

Original papers

First record of *Spinturnix bechsteini* (Acari: Mesostigmata: Spinturnicidae) from Poland with remarks on the diagnostic value of some characters

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ABSTRACT. *Spinturnix bechsteini* Deunff et al., 2004 (Acari: Spinturnicidae) associated with *Myotis bechsteinii* (Kuhl, 1817) (Chiroptera: Vespertilionidae) is reported for the first time from Poland. The usefulness of some morphological features for differentiating *S. bechsteini* from other spinturnicid mites belonging to the *myoti* group was studied. The mite fauna occurring on *M. bechsteinii*, the only host of *S. bechsteini*, are very poorly known. In Poland only five species have been found.

Key words: Acari, Spinturnicidae, *Spinturnix bechsteini*, *Myotis bechsteinii*, *myoti* group, diagnostic features, new records, Poland

Introduction

In Poland first information on spinturnicid mites was given in 1959 and 1961 [1,2]. The name reported at that time, *Spinturnix vespertilionis* (Linnaeus, 1758), was invalidated later [3]. The first species found in Poland was *S. kolenatii* Oudemans, 1910 [4]. Later were stated further six species including one with two subspecies: *S. myoti* (Kolenati, 1856), *S. andegavinus* Deunff, 1977 [recorded as *S. daubentoni* (Kolenati, 1857)], *S. mystacinus mystacinus* (Kolenati, 1857), *S. mystacinus brandti* Haitlinger, 1978, *S. punctata* (Sundsevall, 1833) [recorded as *S. barbastelli* (Kolenati, 1856)], *S. plecotinus* (Koch, 1839), *S. acuminatus* (Koch, 1836) and *S. helvetiae* Deunff et al., 1986 [5–7]. Given here is the ninth species found, *S. bechsteini* Deunff et al., 2004, new for the Polish mite fauna.

Materials and methods

Spinturnicid mites were collected from *Myotis bechsteinii* captured in the cave openings during

swarming between 2009 and 2011. They were removed from the wing membranes with tweezers and conserved in vials of 70% ethyl alcohol. Later the mites were cleared and mounted on slides in Berlese's medium. All specimens are deposited in the collection of the Department of Invertebrate Systematics and Ecology, Wrocław University of Environmental and Life Sciences, Poland. The research was carried out under permits from the Polish Ministry of Environment, General Directorate for Environmental Protection, Tatra and Babia Góra National Parks.

Results and discussion

***Spinturnix bechsteini* Deunff, Walter, Bellido et Volleth, 2004**

Type host: *Myotis bechsteinii* (Kuhl, 1817) (Chiroptera: Vespertilionidae)

Distribution: Belgium, France, Germany, Poland, Switzerland

Material examined: 15 specimens of *S. bechsteini* (10 ♀♀, 5 ♂♂) were collected from 10 Bechstein's bats

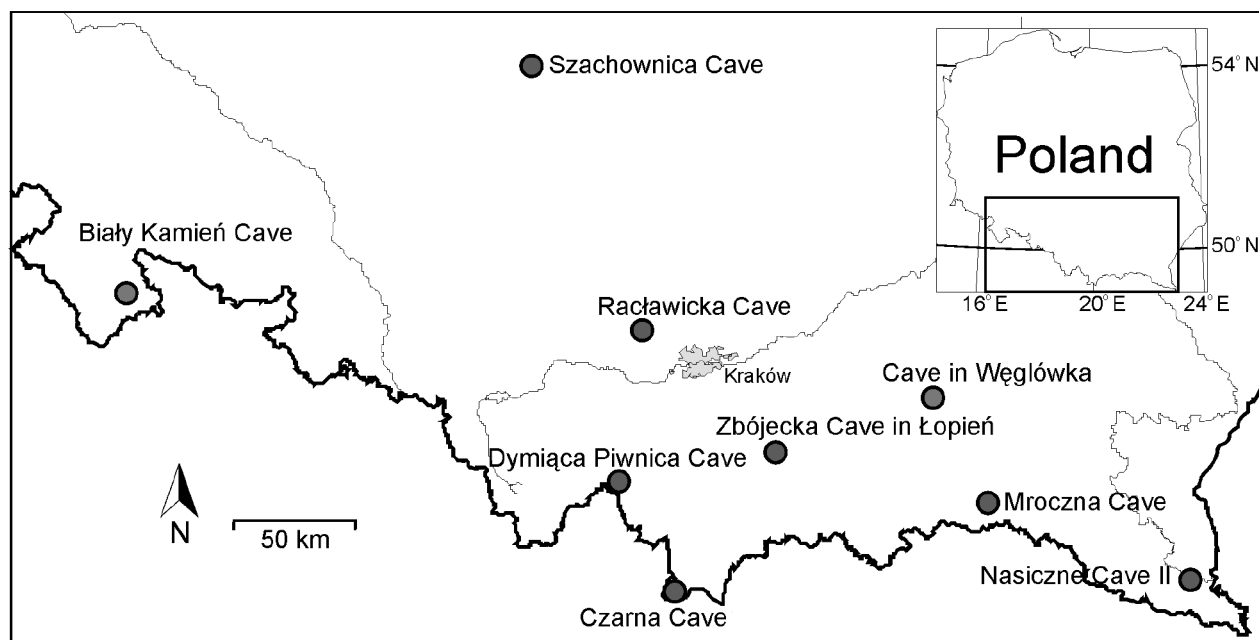


Fig. 1. Distribution of sites, of the mite *Spinturnix bechsteini* in Poland

Localities (Fig. 1): Beskid Wyspowy Mountains, Zbójcecka Cave in Łopień, 2♀♀, 20.07.2010, Dynów Foothills, Cave in Węglówka, 1♀, 1♂ 23.08.2010; Babia Góra Mountain, Dymiąca Piwnica Cave, 1♀, 5.08.2010; Olkuska Highland, Racla-

wicka Cave, 2♀♀, 1♂, 19.10.2010; Tatra Mountains, Czarna Cave, 1♂, 17.08.2009 (Małopolskie Province); Wieluńska Upland, Szachownica Cave, 1♂, 20.08.2011 (Łódzkie Province); Beskid Niski Mountains, Mroczna Cave, 1♀, 24.08.2009; Biesz-

Table 1. Comparison of metric data of idiosoma, sternal plate and number of dorsal and ventral setae for females of spinturnicid mites belonging to the *myoti* group recorded in Poland and literature. Measurements are given in micrometers. Explanations of abbreviations (IL, IW, etc.) are given in text.

Species [literature cited]	IL	IW	L	W	fD	fV
<i>S. bechsteini</i> * n=10	1089–1423	866–1141	180–219	172–198	66–84	44–50
<i>S. bechsteini</i> ** [8]	1475	1255	190	196	64–80***	40–48***
<i>S. myoti</i> [5]	1210–1650	880–1200	212–254	228–256		
<i>S. myoti</i> [10]	1453–1607	1013–1175	228–232	217–239		
<i>S. myoti</i> [12]	1190–1722	938–1330	213–270	217–239	90–130	60–100
<i>S. myoti</i> [11]	1082–1826	809–1457	202–261	2–2–255	71–136	57–88
<i>S. myoti</i> [9]	1250–1466	902–1135				
<i>S. andegavinus</i> [5]	1000–1360	750–970	218–246	182–224		
<i>S. andegavinus</i> [12]	908–960	790–900	160–180	130–152	80–100	70–80
<i>S. andegavinus</i> [11]	1029–1559	739–1178			70–78	46–49
<i>S. dasyncnemi</i> [12]	821–855	205–215	165–174	60–67	54–60	
<i>S. emarginatus</i> [12]	900–1030	740–850	175–193	183–195	40–50	20–35
<i>S. emarginatus</i> [11]	845–1368	678–1101	166–208	172–232	60–86	36–50
<i>S. mystacinus</i> [12]	931–1057	784–838	155–167	148–159	70–80	32–40
<i>S. mystacinus</i> [10]	1261–1274	935–1026	155–167	148–159		
<i>S. mystacinus</i> [9]	958–979	737–792	203	151		

*from Poland; **holotype from Germany (measured with hypostome); ***based on figures from Deunff et al. [8]

Table 2. Comparison of metric data of idiosoma, sternal plate and number of dorsal and ventral setae for males of spinturnicid mites belonging to the *myoti* group recorded in Poland and literature. Measurements are given in micrometers. Explanations of abbreviations (IL, IW, etc.) are given in text.

Species [literature cited]	IL	IW	L	W	fG	fV
<i>S. bechsteini</i> * n=5	899–1033	733–946	341–388	234–267	38–46	16–23
<i>S. bechsteini</i> ** [8]	1150	800	390	234	36	18
<i>S. myoti</i> [5]	960–1130	760–870	402–468	272–320		
<i>S. myoti</i> [10]	972–1000	702–743	351–374	266–285		
<i>S. myoti</i> [12]	1029–1162	840–910	354–371	266–285		
<i>S. myoti</i> [11]	999–1118	738–952	410–446	250–399	32–55	17–28
<i>S. myoti</i> [9]	902–1064	792				
<i>S. andegavinus</i> [5]	830–950	670–780	376–404	246–292		
<i>S. andegavinus</i> [12]	800–830	640–700	280–299	195–220		
<i>S. andegavinus</i> [11]	952–1095	750–869		274–280		25
<i>S. dasyncnemi</i> [12]	930–940	730–739	370–374	257–261		23
<i>S. emarginatus</i> [12]	841–855	698–730	300–310	241–245		
<i>S. emarginatus</i> [11]	875–940	660–773		226–262	28–42	
<i>S. mystacinus</i> [12]	1000–1098	830–904	277–289	200–213		
<i>S. mystacinus</i> [10]	905–930	743–755	277–289	200–215		14
<i>S. mystacinus</i> [9]	803	550	330	203	>50	12

* from Poland; **Germany, allotype (measured with hypostome); *** based on figures from Deunff et al. [8]

czady Mountains, Nasiczne Cave II, 2♀♀, 2.08.2011 (Podkarpackie Province); Lower Silesia, Biały Kamień Cave, 1♀, 9.07.2010, (Dolnośląskie Province); leg. K. Piksa.

Site of infection: All specimens were obtained from membranes of wings.

S. bechsteini belongs to the *myoti* species group. In Europe this group includes *S. myoti*, *S. andegavinus*, *S. mystacinus*, *S. dasyncnemi* (Kolenati, 1859) and *S. emarginatus* (Kolenati, 1856). The diagnostic features differentiating spinturnicid mites used up to now have been dorsal plate dimensions, shape of sternal plate, ornamentation of dorsal plate, presence or absence of jugular plates, length of some setae, number of ventral and dorsal setae, and a few others [10]. This present work examined the usefulness of some features differentiating *S. bechsteini* from other spinturnicid species of *myoti* group: length of idiosoma (IL), width of idiosoma (IW), length of sternal plate (L), width of sternal plate (W), number of dorsal setae (fD) and number of ventral setae (fV). *S. bechsteini* (females) differs from *S. myoti* in having a shorter and narrower sternal plate [8, 10–12] and fewer dorsal and ventral setae [9,11]; from *S. andegavinus* in the shape of the sternal plate (in *S. andegavinus*

narrower anteriorly); from *S. dasyncnemi* in having a longer IL and IW and in the shape of the sternal plate (its anterior part greatly truncate vs. very narrow anteriorly) [12]; from *S. emarginatus* in having fewer dorsal and ventral setae [12] and from *S. mystacinus* in having a longer L and W and more ventral setae [10,12] (Table 1).

The males of *S. bechsteini* differ from *S. myoti* in having a narrower sternal plate [5,10–12]; from *S. andegavinus* in having a longer IL, IW, L and W based on Estrada-Pena and Sanchez [12], but do not differ based on data given by Haitlinger and Peribanez-Lopez et al. [5,11]; from *S. dasyncnemi* in having fewer ventral setae [12]; from *S. emarginatus* in having a longer IL and IW [12], but do not differ based on data given by Peribanez-Lopez et al. [11] and from *S. mystacinus* in having a longer L and W and more fV and fD [9,10,12] (Table 2).

This review indicates that the studied features are of limited value for differentiating *S. bechsteini* from other species belonging to the *myoti* group. Moreover, within the same species there are significant differences in some features. Some specimens probably were incorrectly determined. If this could be confirmed, then these features might actually be of greater value.

In Poland, *S. bechsteini* was collected only in the southern and central parts of the country, matching the distribution of its host. Hitherto, the only known host for it is *M. bechsteinii*. The mites occurring on this host are very poorly known. In Poland only four species were given earlier: *Macronyssus* sp., *Leptotrombidium rassicum* (Oudemans, 1902), *Ixodes vespertilionis* Koch, 1844, and *I. ricinus* (Linnaeus, 1758) [14–16].

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