

***DRYOPTERIS DILATATA* (HOFFM.) A.GRAY (DRYOPTERIDACEAE HERTER) IN THE FLORA OF THE REPUBLIC OF MOLDOVA**

Pavel PÎNZARU 

“Alexandru Ciubotaru” National Botanical Garden (Institute),
Moldova State University – Republic of Moldova
E-mail: p_panzaru@yahoo.it, ORCID: 0000-0001-6116-930X

Abstract: As a result of the new floristic investigations in the Republic of Moldova, the species *Dryopteris dilatata* (Hoffm.) A.Gray was recorded for the first time. It was found in the lower part of a forested valley near the Unguri commune of Ocnîța district. This species is proposed to be included in the Red Book of the Republic of Moldova, the 4th edition, Critically Endangered (CR) category.

Key words: habitat, morphological description, rare species, Red Book of Republic of Moldova.

Introduction

In previous works [GEJDEMAN, 1986; KIRTOKA & ISTRATI, 1987; CHIRTOACĂ & al. 1992; NEGRU & al. 2002; PÎNZARU & al. 2002; CHIRTOACĂ & al. 2005; CHIRTOACĂ & PÎNZARU, 2005; NEGRU & CHIRTOACĂ, 2011; POSTOLACHE & al. 2018] has been cited only the species *D. dilatata* (Hoffm.) A.Gray [= *D. austriaca* (Jacq.) Woyнар ex Schinz et Thell] from the “Plaiul Fagului” Scientific Reserve (plot no. 40), included in the Red Book of the Republic of Moldova [LAZU, 2015]. The specimens collected and determined as *D. austriaca* (Jacq.) Woyнар ex Schinz et Thell, from plot 38 and 16, by V. Kirtoka and A. Istrati CHGB 226754, 226755, 226756; coll. 23.05.1985; 10.09.1987) actually belong to the species *D. carthusiana* (Vill.) H.P. Fuchs [PÎNZARU, 2019]. In the summer of this year, we conducted new floristic field research, during which we once again found *D. carthusiana* and not *D. dilatata* vegetates in the plot no. 38 and 16.

This work confirms the presence of the species *D. dilatata* (Hoffm.) A.Gray in the local flora, although from around Unguri commune, Ocnîța district.

Materials and methods

The article is based on the floristic researches carried out in natural habitats in the Republic of Moldova, but also in Italy (Piemonte region). The exsiccatae are stored in Herbarium of the “Alexandru Ciubotaru” National Botanical Garden (Institute) Moldova State University (CHGB) and in the Herbarium of the botanist Pavel Pinzaru at the “Ion Creangă” State Pedagogical University of Chișinău (CH-HBPP). The identification of the species was carried out with the help of guides, taking into account the morphological and ecological peculiarities.

The list of exsiccatae of *Dryopteris dilatata* (Hoffm.) A.Gray analysed by the author:

Republic of Moldova:

- Ocnița district, Unguri commune, “Rudi-Arionești” Landscape Reserve, plot 62, 14.09.2025, leg. P. Pinzaru (CHGB 240421; CH-HBPP 12018).

Italy, Piemonte region:

- Vercelli province, Piode commune, beech forest, 15.07.2004, leg. P. Pinzaru (CH-HBPP 9940);
- Asti province, Tonengo commune, beech forest, 24.07.2004, leg. P. Pinzaru (CH-HBPP 9938, 9937);
- Torino province, Pont-Canavese commune, chestnut forest, 16.11.2006, 22.05.2007, leg. P. Pinzaru; (CH-HBPP 9934, 9932); Valle Soana, beech forest, alt. 650 m, 25.02.2007, leg. P. Pinzaru (CH-HBPP 9935); Torino commune, Colline Torinese, chestnut forest with beech, 24.05.2005, leg. P. Pinzaru (CH-HBPP 9936, 9937).

Ukraine:

- Reg. Cernăuți, Hotin district, village Blișceadi, beech forest, 30.06.1996, collected P. Pinzaru, determined A. Negru 09.02.2007 (*D. austriaca* (Jacq.) Woyner ex Schinz et Thell.), redetermined 03.12.2018 P. Pinzaru (CHGB 23617, 23618); village Ruhotin, beech forest, 30.06.1996, leg. P. Pinzaru (CHGB 236128).

Russia:

- Sibiri, Western Sayans, Kantegir left tributary of the Enisei River, 17.08.1931, leg. M. Ilin, B. Obrunikov and A. Ivanova (CHGB 116009);
- **Caucasus**, leg. I. Abramov, 15.07.1937 (CHGB 116007).

Results and discussions

As a result of the new floristic investigations in the Republic of Moldova, the species *Dryopteris dilatata* (Hoffm.) A.Gray was recorded for the first time, near the Unguri commune, Ocnița district. A single plant was observed, from which were collected spores for *in vitro* cultivation. The species *D. dilatata* differs from *D. carthusiana* by the color of the scales on the petiole: bicolored scales, with a blackish-brown longitudinal stripe in the middle, pale brown on the edges (not pale brown scales, uniformly colored); the rachis, the abaxial leaf blade and the indusium with glands (not without glands).

Dropteris dilatata (Hoffm.) A.Gray, 1848, Man. Bot.: 631; Fraser-Jenkins, 1993, in Fl. Europ., ed. 2, 1: 29; Lauber & Wagner, 2001, Fl. Helvetica, 2^e ed.: 54; Prelli, 2001, Les Fougères et plantes alliées de France et d'Europe occidentale: 352; Aeschmann & al. 2004, Fl. Alpina 1: 96; Tzvelev, 2012, Conspectus florum Europae Orientalis, 1: 35; Sârbu, Ștefan & Oprea, 2013, Pl. Vasc. România: 44. – *Polypodium dilatatum* Hoffm. 1796, Deutschl. Fl. 2:7. – *D. austriaca* (Jacq.) Woyner ex Schinz et Thell. 1915, Viert. Naturf. Ges. Zürich, 60: 339; Grințescu, 1952, Fl. R.P.R., 1: 108; Protopopova, 1999, Opred. Vysših. Rast. Ukr., 2^e izd.: 31. – **Broad Buckler-fern**. – Figure 1-2.

Rhizome ascending. Leaves about 70 cm long. Petiole 26-28 cm long, with light brown scales, in the middle with a blackish longitudinal stripe. Lamina ± 40 cm long and ± 30 cm wide, triangular-ovate, triple-pinnatisectate, dark green, on the underside with glandular hairs. First leaf segments: oblong-ovate, asymmetrical. First and lower secondary segments: shorter than ½ of the length of the primary segment, the segments of the last order with appressed, curved and

acute teeth. Sori about 1 mm in diameter, not overlapping. Persistent indusium, dentate on the edges, with stalked glands. Dark brown spores, verrucous.

Biological and ecological characteristics. Perennial, hemicryptophyte, geophyte, VII-IX, $2n = 82, 164$, mesohygrophilous (mesophilous), (hilly-) mountain-subalpine (-alpine), Eurosiberian species [AESCHIMAN & al. 2004].

Habitat. In the Republic of Moldova, it grows at an altitude of 88 m, in the lower part of a deep, canyon-type valley, on purple schists with a little soil mixed with shale fragments, covered with moss, under the crown of hazelnut shrubs (*Corylus avellana* L.). The herbaceous cover is scattered, accompanying species: *Chaerophyllum temulum* L., *Glechoma hederacea* L., *Lamium galeobdolon* L., *Salvia glutinosa* L., *Scrophularia nodosa* L., *Urtica dioica* L., *Viola reichenbachiana* Jord. ex Boreau; pH = 6.5.



Figure 1. *Dryopteris dilatata* (Hoffm.) A. Gray, 14.09.2025, Unguri commune, Ocnîța district

Quantitative aspects. In the landscape “Rudi-Arionești” a single plant was recorded (plot 62).

Limitation factors. Aridization of climate, at the limit of the spreading area, destabilization of forest ecosystems through irrational management.

Local distribution (Figure 2). “Rudi-Arionești” landscape reserve, plot 62, near the village of Unguri, Ocnîța district.



Figure 2. Local distribution of the species *Dryopteris dilatata* (Hoffm.) A.Gray

Protection status. Territorially protected in the landscape “Rudi-Arionești” (plot 62).

Protection measures. Inclusion in the *List of species protected by the state* and in *The Red Book of the Republic of Moldova* (ed. IV). It is proposed to multiply the plant under *in vitro* conditions.

Status. Critically Endangered species (CR) Category.

General distribution. Eurosiberian species: Europe, Asia-Temperate (Caucasus North, Transcaucasus, Mongolia, Altay, Iran, Turkey), Africa (Macaronesia Azores), introduced into: Subantarctic Islands Falkland Is, Southern America (Argentina South) [***].

Conclusions

In the local flora, the genus *Dryopteris* Adans. includes 3 rare species: *D. carthusiana* (Vill.) H. P. Fuchs [Endangered (EN)], *D. dilatata* (Hoffm.) A.Gray [(Critically Endangered (CR)], and *D. filix-mas* (L.) Schott [Vulnerable (VU)] and is proposed to be included in the 4th edition of the Red Book of the Republic of Moldova.

References

- AESCHIMANN D., LAUBER K., MOSER D. M. & THEURILLAT J. P. 2004. *Flora Alpina*. Vol. 1. *Lycopodiaceae-Apiaceae*. Bologna: Zanichelli, 1159 pp.
- CHIRTOACĂ V., ISTRATIA A. & NEGRU A. 1992. Flora Rezervației forestiere „Rădenii Vechi” (Republica Moldova). *Studii și cercetări. Biologie – Muzeologie. Muzeul de Științe Naturale Piatra Neamț*. 6: 33-40.
- CHIRTOACĂ V., IZVERSKAIA T. & POSTOLACHE G. 2005. *Flora*. 2.1.4. *Conspectul plantelor vasculare*. Pp. 57. In: URSU A. (red.). *Natura Rezervației „Plaiul Fagului”*. Chișinău: S.n. Tipogr. Edit. Universul, 432 pp.
- CHIRTOACĂ V. & PÎNZARU P. 2005. Ferigile interfluvialului Nistru-Prut. *Mediu Ambient. Cercetări științifice*. 2(20): 11-14.
- FRASER-JENKINS C. R. 1993. *Dryopteris dilatata* (Hoffm.) A.Gray. Pp. 29. In: TUTIN T. G. & al. (eds.). *Flora Europaea*. Psilotaceae to Platanaceae. Second edition. Cambridge: Cambridge University Press, Vol. 1: 519 pp.
- GEJDEMAN T. S. 1986. *Opredelitel' vysših rastenij Moldavskoj SSR*. Kișinev: Știința, 638 pp. (In Russian).
- KIRTOKA V. & ISTRATI A. 1987. Novye vidy paprotnikov v Moldavskoi SSR. V: *Izvestia AN MSSR. Ser. biolog. i him. nauk*. 1: 71-72 (In Russian).
- LAUBER K. & WAGNER G. 2001. *Flora Helvetica*. 2^{ème} edition. Berne, Stuttgart, Vienne: Edit. Paul Haupt, 1615 pp.
- LAZU Ș. 2015. *Dryopteris dilatata* (Hoffm.) A.Gray. Pp. 176. In: *The Red Book of the Republic of Moldova*. Ed. 3. Chișinău: Știința, 492 pp.
- NEGRU A. & CHIRTOACĂ V. 2011. *Dryopteris dilatata* (Hoffm.) A.Gray. P. 276. In: NEGRU A. (red.). *Flora Basarabiei. Bryophyta, Lycopodiophyta, Equisetophyta, Pteridophyta, Pinophyta*. Chișinău: ÎS Universul, 320 pp.
- NEGRU A., ȘABANOV G., CANTEMIR V., GÂNJU G., GHENDOV V. & BACLANOV V. 2002. *Plante rare din flora spontană a Republicii Moldova*. Chișinău: CEUSM, 198 pp.
- PÎNZARU P., NEGRU A. & IZVERSCI T. 2002. *Taxoni rari din flora Republicii Moldova*. Chișinău, 148 pp.
- PÎNZARU P. 2019. *Pteridofitele din Republica Moldova*. Chișinău: (s. n.) Tipogr. UPS “Ion Creangă”, 121 pp.
- PÎNZARU P. 2023. *Flora vasculară din Republica Moldova (lista speciilor și ecologia)*. Ed. a 3-a. Vol. 1. *Plante vasculare spontane*. Chișinău: (s. n.), CEP UPSC, 226 pp.
- POSTOLACHE G., LAZU Ș. & ȚĂCU L. 2018. Flora zonei cu protecție integrală din Rezervația „Plaiul Fagului”, evaluată după două decenii. *Akademios. Revistă de știință, inovare, cultură și artă*. 1(48): 47-58.
- PRELLI R. 2002. *Les Fougères et plantes alliées de France et d'Europe occidentale*. Paris: Edit. Belin, 431 pp.
- PROTOPOPOVA V. V. 1999. *Dryopteris dilatata* (Hoffm.) A.Gray. Pp. 31. In: PROKUDIN YU. N. (eds). *Opredelitel' vysših rastenij Ukrainy*. Kiev: Fitosotziotzentr, izd. 2, 854 pp. (In Russian).
- SÂRBU I., ȘTEFAN N. & OPRÊA A. 2013. *Plante vasculare din România. Determinator ilustrat de teren*. București: Edit. Victor B Victor, 1317 pp.
- TZVELEV N. N. 2012. *Dryopteris dilatata* (Hoffm.) A.Gray. Pp. 35. In: GELTMAN D. V. (red.). *Conspectus florum Europae Orientalis*. Petropoli – Mosqua: Consociatio editionum scientificarum KMK, Tomus 1: 630 pp. (In Russian).
- ***Distribution *Dryopteris dilatata* (Hoffm.) A.Gray. www.worldfloraonline.org/taxon/wfo-0001108304

How to cite this article:

PÎNZARU P. 2025. *Dryopteris dilatata* (Hoffm.) A.Gray (Dryopteridaceae Herter) in the flora of the Republic of Moldova. *J. Plant Develop.* 32: 53-57. <https://doi.org/10.47743/jpd.2025.32.1.980>