

***Nanophyes brevis* BOHEMAN, 1845 (Coleoptera: Curculionoidea:
Nanophyidae) in Poland**

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ABSTRACT. *Nanophyes brevis* BOH., hitherto not included into the Polish fauna, has been discovered on several localities in Poland, in the protected areas of the Świętokrzyski National Park (Holy Cross Mts), and Cisowsko-Orłowski and Przedborski Landscape Parks. Illustrated diagnosis of *N. brevis* is provided, and its origin in Poland is briefly discussed.

KEY WORDS: Coleoptera, Curculionoidea, Nanophyidae, *Nanophyes brevis*, new records, Poland, Świętokrzyski National Park, Cisowsko-Orłowski Landscape Park, Przedborski Landscape Park.

The small weevil family Nanophyidae comprises approximately 300 described species (though many unnamed ones are known from the materials coming from tropical forests, particularly in Asia) concentrated in Palaearctic, Oriental and Ethiopian zoogeographic regions, with only a few representatives in North America and the Australo-Pacific (KLIMA 1934, KISSINGER 1968, KUSCHEL 1995, ZIMMERMAN 1993). It constitutes a distinct, monophyletic group, well defined morphologically (which is not common in the higher classification of the weevils), but still with uncertain relationships within Curculionoidea and controversial taxonomic rank. Owing to their unique combination of morphological features, partly shared with either Brentidae, Apionidae or Curculionidae, nanophyids cause a serious taxonomic problem and their status varies from no more than an apionine tribe of the Brentidae, or subfamily of Apionidae, to a separate weevil family (cf. KUSCHEL 1995 and WANAT 2001 for the most distant concepts).

The nanophyid fauna of Europe is relatively poor and well studied, particularly in the central part of the continent (cf. HOFFMANN 1958, DIECKMANN 1963, SMRECZYŃSKI 1976, LOHSE 1983). In Poland 7 species have been catalogued (BURAKOWSKI et al. 1992, WANAT & MOKRZYCKI 2005), since the generic revision by ALONSO-ZARAZAGA (1989) classified in 4 genera. One of these species, *Dieckmanniellus gracilis* (L. REDTENBACHER), has never been confirmed to occur in Poland since its old records from Tatra Mts (ŁOMNICKI 1886) and Cieszyn in the Beskid Śląski Mts (WANKA 1915). Of the remaining species only one, *Nanophyes marmoratus* (GOEZE, 1777), is very common in every region of the country. The others are rare and local but, excepting *Nanomimus hemisphaericus* (OLIVIER), they all probably inhabit the whole area of Poland.

Further six species of the Nanophyidae are known from other Central European countries, four of which occur in the neighbouring Germany, Czech Rep., Slovakia and/or Ukraine. Two of them, *Nanophyes brevis* BOH. and *Dieckmanniellus nitidulus* (GYLL.) were even occasionally listed from Poland in old general checklists, without any data on localities (cf. BURAKOWSKI et al. 1992 for detailed references), but these enigmatic records have never been considered reliable by further weevil specialists in Poland. To our surprise, the former species was found by us in 2007 to be quite widespread in some regions of south-central Poland.

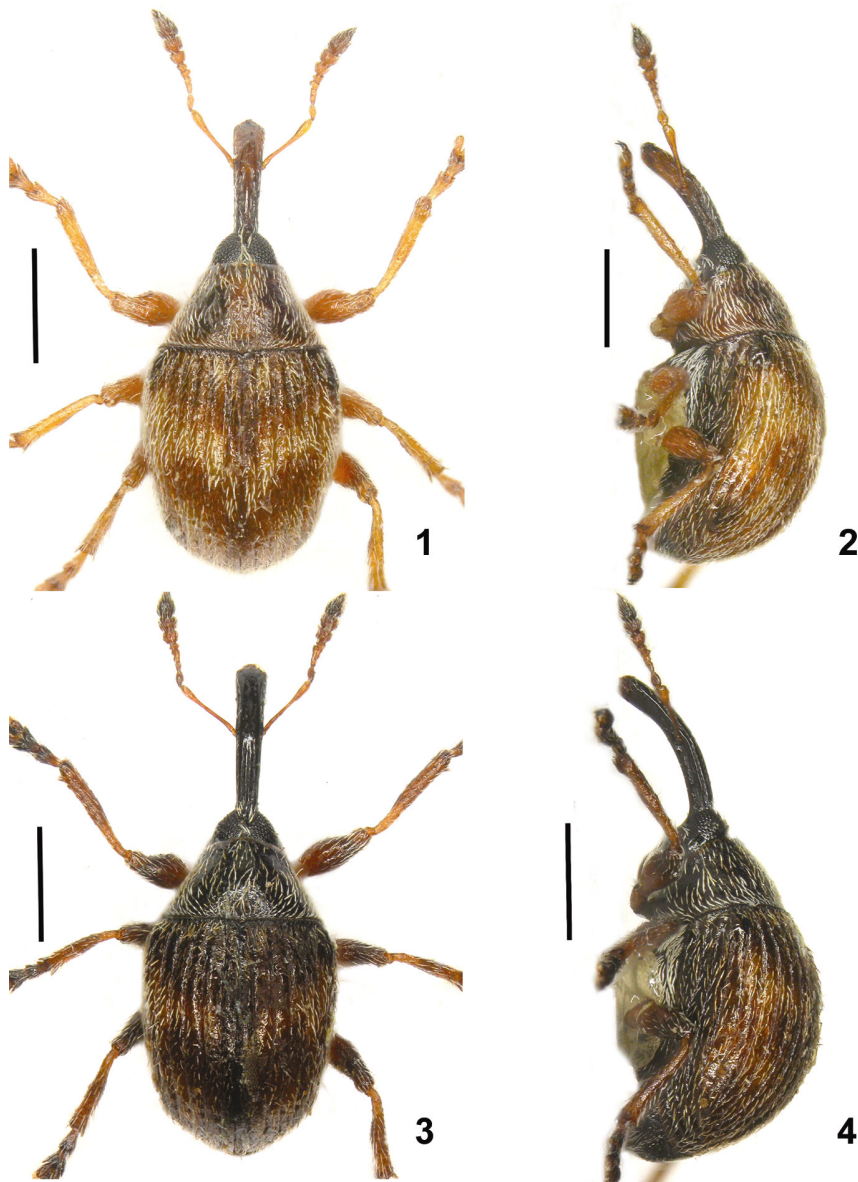
The following abbreviations have been used below: JS – J. SZYPUŁA, MW – M. WANAT. The codes in parentheses after the name of locality refer to the UTM grid codes. The names of Polish regions follow the division adopted for the Catalogus Faunae Poloniae (BURAKOWSKI et al. 1992). Voucher specimens are preserved in the respective author's collections, at the Museum of Natural History, University of Wrocław.

Nanophyes brevis BOHEMAN, 1845

(Figs 1-5)

Material studied

- Świętokrzyskie (Holy Cross) Mts: Świętokrzyski National Park: Mokry Bór Reserve (DB94), forest district no. 30, 7 VII 2007, 3 ♂♂ 2 ♀♀, leg. JS; Wzorki near Święta Katarzyna (DB94), meadows, 18 VIII 2007, 3 ♂♂ 2 ♀♀, leg. MW; Zagaje Grzegorzowickie (EB13), stone mine, 18 VIII 2007, 1 ♀, leg. MW. Cisowsko-Orłowiński Landscape Park: Cisów (Ługi) (DB92), 17 VIII 2007, 15 ♂♂ 17 ♀♀, leg. MW.
- Małopolska Upland: Przedborski Landscape Park: Piskorzaniec Reserve (DB35), dike, 14 VII 2007, 1 ♂, leg. MW. Pilczyca near Kluczewsko (DB24), ponds at Czarna Włoszczowska river, 15 VII 2007, 7 ♂♂ 4 ♀♀, leg. JS & MW, 29 IX 2007, 4 ♂♂ 3 ♀♀, leg. MW.



Figs 1-4. *Nanophyes brevis*. 1, 2 – male in dorsal and lateral view; 3, 4 – female, same views. Scale bar 0.5 mm.

Diagnosis

N. brevis has been included in all modern keys for identification of Central European weevils, e.g. DIECKMANN (1963), SMRECZYŃSKI (1973), LOHSE (1983), hence its description here is limited to a pure comparative diagnosis. It is smaller than *N. marmoratus* (length 1.6-1.8 mm), with evidently shorter and broader body (length/width ratios: pronotum 0.55-0.60, elytra 1.30-1.35), and elytra obtuse apically in dorsal view (Figs 1, 3). Body color varies from almost uniformly pale testaceous to nearly black, but the pattern and obliquely transverse bands never as variable and contrasting as in *N. marmoratus*. Rostrum highly dimorphic (♂: 1.2×, ♀: 1.6× longer than pronotum), much longer in female (barely distinct in length among sexes in *N. marmoratus*), in both sexes distinctly arched in profile (Figs 2, 4). Elytra with several erect sensory setae along each odd interval (much shorter and missing at least from the intervals 1 and 3, and usually vestigial on the interval 5 in all the remaining congeners). Sides of meso- and metathorax clothed with white hair-like scales sparser than in *N. marmoratus*. Femora without spines.

N. brevis is distinct from *N. globiformis* KIESENWETTER also in the more uniform color of elytra, with the suture always concolorous with other inner intervals (always distinctly darker in *N. globiformis*) and the base of elytra devoid of dark triangular patch; rostrum slightly shorter (length/width in dorsal view: *brevis* ♂ 3.8-4.0, ♀ 4.7-5.0; *globiformis* ♂ 4.4-4.7, ♀ 5.6-6.0); frons and eyes much more elevated above rostrum base in head profile (nearly even in *N. globiformis* and the remaining congeners); shorter antennae with median funicular article slightly transverse (slightly elongate in *N. globiformis*); shorter and less convex elytra; shorter legs with protibiae not sinuate along inner margin.

The external differences from *N. globulus* (GERMAR) comprise also the almost uniformly colored legs and indistinct elytral pattern (evidently bicolored femora and sharply contrasting black elytral fasciae and spots in *N. globulus*), sexually distinct rostrum (short and almost uniform in *N. globulus*), and larger body size (*N. globulus* never exceeds 1.5 mm in length). In this case the host plant is different as well, since *N. globulus* develops on *Peplis portula* L.

Aedeagal pedon in *N. brevis* is nearly 4× longer than broad in dorsal view, parallel-sided and broadly, regularly rounded apically. In the remaining species the extreme apex of aedeagus is more or less distinctly narrowed and prominent, pointed as in *N. globulus*, or obtuse/truncate as in *N. globiformis* and *N. marmoratus*.

For the differences from the genera *Microon* and *Nanomimus* consult the key to genera by ALONSO-ZARAZAGA (1989).

Biology

Like most species of the Nanophyidae occurring in Poland, *N. brevis* lives on *Lythrum salicaria* L. (Lythraceae), a common plant growing in a wide range of wet habitats through the whole area of Poland (ZAJĄC & ZAJĄC 2001). In all the sites listed above the weevil was collected together with much more abundant *N. marmoratus*, and it was usually diffi-

cult to recognize in the swept sample among chords of the latter species. The larvae of both *N. brevis* and *N. marmoratus* develop in fruits and new generation appears in the end of summer (HOFFMANN 1958, DIECKMANN 1963).

Distribution

The species ranges from Spain and Portugal in the west to Caucasus and southern Anatolia in the east. It occurs in all Mediterranean countries of Europe, and reaches Egypt on the African continent (DIECKMANN 1963). Its localities in Poland are shown in Fig. 5.

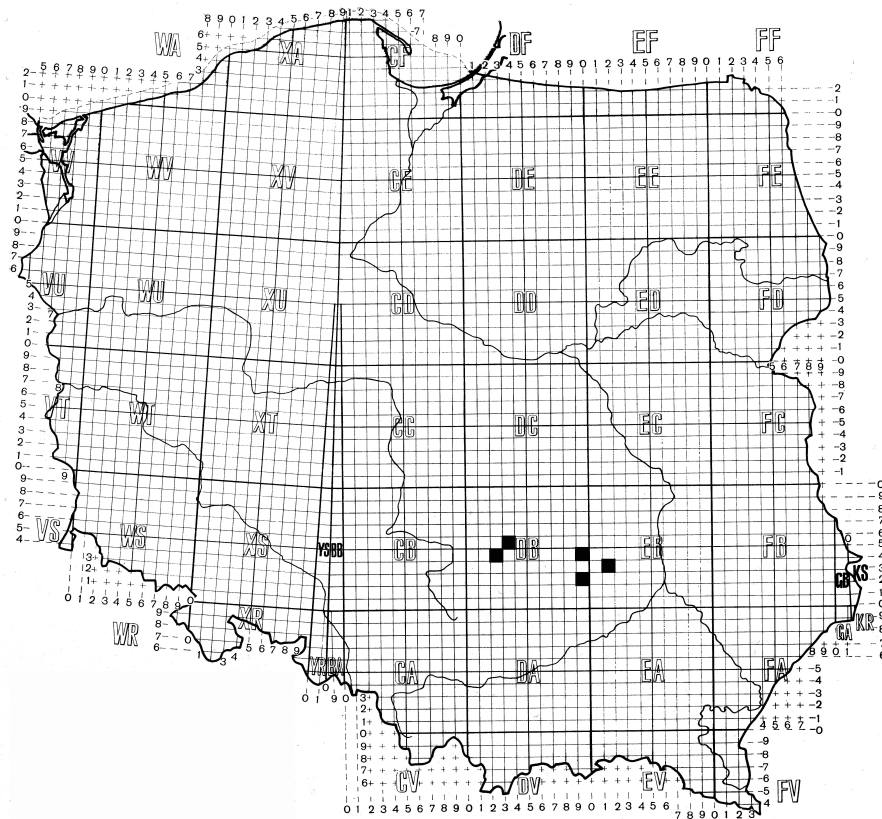


Fig. 5. Localities of *Nanophyes brevis* in Poland (UTM grid map).

Comments

If the species of generally southern distribution in Europe is first found not very far from the center of Poland, thus so distantly from its known range, the question immediately arises where did it come from. Considering its northernmost localities in neighbouring countries, the eastern track of migration seems more likely. To the southwest *N. brevis* is known from the distant southwestern part of Germany (Pfalz, Hessen, Baden) and Switzerland, and missing from the Czech Rep. (DIECKMANN 1963, LÖHSE 2005), apart from a doubtful record from Bohemia (JELÍNEK 1993), while to the east and southeast the weevil is known from Austria, Slovakia, Hungary and Ukrainian Podolia, not very far from the border of Poland. But it would remain then hard to explain why this species could have been omitted during last several decades of quite intense field investigation in Lublin Upland, Roztocze, Sandomierska Lowland and along the basement of the Carpathians. Alternative hypothesis is that the current distributional spot in central Poland is a result of a long distance migration and subsequent development and spreading of a pioneer population. Also in this case the dispersal from one eastern population would be most likely. Among recent findings and additions to the weevil fauna of Poland the case of isolated population of *Anthonomus rubripes* (GYLLENHAL) discovered in the Biebrzański National Park (cf. WANAT & SZYPUŁA 1998) perhaps falls into the latter category. The discovery of huge and apparently isolated population of *N. brevis* in the Świętokrzyskie Mts (in a broad sense) provides opportunity for an interesting study on weevil migration, suitable also for applying molecular methods since the weevil is easy to collect and to obtain properly preserved material for DNA sequencing.

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