

PISIDIUM PSEUDOSPHAERIUM FAVRE, 1927 (BIVALVIA: SPHAERIIDAE) IN THE CZECH REPUBLIC – RARE OR OVERLOOKED?

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ABSTRACT: The data on the distribution of *Pisidium pseudosphaerium* in the Czech Republic were summarised and analysed in an attempt to answer the question of whether the species was really very rare or only overlooked. *P. pseudosphaerium* was recorded at 17 sites, most of them found in the last 15–20 years, while earlier records were very rare. Very abundant populations (metapopulations) were found in eight sites, while the abundance in the other sites was much lower. *P. pseudosphaerium* is a vulnerable species inhabiting natural or only slightly altered sites (now often within protected areas); disappearance of such sites from most of the Czech Republic is the probable reason for its rarity.

KEY WORDS: Mollusca, Bivalvia, *Pisidium pseudosphaerium*, distribution, threats, rare species

INTRODUCTION

The False orb pea mussel *Pisidium pseudosphaerium*, a probably European species (WELTER-SCHULTES 2012), is listed as critically endangered in the Czech Republic (BERAN et al. 2005) and regarded as very rare there (BERAN 2002). Recent data on its occur-

rence made it possible to summarise and analyse its occurrence in the Czech Republic in an attempt to answer the question of whether the species is really very rare or only overlooked.

MATERIAL AND METHODS

The data used here come from the author's database containing more than 57,000 records of aquatic molluscs in the Czech Republic, obtained from his own field research since 1993, from many published and unpublished papers, as well as from private and

museum collections since 1825. Most of the records of *P. pseudosphaerium* since 1995 were acquired during the author's field research, some recent data come from MICHAL HORSÁK's collection.

RESULTS

P. pseudosphaerium (Fig. 1) was discovered in the Czech Republic much later than most of other native freshwater molluscs. The species was not mentioned in the old monographs of Czech molluscs (SLAVÍK

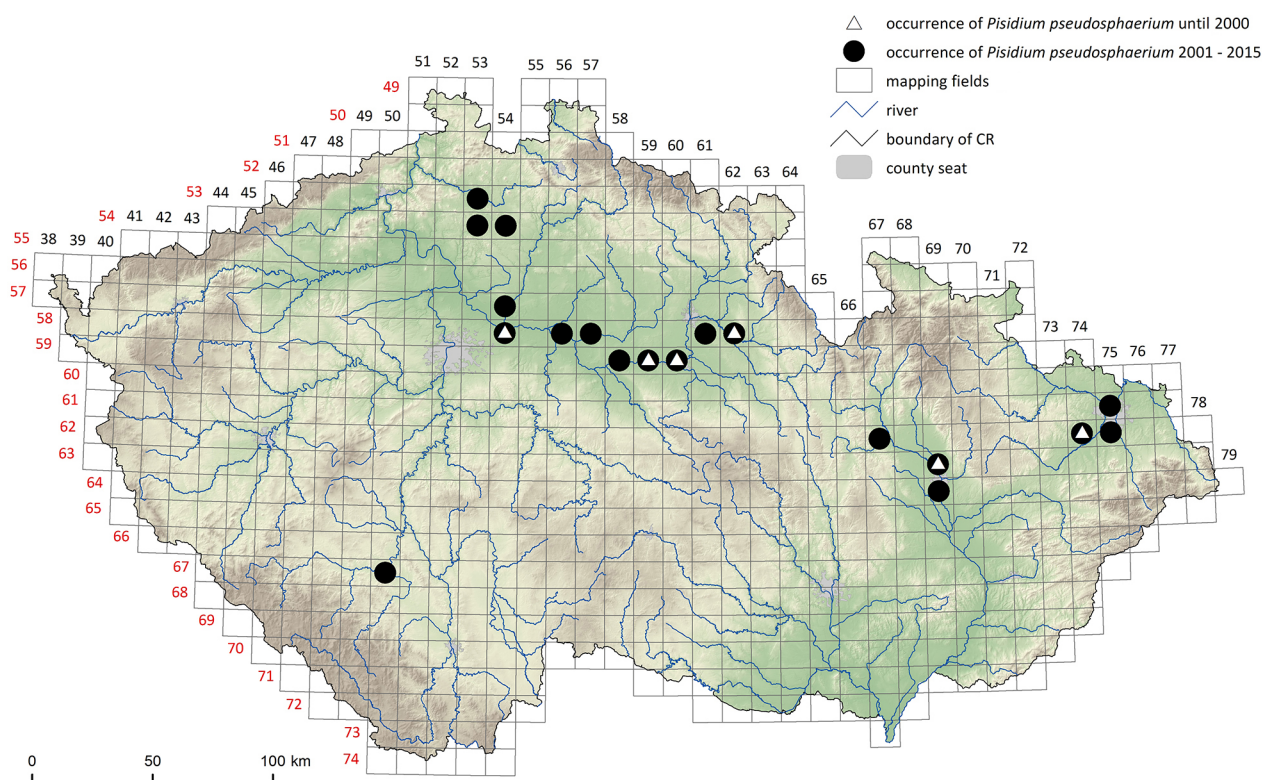
1868, ULIČNÝ 1892–95), since it was described in 1927; likewise there is no mention of this species in LOŽEK (1948, 1956). The first records of this pea mussel refer to the Bohdanečský rybník Pond (1959),



Fig. 1. *Pisidium pseudosphaerium* from site No. 6. Photo: M. HORSÁK

and ponds in the U Houkvice Nature Reserve (1961), both in Eastern Bohemia (BRABENEC 1978). Only 11 records from six sites were made till 2000 (BERAN 2002), and more than 100 records from 16 sites became available since 2001 (site here means a more extensive area with the occurrence of this species – e.g. system of pools, extensive pond and wetlands in its surroundings) (Fig. 2). Most sites are situated at altitudes of 150 to 300 m, and only one at 375 m. At four sites *P. pseudosphaerium* was recorded sporadically, or only a few individuals were found. In two sites it probably became extinct during the last 10–15 years. More abundant populations, but with specimens usually found at only one or a few sampling points, were found in five sites while eight sites held very abundant populations (metapopulations), with individuals recorded at many sampling points. These important sites with the most abundant populations are shown in Fig. 3 and described in Appendix 1. The highest recorded abundance was estimated around 2,000 ind./m².

In nearly all cases the species occurred in shallow and overgrown parts of ponds, oxbows, pools, wetlands or similar shallow water bodies (Figs 4–6). According to the Habitat Catalogue of the Czech Republic (CHYTRÝ et al. 2010) *P. pseudosphaerium* inhabits an array of habitats: macrophyte vegetation of shallow still water, reed and tall-sedge beds, calcareous fens with *Cladium mariscus*, acidic moss-rich fens, and alder carrs. Most records come from sunny hab-



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Fig. 2. Distribution of *Pisidium pseudosphaerium* in the Czech Republic. Drawn by J. VRBA

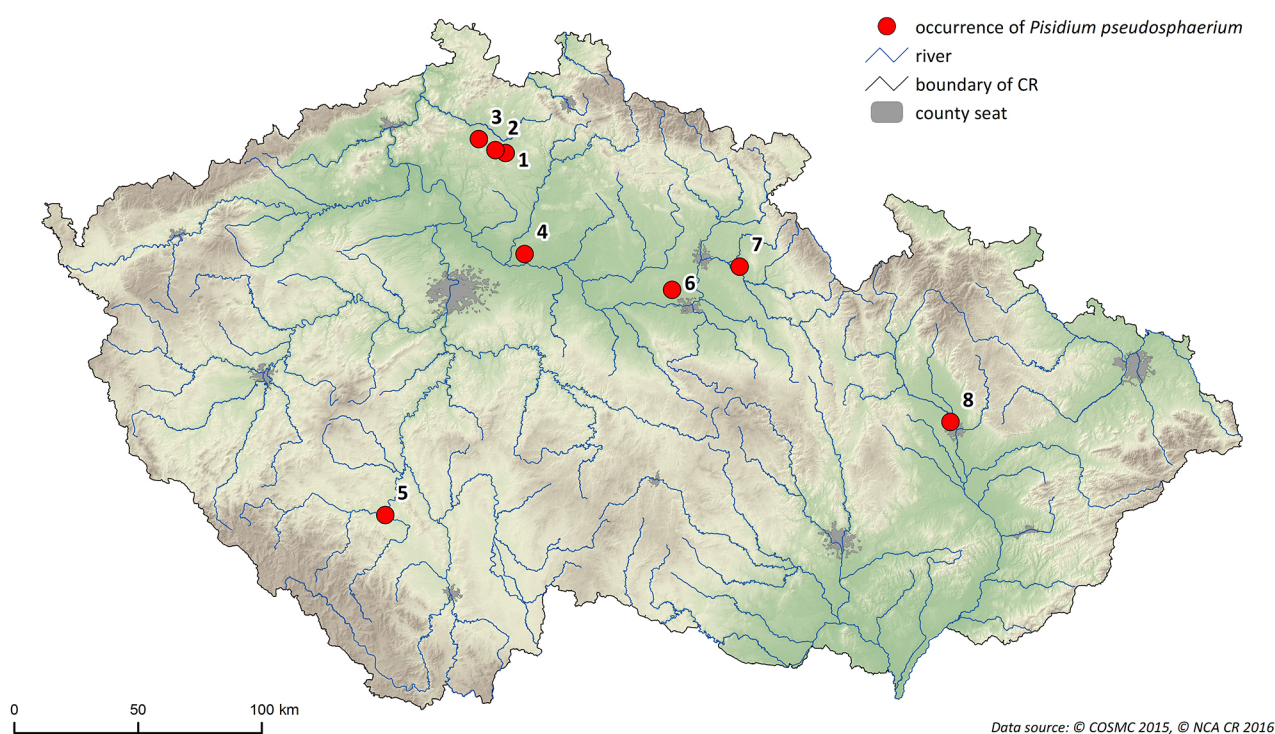


Fig. 3. Location of most important sites of *Pisidium pseudosphaerium* in the Czech Republic. For description of sites see [Appendix 1](#). Drawn by J. VRBA

itats but the species was often found also in shaded places, for example alder carrs. Conductivity and pH, measured at four of the sites, were 155–1,140 $\mu\text{S}/\text{cm}$

and 5.8–7.3. Records from old, relatively natural and undisturbed habitats predominated, but in many cases populations were found in new or restored hab-



Fig. 4. Reed and tall-sedge beds and a small pool. One of the many sampling points of site No. 2 (see [Appendix 1](#)). Photo: L. BERAN



Fig. 5. Shallow parts of a small lake overgrown with *Cladium mariscus* at site No. 4. Photo: L. BERAN



Fig. 6. Shallow parts of a small pool with sedge beds at site No. 8. Photo: L. BERAN

itats (new pools, restored ponds or their parts); in such cases there were numerous other populations nearby.

DISCUSSION

Although the species was regarded as extremely rare, the more intense research in the last decade(s) revealed more sites than was expected. On the other hand, most of the sites are located in most valuable areas which are now strictly protected (e.g. national nature reserves, national nature monuments) or at least within protected landscape areas. *P. pseudo-sphaerium* is a vulnerable species inhabiting natural or only slightly altered sites, which have largely disappeared from most of the Czech Republic. Many sites (especially lowland sites with small populations) are threatened by natural succession, eutrophication and destruction; the species has probably disappeared from two sites.

In the Czech Republic, the species is classified as Critically Endangered and the results of this study confirm its status. The situation is similar in many European countries, as shown by FEHÉR et al. (2004), BYRNE et al. (2009), JUNGBLUTH & KNORRE (2009), WELTER-SCHULTES (2012), although in the IUCN Red List it is categorised as Least Concern (KILLEEN 2011).



The results of this study show that *P. pseudosphaerium* has truly been overlooked in the past, however, despite the numerous sites found in the last 20 years, it should still be considered as a rare species inhabiting natural or only slightly altered sites which often have a relict character. It is possible that new sites will be found in the future but probably only in well preserved areas.

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Appendix 1

List of most important sites of *Pisidium pseudosphaerium*

No.	Name	Description	Population	Protection
Northern Bohemia				
1	Břehyňský rybník Pond	reed and tall-sedge beds, acidic moss-rich fens near large pond	dozens of specimens at several sampling points	national nature reserve in protected landscape area
2	Máchovo jezero Pond	reed and tall-sedge beds, acidic moss-rich fens, near large pond, small pools	dozens of specimens at several sampling points, at some points more than 500 indiv./m ²	protected landscape area, partly national nature monument
3	Novozámecký rybník Pond	reed and tall-sedge beds near large pond, small pools	dozens of specimens at several sampling points, at some points more than 500 indiv./m ²	national nature reserve in protected landscape area
Central Bohemia				
4	Hrabanovská černava	calcareous fens with <i>Cladium mariscus</i> in shallow parts and on shores of small lake	dozens of specimens at several sampling points, at some points around 2,000 indiv./m ²	national nature monument
Southern Bohemia				
5	Řežabinec Pond	reed and tall-sedge beds near large pond, shallow pools	dozens of specimens at several sampling points	national nature reserve
Eastern Bohemia				
6	Bohdanečský rybník Pond and pond Matka	reed and tall-sedge beds near two large ponds, smaller and shallow pools	dozens of specimens at several sampling points	national nature reserve
7	Houkvice	reed and tall-sedge beds near ponds	hundreds of specimens at several sampling points	nature reserve
Central Moravia				
8	Plané loučky	reed and tall-sedge beds of shallow pools, Morava River floodplain	hundreds of specimens at several pools	nature reserve in protected landscape area