

# New locality of *Cyrtomium falcatum* (L. f.) C. Presl (Dryopteridaceae) in Croatia

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## Abstract

*Cyrtomium falcatum* (L. f.) C. Presl is an ornamental fern species originally native in East Asia. It has been introduced in North America and Europe and subsequently naturalized locally. The first occurrence of *C. falcatum* in Croatia was reported on the island of Rab by Trinajstić & Španjol in 1994. During a field study conducted in the summer of 2015 in the area of Dubrovnik this species was found again. In this paper the new locality is reported of this alien fern species in Croatia.

**Keywords:** alien plants, Croatia, *Cyrtomium*, ferns

**Maslo, S. (2021): Novi lokalitet srpaste papratice *Cyrtomium falcatum* (L. f.) C. Presl u Hrvatskoj. Glas. Hrvat. bot. druš. 9(2): 104-107.**

## Sažetak

*Cyrtomium falcatum* (L. f.) C. Presl. je ukrasna vrsta papratnjače izvorno porijeklom iz istočne Azije. Unesena je u Sjevernu Ameriku i Europu i naknadno lokalno naturalizirana. O prvom nalazu vrste *C. falcatum* za Hrvatsku izvijestili su Trinajstić & Španjol 1994. godine kada je ista zabilježena na otoku Rabu. Tijekom terenskog istraživanja provedenog u ljeto 2015. na području Dubrovnika ova vrsta je ponovno pronađena. U radu je prikazano novo nalazište ove strane vrste papratnjače u Hrvatskoj.

**Glavne riječi:** *Cyrtomium*, Hrvatska, papratnjače, strane vrste

*Cyrtomium* C. Presl (Dryopteridaceae) is mainly an East-Asian genus, locally also present in Africa and Madagascar. It is represented by 35 species in the world, of which two were introduced for ornamental purposes in Europe and are now well naturalized – *Cyrtomium falcatum* (L. f.) C. Presl and

*Cyrtomium fortunei* J. Sm. (Prelli & Boudrie 2021). In Europe, *C. falcatum* and *C. fortunei* are currently the most commonly established species. However, it has long been unclear which species occurred where. After all, both are closely related and, on rare occasions, are even considered one variable

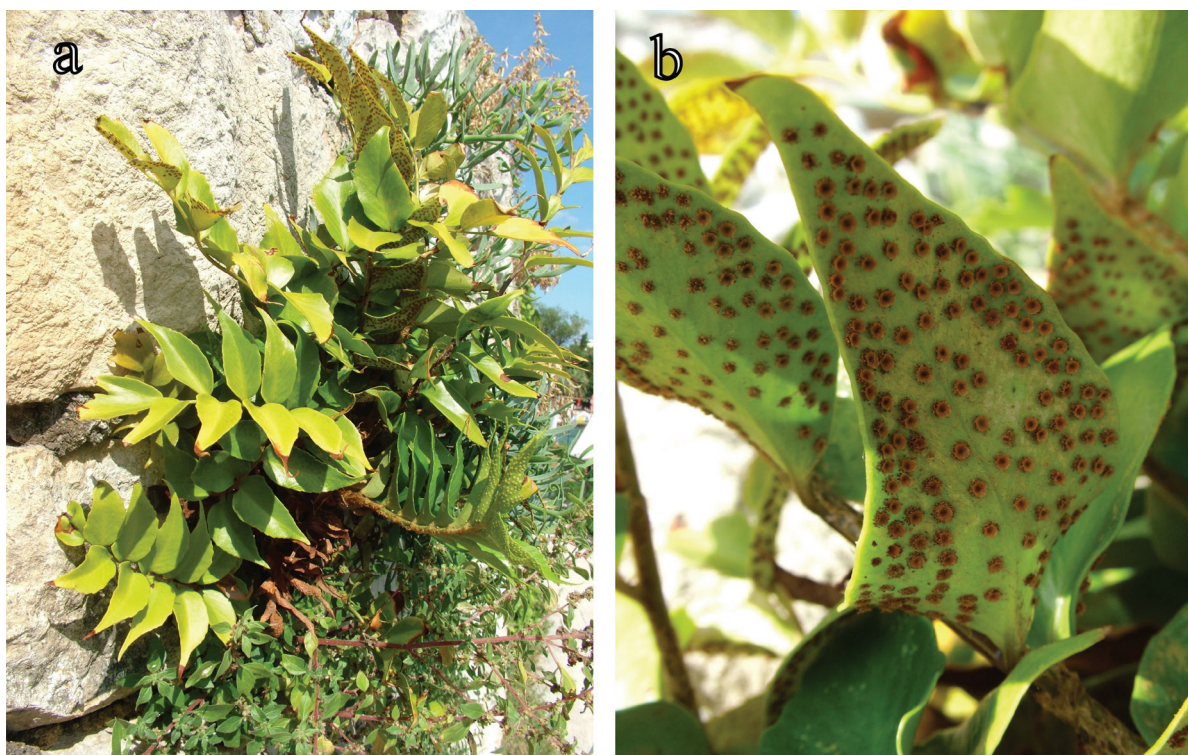
species. *C. falcatum* is easily distinguished from *C. fortunei* by the thick, leathery, glossy lamina with a smooth margin, widely different from the dull green lamina of *C. fortunei*. Usually, fully grown fronds of *C. falcatum* have fewer and wider pinnae than those of *C. fortunei* (Verloove et al. 2007). Detailed description of these species as well as identification key can be found in Verloove et al. (2007) and Prelli & Boudrie (2021).

The field study was conducted in the summer of 2015 and 2021. Digital photographs and GPS coordinates were taken in the field. The used nomenclature and classification of taxa are in accordance with Christenhusz & Raab-Straube (2013). Its invasiveness status was determined using the terminology according to Blackburn et al. (2011).

*Cyrtomium falcatum* (L. f.) C. Presl. (syn. *Polypodium falcatum* L. f., *Polystichum falcatum* (L. f.) Diels) is an evergreen fern. Rhizome is erect, densely covered with lanceolate brown scales, and with several fronds at apex. Fronds are in tufts, reaching 60-70 cm in length, including the stipe. The stipe is about half to two third as the lamina and is covered with

orange-brown scales. Lamina is broadly lanceolate, 1-imparipinnate with 5-14 pairs pinnae. The pinnae are alternate, shortly stalked, about 10 cm long and up 4 cm wide, often with one basal lobe but otherwise entire to very shortly obtusely toothed proximally, asymmetrically triangular ovate, leathery and very shiny, glabrous on both surfaces. The sori are numerous, round, appearing scattered on the underside of the pinnae, each covered with a peltate indusium (Fig. 1) (adapted from Prelli & Boudrie, 2021).

*Cyrtomium falcatum* is considered to be a native species in East Asia distributed from Vietnam to China and Japan, but it has been introduced in North America and Europe. In Europe it occurs primarily in coastal areas of West Europe. This species is often cultivated for ornamental purposes and escapes and naturalizes quite easily, both on shaded embankments and on old walls or in wells. Throughout the introduced range it occurs on man-made structures including walls, well interiors, stairways and other masonry or brick structures where there is shade and protection from excessive cold.



**Figure 1.** *Cyrtomium falcatum* on a wall in Dubrovnik: habitat (a), pinnae from beneath with sori (b) (Photos: S. Maslo).

Despite its thick leaves suggesting a preference for xeric habitats, *C. falcatum* favours mesophytic or coastal habitats. Thanks to a certain tolerance of sea spray, it often settles in the immediate vicinity of the sea, but populations are also known far from the coast (Denters 2003, Marchetti 2004, Prelli & Boudrie 2021).

The earliest report of naturalization in Europe was from Netherlands in 1915 (Denters 2003), where it was introduced as an ornamental fern species from Japan in the first part of the 19th century (Christenhusz & Uffelen 2001). Up to date, *C. falcatum* was reported in Europe as introduced in Belgium (Verloove et al. 2007), Croatia (Trinajstić & Španjol 1994), France (Parrot 1982, Prelli & Boudrie 2021), Great Britain (Clement & Foster 1994), Ireland (Cullinane & Crowley 1985), Italy (Bonafede et al. 1993, Marchetti 2004), Netherlands (Denters 2003), Portugal (Azores only: Schäfer 2001), Spain (Casasayas & Farras 1986, Segarra-Moragues 2001) and Switzerland (Schoenenberger et al. 2013). In Eastern European countries, the species was not recorded until recently in Romania (Negrean 2011).

The first record of *C. falcatum* in Croatia dates from 1994, when it was discovered on the Kvarner island of Rab (Pod pjacetu locality in the town of Rab), but without details of habitat and population size (Trinajstić & Španjol 1994). The same authors state that species has been found to survive for more than 10 years growing wild and slowly spreading to new surface areas. However, during the latest field research, the presence of the species could not be confirmed on the island of Rab (Vedran Šegota, pers. comm.). On the other hand, the species was recorded again, during field research in southern Dalmatia. New chorological data was gathered within the town of Dubrovnik, on Lapad Peninsula on June 27 2015 where two specimens were recorded on the old stone wall along the Promenade of Niko and Medo Pucić, near the hotel More (42°39'25" N, 18°03'57" E), together with *Crithmum maritimum* L. and *Parietaria judaica* L. (Fig. 1a). It is important to note that some

other taxa of ferns grow on the same wall, namely *Adiantum capillus-veneris* L., *Allosorus acrosticus* (Balb.) Christenh., *Asplenium ceterach* L., *Asplenium ruta-muraria* L. and *Asplenium trichomanes* subsp. *quadri-valens* D. E. Mey. Upon re-visit of the site in July 2021, I observed only one specimen of *C. falcatum*.

Following the framework proposed by Blackburn et al. (2011), it can be considered that *C. falcatum* is a casual alien species in the territory of Croatia, already in the E category (individuals surviving in the wild in location where introduced, reproduction occurring, but population not self-sustaining).

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### References

- Blackburn, T.M., Pyšek, P., Bacher, S., Carlton, J.T., Duncan, R.P., Jarošík, V., Wilson, J.R., Richardson, D.M. (2011): A proposed unified framework for biological invasions. *Trends in Ecology and Evolution* 26(7): 333-339.
- Bonafede, F., Ferrari, C., Vigarani, A. (1993): *Cyrtomium falcatum*, new to the Italian flora. *Flora Meditteranea* 3: 261-264.
- Casasayas, T., Farras, A. (1986): Short notes: *Polystichum falcatum* (L. fil.) Diels, adventitious to Catalonia. *Collectanea Botanica* 16(2): 425-426.
- Christenhusz, M., Uffelen, G.A. van. (2001): Naturalized Japanese plants in the Netherlands, introduced by Von Siebold. *Gorteria* 27(5): 97-108.
- Christenhusz, M., Raab-Straube, E. von (2013): Polypodiopsida. In: Euro+Med Plantbase - the information resource for Euro-Mediterranean plant diversity (accessed January 2022).
- Clement, E.J., Foster, M.C. (1994): Alien plants of the British Isles. London.
- Cullinane, J.P., Crowley, C. (1985): *Cyrtomium falcatum* in Ireland. *Fern Gazette* 13(1): 42.

- Denters, T. (2003): History and present occurrence of *Cyrtomium falcatum* (L.f.) C.B. Presl. in the Netherlands. *Gorteria* 29(5): 125-133.
- Marchetti, D. (2004): Pteridophytes of Italy. (Le Pteridofite D'Italia). *Annals of the Museum of Civilisation Rovereto* 19: 71-231.
- Negrean, G. (2011): Addenda to flora Romaniaae, volumes 1-12 - Newly published plants, nomenclature, taxonomy, chorology and commentaries (Part 1). *Kanitzia* 8: 89-194.
- Parrot, A.G. (1982): Une fougère exotique: *Polystichum falcatum* Dils., var. *rochefordii*, naturalisée à Biarritz, 64200, France. *Bulletin de la société botanique du Centre-Ouest*, N.S. 13: 15-23.
- Prelli, R., Boudrie, M. (2021): Les fougères et plantes alliées d'Europe. Editions Biotope, Mèze. 528 p.
- Schafer, H. (2001): Distribution and status of the pteridophytes of Faial island, Azores (Portugal). *Fern Gazette* 16(5): 213-237.
- Schoenenberger, N., Rothlisberger, J., Carraro, G. (2014): The exotic flora of the Canton Ticino (Switzerland). *Bolletino della Societa ticinese di scienze naturali* 102: 13-30.
- Segarra-Moragues, J.G. (2001): Data on pteridoflora subspontaneous Iberica - *Cyrtomium falcatum* (Dryopteridaceae) and *Nephrolepis cordifolia* (Nephrolepidaceae). *Acta Botanica Malacitana* 26: 247-249.
- Trinajstić, I., Španjol, Ž. (1994): *Cyrtomium falcatum* (L. fil.) C Presl. (Polystichaceae) a newcomer in the Croatian flora. *Natura Croatica* 3(1): 87-90.
- Verloove, F., van der Ham, R., Denters, T. (2007): Exotische muurvarens in België en Nederland *Dumortiera* 92: 1-16.