

## ***Emblyna brevidens* (Araneae: Dictynidae) in the Mazurian Lake District (NE Poland) – rediscovered in Poland**

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**Abstract.** Research was carried out on lake islands in the Mazurian region of NE Poland in 2004. During the study, 8546 specimens of 190 spider species were caught by Barber traps. One male of *Emblyna brevidens* (Kulczyński, 1897) was found on an island of Lake Wigry (Wigry National Park). This site was situated on the edge of a peat bog with *Salicetum pentandro-cinereae*, surrounded by wet alder forest. For the first time complete diagnostic drawings and measurements for both sexes of *E. brevidens* from Poland are given.

**Key words:** diagnostic drawings, habitat description, rare species, spiders, Wigry National Park

*Emblyna brevidens* (Kulczyński, 1897) is a very rare spider species known from only a few sites scattered across Europe. Single specimens have been recorded from 10 European countries: France and Germany to the west; Italy and Serbia to the south; Romania to the south-east; Hungary, Slovakia and Poland to the east; and Finland and Estonia to the northeast (SIMON 1914, BONNET 1956, LOKSA 1969, NIKOLIC & POLENEC 1981 after STAUDT 2007, MIKHAILOV 1996, WEISS et al. 1998, RASSI et al. 2001, BLICK et al. 2004). The only one cited female from Switzerland (MAURER & HÄNGGI 1990) was a misidentification. The identification was reviewed by A. Hänggi (in litt.) and the specimen was recognised as *Dictyna arundinacea* (Linnaeus, 1758).

Thus far, in Poland *E. brevidens* has only been reported from the Poleski National Park situated in the Polesie region in east-central part of the country, from which a few females of the species were recorded (HAJDAMOWICZ 2006). The numbers of sites in countries adjacent to Poland vary greatly. While there are only two known sites in Germany – in Mecklenburg and in Berlin, Slovakia encompasses 10 reported locations (WUNDERLICH 1975, MARTIN 1983, STAUDT 2007, GAJDOŚ et al. 1999) (Fig. 1). There are, however, no data from other countries bordering with Poland.

The present study details the discovery of a male *E. brevidens* from the Wigry National Park in the Mazurian Lake District. In this connection, data on the distribution of the species are given, along with a habitat description. Moreover, presented here for the first time are complete diagnostic drawings and measurements of the Polish specimens, including details of the pedipalp and the chelicerae of the male from the Mazurian Lake District, as well as the epigyne and internal genital structures of a female from Polesie.

### **The Area**

Research was carried out on two complexes of lake islands in the Mazurian region of NE Poland in 2004. The islands support a broad spectrum of semi-natural habitats, including pine and oak forest (Carpinion betuli, Dicrano-Pinion) on elevated land, alder forest (*Alnion glutinosae*, *Alno-Ulmion*) on low-lying land, and meadows subject to very extensive pasturing (*Arrhenatherion*, *Cynosurion*). Mainland sites on the lakeshore were also selected. The Lake Wigry archipelago (co-ordinates 54°00'–54°05'N, 22°01'–22°09' E) is regarded as one of the most valuable natural areas in the Wigry National Park. Its islands are characterised by well-preserved habitats and limited human impact. Ostrów, Ordów and Krowa islands once sustained the grazing of small herds of cows and horses, and the cessation of this activity in fact poses a threat to open habitats. The archipelago of islands in the Nidzkie-Bełdany Lakes (co-ordinates 53°37'–53°46'N, 21°31'–21°37'E) in turn lacks pasture habitat, and is subject to tourist activity.

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**Fig. 1:** Distribution of *Emblyna brevidens* in Poland and in countries adjacent to Poland.

Habitat study using Plant Habitat Indices (ELLENBERG et al. 1992, ZARZYCKI et al. 2002) was conducted on all islands and the mainland. In addition, habitat study was also carried out at the Lake Mamry archipelago (co-ordinates: 54°00'–54°10'N, 21°30'–21°52'E). The data were used to find islands on which *E. brevidens* seemed likely to exist.

## Sampling

Sampling procedure followed ZALEWSKI (2004). In essence, pitfall traps were placed in every habitat of each study site following stratified sampling (KREBS 1989). The trap lines usually consisted of 3 traps 25 m apart (DIGWEED et al. 1995). Between 1 and 15 traps per island were employed, depending on habitat diversity and size. Traps (0.5 l plastic mugs of mouth diameter 120 mm) were operated from May through to October 2004. Additionally, Barber traps were also set out on 20 artificial islands assuming the form of 50x100 cm polystyrene foam rafts.

## Material

1♂ 18.05–24.06 2004, Barber trap, willow thicket *Salicetum pentandro-cinereae*, Mazurian Lake District, Wigierski National Park, Lake Wigry, island Krowa, Bryzgiel 54°0'0.70"N, 23°4'31.02"E  
5♀♀ 01.06.1996, sweep netting, willow-birch thicket *Betulo-Salicetum repentis*, Polesie re-

gion, Poleski National Park, Załucze Stare 51°25'N, 23°06'E (details in Hajdamowicz 2006).

The determination of the specimens was done on the base of descriptions and drawings of LOKSA (1969), WUNDERLICH (1975) and MILLER & SVATON (1978).

## Descriptions and drawings

**Male** (1♂): Carapace brown with dark brown markings, 0.88 mm long and 0.68 mm wide. Chelicerae curved, dark brown, tiny granulations with basal tubercles (Fig. 2c). Sternum 0.47 – 0.48 mm long and 0.41 – 0.43 mm wide, yellow-brown with

darker border. Abdomen 1.02 mm long and 0.7 mm wide, grayish brown with blackish pattern – main basal patch plus smaller dots at end of abdomen. Male palpal organs distinctive (Fig. 2a, b).

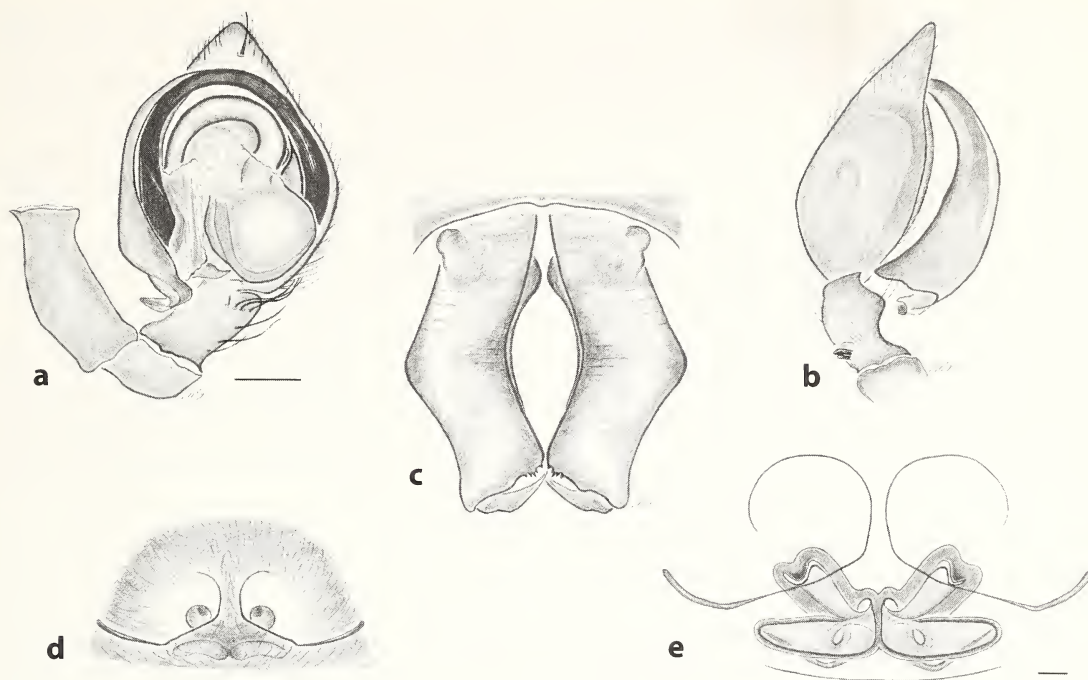
**Female** (5♀♀, abdomens measured in three females): Carapace yellow-brown with brown markings, 0.72 – 0.82 mm long and 0.58 – 0.66 mm wide. Sternum 0.41 – 0.48 mm long and 0.4 – 0.45 mm wide, yellow-brown with darker border. Abdomen pale yellowish-gray with dark brown basal patch and 2 pairs of smaller dots at distal part of abdomen, 1.2 – 1.22 mm long and 0.86 – 1.05 mm wide. Epigyne distinctive (Fig. 2d, e).

## Habitat

During the study, 8546 specimens of 190 spider species were caught. One male of *Emblyna brevidens* was found in the May-June period, on the edge of a large ca. 2 ha peat bog with *Salicetum pentandro-cinereae*, surrounded by wet alder forest. The vegetation of this fen is dense and dominated by *Phragmites australis*, *Thelypteris palustris*, *Calamagrostis canescens* and *Lysimachia vulgaris*. The overall floristic list for the habitat is short, comprising only 15 species that also include *Carex vulpina*, *Cirsium palustre*, *Comarum palustre*, *Galium palustre* and *Lathyrus palustris*.

**Tab. 1:** Plant Habitat Indexes after Ellenberg for the *Salicetum pentandro-cinereae* association – the site of *Emblyna brevidens* in Wigry National Park.

Index	Insulation	soil humidity	soil fertility	soil acidity	soil dispersion	organic matter content
Values	3,74	4,64	3,25	3,70	3,45	2,82



**Fig. 2:** Diagnostic drawings of *Emblyna brevidens*: (a) ventral view of palpal organ, (b) lateral view of palpal organ, (c) chelicerae of male, (d) epigyne, (e) internal structures of epigyne – dorsal view. Scale: fig. a-d – 0.1 mm; fig. e – 0.03 mm.

The Plant Habitat Indexes Method gives a rather precise picture of the habitat (ZARZYCKI et al. 2002, reviewed in DIEKMANN 2003), and allows comparisons with other habitats in Europe. Results for the peat bog are given in Tab. 1.

## Discussion

According to the habitat data from the European sites, *Emblyna brevidens* is probably originally associated with fen habitats of medium or high fertility covered by well-developed herb and shrub layers on which the spiders build their webs (reviewed in HAJDAMOWICZ 2006). This means that *E. brevidens* requires marshy or moist conditions with good exposure to the sun. Our record of this species in the Salicetum pentandro-cinereae association confirmed this speculation. So the species seems to demand habitats that are rare on islands in lakes in NE Poland. The degree of isolation and small area of the islands in question also do not help in establishing viable populations (HANSKI & GAGGIOTTI 2004.). Because Barber traps were used, the chance of catching this species was low. But we were able to confirm the presence

of similar habitat conditions on some of the studied islands. Populations of *E. brevidens* are likely to be present on a few islands of the Lake Wigry, but probably on no other island studied by us. Peat bogs are, however, quite common on the mainland too, and so new discoveries may be expected.

The same site in Salicetum pentandro-cinereae yielded other spider species, very rare in both national and European terms and characteristic of fens, i.e. *Agroeca dentigera* Kulczyński, 1913, *Centromerus semiater* (L. Koch, 1879), *Silometopus elegans* (O. P.-Cambridge, 1872), *Taranucnus setosus* (O. P.-Cambridge, 1863) (HÄNGGI et al. 1995, STAŃSKA et al. 2002, KUPRYJANOWICZ 2003).

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