

LESTES BARBARUS (FABRICIUS), A FORGOTTEN SPECIES IN THE FAUNA OF LITHUANIA (ZYGOPTERA: LESTIDAE)

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Abstract *L. barbarus* is added to the odon. fauna of Lithuania based on a forgotten note and 3 new records. The Lithuanian localities are among the northernmost sites in the *L. barbarus* distribution. Their situation is considered in the context of the pulsating nature of the northern border of its range with relation to climatic changes and wandering tendencies of the sp. The new localities are briefly described, special attention is given to the site of a breeding population.

Introduction

The first checklist of the dragonflies of Lithuania comprised 59 species (STANIONYTĖ, 1993). Due to intensive research, 3 new species, *Aeshna crenata* Hag., *Orthetrum brunneum* (Fonsc.) and *Aeshna affinis* Vander L., were added to this list in recent years (BERNARD,

2002, 2005; BERNARD & IVINSKIS, 2004). However, two other species, *Sympetrum eroticum* (Sel.) and *Aeshna caerulea* (Ström), had to be excluded from it. The former is an exotic and certainly a very incidental element, while the listing of the latter was based on a misidentification of the larvae (BERNARD, 2005). Finally, until recently, 60 species were known from Lithuania (BERNARD, 2005). However, the analysis of the odonate distribution in Poland and the biogeographic trends recently recognizable in the northern part of central Europe led to the expectation of the occurrence of several other species in Lithuania. This supposition was quickly confirmed.

Results

Unexpectedly, a new (in fact, a forgotten) spe-

cies has been found in the literature. In 1952, Professor J. Prüffer published a brief note including some of the highlights of his studies of the odonate fauna in the Vilnius region, carried out during 1927-1943 (PRÜFFER, 1952). This note was published in a poorly known journal, including mostly brief reports of members of a local scientific society in Toruń (Poland), where J. Prüffer settled after the World War II. Therefore it remained unknown both to A. Stanionytė and to us until 2006. In the note, *L. barbarus* is given from the locality of Gulbiny near Vilnius, today a part of the city area of Vilnius, named Didieji and Mažieji Gulbinai (54°47' N, 25°17-18' E). No other data were enclosed.

Recently, *L. barbarus* was rediscovered in Lithuania at three localities. At two of these (Nos 1, 3) only single individuals were recorded but at loc. 2 an autochthonous population occurs.

- (1) Palanga-Nemirseta, Kretinga district, 55°51'52" N 21°03'53" E; 13-VII-2005, 1 ♂ (P. Ivinskis leg.). Sandy hills and meadows with *Salix*, *Pinus sylvestris* and numerous orchids, without water bodies but in rainy years with stagnant water.
- (2) A forest glade ca 3.5 km NW of Inkakliai, Šilutė district, 55°29'35" N 21°31'29" E; 17-18-VI-2007, ca 10 teneral individuals (two first days of the emergence of the population), coll. 1 ♂, 2 ♀ (R. Bernard and B. Daraž leg.). A forest astatic fen (0.9 ha) with two deeper small pools (*Carex rostrata*, *Nymphaea alba*) and large shallow (5-40 cm deep) areas overgrown with fairly loose *C. rostrata*, *Eleocharis palustris*, grasses, locally with *Sphagnum* sp. Some parts of the fen already dried up, the current area covered by water ca 0.6 ha. *L. barbarus* individuals preferred small, dry, highly insolated and grassy patches adjacent to the fen and forest edges with similar conditions. Accompanying species: *Lestes sponsa* (Hans.): very abundant, an advanced emergence; *L. dryas* Kirby: abundant, a maturation period; *L. virens vestalis* Ramb.: 20-30 teneral individuals in shallower parts, first days of emergence; *Sympetrum flaveolum* (L.): abundant teneral individuals, first days of emergence; *Leucorrhinia pectoralis* (Charp.): fairly numerous; *Libellula quadrimaculata* L.

- (3) Bugieda, Lazdijai district, close to the border of Belarus, 53°56'31" N 23°48'23" E; 9-VII-2002, 1 ♀ (P. Ivinskis leg.); astatic pool (0.3 ha), in some years the water stays continuously, but in most years the pool dries up completely in the second part of the summer. This vicinity is an important breeding area for *Hyla arborea*, *Hirudo medicinalis* and *Triturus cristatus*.

Discussion

With the addition of *L. barbarus*, the known odonate fauna of Lithuania has increased to 61 species. The historical occurrence of *L. barbarus* in southern Lithuania is not a surprise since it was recorded at this latitude in the 1840s in the vicinity of Königsberg (HAGEN, 1846), today Kaliningrad in the Kaliningradskaya oblast' of Russia. It was also known from several localities situated only slightly to the South, in present northernmost Poland, published in the 19th and 20th centuries (HAGEN, 1846, 1855; BRISCHKE, 1888, 1891; KRÜGER, 1925; FISCHER, 1959; MIELEWCZYK, 1972). These data as well as the old Lithuanian record suggest that the species could have balanced on the border of its distribution at these latitudes for a long time. Strictly speaking, the northern border of its range in eastern Europe is most probably of a fluctuating nature, moving slightly northwards and southwards in periods of more or less appropriate climatic conditions. This supposition may be supported by strong wandering tendencies of this species; it

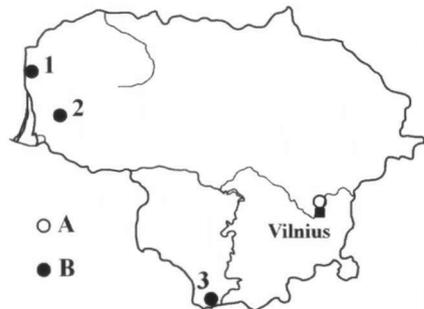


Fig. 1. Records of *Lestes barbarus* in Lithuania, A: an old record from the literature; - B: new localities.

may be absent from areas for many years, then suddenly establishing large colonies that may persist for years (DIJKSTRA, 2006). A similar unstable state occurs also more to the West, where rare old records are known from northernmost Germany, southern Denmark and southern Sweden (ANDER, 1963; BROCK et al., 1997; JÖDICKE, 1997; NIELSEN, 1979), while a current dramatic increase of the species in northern parts of western and central Europe was reported since the 1990s (DIJKSTRA, 2006). For example, *L. barbarus* probably began a colonization of Great Britain, where it was repeatedly recorded during 2002-2004 from Kent and Norfolk (NOBES, 2003; FORREST, 2005; PARR, 2005). The range and abundance increase and the new localities in Lithuania correspond to similar increases and range expansions observed for some other odonate species in northern parts of central Europe and in the corresponding latitudes of western and eastern Europe (e.g. OTT, 2001; BERNARD et al., 2002; BERNARD, 2005; BERNARD & IVINSKIS, 2004). All these changes are certainly a consequence of the particularly favourable climatic conditions during the past 15 years (e.g. OTT, 2001; BERNARD et al., 2002). On a larger time scale, such a state is not new, since the occurrence, ranges and abundance of these increasing species are generally fluctuating (pulsating) in nature at these latitudes, being correlated with climatic changes (BERNARD, 1997; BERNARD et al., 2002).

It must be stressed that Lithuanian localities Nos 1 and 2 belong to the northernmost sites in the *L. barbarus* range. The records north of the 55 parallel are extremely rare. In the available Russian literature and in the publications from other European countries, only four other records from these latitudes were found: one from Sweden (ANDER, 1963), one from Denmark (NIELSEN, 1979) and two from Russia, with the 'record holder' – Malmyzh in the Kirovskaya oblast', 56°30' (KRULIKOVSKII, 1907; UL'YANIN, 1869). However, such northern records are certainly mostly related to wanderers. The Lithuanian locality No. 2 represents most probably the northernmost known breeding population of the species.

L. barbarus favours temporary water bodies

(DIJKSTRA, 2006). The habitat at two new localities (Nos 2 and 3) fits the species' preferences well. At loc. 2, where four lestids were recorded, almost all members of the odonate assemblage prefer or tolerate astatic water conditions. *Leucorrhinia pectoralis* requires more stable conditions which are represented by small, deeper depressions; it is likely that its local population is also reinforced by individuals from a large population, occurring only 0.5 km west. The male collected at loc. 1 might have originated from another site in the vicinity, but it may also be treated as a nomad, brought by the wind. The situation of this site in the windy area, only 500 m from the seashore, may support the latter option. Considering the surroundings of the studied sites, loc. 2 is noteworthy, as in the northern borderlands of the species' range the occurrence in more open, easily penetrable landscapes could be expected. The situation of this locality, rather deep in a large forest complex, certainly does not favour wanderers. On the other hand, these forest surroundings may positively influence the water conditions, hence the long-term existence of the habitat.

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