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SHORT COMMUNICATION

First records of *Emblyna brevidens* (Kulczyński, 1897) (Araneae: Dictynidae) in Poland

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Abstract: The very rare spider species *Emblyna brevidens* (Kulczyński, 1897) is known from only few sites in Europe. This article reports on the first sites of this species in Poland, found in the mid-eastern part of the country, in the Polesie National Park, during studies carried out between 1995 and 1998. Six mature females were caught in willow-birch thickets and on a flooded meadow. Available data from the Park and from other European sites suggest that the species is probably associated with marshy or moist areas of medium or high fertility with a well-developed herb layer and shrub layer.

Key words: *Emblyna brevidens*, spiders, rare species, potential treats, Polesie National Park (Poland), habitat preferences, wetlands

INTRODUCTION

There are only two spider species of the genus *Emblyna* in Central Europe: *E. brevidens* (Kulczyński, 1897) and *E. mitis* (Thorell, 1875) (BLICK et al. 2004). To date species of this genus have not been known from Poland.

Emblyna brevidens (Kulczyński, 1897) is very rare, known from only few sites in Europe. So far, the species has been found in: France (SIMON 1914), Italy (BONNET 1956, TROTTA 2005), Switzerland (MAURER 1978), Serbia (NIKOLIC & POLENEC 1981 after NACHWEISKARTEN DER SPINNENTIERE DEUTSCHLANDS 2006), Hungary (LOKSA 1969), Romania (WEISS et al. 1998), Germany (WUNDERLICH 1975, NACHWEISKARTEN DER SPINNENTIERE DEUTSCHLANDS 2006), Slovakia (CHYZER & KULCZYŃSKI 1897, GAJDOŠ et al. 1999), Estonia (MIKHAILOV 1996), and Finland (RASSI et al. 2001). The only site in Asian Kamchatka (BONNET 1956, MIKHAILOV 1996) was revised and rejected by LEHTINEN (1967). Unfortunately, few data are available on habitats of *E. brevidens* in given sites and in some cases there is no available detailed information about the location of sites.

The present study brings information about the first records of *E. brevidens* in Poland. New data on the distribution and habitat description of the species are given.

MATERIALS AND METHODS

The sites of *E. brevidens* were found in the Polesie National Park, in Polesie Lubelskie (mid-eastern part of Poland) (Fig. 1). The Park's area includes the most valuable and unique fragments of raised bogs, transitional bogs and fens of the Polish part of Polesie (CHMIELEWSKI & RADWAN 1993, CHMIELEWSKI et al. 1995). These areas form the West Polesie Biosphere Reserve, which is complemented by the ad-

Fig. 1. Location of the Polesie National Park in Poland

jacent Pribuzhskoye-Polesie Biosphere Reserve in Belarus and the Shatsky Biosphere Reserve in Ukraine. They are planned to become one transboundary biosphere reserve, protecting the largest swamp of the European continent.

Regular faunistic and ecological studies in the Polesie National Park were carried out from July 1995 to July 1998. Samples were collected fortnightly on 10 plots in habitats representative for the Park: transitional/raised bog, wooded raised bog, marshy pine forest, drained marshy pine forest, sedge fen, moist meadow, wil-

low-birch thickets, alder carr, fresh meadow, and flooded meadow. Spiders from particular layers of vegetation were collected with standard methods, like: Barber's pitfall traps, sweep netting, shaking off branches of shrubs and small trees, bark traps on tree trunks, and by sieving litter through an entomologic sieve.

RESULTS

In total, 60 000 specimens of 311 spider species were caught during this study. They included 6 individuals of *E. brevidens*, found in 2 localities. The specimens are deposited in the Department of Zoology, University of Podlasie in Siedlce (Poland).

(1) 5 ♀♀, 1 June 1996, sweep netting; Załucze Stare, Lake Łukie, Uroczysko Spławy, 51°25'N, 23°06'E

Willow-birch thickets *Betulo-Salicetum repentis*. Well-developed layer of low shrubs (coverage 70%). Numerous plant species, including the downy birch *Betula pubescens*, rosemary-leaved willow *Salix rosmarinifolia* and shrubby birch *Betula humilis*, with a small admixture of the grey willow *Salix cinerea* and common alder *Alnus glutinosa*. Herb layer (coverage 80%) formed by representatives of classes *Scheuchzerio-Caricetea fuscae*, *Phragmitetea* and *Alnetea glutinosae*, mainly the slender sedge *Carex lasiocarpa*, mud sedge *C. limosa*, smooth black sedge *C. nigra*, tufted loosestrife *Lysimachia thyrsiflora*, water horsetail *Equisetum fluviatile*, buckbean *Menyanthes trifoliata*, and gypsywort *Lycopus europaeus*. Depressions filled with water are inhabited by the waterwheel *Aldrovanda vesiculosa*. Moss layer well developed (coverage 70%), dominated by brown mosses: *Dreponcladus revolvens* and *Calliergon cuspidatum*. The presence of representatives of the class *Scheuchzerio-Caricetea fuscae* suggests that this association was formed on a site of transitional peatland of the order *Scheuchzerietalia palustris*. The abundant occurrence of downy birch might in turn indicate succession towards forest associations of marshy birch and alder forests.

(2) 1 ♀, 02 June 1998, Barber's pitfall traps; Wołoskowola, Nowiny, Mietiułka valley, 51°28'N, 23°14'E

Flooded meadow – floristically impoverished association with the tufted hair grass *Deschampsia caespitosa* of the class *Molinio-Arrhenatheretea* (semi-natural turf meadow and pasture associations). The association formed on dried fen was transformed into an intensively used meadow. Now the area, abandoned and flooded, undergoes secondary succession into shrub and forest associations of the class *Alnetea glutinosae*. Vascular plants cover 90% of the area. The community is dominated by the tufted hair grass *Deschampsia caespitosa*; other abundant species are: the creeping buttercup *Ranunculus repens*, silverweed *Potentilla anserina*, rough-stalk bluegrass *Poa trivialis*, fowl bluegrass *P. palustris*, blue moor grass *Molinia caerulea*, common chickweed *Stellaria media*, lesser stitchwort *S. graminea*, hedge bedstraw *Galium mollugo*, grey willow *Salix cinerea*, and rosemary-leaved willow *Salix rosmarinifolia*. Moss layer (coverage 40%) formed only by *Calliergonella cuspidata* and *Climacium dendroides*. Grounds overgrown by ruderal associations neighbour on the meadow from the north.

DISCUSSION

Areas within the Polesie National Park are inhabited by many very rare and rare spider species, like *Meioneta mossica* Schikora, 1993, *Scotina palliardi* (L. Koch, 1881), *Gnaphosa nigerrima* L. Koch, 1877, *Arctosa alpigena* (Doleschall, 1852), living in sphagnum mosses (KUPRYJANOWICZ et al. 1997, 1998). Other rare species, like *Clubiona rosserae* Locket, 1953, *Ero cambridgei* Kulczyński, 1911, *Centromerus levitarsis* (Simon, 1884), *C. semiater* L. Koch, 1879, *Taranucnus setosus* (O. P.-Cambridge, 1863) and *Pirata tenuitarsis* Simon, 1876, all preferring fens, were also recorded in the Park (STAŃSKA et al. 2002). Moreover, the Polesie National Park is inhabited by rare thermophilic species, like *Mysmenella jobi* (Kraus, 1967), which has its only Polish site there (HAJDAMOWICZ et al. 2003), or *Tetragnatha reimoseri* (Rosca, 1939), associated with water and sedge communities (ROZWAŁKA 2005).

New findings of *E. brevidens* in Europe have brought important data on the distribution and habitat of this species. Its sites found in the Polesie National Park are situated at the eastern border of the geographic range of this species. In the case of so rare species it is very difficult to conclude about the character of its range. The species of the Cribellatae family – Dictynidae, like *E. brevidens*, are in general less numerous web spiders and they have been found less frequently than the species of the Ecribellatae families – Araneidae, Linyphiidae or Theridiidae, which are also richer in species (BLICK et al. 2004, PLATNICK 2006). Probably it is a result of competition with these more 'expansive' spiders.

E. brevidens, like most web spiders, lives in herbaceous vegetation and among branches of shrubs and small trees, where it builds irregular small webs (WUNDERLICH 1975, MILLER & SVATOŇ 1978). Spiders of the family Dictynidae resemble each other in size and shape. *E. brevidens* is ca. 2 mm long and has a brown carapace, yellow-brown legs, dark brown chelicerae, and a white abdomen with a pale brown pattern (Fig. 2a,b,c).

Basing on available autecological data from the Polesie National Park, *E. brevidens* seems to be associated there with flooded habitats of moderate or high fertility, with a well-developed herb layer and deciduous shrubs. The plot with the flooded meadow was situated in the area of degraded fen – formerly cultivated, in the Mietiułka river catchment. The area was renaturalised by flooding in 1995 (RADWAN et al. 1999). The plot with willow-birch thickets was located in a former bay of the eutrophic Lake Łukie. It is now a complex of carbonate fens and transitional bogs (CHMIELEWSKI et al. 1995). The fens were extensively used – mown and burnt – in the 1950's. Reclamation measures in the 1970's resulted in decreasing lake surface area and in increasing the area of dried peatlands, which are now overgrown by shrubs and trees (LORENS & SUGIER 1999).

The observed habitat preferences of *E. brevidens* are similar to most data from other countries. In Slovakia, where it was caught most often, *E. brevidens* was reported from 10 sites. They were mainly situated in mountain valleys and in river valleys in lowlands (review in GAJDOŠ et al. 1999). In the region of Mala Fatra the species was found among grasses in a meadow near a stream as well as on juniper and spruce trees (MILLER & SVATOŇ 1978). The spiders were found also in wet or moist habitats on grasses and small trees in the Turčanska valley (SVATOŇ 1984). In

the Danube Delta, specimens of *E. brevidens* were collected in wet habitats, like *Phragmites* and *Typha* communities, thickets along river banks, semi-natural meadows, and grasslands (WEISS et al. 1998). Only one site near Berlin was noted in Germany. One male was found there in a swampy mesotrophic sedge association in an area of felled alder carr (WUNDERLICH 1975). *E. brevidens* was considered there a stenotopic, hygrophilous species living in open marshes and wet meadows in the herb layer and in crowns of deciduous trees (PLATEN et al. 1999). There are few known sites of the spider in Finland, where it is listed as a species living in bogs (RASSI et al. in KOPONEN et al. 2001, S. KOPONEN pers. comm.) or semi-natural wet meadows (RASSI et al. 2001). In Switzerland, however, *E. brevidens* was found in only one mountain site on a forested slope of southern exposure (MAURER 1978).

The available data from the Park and from other European sites suggest that *E. brevidens* is most likely associated with marshy or moist areas of medium or high fertility, with well-developed herb layer and shrub layer. Probably wetlands were also the natural habitat of the species; therefore it occurs in semi-natural wet meadows and variously transformed moist meadows. Wetlands, however, are the habitats whose area markedly declined in the former century due to numerous drainage enterprises and excessive water consumption (SZAFER & ZARZYCKI 1977, SUCCOW & JESCHKE 1990, CHMIELEWSKI & RADWAN 1993).

Because of the limited number of sites and individuals, *E. brevidens* is listed in red data books of endangered animals in three countries in Europe. In Slovakia it is considered a species of high risk and vulnerable (VU) (GAJDOŠ et al. 1999). In Finland it belongs to species of smaller risk but still nearly threatened (NT). The main source of the hazard reported there is the development of towns, rural areas and road construction, and consequently the degradation of natural habitats (RASSI et al. 2001). In Poland STAREGA et al. (2002) placed the species in the category DD – deficient data – due to a small number of findings and sites, as only my data from Polesie were available. The potential threat to *E. brevidens* is also the disappearance of its habitats due to draining. Sites of *E. brevidens* in the Polesie National Park are situated in areas where active protection is aimed at maintaining wetlands (RADWAN et al. 1995, 1999) – an important habitat for this species.

Because *Emblyna brevidens* is in general a rare species, it is still not found in many regions, also in European wetlands. However, further research, especially in marshy or moist areas with well-developed herb layer and shrub layer, should give us more information on the distribution and requirements of this species.

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a

b

c

Fig. 2. Female of *Emblyna brevidens*: a, dorsal view; b, ventral view; c, lateral view