

***DRYOPTERIS REMOTA* (A. BRAUN EX DÖLL) DRUCE
(DRYOPTERIDACEAE: PTERIDOPHYTA) IN POLAND**

Dariusz Tlałka¹ & Krzysztof Piątek²

¹*Os. nad Solą 4/19, Kęty, Poland;*

²*Institute of Botany, Jagiellonian University, Kraków, Kopernika 27, 31-501 Kraków,
Poland, e-mail: piatek@interia.eu*

Keywords: *Dryopteris remota*, Poland, ferns, *Pteridophyta*, distribution;

ABSTRACT

The presence of *Dryopteris remota* (A. Braun ex Döll) Druce in Poland was unclear (Piękoś-Mirkowa 1979). Recently the presence of this species in Poland has been confirmed and this paper presents a review and description of Polish localities. Fifteen new localities of *D. remota* were found in the Beskidy Mountains (S Poland), and two contemporary and six historical sites confirmed. Ecological requirements in Poland are described. Determination of the Polish specimens of *D. remota* was based on comparison with descriptions and iconography of this species and in consultation with specialists in *Dryopteris*. A map of the distribution of *D. remota* within Poland is provided.

INTRODUCTION

The presence of *Dryopteris remota* (A. Braun ex Döll) Druce in Poland was unclear (Piękoś-Mirkowa, 1979). *Dryopteris remota* had been recorded in Poland from eight sites, of which six are historical. Fraser-Jenkins (pers. comm.) reported two sites from Poland, based on a revision of Polish herbarium materials, one of which (Przemyśl) appeared on a map of the overall distribution of this species (Ekrt et al. 2007). The species has also been reported by Fiek (1881) and Shube (1903) from four sites. Two contemporary localities were reported by Kwiatkowski (2006). During 2007-2009 D. Tlałka found 15 further localities of this species in Poland (Tlałka, 2008; Tlałka & Rostański, 2008; Tlałka, 2009; Szczeńniak, Tlałka & Rostański, 2009; Wilczek, Tlałka & Rostański, 2009; Tlałka 2010), and voucher specimens were confirmed by K. Piątek. This paper presents a review and description of material from all Polish localities. A map of the distribution of *D. remota* within Poland is also presented. A detailed description of the species, nomenclature, general distribution as well as a complete literature review was published by Ekrt et al. (2007).

MATERIAL AND METHODS

The distribution of this species within Poland is based upon examination of specimens from the KTU herbarium (abbreviations follow Holmgren et al. 1990) and from the literature (Fiek, 1881; Shube, 1903; Kwiatkowski, 2006). Voucher herbarium specimens from the Carpathian localities found by Tlałka are preserved at KTU and duplicates are preserved at KRA. Phytosociological survey was made in accordance with the methodology proposed by the Zurich-Montpellier school.

ECOLOGICAL REQUIREMENTS IN POLAND

Dryopteris remota is reported from altitudes of 480 to 730 m from ravines, steep rocky

slopes and screes. It grows in forest communities, especially in Carpathian beech forest *Dentario glandulosae*-Fagetum. At one of the stations a phytosociological survey (relevé) was made:

Phytosociological relevé:

Dentario glandulosae-Fagetum. 16.06.2008. Porąbka, Wielka Puszcza valley, steep (50%) N slope, 550 m a.s.l., Relevé area: 100 m², cover of tree layer (A): 90%, cover of shrub layer (B): 1%, cover of herb layer (C): 30%. A: *Fagus sylvatica* 4. *Abies alba* +. *Fraxinus excelsior* +. *Acer pseudoplatanus* +. B: *Fagus sylvatica* +. C: ***Dryopteris remota*** +. *D. dilatata* 1. *D. carthusiana* +. *D. affinis* +. *D. filix-mas* +. *Athyrium filix-femina* 2. *Oxalis acetosella* 1. *Rubus* sp. +. *Acer pseudoplatanus* 1. *Impatiens parviflora* 1. *Abies alba* 1. *Senecio ovatus* agg. +. *Geranium robertianum* +. *Allium ursinum* +. *Dentaria glandulosa* +. *Dentaria bulbifera* +. *Carex sylvatica* +. *Aruncus dioicus* +. *Galeobdolon luteum* +. *Sorbus aucuparia* +.

RECORDS OF *DRYOPTERIS REMOTA* FROM POLAND

All currently known Polish stations of *Dryopteris remota* are presented below. The distribution map of *D. remota* in Poland is presented in Figure. 1. The map was created using cartogram method based on an artificial grid of square units 10 x 10 km (Zajac A. & Zajac M., 2001).

Historical records

1. Kraków-Bronowice, ATPOL square DF6911, leg. A. Rehman, rev. Fraser-Jenkins C. R. (pers. inf.);
2. Przemyśl, ATPOL square GF90, rev. Fraser-Jenkins C. R., (pers. inf.);
3. Buchberg (Bukowiec Mount), ATPOL square BE9303 (Fiek 1881);
4. Schierlichskoppe (Kostrzyna Mount), ATPOL square BE9313 (Fiek 1881);
5. Storchberg (Stożek Wielki Mount), ATPOL square BE9302 (Fiek 1881);
6. Freudenkamm (a valley in the vicinity of Sokołowsko (Görbersdorf)), ATPOL square BE9313 (Shube 1903).

Contemporary localities

7. Góry Ołowiane / Turzec, ATPOL square BE6123 (Kwiatkowski 2006);
8. Ciechanówka, ATPOL square BE7103 (Kwiatkowski 2006);
9. Beskid Mały Mountains, Wielka Puszcza valley, on the SW slope of Wielka Bukowa Mount and N slope of Beskid Mount, 540-590 a.s.l., 22 individuals in beech forest. Porąbka, Porąbka gmina, Bielsko-Biała powiat, Silesia Province, ATPOL square DF9530, **KTU**;
10. Beskid Mały Mountains, Kocierska Pass, on the N slope, Wielka Puszcza Valley, on the S slope of Wielka Bukowa Mount and on the N and NE slope of Beskid Mount, 550-610 m a.s.l., 19 individuals in beech forest and fir-spruce forest. Targanice, Andrychów gmina, Wadowice powiat, Małopolska Province; Porąbka, Porąbka gmina, Bielsko-Biała powiat, Silesia Province, ATPOL square DF9531;
11. Beskid Mały Mountains, Targaniczanka valley, on the N slope of Kiczora Mount and on the W slope of Potrójna Mount, Kiczora, on the NW slope, 530-630 m a.s.l., several hundred individuals in beech forest and fir-spruce forest, Targanice, Andrychów gmina, Wadowice powiat, Małopolska Province, ATPOL square DF9532, **KTU**;
12. Beskid Mały Mountains, Potrójna Mount between Łamana Skała and Leskowiec,

- on the E slope, 630-640 m a.s.l., 2 individuals in beech forest, Targoszów, Stryżawa gmina, Sucha Beskidzka powiat, Małopolska Province, ATPOL square DF9640, **KTU**;
13. Beskid Mały Mountains, Leskowiec Mount, on the SW slope, 700-730 m a.s.l., 26 individuals in beech forest, Targoszów, Stryżawa gmina, Sucha Beskidzka powiat, Małopolskie Province, ATPOL square DF9630, **KTU**;
 14. Beskid Żywiecki Mountains, Sucha Góra Mount on the SW slope, 600-620 m a.s.l., 3 individuals in fir-spruce forest, Rajcza, Rajcza gmina, Żywiec powiat, Silesia Province, ATPOL square DG2334;
 15. Beskid Śląski Mountains, Jasionka valley, on the NW slope of Błatna Mount, 600 m a.s.l., 1 plant in beech forest, Brenna, Brenna gmina, Cieszyn powiat, Silesia Province, ATPOL square DG0202;
 16. Beskid Mały Mountains, Łamana Skąła Mount, on the SE slope above Komoniecki Cave, 720-730 m a.s.l., 15 individuals in young fir-spruce forest, Las, Ślemień gmina, Żywiec powiat, Silesia Province, ATPOL square DF9544, **KTU**;
 17. Beskid Mały Mountains, Beskid Mount near Kocierska Pass on the SE slope, 650-

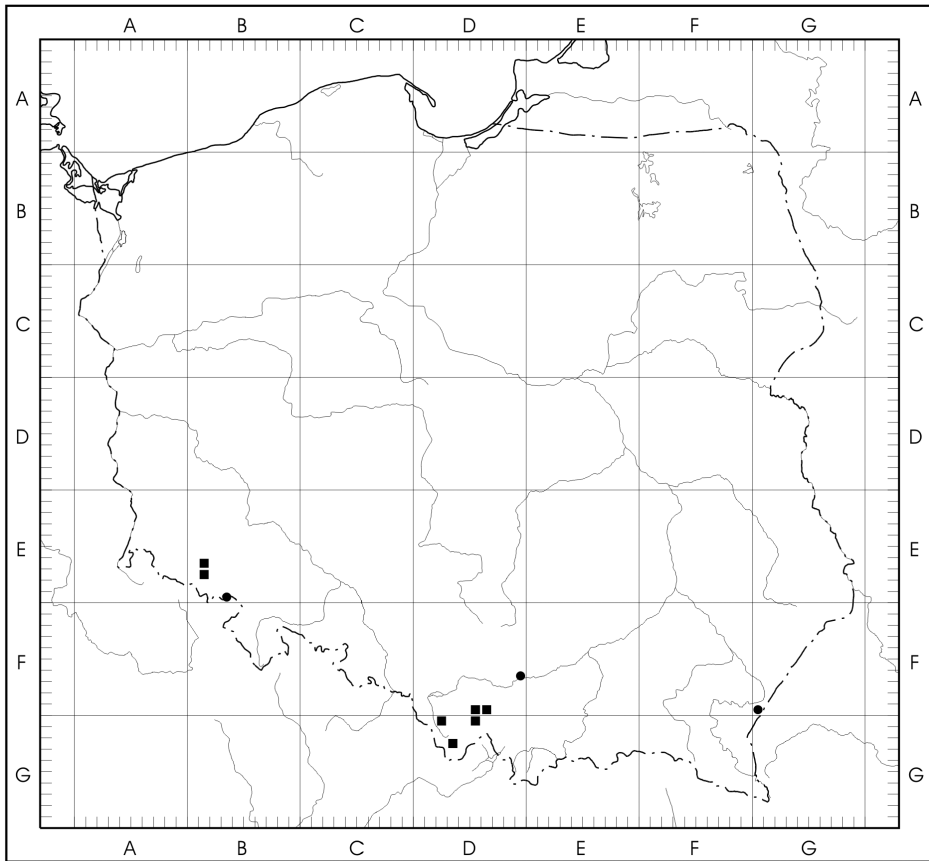


Figure 1. Map of the distribution of *Dryopteris remota* in Poland: ● – historical records, ■ – current sites.

- 660 m a.s.l., 4 individuals in beech forest, Kocierz Rychwałdzki, Łękawica gmina, Żywiec powiat, Silesia Province, ATPOL square DF9541;
18. Beskid Mały Mountains, Nad Płonem Mount, on the NW slope, 610-620 m a.s.l., 17 individuals in beech forest, Kocierz Rychwałdzki, Łękawica gmina, Żywiec powiat, Silesia Province, ATPOL square DG0501;
 19. Beskid Mały Mountains, Mały Gibasów Wierch Mount, on the SW slope below Czarne Działy Caves, 700-710 m a.s.l., 10 individuals in beech forest, Ślemień, Ślemień gmina, Żywiec powiat, Silesia Province, ATPOL square DG0503;
 20. Beskid Mały Mountains, Potrójna (Czarny Groń) Mount, on the W and SW slopes, 620-710 m. a.s.l., 10 individuals in beech forest, Targanice, Andrychów gmina, Wadowice powiat, Małopolska Province; Kocierz Rychwałdzki, Łękawica gmina, Żywiec powiat, Silesia Province, ATPOL square DF9542;
 21. Beskid Mały Mountains, Kiczera, on the E slope, 530 m a.s.l., 2 individuals in beech forest, Porąbka, Porąbka gmina, Bielsko-Biała powiat, Silesia Province, ATPOL square DF9434;
 22. Beskid Mały Mountains, Łamana Skąła Mount, on the SE slope below Dusica waterfall, 660-680 m a.s.l., 4 individuals in young fir-spruce forest, Las, Ślemień gmina, Żywiec powiat, Silesia Province, ATPOL square DG0504;
 23. Beskid Mały Mountains, Magurka Ponikiewska Mount, on the NE slope, 480-490 m a.s.l., 3 individuals in beech forest, Koziniec, Mucharz gmina, Wadowice powiat, Małopolska Province, ATPOL square DF9622.

CONCLUSION

Dryopteris remota should be included in the list of the native species of the flora of Poland. The species is probably more common, but has been overlooked. It should be included as a mountain species in the list of Zajac (1996). Considering the IUCN categories and criteria (IUCN 2001), we recommend that *D. remota* should be designated as a critically endangered species (CR) in Poland.

ACKNOWLEDGEMENTS

We are very grateful to C. R. Fraser-Jenkins for making available information about Polish specimens revised by him in herbaria and for confirmation of our identification; we also thank A. Zajac for his help in preparation of the distribution map and translation of German geographical names.

REFERENCES

- EKRT, L., LEPŠÍ, M., BOUBLÍK, K. & LEPŠÍ, P. 2007. *Dryopteris remota* rediscovered for the flora of the Czech Republic. *Preslia* 79: 69–82.
- FIEK, H. 1881. Flora von Schlesien, preussischen und österreichischen Antheils, endhaltend die wildwachsenden, verwilderten und angebauten Phanerogamen und Gefäss-Cryptogamen. J. U. Kern's Verl., Breslau.
- HOLMGREN, P. K., HOLMGREN, N. H. & BARNETT, L. C. 1990. Index herbariorum. Part I: Herbaria of the World. Ed. 8. *Regn. Veg.* 120: 1–693.
- IUCN. 2001. IUCN Red List Categories and Criteria: Version 3.1. IUCN Species Survival Commission. IUCN, Gland, Switzerland and Cambridge, UK. ii + 30 pp.
- KWIATKOWSKI, P. 2006. Current state, separateness and dynamics of vascular flora of the Góry Kaczawskie (Kaczawa Mountains) and Pogórze Kaczawskie (Kaczawa

- Plateau). I. Distribution atlas of vascular plants. W. Szafer Institute of Botany, Polish Academy of Sciences, Kraków.
- PIĘKOŚ-MIRKOWA, H. 1979. Paprocie z grupy *Dryopteris dilatata* w Polsce. Monogr. Bot. 59: 1–75.
- SCHUBE, T. 1903. Die Verbreitung der Gefäßpflanzen in Schlesien preussischen und österreichischen Anteils. R. Nischowsky Verl., Breslau.
- SZCZEŚNIAK, E., TLAŁKA, D., ROSTAŃSKI, A. 2009. Key to identification and descriptions of species of Buckler-ferns (*Dryopteris* Adans.) occurring in Poland. In: SZCZEŚNIAK, E., GOLA, E. (Eds), Genus *Dryopteris* Adans. in Poland, pp. 5–34. Polish Botanical Society & Institute of Plant Biology, University of Wrocław, Wrocław.
- TLAŁKA D. 2008. Nieczniza pośrednia - nowy gatunek paproci w województwie śląskim. Przyn. Górnego Śląska 54: 3.
- TLAŁKA D. 2009. Occurrence of the species of *Dryopteris* Adans. in Beskid Mały in the Western Carpathians. In: SZCZEŚNIAK, E., GOLA, E. (Eds) Genus *Dryopteris* Adans. in Poland, pp. 35–43. Polish Botanical Society & Institute of Plant Biology, University of Wrocław, Wrocław.
- TLAŁKA D. 2010. Paprotniki województwa śląskiego (cz. 5). Przyn. Górnego Śląska 59: 3.
- TLAŁKA D., ROSTAŃSKI A. 2008. Peculiar pteridophyte species of the administrative Silesia Province (Southern Poland). In: SZCZEŚNIAK, E., GOLA, E. (Eds), Club mosses, horsetails and ferns in Poland - resources and protection, pp. 127–137. Polish Botanical Society & Institute of Plant Biology, University of Wrocław, Wrocław.
- WILCZEK Z., TLAŁKA D., ROSTAŃSKI A. 2009. Pteridological field-trip to the Beskidy Zachodnie range (Southern Poland), a refuge of natural habitats of ferns and fern allies species. In: SZCZEŚNIAK, E., GOLA, E. (Eds) Genus *Dryopteris* Adans. in Poland, pp. 97–107. Polish Botanical Society & Institute of Plant Biology, University of Wrocław, Wrocław.
- ZAJĄC, A., ZAJĄC, M. (eds.). 2001. Atlas rozmieszczenia roślin naczyniowych w Polsce – Distribution Atlas of Vascular Plants in Poland. Nakł. Pracowni Chorologii Komputerowej Instytutu Botaniki Uniw. Jagiell., Kraków.
- ZAJĄC, M. 1996. Mountain vascular plants in the Polish Lowlands. Polish Bot. Stud. 11: 1–92.