate it from the other species of *Platydictya*. *P. jungermannioides* is distributed in the north of Europe, Svalbard, Iceland, the Caucasus, North and South Asia, Greece, Japan, North America, Greenland, Iraq and, Türkiye (Smith, 2004; Batan et al., 2017; Kürschner and Frey, 2020; Kürschner and Erdağ, 2021). Due to in Türkiye, previously representative species of the genus were transferred to genera such as *Pseudoamblystegium* and *Serpoleskea*, the genus *Platydictya*, which was removed from the flora because it has re-entered the Turkish bryoflora with the record given from Ardahan province. *P. jungermannioides* is included in the IUCN Red List Category (Europe) as Least Concern (LC) (Hodgetts et al., 2019).

With this study, the second locality record of the species from Türkiye and the third record from Southwest Asia has been given, and it will contribute to the bryophyte flora of Türkiye.

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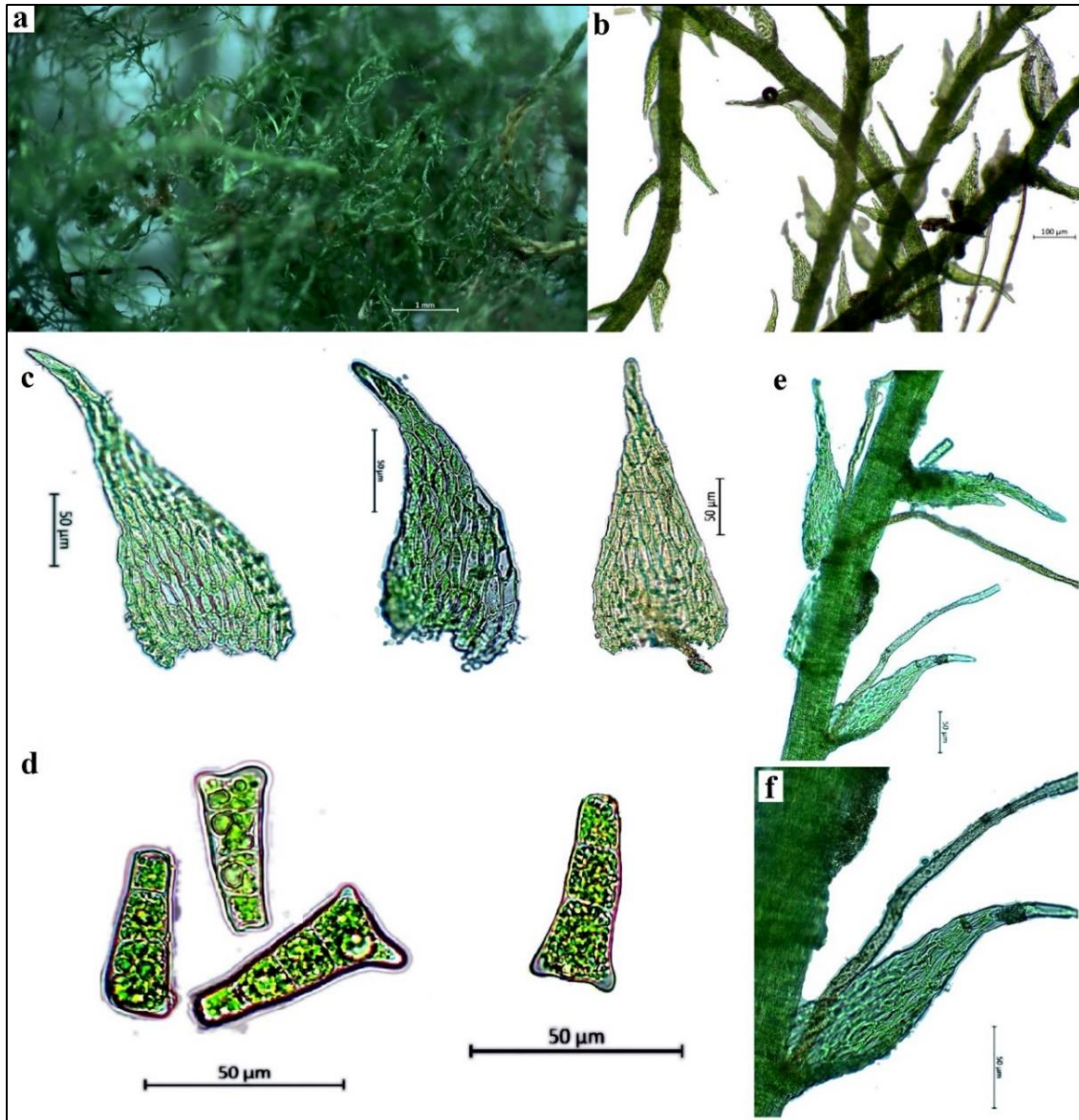


Figure 2. a. Habitus, b. shoots, c. leaves, d. asexual propagules, e-f. axillary rhizoids

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