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Author: Barbara Tokarska-Guzik, Dariusz Tlałka, Teresa Nowak, Eleanor Cohn, Ian C. Trueman

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Anthropogenic disturbance as a factor supporting the development of rare plant species as exemplified by *Botrychium matricariifolium* in the Silesia region of Poland

Barbara Tokarska-Guzik[1], Dariusz Tlałka[2], Teresa Nowak[1], Eleanor Cohn[3] & Ian C. Trueman[3]

[1]Department of Plant Systematics, Faculty of Biology and Environmental Protection, University of Silesia, Jagiellońska 28, 40-032 Katowice, Poland, e-mail: barbara.tokarska-guzik@us.edu.pl
[2]Oś. Nad Sołą 4/19, 32-650 Kęty, Poland
[3]Univeristy of Wulverhampton, United Kingdom

Botrychium matricariifolium (Retz) A. Braun ex W. D. J. Koch (daisy-leaved moonwort; Ophioglossaceae), an endangered and strictly protected species of moonwort has lost significant number of its localities during recent decades in Poland. From over 200 known localities from the area of the entire country, only about thirty were confirmed in the period of last 30 years. The majority of known populations usually consists of a few individuals or even a single individual plant. Little is known about the life history of the species, and what is more, until now no monitoring of the existing populations has taken place.

We present the results of monitoring of two populations of *B. matricariifolium* conducted between 2007 and 2014 in the Silesian Uplands (southern Poland). The species was found for the first time in a forest area in the vicinity of the town of Siewierz in 2007 and in another similar nearby site in 2009. Several individuals of the fern were found to occur here on forest clearings under a high-voltage electricity line at two locations about 1 km distant from one another.

At the sites of occurrence of the fern, phytosociological relevés and floristic lists in the direct surrounding areas were made. In every growing season from 2007 to 2014, all specimens of *B. matricariifolium* were counted in June-July.

The populations of *B. matricariifolium* occupied an open sandy grassland community. In consecutive years a dozen to several dozen individuals of *Botrychium* were recorded in the study plots. In autumn 2009 during

works conducted beneath the high-voltage line, the sites for the fern appeared to have been destroyed. Young trees and shrubs were cut down and the turf formed by the herbaceous plants was damaged completely. However, this damage to the vegetation did not affect the population of the moonwort. In the following year, about 100 individuals of the species were found there.

The results of the monitoring conducted suggest that the disturbance (including the destruction of the vegetation) can be one factor which supports the maintenance of populations of *B. matricariifolium*, a hypothesis which had also been previously put forward by other investigators.