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**NEW DATA ON TROMBIDIA
(ACARI: PROSTIGMATA: PARASITENGONA) IN PROTECTED
AREAS IN LUBUSKIE PROVINCE (WESTERN POLAND)**

Abstract

The state of knowledge on the mites of terrestrial Parasitengona (= Trombidia) in the western part of Poland is very poor. In particular, there is no precise data on the occurrence of these mites in the protected areas. The present work is a faunistic review of Trombidia in the selected protected areas in Lubuskie Province, Poland. The study was carried out in several nature reserves, ecological sites, a landscape park, and in the area NATURA 2000. 21 species represented by active postlarval instars are reported: one species of the superfamily Calypstostomatoidea, eight species of Erythraeoidea, and 12 species of Trombidoidea. The analysis of the results indicated the necessity of further extended research to supplement the knowledge on the biodiversity of the Lubuskie Province, especially in the context of changes in the ecosystems.

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Introduction

The occurrence of Trombidia in the Lubuskie Province has not been studied in detail. Hitherto, only one study has appeared, which was a review of the state of knowledge on these mites in the area of concern, based on literature data and own research (Roland, Gabryś 2006). Among the 17 recorded species known from postlarval instars, four were reported from the protected areas: *Abrolophus artemisiae* (Schrank, 1803) – Łagowski-Sulęciński Landscape Park (Gabryś 1990), *Abrolophus norvegicus* (Thor 1900) – National Park “Ujście Warty” (Roland, Gabryś 2006), *Trombidium holosericeum* (Linnaeus 1758) – ecological site “Pętla Odry II” (Roland, Gabryś 2006), and *Dactylothrombium pulcherrimum* (Haller 1882) – Nature Reserve “Zimna Woda” (Roland, Gabryś 2006). Considering the anecdotal character of the collected data, which is the reason of the fragmentary knowledge on the occurrence of terrestrial Parasitengona in the protected areas within the boundaries of Lubuskie Province, the methodical study has been carried out to fill the existing gaps. Terrestrial Parasitengona are a very diverse group of mites and there is a continuous demand for the new facts on their biology and occurrence.

The present study is a faunistic review on Trombidia in selected areas protected by law in the Lubuskie Province. This review contains data on the biology, ecology, and zoogeography of these mites. As such, it is a part of an extensive research intended for the valuation of the biodiversity in the Lubuskie Province and as a reference study for the analysis of changes in ecosystems.

Material and methods

The material used in the present study was collected in the selected areas protected by law within the borders of Lubuskie Province: 7 nature reserves (“Bażantarnia”, “Dąbrowa Brzeźnicka”, “Gorzowskie Murawy”, “Jezioro Łubówko”, “Kręcki Łęg”, “Laski”, “Zimna Woda”), 1 landscape park (“Gryżyński Park Krajobrazowy”), 1 Natura 2000 area (“Dolina Dolnego Bobru”), and 2 ecologi-

cal sites (“Dachowskie Ługi” and “Pętla Odry II”). The location of the research areas is presented in Map 1.

The mites were collected in 2011–2014 by Beata Gabryś (BG), Grzegorz Gabryś (GG), Kinga Koperwas (KK), Adrianna Kościelska (AK), Joanna Massalska (JM), Elżbieta Roland (ER), and Joanna Wojciechowicz (JW). The following methods of collection were applied: Barber pitfall trap (PB), extraction of mites from soil samples using Berlese’s funnels (PT) and direct collecting in the field (U). In total, 137 specimens of *Trombidia* were collected.

The collected specimens were preserved in 75% ethanol. The description of a specimen included: locality (incl. GPS data), habitat, date of collection, method of collection, and name of the collector. Few specimens did not possess a full description, which was indicated with an asterisk*.

Permanent microscopic slides were prepared according to the procedure described by Gabryś (1994). The specimens, were macerated using Nesbitt’s fluid, mounted in Faure’s medium (Krantz 1978; Walter, Kranz 2009), and used for morphology-based diagnosis. The observations were carried out using microscopes Nikon Eclipse *Ni – U* with phase and differential interference contrast (DIC). The specimens were determined using available literature and comparative material from author’s collection.

The slides are deposited in the collection of the Department of Zoology, Faculty of Biological Sciences, University of Zielona Góra, Poland.

Other abbreviations used in the present work: NR – Nature Reserve; LP – Landscape Park; ES – Ecological Site; AD – adult; DN – deutonymph; Postlv. – postlarval instars.

Nature Reserves

The descriptions of the nature reserves were based on the registry of nature reserves in Lubuskie Province (www.bip.gorzow.rdos.gov.pl).

“Bażantarnia”: forest reserve; location: district Nowa Sól, commune Otyń (Fig. 1). Area: 17.88 ha. Characteristic habitat types: fresh mixed coniferous forest and fresh mixed deciduous forest (predominating).

“Dąbrowa Brzeźnicka”: forest reserve; location: district Żagań, commune Brzeźnica (Map 1). Area: 5.88 ha. Characteristic habitat types: mainly fresh broadleaved forest; small area of fresh mixed deciduous forest.

“Gorzowskie Murawy”: steppe reserve; location: district Gorzów Wielkopolski, commune Gorzów Wielkopolski (Fig. 1). Area: 78.31 ha. Characteristic habitat type: xerothermic plant communities.

“Jezioro Łubówko”: forest reserve; location: district Strzelce Krajeńskie-Drezdenko, commune Drezdenko (Fig. 1). Area: 77.5 ha. Characteristic habitat type: fresh broadleaved forest.

“Kręcki Łęg”: forest reserve; location: district Zielona Góra, commune Zbąszynek (Fig. 1). Area: 65.57 ha. Characteristic habitat types: wet forest and alder and ash-alder swamp forests.

“Laski”: location: district Zielona Góra, commune Babimost (Fig. 1). Area: 42.92 ha. Characteristic habitat types: riparian and alder swamp forests.

“Zimna Woda”: location: district Zielona Góra, commune Zielona Góra (Fig. 1). Area: 88.69 ha. Characteristic habitat types: alder swamp forest, ash-alder riparian forest.

Landscape Parks

Gryżyński Landscape Park: location: district Krosno Odrzańskie, commune Bytnica and Krosno Odrzańskie; district Zielona Góra, commune Czerwieńsk; district Świebodzin, commune Skąpe (Fig. 1). Area: 3 065.9 ha. Characteristic habitat types: the aim of the Gryżyński Landscape Park is to protect the landscape and natural values of the postglacial gully and its ponds, lakes, and the valley of Gryżyński Potok river. Forests cover 86.6% of the Park area. The predominating forest type is pine forest. Less abundant deciduous forests occur mainly in the valley of Gryżynka and they consist of alder and ash-alder swamp forests and spring alder forests (www.bip.gorzow.rdos.gov.pl; www.zpkwl.gorzow.pl).

Natura 2000

“Dolina Dolnego Bobru”: location: districts Krosno Odrzańskie, Zielona Góra, Żagań, communes Bobrowice, Dąbie, Żagań, Nowogród Bobrzański (Fig. 1). Area: 1 730.05 ha. Characteristic habitat types: open areas (fields, meadows and accompanying thickets) and deciduous forests (well preserved oak-elm-ash *Ficario-Ulmetum minoris* forests and oak-hornbeam forests). The shores of the river Bóbr are covered mainly with willow thickets and willow trees (www.natura2000.gdos.gov.pl).

Ecological Sites

“Dachowskie Ługi”: location: district Krosno Odrzańskie, commune Bobrowice (Fig. 1). Area: 242.87 ha. Characteristic habitat types: semi-natural forests introduced ca. 200 years ago to stabilize sand dunes. The highest parts are the driest, therefore two protected habitats occur: inland dunes with *Corynephorus canescens* and inland Central European lichen pine forest. The depressions among the dunes are covered with swampy forests of different types. The most common type is the degraded form of birch swamp forest with predominating *Betula pendula* (www.krzystkowice.zielonagora.lasy.gov.pl; Jerzak et al. 2013).

“Pętla Odry II”: location: district Zielona Góra, commune Zielona Góra. Area: 3.59 ha. Characteristic habitat types: various forest and non-forest types (www.bip.gorzow.rdos.pl 8.07.2015).

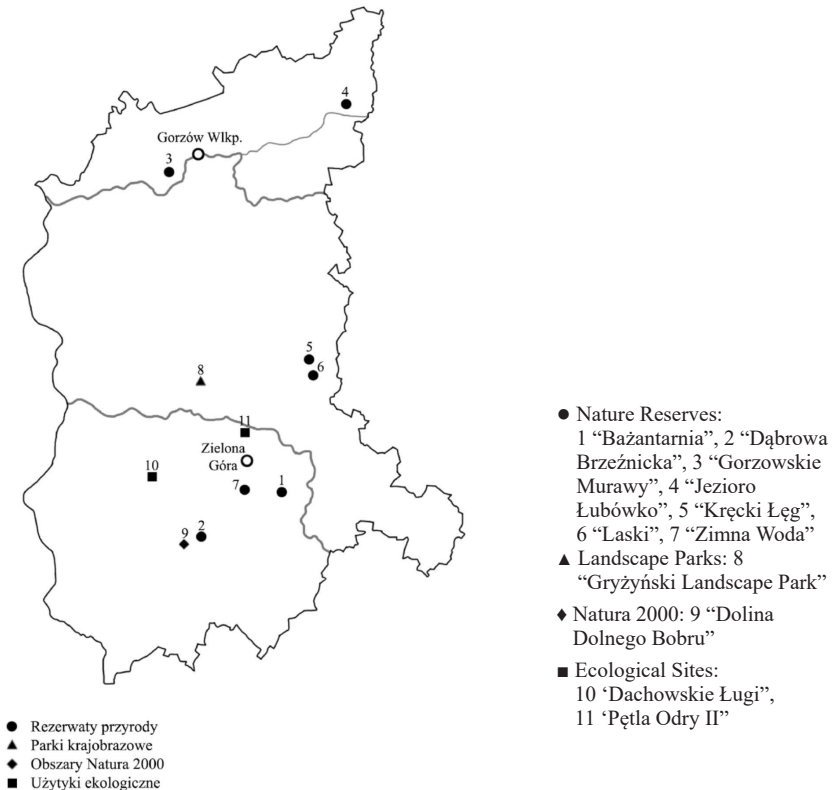


Figure 1. Protected areas in Lubuskie Province studied

Protected area											
Species	NR "Bazantarnia"	NR "Dąbrowa Brzeźnicka"	NR „Gorzowskie Murawy”	NR "Jezioro Lubówko"	NR "Kręcki Łęg"	NR "Laski"	NR "Zimna Woda"	Gryżyński Landscape Park	NATURA 2000 "Dolina Dolnego Bobru"	ES „Dachowskie Ługi"	ES "Pełta Odry II"
<i>Allothrombium fuliginosum</i>									X		
<i>Trombidium holosericeum</i>				X		X				X	
<i>Trombidium latum</i>						X					
<i>Podothrombium filipes</i>							X				
<i>Camerotrombidium rasum</i>		X						X			
<i>Campylothrombium clavatum</i>					X	X	X				
<i>Dactylothrombium pulcherrimum</i>	X	X		X	X	X	X	X	X		
<i>Echinothrombium spinosum</i>					X						
<i>Milandanielia intermedia</i>						X					
<i>Sucidothrombium sucidum</i>									X		
<i>Johnstoniana eximia</i>					X						

CALYPTOSTOMATOIDEA

Calyptostomatidae Oudemans, 1923

Calyptostoma Cambridge, 1875

Calyptostoma velutinus (Müller, 1776)

Remarks.

The distribution is confined to Central Europe; in litter, abundant in amphibious (limnic) biotopes (Gabryś, Małkol 1994; Wohltmann et al. 2007).

List of localities.

NR "Dąbrowa Brzeźnicka": N 51° 43.922', E 015° 21.298'/forest litter Lśw/11.05.2012/JM; 1 AD. NR "Kręcki Łęg": N 52°12.526', E 015°48.004'/riparian forest/1.05.2014/PT/GG; 1 AD. NR "Zimna Woda": N 51°52.215', E 015°32.359'/alder forest with an admixture of scots pine, pine; ferns, thick layer of forest litter /24.04.2014/U/AK; 4 ♀.

ERYTHRAEOIDEA

Erythraeidae Robineau-Desvoidy, 1828

Abrolophinae Witte, 1995

Abrolophus Berlese, 1891*Abrolophus artemisiae* (Schrank, 1803)

Remarks.

Species recorded from most European countries (Gabryś 1990; Gabryś, Mąkol 1994; Mąkol, Wohltmann 2012); eurytopic and euryhygric species (Gabryś, Mąkol 1995).

List of localities.

“Gryżyński” LP: */meadow, molehill/2.07.2012/PT/ER, JW; 1AD.

Abrolophus miniatus (Hermann, 1804)

Remarks.

Species recorded from Europe also from Siberia (Gabryś 1990; Mąkol, Wohltmann 2012); ubiquitous and euryhygric species (Gabryś, Mąkol 1995).

List of localities.

NR “Dąbrowa Brzeźnicka”: N 51°44.026', E 015°21.176'/wet forest litter Lśw/26.06.2012/PT/GG, JM; 6 AD // N 51°44.026', E 015°21.176'/wet oak humus/26.06.2012/PT/GG, JM; 1 AD. NR “Laski”: N 52°10.234', E 015°48.458'/oak-hornbeam forest, from below dead birch trunk/4.05.2014/T/BG, GG; 1AD, 1DN. NR “Zimna Woda”: N 51°52.253', E 015°32.260'/alder forest with an admixture of scots pine; ferns, thick layer of forest litter /12.06.2012/U/KK; 1AD // N 51°52.360', E 015°31.360'/ alder forest with an admixture of scots pine; ferns, thick layer of forest litter /24.07.2012/PT/KK; 1AD.

“Gryżyński” LP: */meadow, molehill/2.07.2012/ PT/ER, JW; 1AD // N 52°09.768', E 015°16.746'/slope at the swampy area, shadowed, birch, hornbeam, pines, grasses, ferns, *Rubus* sp., *Calystegia sepium*/15.06.2012/PT/ER, JW; 4AD.

Natura 2000 “Dolina Dolnego Bobru”: N51°58.353', E 015°06.236'/litter, oak, hazel, hawthorn, slope /6.06.2014/PT/GG; 1♀, 2AD.

ES “Pętla Odry II”: N 52°01.806', E 015°33.191'/oak forest/17.06.2012 – 29.06.2012/PB/ER, JW: 1AD // N 52°01.806', E 015°33.191'/oak forest/06.07.2012/U/ER, JW; 2AD.

Abrolophus norvegicus (Thor, 1900)

Remarks.

Species recorded from Europe (Gabryś 1990; Mąkol, Wohltmann 2012). *A. norvegicus* is a hygrophilous species inhabiting open grasslands and reeds, including salt marshes. It survives even at temporarily inundated areas (Gabryś 1990; Mąkol, Gabryś 1999; Wohltmann and Mąkol 2012).

List of localities.

NR “Dąbrowa Brzeźnicka”: N 51°44.109’, E 015°21.473’/wet meadows/26.06.2012/U/GG; 4AD.

Abrolophus quisquiliarus (Hermann, 1804)

Remarks.

Species recorded from Europe, ubiquitous species (Gabryś 1990); eurytopic and euryhygric (Gabryś, Mąkol 1995).

List of localities.

NR “Bazantarnia”: N 51° 51.696’, E 015°41.060’/mosses, grasses, ferns, fallen trees, *Robinia* sp. scots pine, beech, oak leaves predominate in litter/23.07.2012/PT/ER, JW; 1AD.

Balaustiinae Grandjean, 1947

Balaustium von Heyden, 1826*Balaustium murorum* (Hermann, 1804)

Remarks.

Species widely distributed in the Western Palearctic. *B. murorum* is a petrophilous species, displaying a strong preference to rock, stone, brick and concrete substratum during the activity period (Gabryś 1990, 2000; Mąkol 2010).

List of localities.

NR “Dąbrowa Brzeźnicka”: N 51°43.934', E 015°21.384'/wall near the forestry station/11.05.2012/U/GG, JM; 2 AD // N 51°43.934', E 015°21.384'/ wall near the forestry station /27.05.2012/U/JM; 9 AD.

Erythraeinae Robineau-Desvoidy, 1828

Erythraeus (*Erythraeus*) Latreille, 1806

Erythraeus regalis (C.L. Koch, 1837)

Remarks.

Common in Palearctic (Gabryś 1990; Gabryś, Mąkol 1994; Mąkol, Wohltmann 2012); remarkably hygrophilous species (Gabryś, Mąkol 1995).

List of localities.

NR “Dąbrowa Brzeźnicka”: N 51°44.026', E 015°21.176'/wet forest litter Lśw/T/GG, JM; 1 Postlv.

Leptinae Billberg, 1820

Leptus (*Leptus*) Latreille, 1796

Leptus molochinus (C.L. Koch, 1837)

Remarks.

Species recorded from Europe (Gabryś 1990; Łajdanowicz, Mąkol 2010); occur in a wide range of biotopes including amphibious once, inhabit the litter (Wohltmann et al. 2007).

List of localities.

NR “Bażantarnia”: N 51°51.663', E 015°41.308'/grasses, young trees, scots pine /23.07.2012/PT/ER, JW; 1AD. NR “Dąbrowa Brzeźnicka”: N 51°44.109', E 015°21.473'/wet meadows/26.06.2012/GG, JM; 1 AD. NR “Zimna Woda”: N 51°52.352', E 015°31.376'/alder forest with an admixture of scots pine, pines, ferns, thick layer of litter/24.07.2012/PT/KK; 1AD.

Natura 2000 “Dolina Dolnego Bobru”: N 51°58.353', E 015°06.236'/bend in the river near Gola, detritus, litter, oak, hazel, hawthorn, slope/6.06.2014/GG; 2 AD.

Leptus rubricatus (C.L. Koch, 1837)

Remarks.

Species recorded from Europe (Gabryś 1990; Mąkol, Wohltmann 2012); inhabit the litter, eurytopic (Gabryś 1990; Gabryś et al. 2009).

List of localities.

NR “Dąbrowa Brzeźnicka”: N 51°44.026', E 015°21.176'/wet oak humus/26.06.2012/PT/GG, JM; 1 AD.

TROMBIDIOIDEA

Trombidiidae Leach, 1815

Allothrombiinae Thor, 1935

Allothrombium Berlese, 1903

Allothrombium incarnatum Oudemans, 1905

Remarks.

Western Palearctic; xerothermophilous species (Mąkol 2005).

List of localities.

NR “Gorzowskie Murawy”: N 52°43.542', E 015°11.165'/xerothermic vegetation/7.2011/T/ER; 1AD.

Allothrombium fuliginosum (Hermann, 1804)

Remarks.

Western Palearctic; euryoecious species, with tendency to synanthropism (Mąkol 2005).

List of localities.

Natura 2000 “Dolina Dolnego Bobru”: N 51°58.353', E 015°06.236'/ bend in the river near Gola, detritus, litter, oak, hazel, hawthorn, slope /6.06.2014/GG; 2AD.

Trombidiinae Leach, 1815

Trombidium Fabricius, 1775

Trombidium holosericeum (Linnaeus, 1758)

Remarks.

Palaearctic. Species recorded from most European countries and also from Asia and northern Africa. Euryoecious, synanthropic species (Małkol 2005).

List of localities.

NR "Jeziro Łubówko": N 52°52.466', E 015°50.236', 156 m a.s.l./beech forest, sieved material from below a fallen partly humified beech trunk, litter /8.05.2014/ PT/GG, AK; 4AD. NR "Laski": N 52°10.333', E 015°48.308'/oak-hornbeam forest: oak, beech, hazel, birch, elder, sieved material from below the fallen oak, litter, *Anemone nemorosa*, *Impatiens* sp., *Ajuga reptans*, *Asperula odorata* /4.05.2014/ PT/BG, GG; 1 AD.

ES "Dachowskie Ługi": N 51°54.167', E 015°06.486'/wet meadow with *Juncus* sp. and grasses; *Calamagrostis* in the vicinity/30.04.2014/T/GG, BG, AK; 1AD.

Trombidium latum C.L. Koch, 1837

Remarks.

Species recorded from several European countries. Hygrophilous species; inhabits the litter (Małkol 2005).

List of localities.

NR "Laski": N 52°10.333', E 015°48.308'/ oak-hornbeam forest: oak, beech, hazel, birch, elder, sieved material from below the fallen oak, litter, *Anemone nemorosa*, *Impatiens* sp., *Ajuga reptans*, *Asperula odorata* /4.05.2014/PT/BG, GG; 1 DN.

Podothrombiidae Thor, 1935

Podothrombium Berlese, 1910*Podothrombium filipes* (C.L. Koch, 1837)

Remarks.

Species recorded from several European countries and also from Turkey (Małkol, Wohltmann 2012), hygrophilous species, associated with temporarily flooded areas (Małkol 2005).

List of localities.

NR "Zimna Woda": N 51°52.250', E 015°32.308'/alder forest with an admixture of scots pine, pines, thick layer of litter /24.07.2012/PT/KK; 1AD.

Microtrombidiidae Thor, 1935

Microtrombidiinae Thor, 1935

Camerotrombidium Thor, 1936

Camerotrombidium rasum (Berlese, 1910)

Remarks.

Species recorded from Central and South-Western Europe; *C. rasum* inhabits wet grasslands and fresh meadows (Gabryś 1996, 1999; Wohltmann et al. 2003).

List of localities.

NR "Dąbrowa Brzeźnicka": N 51°44.109', E 015°21.473'/wet meadows/26.06.2012/U/GG, JM; 2 AD.

"Gryżyński" LP: */meadow, in tall grasses /13.07.2012/PT/ER, JW; 1AD.

Campylothrombium Krausse, 1916

Campylothrombium clavatum (George, 1909)

Remarks.

Species recorded from Central and South-Western Europe also from North Africa (Gabryś 1996, 1999; Małkol, Wohltmann 2012); forestal, in litter (Gabryś 1996).

List of localities.

NR "Kręcki Łęg": N 52°12.548', E 015°47.434'/beech forest, litter with *Convalaria majalis*/1.05.2012/ PT/GG; 2AD. NR "Laski": N 52°10.333', E 015°48.308'/ oak-hornbeam forest: oak, beech, hazel, birch, elder; sieved material from below the fallen oak, litter, *Anemone nemorosa*, *Impatiens* sp., *Ajuga reptans*, *Asperula odorata* /4.05.2014/PT/GG; 1AD. NR "Zimna Woda": N 51°52.253', E 015°32.260'/ alder forest with an admixture of scots pine, pines, ferns, thick layer of litter /12.06.2012/PT, U/KK; 1AD.

Dactylothrombium Feider, 1952

Dactylothrombium pulcherrimum (Haller, 1882)

Remarks.

Species recorded from several European countries and also from Algeria (Gabryś 1996, 1999; Wohltmann, Gabryś 2003; Mąkol, Wohltmann 2012). *D. pulcherrimum* is very abundant in forest biotopes in litter, sometimes rather frequent in soil samples (Gabryś 1996; Wohltmann, Gabryś 2003).

List of localities.

NR „Bażantarnia”: N51°56.679', E015°31.696'/ mixed forest with dominating scots pine, rowan, *Prunus padus*, ferns, *Vaccinium* sp. mosses/23.07.2012/PT/ER, JW; 1♀, 2AD // N51°56.679', E015°31.696'/ mixed forest with dominating scots pine, rowan, *Prunus padus*, ferns, *Vaccinium* sp. mosses /31.07.2012/PT/ER, JW; 1AD // N51°51.637', E015°41.037'/coniferous forest, sample collected from the foot of a giant scots pine/31.07.2012/PT/ER, JW; 1AD. NR „Dąbrowa Brzeźnicka”: N51°43.922', E015°21.298'/forest litter Lśw/U/GG/; 1 AD. NR „Jezioro Łubówko”: N52°52.466', E015°50.236'/ wet humus from below the fallen beech /T/8.05.2014/GG, AK; 3 AD. NR „Kręcki Łęg”: N52°12.526', E015°48.004'/riparian forest/1.05.2014/PT/GG; 2 AD // N52°12.524', E015°47.473'/alder forest, very wet /1.05.2012/PT/GG; 1 AD. NR „Laski”: N52°10.234', E015°48.458'/oak-hornbeam forest: hornbeam, birch, oak, scots pine, beech, from below the dead birch trunk/4.05.2014/PT/GG, BG; 1 AD // N52°10.234', E015°48'458'/ humus sample from below a dead tree /4.05.2014/T/GG, BG; 1 ♀, 10 AD. NR „Zimna Woda”: N51°52.281', E015°32.538'/alder forest with an admixture of scots pine, ferns /24.07.2012/PT/KK; 2 AD // N51°52.360', E015°31,360'/alder forest with an admixture of scots pine, pines, ferns, thick layer of litter /24.07.2012/PT/KK; 1AD. „Gryżyński” LP: N52°09.747', E 015°16.754'/edge of a backwater, stream valley, fallen trees, *Prunus padus*, oak, hornbeam, maple, *Geranium* sp., *Urtica dioica*, *Rubus* sp., *Oxalis acetosella*, *Calystegia* sp./2.07.2012/PT/ER, JW; 2 AD // N52°09.768', E 015°16.746'/ slope near the backwater, shadow, birch, hornbeam, pines, grasses, ferns, *Rubus* sp., *Calystegia* sp. /13.07.2012/PT/ER, JW; 1 AD. Natura 2000 „Dolina Dolnego Bobru”: N51°58.353', E 015°06.236'/bend in the river near Gola, detritus, litter, oak, hazel, hawthorn, slope /6.06.2014/PT/GG; 1 DN.

Echinothrombium Womersley, 1937

Echinothrombium spinosum (Canestrini, 1885)

Remarks.

Species recorded from a number of European countries, connected with forests and wooded areas (Gabryś 1986, 1996, 1999; Mąkol, Wohltmann 2012; Mąkol et al. 2008).

List of localities.

NR "Kręcki Łęg": N52°12.526', E015°48.004'/alder forest/1.05.2014/PT/GG; 5AD // N52°12.524', E015°47'473'/alder swamp forest, very wet, sieved material of litter and wet detritus near water /1.05.2012/PT/GG; 1AD.

Milandanielia Gabryś, 1999

Milandanielia intermedia (Feider, 1950)

Remarks.

Species recorded from Hungary, Poland and Romania (Gabryś 1996, 1999; Mąkol; Wohltmann 2012); forestal, connected exclusively with rot (Gabryś 1996).

List of localities.

NR „Laski”: N52°10.234', E015°48.458'/humus from below a dead tree /4.05.2014/T/BG, GG; 2♀, 1 AD.

Sucidothrombium Feider, 1952

Sucidothrombium sucidum (L. Koch, 1879)

Remarks.

Species recorded from Central and North Europe (Gabryś 1996, 1999; Mąkol, Gabryś 2002; Mąkol, Wohltmann 2012).

List of localities.

Natura 2000 „Dolina Dolnego Bobru”: N51°583', E015°062'/bend in the river near Gola, detritus, litter, oak, hazel hawthorn, slope /6.06.2014/PT/GG; 1 AD.

Johnstonianidae Thor, 1935

Johnstonianinae Thor, 1935

Johnstoniana George, 1909

Johnstoniana eximia (Berlese, 1910)

Remarks.

Species recorded from a few European countries. The species is restricted to semiaquatic habitats (Wohltmann et al. 2004).

List of localities.

NR "Kręcki Łęg": N52°12.524', E015°47.473' / alder swamp forest, very wet, sieved material of litter and wet detritus near water /1.05.2012/PT/GG; 1AD.

Discussion

According to Gabryś and Mąkol (2008), Gabryś et al. (2008) and Mąkol and Gabryś (2008), 91 species of mites representing postlarval instars of *Parasitengona terrestria* have been reported from Poland. Evidence material comes from different regions of the country but records on the occurrence of *Trombidia* in the western part of Poland are relatively scarce. This is particularly true for the parts within administrative boundaries of the Lubuskie Province. Only one publication that recapitulates the state of knowledge on these mites in the area of concern has appeared (Roland, Gabryś 2006). It is a compilation work that gathered literature data and results of incidental collection carried out by the authors. From 2011 to 2014, regular studies have been conducted in this region. However, these studies were limited to the natural areas protected by law. Faunistic studies within such areas are of particular importance because they allow the identification of the existing biodiversity, which can be a starting point for the studies on changes in ecosystems. Over the course of the present study 21 species of terrestrial *Parasitengona* have been found in the area of Lubuskie Province (basing on postlarval stages). The majority of the species were recorded for the first time within the studied areas. *Dactylothrombium pulcherrimum* (Haller 1882) from nature reserve „Zimna Woda” has already been recorded in that area by Roland and Gabryś (2006).

The habitat analysis of the records confirmed the eurytopic and euryhygrophilous character of the following species: *Calyptostoma velutinus*, *Abrolophus artemisiae*, *Abrolophus miniatus*, *Abrolophus norvegicus*, *Abrolophus quisquiliarius*, *Erythraeus regalis*, *Leptus molochinus*, *Leptus rubricatus*, *Allothrombium fuliginosum*, *Trombidium holosericeum*, *Podothrombium filipes*, *Campylothrombium clavatum*, *Dactylothrombium pulcherrimum*, *Echinothrombium spinosum*, *Milandanielia intermedia*, *Sucidothrombium sucidum*, *Johnstoniana exima*, which has been described in the works by Gabryś (1986, 1990, 1996), Gabryś et al. (2009), Gabryś and Mąkol (1994, 1995), Mąkol (2005, 2010), Mąkol and Gabryś (2002), Roland (2008), Wohltmann and Gabryś (2003), Wohltmann and Mąkol (2012), Wohltmann et al. (2007). According to the categories proposed by Gabryś and Mąkol (1995), these species can be included in ecological group of eurytopic – euryhygrophilous, associated with forest areas. The association of *Camerotrombium rasum* with wet grassland and fresh meadows described by Gabryś (1996) and Wohltmann et al. (2003) has also been verified. Likewise, the xerothermophilous character of *Allothrombium incarnatum* described by Mąkol (2005) was verified. *A. incarnatum* occurred only in the nature reserve “Gorzowskie Murawy”, which protects steppe plant communities.

Gabryś et al. (2014) presented an idea of a special “mite scale” which might be applied to indication and study of changes in soil-litter environment. This scale, a set of species ranging from stenotopic to eurytopic, correlated to the degree and character of human interference with nature might reveal the state of preservation of a given ecosystem. For example, the set of Microtrombididae associated with deciduous forests is as follows: *Milandanielia intermedia* (Feider 1950) (stenotopic species, associated with rich, old, and stable forest habitats), *Camerotrombidium pexatum* (C.L. Koch 1837), *Campylothrombium clavatum* (George 1909), *Dactylothrombium pulcherrimum* (Haller 1882) (eurytopic species, not sensitive to environmental changes) (Gabryś 1996, 1999; Gabryś et al. 2005, 2014). In the light of such analysis, the nature reserve “Laski” seems a well preserved object and in good condition: all species of the set except *Camerotrombidium pexatum* occur there. However, to be able to draw convincing conclusions, it is essential to continue the search for additional species of terrestrial Parasitengona that could be added to the list of bioindicators (Gabryś et al. 2014).

The results of the present study demonstrate that the faunistic-ecological research on the Trombidia of the western part of Poland should be continued. This

is vital for establishing the biodiversity status of this area and detecting changes related to the growing anthropopressure.

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**NOWE DANE O WYSTĘPOWANIU ROZTOCZY Z GRUPY TROMBIDIA
(ACARI: PROSTIGMATA: PARASITENGONA) NA OBSZARACH
CHRONIONYCH WOJEWÓDZTWA LUBUSKIEGO (POLSKA
ZACHODNIA)**

Streszczenie

Polska Zachodnia jest słabo zbadana pod względem występowania roztoczy należących do lądowych Parasitengona (= Trombidia). Szczególnie brak jest usystematyzowanych danych na temat ich występowania na obszarach chronionych. Poniższe opracowanie stanowi przegląd faunistyczny roztoczy z grupy Trombidia na terenie wybranych obszarów prawnie chronionych województwa lubuskiego. Badania przeprowadzono w kilku rezerwach przyrody, użytkach ekologicznych, w parku krajobrazowym i na obszarze NATURA 2000. Wykazano obecność 21 gatunków reprezentujących aktywne stadia postlarwalne, z czego jeden gatunek należy do nadrodziny Calyptostomatoidea, osiem do nadrodziny Erythraeoidea a dwanaście do nadrodziny Trombidioidea. Wyniki wskazują na konieczność prowadzenia dalszych systematycznych badań w celu wzbogacenia wiedzy o istniejącej na badanym obszarze bioróżnorodności, jako punktu odniesienia do obserwacji zmian zachodzących w ekosystemach. Jest to szczególnie istotne w aspekcie nasilającej się antropopresji.

Słowa kluczowe: Actinotrichida, terrestrial Parasitengona, Calyptostomatoidea, Erythraeoidea, Trombidioidea, rezerwy przyrody, parki krajobrazowe, obszary Natura 2000, użytki ekologiczne

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