

New and rare species of the Gamasida (Acari) in the Polish fauna, recorded in ‘Bagno Stawek’ Reserve (Tuchola Forest, northern Poland)

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Abstract: As a result of 3-year studies of gamasid mites (Acari) from ‘Bagno Stawek’ Reserve (in the Zaborski Landscape Park), 4 rare species were identified: *Platyseius subglaber* (Oudemans, 1903), *Stylochirus giganteus* (Willmann, 1938), *Uroobovella minima* (Koch, 1841), and *Veigaia transisalae* (Oudemans, 1902). Among them, *S. giganteus* is new to the fauna of Poland.

Keywords: Acari, Gamasida, new species, rare species, Polish fauna, Zaborski Landscape Park, Tuchola Forest

INTRODUCTION

The Tuchola Forest is one of the largest forests in Poland. This precious natural area is protected within the Tuchola Forest National Park, as well as the Tuchola, Wda, Wdzydze, and Zaborski Landscape Parks. The last one includes ‘Bagno Stawek’ Reserve. The first scientific paper concerning its interesting vegetation (also peat-forming communities) was published in 1965 (Lisowski et al. 1965). There are relatively few studies involving the researched area. The geological structure of the reserve was documented by Kowalewski et al. (1997). A teledetective change analysis based on aerial photographs taken in 1951–1995 was performed by Kowalewski & Tobolski (1997). The reserve’s avifauna was recorded by Bednorz (1982). To date, the only acarological studies within that area were conducted by Kaczmarek (2002), Kaczmarek & Marquardt (2004, 2006, 2007a, 2007b), and Kaczmarek et al. (2006a, 2006b).

This paper describes the distribution and ecology of rare and new gamasid mite species found within the studied reserve, including a species that is new to Polish fauna.

STUDY AREA

The mites were collected from litter and soil in 3 types of Scots Pine forest (the dry *Leucobryo-Pinetum*, the moist *Molinio-Pinetum* and the wet *Vaccinio uliginosi-Pinetum*) and in a poor fen (*Caricetum lasiocarpae*) in the 'Bagno Stawek' Reserve within the Zaborski Landscape Park. The reserve is dominated by peaty soils and muck-gley soils. The dry pine forest (*Leucobryo-Pinetum*) was characterized by a high degree of crown closure (80%), a poor shrub layer (*Juniperus communis*, coverage ca. 30%), and a ground layer dominated by grasses and mosses (coverage 50–60%). In the moist pine forest (*Molinio-Pinetum*), the coverage reached 60% in the tree layer, 30% in the herb layer, and 60% in the moss layer. The dominant species were the purple moor-grass (*Molinia coerulea*), interrupted clubmoss (*Lycopodium annotinum*), and the mosses *Sphagnum palustre* and *Polytrichum commune*. The wet pine forest (*Vaccinio uliginosi-Pinetum*) was characterized by a higher coverage in the tree layer (80%) and a scanty shrub layer (mainly *Ledum palustre* and *Vaccinium uliginosum*). The moss and herb layers covered 90–100% of the area. In the poor fen (*Caricetum lasiocarpae*), both the herb layer and the moss layer were well-developed, covering 100% of the area. *Sphagnum* mosses were absent, and the dominant moss species were characteristic of poor fens: *Campylium stellatum* and *Drepanocladus revolvens*. Also the relic moss species *Cinclidium stygium* was found there. The herb layer was composed mostly of *Carex lasiocarpa* and *Menyanthes trifoliata*. Also, the protected *Drosera rotundifolia* and *Drosera anglica* occurred there.

MATERIAL AND METHODS

Samples were collected between October 2002 and May 2005. Mites were extracted in modified Tullgren funnels, preserved in 70% ethyl alcohol, and mounted in Hoyer's medium. The gamasid mites, both mature and immature specimens, were identified to the species level, using universally applied keys (KARG 1993, BREGETOVA 1977). Specimens were marked as: L = larva; P = protonymph; D = deutonymph; ♀ and ♂.

RESULTS AND DISCUSSION

The gamasid mites found in the study area include the following species that are rare or new in the Polish fauna.

Family: Veigaiidae Oudemans, 1939
Veigaia transisalae (Oudemans, 1902)

Material investigated: *Leucobryo-Pinetum* 2P; *Molinio-Pinetum* 17♀♀; *Vaccinio uliginosi-Pinetum* 11P, 7D, 80♀♀

This species chooses moderately humid and very humid substrates. To date, it was collected from forest litter, under pine and fir bark, from rotten wood, tree hollows (lime, hornbeam), rotten sporocarps of Polyporales, rotten roots in an alder

forest, nests of bark beetles, and soil of ski slopes (BREGETOVA 1977, KIELCZEWSKI & WIŚNIEWSKI 1983, KARG 1993, SKORUPSKI & GWIAZDOWICZ 1996, GWIAZDOWICZ 1999, 2002, GWIAZDOWICZ & KLEMT 2004, SŁOMIAN & MADEJ 2006). In the studied reserve, *V. transisalae* was extremely rare in *Leucobryo-Pinetum* (dominance $D = 0.01\%$, constancy $C = 1\%$) and *Molinio-Pinetum* ($D = 0.22\%$, $C = 3\%$), and more frequent in *Vaccinio uliginosi-Pinetum* ($D = 5.19\%$, $C = 13\%$).

Family: Ascidae Oudemans, 1905
Platyseius subglaber (Oudemans, 1903)

Material investigated: *Vaccinio uliginosi-Pinetum* 1L, 7P, 1D, 16♀♀, 1♂; *Caricetum lasiocarpae* 2L, 5P, 8♀♀

To date, this species was found in Poland only in mosses within the Narew National Park (GWIAZDOWICZ & SZADKOWSKI 2000), in humid microhabitats of the Połoniny NP (FENĎA & MAŠÁN 2003), in the soil of the area flooded by the Oder River (GRIEGEL 1999, 2000), and in nests of *Apodemus flavicollis* (STANKO 1987, 1988, 1995, STANKO et al. 1992, FENĎA & MAŠÁN 2003). In 'Bagno Stawek' Reserve, *P. subglaber* occurred in the *Vaccinio uliginosi-Pinetum* ($D = 0.08\%$, $C < 1\%$) and *Caricetum lasiocarpae* ($D = 1.67\%$, $C = 5\%$).

Family Urodinychidae Berlese, 1917
Uroobovella minima (Koch, 1841)

Material investigated: *Vaccinio uliginosi-Pinetum* 22D, 23♀♀, 10♂♂

According to WIŚNIEWSKI (1993), this species prefers meadow biotopes, but MAŠÁN & FENĎA (2002) found it in the moist soil of a peaty habitat in North Slovakia, in soil detritus, and in moss. Within the studied reserve, *U. minima* occurred only in the ecotone zone between *Vaccinio uliginosi-Pinetum* and *Caricetum lasiocarpae*.

Family Rhodacaridae Oudemans, 1902
Stylochirus giganteus (Willmann, 1938)

Material investigated: *Leucobryo-Pinetum* 3♀♀

According to KARG (1993), it is a rare species recorded so far in coniferous and deciduous forests, in litter and humus, so it prefers relatively dry microhabitats. *Stylochirus giganteus* has never been reported from Poland before. In 'Bagno Stawek' Reserve, this species occurred only in the dry pine forest, with very low dominance ($D = 0.03\%$) and constancy ($C = 1\%$).

CONCLUSIONS

Three out of the 4 gamasid mite species presented in this paper prefer habitats characterised by high (*Platyseius subglaber*, *Uroobovella minima*) or medium and high (*Veigaiia transisalae*) humidity. Simultaneously, their complete or almost complete absence within the microhabitats characterised by lower humidity proves their

low tolerance to this environmental factor. *Stylochirus giganteus*, which was recorded within the studied reserve, is new to the Polish fauna. This species most probably prefers dry microhabitats, but on account of its very rare occurrence, we currently have very little information on its environmental requirements.

The presence of very rare species (including one that is new in the national fauna) within a relatively small nature reserve, confirms the natural value of this area and justifies the continuation of its protection.

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