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SPECIES OF DEMODECIDAE (ACARI, ACTINEDIDA), NEW FOR THE FAUNA OF POLAND, IN COMMON SHREW (*SOREX ARANEUS* L.)

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Abstract. Two demodecid (Demodecidae) species new for the fauna of Poland: *Soricidex dimorphus* and *Demodex soricinus*; were found. The genus *Soricidex* is new for Poland. The two species are species-specific parasites of the common shrew and enlarge the list of Polish hosts of the Demodecidae. *S. dimorphus* was identified in 17.8% of the common shrew individuals examined, 8.2% of them being infested with *D. soricinus*.

INTRODUCTION

The family Demodecidae includes hair follicle mites dwelling in the mammalian skin. They are highly specialised and specific for various host species. A single host species can support a number of synhospital parasite species that differ in their topical preferences. In Poland, several *Demodex* species have been found so far as parasites of humans, dog, cat, wild and domestic ungulates as well as in house mice (KADULSKI and IZDEBSKA, 1996; KADULSKI, 1997; IZDEBSKA, 2000, 2002), and in the mole among insectivores (IZDEBSKA and ROLBIECKI, 2003). On the other hand, there have been no data on the occurrence of representatives of the remaining six genera assigned so far to the Demodecidae.

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MATERIALS AND METHODS

The study involved 73 individuals of the common shrew *Sorex araneus* from the northern part of Poland (the Kaszubskie Lake District and surroundings of the Tri-City as well as the Masurian Lake District), found dead during field trips in 1998-2003.

Skin sections (about 1 cm^2 each) from 11 areas on the body, i.e., from the head (eyelid, cheek, ear, jaws, and nostrils), neck, back, abdomen, fore and hind armpits, and genital-anal area were collected. The samples were fixed in 70% ethyl alcohol, digested in 6-10% (depending on the skin thickness) potassium hydroxide, and decanted. The residue was covered with ethanol again and examined under the phase-contrast microscope. The mites found were measured (for diagnostic purposes) and mounted permanently in the Hoyer medium.

RESULTS

The common shrew examined yielded two demodecid species: *Demodex soricinus* (Fig. 1) and *Soricidex dimorphus* (Fig. 2). A total of 59 individuals of *D. soricinus* were collected from skin sections of 6 hosts; thus the mean infestation intensity amounted to 9.8 inds. and prevalence to 8.2%; the demodecids were found only in the genital-anal area. *S. dimorphus* was found to occur in 13 animals (prevalence 17.8%) at a mean infestation intensity of 9.2 inds. A total

Fig. 1. *Demodex soricinus* - female (ventral view; mean total length 165 μm)

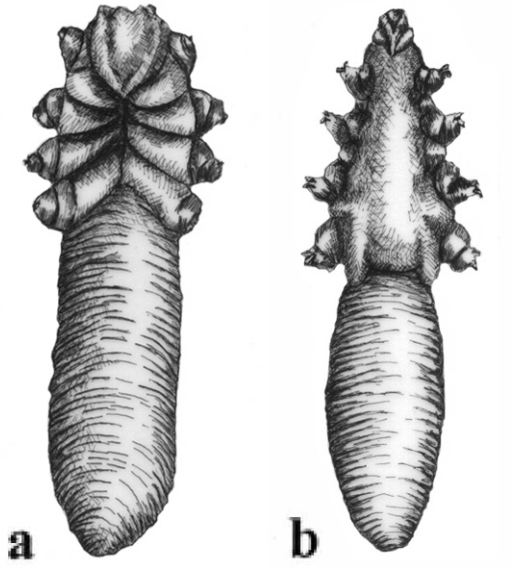

Fig. 2. *Soricidex dimorphus* (ventral view); a - male (mean total length 205 μm), b - female (mean total length 198 μm)

of 124 individuals were found, primarily in skin sections from the head and also from the trunk and the genital area. All the developmental stages of the mites, typical of the two species, were present in the samples (*S. dimorphus*: 17 females, 11 males, 31 immature stages; *D. soricinus*: 39 females, 22 males, 63 immature stages). No symptoms of parasitic infestation on the hosts' skin were observed.

DISCUSSION

European insectivores have so far yielded 7 demodecid species that were found in the hedgehog (*Demodex erinacei*), mole (*D. talpae*), common shrew (*D. soricinus*, *Soricidex dimorphus*), lesser white-toothed shrew (*D. foveolator*), and Miller's (Mediterranean) water shrew (*Apodemodex cornutus*, *D. neomydis*) (BUKVA, 1995, 1996; IZDEBSKA, 2002). In Poland, only *Demodex talpae* has been recorded, during research on the parasitic fauna of *Talpa europaea* (IZDEBSKA and ROLBIECKI, 2003). This study adds two species to the list of demodecids of Poland: *S. dimorphus* BUKVA, 1982 (Fig. 2) and *Demodex soricinus* HIRST, 1918 (redescription BUKVA, 1993b) (Fig. 1). At the same time, this is also the first Polish record of the genus *Soricidex*, *Sorex araneus* being added to the list of mammals hosting demodecids. Early these mites were recorded from the Czech Republic (BUKVA, 1982, 1993a, 1993b).

Particularly interesting is *Soricidex dimorphus*, a representative of the genus new for Poland. The sexual dimorphism of the species is much more pronounced than that found in other demodecids described so far and is manifest not only in different body proportions (IZDEBSKA and FRYDERYK, 2002), but also in differences in a number of morphological features (BUKVA, 1993a) (Fig. 2).

The level of infestation of demodecid occurrence is, doubtless, related to the host's biology, location, and pathways and means of transmission (NUTTING, 1976; IZDEBSKA, 2000). Hence, it should not come as a surprise that a higher prevalence of the common shrew's infestation involved *S. dimorphus* (17.8%), a species occurring primarily on the skin of the whole head, but found also elsewhere on the body, compared to that of *D. soricinus* (8.2%), confined to the genital-anal area. The level of common shrew's infestation with *D. soricinus* is more similar to infestation parameters of *Demodex flagellurus* in house mice, the mite showing a similar location on host (BUKVA, 1985; IZDEBSKA, 2000). That infestation level seems rather low, compared to other, better known demodecid species which parasitise humans, dog, and domestic and wild ungulates. Both *D. flagellarus* and *D. soricinus* are associated with glands situated in the host's genital-anal area and are transmitted (between adult hosts) primarily during sexual encounters. Similar trends were visible in shrew infestations studied in the Czech Republic (BUKVA, 1982, 1993b): the prevalence of *S. dimorphus* (11.7%) was also higher than that of *D. soricinus* (5.6%).

On the other hand, the mean infestation intensity, similar in both species (9.5 and 9.8 inds in *S. dimorphus* and *D. soricinus*, respectively), should be regarded as low, hence perhaps the symptomless infestation.

It is worth mentioning that the Czech parasitic fauna includes four demodecid genera and a much higher number of species than that recorded from Poland in the same mammals, including insectivores. It is thus reasonable to expect that the Polish list of demodecid species should be further enlarged by future research.

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NOWE GATUNKI Z RODZINY DEMODECIDAE (ACARI, ACTINEDIDA) U RYJÓWKI AKSAMITNEJ (*SOREX ARANEUS* L.) W POLSCE

STRESZCZENIE

Znaleziono dwa nowe dla fauny Polski gatunki z rodziny Demodecidae - *Soricidex dimorphus* i *Demodex soricinus*; jednocześnie *Soricidex* jest również nowym dla Polski rodzajem. Obydwa gatunki są specyficznymi pasożytami ryjówki aksamitnej, która tym samym poszerza listę krajowych żywicieli roztoczy z rodziny nużeńcowatych. Zarażenie *S. dimorphus* wykazano u 17.8%, a *D. soricinus* stwierdzono u 8.2% badanych ryjówek. Zróżnicowanie w poziomie infestacji można prawdopodobnie tłumaczyć odmiennymi drogami transmisji obu gatunków pasożytów, które wykazują inną lokalizację u żywicieli.

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