

Oribatid mites (Acari, Oribatida) from the biodiversity days in South Tyrol (Prov. Bolzano, Italy)

Abstract

An overview of the oribatid mite fauna collected during the last 14 events „days of biodiversity“ in different regions of South Tyrol from 2003 until 2016 is presented. Collections were undertaken at different altitudes from 270 m to 2300 m a.s.l. in 60 sites belonging to different habitats, as riparian forests, marsh and peat bogs, dry grasslands, scree slopes, montane forests, meadows and pastures, dwarf shrub heaths. Also some microhabitats as lichens on tree bark as well as submerged algae were sampled. A total of 311 oribatid species from 60 families were identified, among them 144 new records for South Tyrol and 41 for Italy. Two species are considered as alpine endemic, most of the other species have a wide distribution. More than 60 species occur preferably in southern Europe or in the southern Palaearctic respectively. The habitats were clustered into three groups: arid, humid, and montane forests including subalpine habitats. Their respective species assemblages are discussed. The highest species numbers were found in the montane forests and larch pastures.

Keywords: Acari, Oribatida, biodiversity days, faunistics, species assemblages, South Tyrol, Italy

Introduction

The original aim of the „day of biodiversity“ is to make an inventory of the environment of human settlements by registering as many plants and animals as possible in a certain area within 24 hours. The background for these activities is to demonstrate the biodiversity in peoples proximate environment and to inspire consciousness for the importance of conservation. The campaign originated in the United States and spread to Europe in 1999, promoted by the German popular magazine GEO. Since then, this day of field research occurs every year in different countries with an increasing number of participants and experts covering numerous animal and plant taxa. On the same day several popular events are arranged for children, school classes, environmental organisations etc. to propagandize the importance of the nearest environment (www.geo.de).

In South Tyrol, the biodiversity day took place in different parts of the country since 2000 (Fig. 1, Table 1). The participants are interested nature lovers but primarily experts in different research fields as mycology, lichenology, bryology, botany, aquatic biology, gastropodology, acarology, arachnology, entomology, herpetology, ornithology, chiropterology, and other taxa. Especially for smaller organisms the presentation of the results was not always possible immediately after the date of the biodiversity day, since the study and identification of the collected taxa took weeks or even months. Results were published in the journal of the South Tyrol Museum of Natural History „*Gredleriana*“. The obtained data are integrated into the database of the museum. Oribatid mites were collected and studied on those occasions since 2003. The present compilation gives an overview and recapitulation of results until present.

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submitted: 22. 09. 2016
accepted: 24. 10. 2016

Fig. 1: Biodiversity days („GEO-Tage der Artenvielfalt“) in South Tyrol (Prov. Bolzano, Italy). The numbers correspond with the respective year (2000 - 0, 2016 - 16, see Table 1), red numbers: no oribatid mites collected.

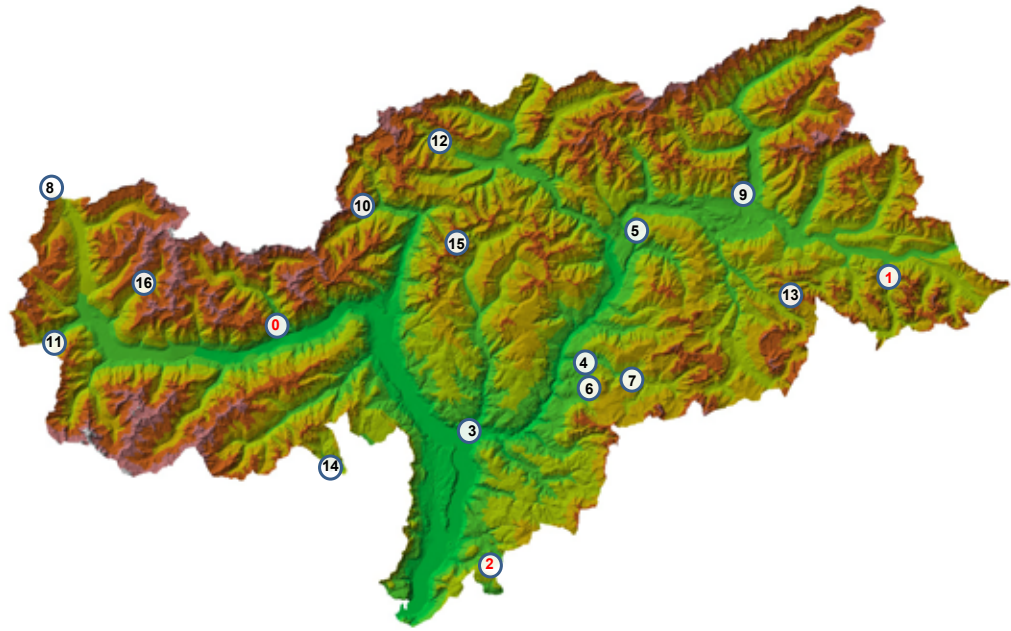


Table 1: Biodiversity days („GEO-Tage der Artenvielfalt“) in South Tyrol (Prov. Bolzano, Italy) and respective publications. The numbers of events correspond with the respective year. hab. Number of sites (habitats)

NR.	YEAR	DATE	LOCALITY (REGION)	HAB.	PUBLISHED
00	2000		Schnals / Senales		
01	2001		Toblacher See / Lago di Dobbiaco (Dolomites)		
02	2002	08.06.2002	Altrei / Anterivo (Fiemme Valley)		
03	2003	07.06.2003	Talfer bei Bozen / Talvera a Bolzano	1	in SCHATZ (2005a)
04	2004	11.06.2004	St. Konstantin - Völs am Schlern / San Constantino - Fié allo Sciliar (Dolomites)	2	SCHATZ (2005b)
05	2005	25.06.2005	Natz - Schabs / Naz - Sciaves	2	SCHATZ (2005c)
06	2006	24.06.2006	Rosengarten / Catinaccio (Dolomites)	6	SCHATZ (2006)
07	2007	30.06.2007	Plattkofel / Sassopiatto (Dolomites)	5	FISCHER & SCHATZ (2007)
08	2008	28.06.2008	Reschenpass / Passo di Resia (Vinschgau Valley, Central Alps)	4	FISCHER & SCHATZ (2009)
09	2009	27.06.2009	Ahrntal - Bruneck / Valle di Tures - Brunico (Puster Valley)	6	SCHATZ & FISCHER (2010)
10	2010	26.06.2010	Pfelders / Val di Plan (Central Alps)	5	SCHATZ & FISCHER (2011)
11	2011	25.06.2011	Münstertal / Val Monastero (Vinschgau Valley)	3	SCHATZ & FISCHER (2012)
12	2012	30.06.2012	Ridnauntal / Val Ridanna (Central Alps)	7	SCHATZ et al. (2013)
13	2013	29.06.2013	Wengen / La Valle (Dolomites)	6	SCHATZ & FISCHER (2014)
14	2014	28.06.2014	Unsere Liebe Frau im Walde - St.Felix / Senale - San Felice (Val di Non, Non Valley)	3	FISCHER & SCHATZ (2015)
15	2015	27.06.2015	Sarntal / Val Sarentino (Central Alps)	4	SCHATZ & FISCHER (2016)
16	2016	26.06.2016	Matschertal / Val Mazia (Vinschgau Valley)	6	SCHATZ (in prep.)

Biodiversity days in South Tyrol and collected sites

On the first three days of biodiversity (2000, 2001, 2002) no oribatid mites were collected. Starting from 2003 all results were published (Table 1). On the different events several sites were included in the investigation area, as riparian forests, wet meadows and peat bogs, dry grasslands, montane forests and subalpine meadows. Samples for oribatid mites were taken in a total of 60 sites in different habitats (see table 3). The events took place at different altitudes. The lowest site was a riparian forest at the mouth of Talvera near Bolzano at 270 m a.s.l. All other sites were above 800 m until 2300 m a.s.l. (a subalpine meadow in the Dolomites). High alpine sites were not visited during the biodiversity days.

Results and Discussion

Species

General

During all biodiversity events a total of 311 oribatid mite species belonging to 60 families were collected (Table 2). Families with the highest species numbers overall are Oppiidae (27 spp.), Suctobelbidae (23 spp.), Ceratozetidae (22 spp.), Damaeidae (18 spp.), Brachychthoniidae (14 spp.), Scheloribatidae, Phenopelopidae (12 spp. each), Galumnidae, Oribatulidae, Phthiracaridae (11 spp. each). Thus, more than half of all species belong to one of these ten families.

The species number varies among the different events, depending from the intensity of collecting and number or structure of habitats. In most years between 90 and 140 species were recorded, highest numbers in #16 Val Mazia (4 habitats, 137 spp.), #10 Val di Plan (5 habitats, 133 spp.), #15 Val Sarentino (4 habitats, 129 spp.), #08 Resia (4 habitats, 128 spp.), #12 Val Ridanna (7 habitats, 126 spp.), #09 Valle di Tures (6 habitats, 121 spp.) (Fig. 2).

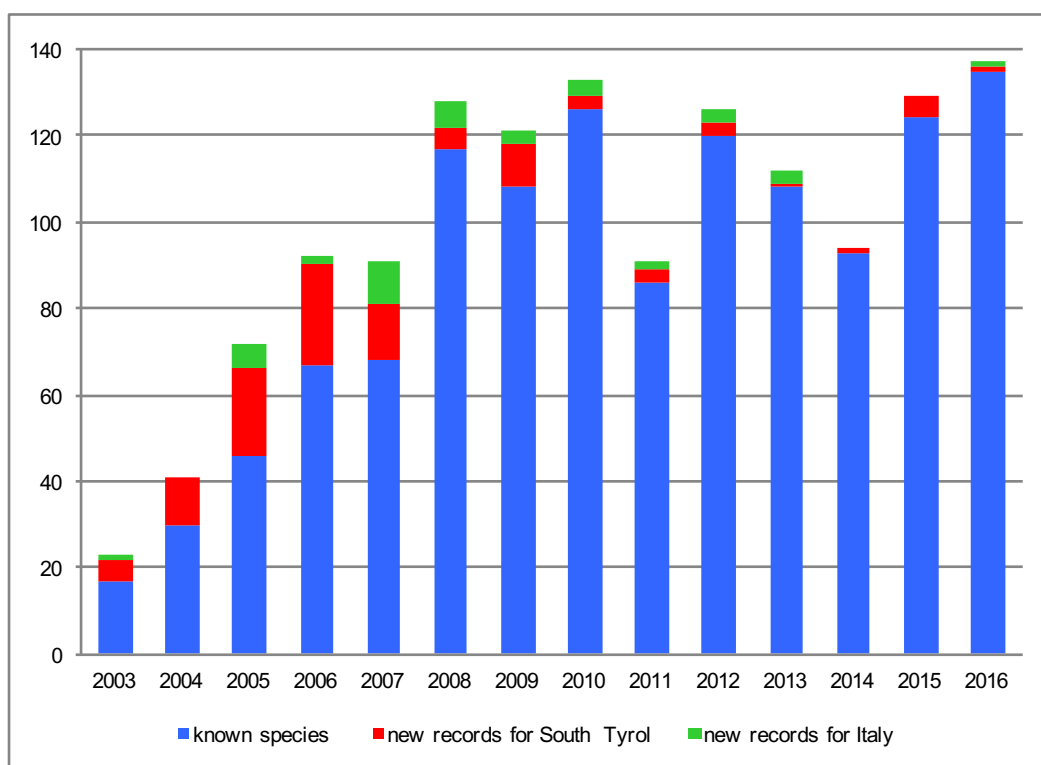


Fig. 2: Oribatid mites (Acari: Oribatida) from the biodiversity events in South Tyrol (Prov. Bolzano, Italy). Species number on each biodiversity event (see Table 1).

Table 2: Oribatid mites (Acari: Oribatida) from the biodiversity days in South Tyrol (Prov. Bolzano, Italy). Record of the species in each biodiversity day (numbers see Table 1), bold numbers with I or S: new records for Italy (I) or South Tyrol (S). General habitat preferences of the species (data from SCHATZ 1983, BERNINI et al. 1987, WEIGMANN 2006, WEIGMANN et al. 2015, updated): habitat preferences: al alpine, aq aquatic-limnic, ar arboricolous, eu euryoecious, hy hygrophilous, li lichenicolous, mh mesohygrophilous, mo mountainous, mu muscicolous, pr praticolous, si silvicolous, ty tyrphophilous – tyrphobiontic, xe xerophilous – xerobiontic. * see text for taxonomical or nomenclatorial comments. General distribution: alp end alpine endemic, ceur Central Europe, cseur central and south Europe, eur Europe, hol Holarctic region, hol-cos (semi)cosmopolitan, pal Palaearctic region, seur. South Europe, (south) „southern species“ (see text).

SPECIES	FAMILY	RECORDED ON EVENT	HABITAT PREFERENCES	GENERAL DISTRIBUTION
<i>Achipteria coleoptrata</i> (LINNAEUS, 1758)	Achipteriidae	04 06 07 08 09 10 12 14 15 16	eu (pr si)	hol
<i>Achipteria nitens</i> (NICOLET, 1855)	Achipteriidae	09 12 14	si	hol
<i>Achipteria sellnicki</i> HAMMEN, 1952	Achipteriidae	06S 07 08 10 13 14	pr xe	eur
<i>Acrogalumna longipluma</i> (BERLESE, 1904)	Galumnidae	06 08 09 10 11 12 14 15 16	si	hol-cos
<i>Adamaeus onustus</i> (C.L. KOCH, 1844)	Damaeidae	04S	eu	eur
<i>Adoristes ovatus</i> (C.L. KOCH, 1839)	Liacaridae	04S 05 06 09 10 12 14 15	eu (si ty)	hol
<i>Allosuctobelba grandis</i> (PAOLI, 1908)	Suctobelbidae	13	mu si	hol
<i>Anachipteria shtanchaevae</i> SUBIAS, 2009 *	Achipteriidae	07 08 10 12 14 15	li mu xe al	cseur (south)
<i>Arthrodamaeus femoratus</i> (C.L. KOCH, 1840)	Gymnodamaeidae	15S	mu xe	pal (south)
<i>Arthrodamaeus reticulatus</i> (BERLESE, 1910)	Gymnodamaeidae	07 08 11 13 16	pr xe	cseur (south)
<i>Astegistes pilosus</i> (C.L. KOCH, 1841)	Astegistidae	05I	hy ty si	pal
<i>Atropacarus striculus</i> (C.L. KOCH, 1836)	Phthiracaridae	04S 05 06 07 08 09 10 11 12 13 14 15 16	eu (hy si ty)	hol-cos
<i>Autogneta longilamellata</i> (MICHAEL, 1885)	Autognetidae	09S	si	hol
<i>Banksinoma lanceolata</i> (MICHAEL, 1885)	Thyrisomidae	05S	eu (si pr ty)	hol
<i>Belba compta</i> (KULCZYNSKI, 1902)	Damaeidae	06 08 10 15 16	hy mu si	pal
<i>Belba corynopus</i> (HERMANN, 1804)	Damaeidae	06S	hy mu si	hol
<i>Berniniella bicarinata</i> (PAOLI, 1908)	Oppiidae	06S 10 12 13 15 16	eu (pr si)	pal-cos
<i>Berniniella conjuncta</i> (STRENZKE, 1951)	Oppiidae	06I 08 13 15 16	hy mu si	cseur
<i>Berniniella hauseri</i> (MAHUNKA, 1974)	Oppiidae	16	xe si	cseur (south)
<i>Brachychthonius berlesei</i> WILLMANN, 1928	Brachychthoniidae	16	mu si ty	hol
<i>Brachychthonius pius</i> MORITZ, 1976	Brachychthoniidae	11S	si xe	hol (south)
<i>Caleremaeus monilipes</i> (MICHAEL, 1882)	Caleremaeidae	06 07 08 09 10 11 12 13 14 15 16	ar si	eur
<i>Camisia biurus</i> (C.L. KOCH, 1839)	Crotoniidae	05S 06 08 09 10 12 13 14 15 16	ar mu xe	hol
<i>Camisia biverrucata</i> (C.L. KOCH, 1839)	Crotoniidae	07 08 09	mu si pr xe	hol
<i>Camisia horrida</i> (HERMANN, 1804)	Crotoniidae	05 08 11 12 14 16	ar mu xe	hol
<i>Camisia segnis</i> (HERMANN, 1804)	Crotoniidae	04 05 12	ar mu xe	hol-cos
<i>Camisia solhoei</i> COLLOFF, 1993	Crotoniidae	07I	al ty	pal
<i>Camisia spinifer</i> (C.L. KOCH, 1836)	Crotoniidae	10 11 16	ar si xe	hol-cos
<i>Carabodes areolatus</i> BERLESE, 1916	Carabodidae	07 08 13	ar si xe	pal
<i>Carabodes coriaceus</i> C.L. KOCH, 1835	Carabodidae	03 04 09	eu (mu si ar)	pal
<i>Carabodes labyrinthicus</i> (MICHAEL, 1879)	Carabodidae	05 06 07 08 09 10 12 13 14 15 16	eu (ar mu si)	hol
<i>Carabodes marginatus</i> (MICHAEL, 1884)	Carabodidae	09 10 15	eu (mu si)	pal
<i>Carabodes ornatus</i> ŠTORKÁN, 1925	Carabodidae	06S 09 12 14 15	si hy	pal
<i>Carabodes rugosior</i> BERLESE, 1916	Carabodidae	06S 08 09 12 13 15	si	hol
<i>Carabodes schatzi</i> BERNINI, 1976	Carabodidae	08 09 10 12 14	al li	eur
<i>Cepheus cepheiformis</i> (NICOLET, 1855)	Compactozetidae	04S 05 08 09 10	eu (si)	pal
<i>Cepheus dentatus</i> (MICHAEL, 1888)	Compactozetidae	10S 12 13 15 16	si ar	pal
<i>Cepheus latus</i> (C.L. KOCH, 1835)	Compactozetidae	16	ar mu si	hol
<i>Cepheus tuberculosus</i> STRENZKE, 1951	Compactozetidae	08	si xe	cseur (south)
<i>Ceratoppia bipilis</i> (HERMANN, 1804)	Peloppiidae	06 07 08 09 10 11 12 13 14 15 16	eu (pr si)	hol
<i>Ceratoppia quadridentata</i> (HALLER, 1882)	Peloppiidae	04 05 06 07 10 14 15	eu (si)	hol
<i>Ceratozetes gracilis</i> (MICHAEL, 1884)	Ceratozetidae	04 05 06 08 09 10 12 15 16	eu (si)	hol-cos
<i>Ceratozetes mediocris</i> BERLESE, 1908	Ceratozetidae	05S 09	pr si	hol-cos
<i>Ceratozetes minutissimus</i> WILLMANN, 1951	Ceratozetidae	08I 09 11 16	xe?	pal (south)
<i>Ceratozetes sellnicki</i> RAJSKI, 1958	Ceratozetidae	09I 10	hy pr	pal
<i>Ceratozetes thienemanni</i> WILLMANN, 1943	Ceratozetidae	06I 09 10 12	si	hol-cos

SPECIES	FAMILY	RECORDED ON EVENT	HABITAT PREFERENCES	GENERAL DISTRIBUTION
<i>Chamobates birulai</i> (KULCZYNSKI, 1902)	Chamobatidae	06S 07 08 10 11 12 13 14 15 16	si	pal
<i>Chamobates cuspidatus</i> (MICHAEL, 1884)	Chamobatidae	03 04 06 08 14 15	eu (si)	hol-cos
<i>Chamobates interpositus</i> PSCHORN-WALCHER, 1953	Chamobatidae	05S 15	ar li mu	cseur (south)
<i>Chamobates pusillus</i> (BERLESE, 1895) *	Chamobatidae	03 05 06 07 08 09 10 11 12 13 14 15 16	eu (si ty xe)	hol
<i>Chamobates rastratus</i> (HULL, 1914) *	Chamobatidae	08 13 16	ar mu xe	pal
<i>Chamobates voigtsi</i> (OUDEMANS, 1902)	Chamobatidae	06 07 08 10 12 13 14 15 16	eu (ar si mu)	pal
<i>Conchogneta dalecarlica</i> (FORSSLUND, 1947)	Autognetidae	09I 15	si	pal
<i>Conoppia palmicincta</i> (MICHAEL, 1880)	Oppiidae	07 12	si ty	hol-cos
<i>Coronoquadroppia galaica</i> (MINGUEZ, RUIZ & SUBIAS), 1985	Quadropiidae	07I	mh	cseur (south)
<i>Coronoquadroppia monstrosa</i> (HAMMER, 1979) *	Quadropiidae	07S 09 10 15	pr si	hol-cos (south)
<i>Ctenobelba pectiniger</i> (BERLESE, 1908)	Ctenobelbidae	03S 07 08 09 10 11 12 16	si xe	pal (south)
<i>Cultroribula juncta</i> (MICHAEL, 1885)	Astegistidae	13	si	hol
<i>Cymbaeremaeus cymba</i> (NICOLET, 1855)	Cymbaeremaeidae	05 07 08 09 10 11 12 13 14 16	eu (ar li mu xe)	pal
<i>Damaeolus asperatus</i> (BERLESE, 1904)	Damaeolidae	09	xe si	pal (south)
<i>Damaeus auritus</i> C.L. KOCH, 1836	Damaeidae	04	si	pal
<i>Damaeus clavipes</i> (HERMANN, 1804) (<i>Paradamaeus</i>)	Damaeidae	04 08 10	si	pal
<i>Damaeus gracilipes</i> (KULCZYNSKI, 1902)	Damaeidae	06 07 08 09 10 11 12 13 14 15 16	hy si	pal
<i>Damaeus riparius</i> NICOLET, 1855	Damaeidae	07S 08 09 12 13 16	hy mu si	pal
<i>Diapterobates humeralis</i> (HERMANN, 1804)	Ceratozetidae	04 05 06 08 09 10 11 12 14 15 16	ar pr si xe	hol
<i>Dissorhina ornata</i> (OUDEMANS, 1900)	Oppiidae	06 07 08 09 10 12 13 15 16	eu (si)	hol
<i>Dissorhina signata</i> (SCHWALBE, 1989)	Oppiidae	12 13 15 16	si? xe?	cseur (south)
<i>Domatorina plantivaga</i> (BERLESE, 1895)	Scheloribatidae	05S 09 16	ar xe	hol-cos
<i>Dorycranosus curtii</i> (WILLMANN, 1935)	Liacaridae	07I	xe	cseur (south)
<i>Edwardzetes edwardsi</i> (NICOLET, 1855)	Ceratozetidae	06 07 08 10 12 13 14 15	si al	eur
<i>Eniochthonius minutissimus</i> (BERLESE, 1904)	Eniochthoniidae	05 09 10 11 12 14 16	eu (si)	hol-cos
<i>Eobranchycthonius latior</i> (BERLESE, 1910)	Brachycthoniidae	16	hy si	hol
<i>Eobranchycthonius oudemansi</i> HAMMEN, 1952	Brachycthoniidae	13	si	hol-cos
<i>Epidamaeus berlessei</i> (MICHAEL, 1898)	Damaeidae	06 09 13 15	eu (xe si al)	cseur (south)
<i>Epidamaeus bituberculatus</i> (KULCZYNSKI, 1902)	Damaeidae	08I 10 12 16	si mo	pal
<i>Epidamaeus tatricus</i> (KULCZYNSKI, 1902)	Damaeidae	08	si mo al	hol
<i>Eremaeus hepaticus</i> (C.L. KOCH, 1835)	Eremaeidae	10 11 14 15 16	si xe	hol
<i>Eueremaeus oblongus</i> (C.L. KOCH, 1836)	Eremaeidae	07 08 09 10 11 13 14 15 16	mu si xe ar	hol
<i>Eueremaeus silvestris</i> (FORSSLUND, 1956)	Eremaeidae	06 07 11 12 13 16	eu (si)	hol
<i>Eueremaeus valkanovi</i> (KUNST, 1957)	Eremaeidae	05 07 08 09 10 11 12 13 14 15 16	ar mu xe	pal (south)
<i>Eulohmannia ribagai</i> (BERLESE, 1910)	Eulohmanniidae	12 15	si al	hol
<i>Eupelops acromios</i> (HERMANN, 1804)	Phenopelopidae	03 05 07 11 12 13 15 16	ar si xe	pal-cos
<i>Eupelops curtii</i> (BERLESE, 1916)	Phenopelopidae	10 12 14	hy mu ty	pal
<i>Eupelops hygrophilus</i> (KNÜLLE, 1954)	Phenopelopidae	05I 14	hy li	ceur
<i>Eupelops occultus</i> (C.L. KOCH, 1835)	Phenopelopidae	05S 08 12 14 15	eu (ty ar si pr)	pal
<i>Eupelops plicatus</i> (C.L. KOCH, 1835)	Phenopelopidae	06 07 12 13 14 15 16	eu (ar si)	hol
<i>Eupelops</i> sp.	Phenopelopidae	10I		alp end?
<i>Eupelops strenzkei</i> (KNÜLLE, 1954)	Phenopelopidae	14S	hy ty	ceur
<i>Eupelops subuliger</i> (BERLESE, 1916)	Phenopelopidae	06 07 08 10 12 13 15 16	si	cseur (south)
<i>Eupelops tardus</i> (C.L. KOCH, 1835)	Phenopelopidae	09 10 15 16	si xe?	pal
<i>Eupelops torulosus</i> (C.L. KOCH, 1835)	Phenopelopidae	06S 07 08 09 10 11 12 13 14 15 16	si	pal
<i>Eupelops variatus</i> (MIHELČIČ, 1957)	Phenopelopidae	10 13	xe	cseur (south)
<i>Euphthiracarus monodactylus</i> (WILLMANN, 1919)	Euphthiracaridae	13 15	si	hol-cos
<i>Euzetes globulus</i> (NICOLET, 1855)	Euzetidae	09 13 16	si ty	pal
<i>Feiderzetes latus</i> (SCHWEIZER, 1956)	Mycobatidae	16	si xe al	cseur
<i>Fosseremus laciniatus</i> BERLESE, 1905	Damaeolidae	04 08 11 13 14 15	si xe	hol-cos (south)
<i>Fuscozetes fuscipes</i> (C.L. KOCH, 1844)	Ceratozetidae	04S 05 07	hy si ty al	hol

SPECIES	FAMILY	RECORDED ON EVENT	HABITAT PREFERENCES	GENERAL DISTRIBUTION
<i>Fuscozetes intermedius</i> CAROLI & MAFFIA, 1934	Ceratozetidae	07S 09 10 12 13 14	si mo al	cseur (south)
<i>Fuscozetes setosus</i> (C.L. KOCH, 1839)	Ceratozetidae	06 07 08 09 10 12 13 15 16	hy si ty al	hol
<i>Galumna alata</i> (HERMANN, 1804)	Galumnidae	06 09	hy mu si	hol-cos
<i>Galumna elimata</i> (C.L. KOCH, 1841)	Galumnidae	04S	eu (si)	hol-cos
<i>Galumna lanceata</i> (OUDEMANS, 1900)	Galumnidae	03 08 09 11 12 15	eu (si)	pal
<i>Galumna obvia</i> (BERLESE, 1915)	Galumnidae	04S 05 06 09 14	eu (hy pr si)	pal (south)
<i>Graptoppia foveolata</i> (PAOLI, 1908) (<i>Apograptoppia</i>)	Oppiidae	12S	si ar	pal
<i>Graptoppia paraanalis</i> SUBIAS & RODRIGUEZ, 1985	Oppiidae	16S	eu? (xe pr si ty)	cseur (south)
<i>Gustavia microcephala</i> (NICOLET, 1855)	Gustaviidae	06 09	eu (hy)	pal-cos
<i>Gymnodamaeus barbarossa</i> WEIGMANN, 2006	Gymnodamaeidae	09I 11	xe	cseur
<i>Gymnodamaeus bicostatus</i> (C.L. KOCH, 1836)	Gymnodamaeidae	11	ar li mu si xe	hol (south)
<i>Gymnodamaeus meyeri</i> BAYARTOGTOKH & SCHATZ, 2009	Gymnodamaeidae	16I	xe	ceur
<i>Haplozetes vindobonensis</i> (WILLMANN, 1935)	Haplozetidae	11	xe	pal (south)
<i>Hemileius initialis</i> (BERLESE, 1908)	Scheloribatidae	06 07 09 12 13 14 15 16	eu (si ty)	pal-cos
<i>Heminothrus targionii</i> (BERLESE, 1885)	Crotoniidae	07 09 10	mu si pr xe	hol
<i>Hermannia gibba</i> (C.L. KOCH, 1840)	Hermanniidae	04 06 08 10 12 13 14 15 16	si hy	hol
<i>Hermanniella dolosa</i> GRANDJEAN, 1931	Hermanniellidae	09S	si xe	pal
<i>Hermanniella granulata</i> (NICOLET, 1855)	Hermanniellidae	03	si	pal (south)
<i>Hermanniella septentrionalis</i> BERLESE, 1910	Hermanniellidae	09 16	mh mu si	hol (south)
<i>Hydrozetes lacustris</i> (MICHAEL, 1882)	Hydrozetidae	08S 10 12	aq ty	hol
<i>Hypochthonius luteus</i> OUDEMANS, 1917	Hypochthoniidae	11	xe	hol-cos
<i>Hypochthonius rufulus</i> C.L. KOCH, 1835	Hypochthoniidae	04 05 06 09 10 12 14 15 16	eu (ar mh si ty)	hol-cos
<i>Jugatala angulata</i> (C.L. KOCH, 1840)	Ceratozetidae	08S 13 16	ar	ceur
<i>Jugatala cribelliger</i> (BERLESE, 1904)	Ceratozetidae	07S 12 13	mu	cseur (south)
<i>Kartoeremaeus areolatus</i> (KUNST, 1959)	Eremaeidae	07S	xe?	cseur (south)
<i>Kunstidamaeus diversipilis</i> (WILLMANN, 1951)	Damaeidae	08 13	li mu pr al	alp end
<i>Kunstidamaeus tecticola</i> (MICHAEL, 1888)	Damaeidae	05S 07 09 16	li mu xe	eur
<i>Lamellovertex caelatus</i> (BERLESE, 1895)	Scutoverticidae	09S	li mu xe	pal (south)
<i>Lepidozetes singularis</i> BERLESE, 1910	Tegoribatidae	06S 07 08 10 11 12 13 14 15 16	ar li mu xe al	hol
<i>Liacarus coracinus</i> (C.L. KOCH, 1840)	Liacaridae	04 06 07 08 09 10 12 13 14 15 16	eu (si pr)	hol
<i>Liacarus nitens</i> (GERVAIS, 1844)	Liacaridae	05	si	hol
<i>Liacarus oribatelloides</i> WINKLER, 1956	Liacaridae	13I	si al	ceur
<i>Licneremaeus licnophorus</i> (MICHAEL, 1882)	Licneremaeidae	08 09 10 11 12 13 15 16	ar mu si xe	hol (south)
<i>Licnodamaeus pulcherrimus</i> (PAOLI, 1908)	Licnodamaeidae	05 11	si xe	pal (south)
<i>Liebstadia humerata</i> SELLNICK, 1929	Scheloribatidae	03S 12	ar mu xe	hol
<i>Liebstadia longior</i> (BERLESE, 1908)	Scheloribatidae	06S 12	ar li mu	cseur (south)
<i>Liebstadia pannonica</i> (WILLMANN, 1951)	Scheloribatidae	05S 07 08 09 10 11 15 16	pr xe	hol (south)
<i>Liebstadia similis</i> (MICHAEL, 1888)	Scheloribatidae	04 05 07 08 10 13	eu (hy pr si)	hol-cos
<i>Liebstadia willmanni</i> MIKO & WEIGMANN, 1996	Scheloribatidae	08 09 10 14 16	hy pr si	ceur
<i>Limnozetes ciliatus</i> (SCHRANK, 1803)	Limnozetidae	08 10 12 13 14	aq hy ty	eur
<i>Limnozetes rugosus</i> (SELLNICK, 1923)	Limnozetidae	12I	aq	pal
<i>Liochthonius hystricinus</i> (FORSSLUND, 1942)	Brachychthoniidae	14	eu	hol
<i>Liochthonius lapponicus</i> (TRÄGARDH, 1910)	Brachychthoniidae	05 06 08 10 12 13 14 15 16	eu (hy pr si ty)	hol
<i>Liochthonius sellnicki</i> (THOR, 1930)	Brachychthoniidae	06S 08 10 11 13 15	mh pr	hol
<i>Liochthonius simplex</i> (FORSSLUND, 1942)	Brachychthoniidae	15S	si	hol, australian
<i>Liochthonius strenzkei</i> FORSSLUND, 1963	Brachychthoniidae	07S 13	pr si	hol
<i>Mainothrus badius</i> (BERLESE, 1905)	Trhypochthoniidae	06S 13	aq hy mu ty	hol
<i>Malaconothrus monodactylus</i> (MICHAEL, 1888)	Malaconothridae	05 06 07 08 09 10 12 13 14 15 16	hy pr si ty	hol, neotropical
<i>Melanozetes interruptus</i> WILLMANN, 1953	Ceratozetidae	13I 15	mu al	pal
<i>Melanozetes meridianus</i> SELLNICK, 1929	Ceratozetidae	04	hy mu ty al	hol
<i>Melanozetes mollicomus</i> (C.L. KOCH, 1839)	Ceratozetidae	06 08 10 12 13 15	mu si ty al	hol

SPECIES	FAMILY	RECORDED ON EVENT	HABITAT PREFERENCES	GENERAL DISTRIBUTION
<i>Mesotritia nuda</i> (BERLESE, 1887)	Oribotritiidae	13	si	hol
<i>Metabelba papillipes</i> (NICOLET, 1855)	Damaeidae	03 06 08 10 11 13 14 15 16	mu si	hol-cos
<i>Metabelba propexa</i> (KULCZYNSKI, 1902)	Damaeidae	07S 10 11 16	si	eur
<i>Metabelba pulverosa</i> STRENZKE, 1953	Damaeidae	05 07 10 15	eu (li mh mu si ty)	hol
<i>Micreremus brevipes</i> (MICHAEL, 1888)	Micreremidae	05S 11 14 16	ar li mu xe	pal
<i>Microppia minus</i> (PAOLI, 1908)	Oppiidae	03S 04 06 14 16	eu (ar xe)	hol-cos
<i>Microzetorches emeryi</i> (COGGI, 1898)	Zetorchestidae	08 10 11 16	mu xe	pal (south)
<i>Minunthozetes pseudofusiger</i> (SCHWEIZER, 1922)	Mycobatidae	03S 06 07 08 09 12	ar li mu xe	pal
<i>Minunthozetes semirufus</i> (C.L. KOCH, 1841)	Mycobatidae	04S 05 06 08 09 11 12 13 14 15	eu (pr si)	pal
<i>Multioppia glabra</i> (MIHELČIĆ, 1955)	Oppiidae	03I 09 10 12 16	si xe	pal (south)
<i>Mycobates alpinus</i> (WILLMANN, 1951)	Mycobatidae	06S 07 08 13	ar mu pr xe al	ceur
<i>Mycobates bicornis</i> (STRENZKE, 1954)	Mycobatidae	07S	mu al	pal (south)
<i>Mycobates carli</i> (SCHWEIZER, 1922)	Mycobatidae	06 07 08 12 15 16	li mu al	cseur (south)
<i>Mycobates parmelliae</i> (MICHAEL, 1884)	Mycobatidae	09 10 11 12 14 16	ar li mu al	hol
<i>Nanhermannia comitalis</i> BERLESE, 1916	Nanhermanniidae	04S 05 06 14 16	hy ty	pal
<i>Nanhermannia nana</i> (NICOLET, 1855)	Nanhermanniidae	09 15 16	eu (hy ty si)	hol-cos
<i>Nanhermannia sellnicki</i> FORSSLUND, 1958	Nanhermanniidae	09 10 15 16	hy si ty	pal
<i>Neoliodes theleproctus</i> (HERMANN, 1804)	Neoliodidae	09S	ar xe	pal (south)
<i>Neoribates aurantiacus</i> (OUDEMANS, 1914)	Parakalummidae	09 10 11 12 13 14 16	pr si mh	hol
<i>Neotrichoppia confinis</i> (PAOLI, 1908) (<i>Confinoppia</i>)	Oppiidae	12S 16	si xe?	cseur (south)
<i>Niphocephus nivalis</i> (SCHWEIZER, 1922)	Niphocephidae	09 10 15	al	pal
<i>Nothrus anauniensis</i> CANESTRINI & FANZAGO, 1876 *	Nothridae	03 09S 11 15 16	eu (si pr)	hol-cos
<i>Nothrus borussicus</i> SELLNICK, 1928	Nothridae	08 10 12 13 16	eu (pr)	hol
<i>Nothrus palustris</i> C.L. KOCH, 1839	Nothridae	04S 05 06 07 09 10 13 15 16	hy pr si	hol
<i>Nothrus pratensis</i> SELLNICK, 1929	Nothridae	10	hy ty	hol
<i>Nothrus silvestris</i> (NICOLET, 1855)	Nothridae	13	eu (si)	hol-cos
<i>Odontocephus elongatus</i> (MICHAEL, 1879)	Carabodidae	05S 08 09 11 15	mu si xe	hol
<i>Ommatocephus ocellatus</i> (MICHAEL, 1882)	Compactozetidae	09	ar li	pal (south)
<i>Ophidiotrichus tectus</i> (MICHAEL, 1883)	Oribatellidae	15	ar si mu xe	eur (south)
<i>Oppia nitens</i> (C.L. KOCH, 1835)	Oppiidae	03 04 05 08	eu (si)	hol
<i>Oppiella falcata</i> (PAOLI, 1908) (<i>Oppiella</i>)	Oppiidae	06S 08 10 12 13 15 16	mh si	pal
<i>Oppiella fallax</i> (PAOLI, 1908) (<i>Rhinoppia</i>)	Oppiidae	06S 10 15	eu (si)	hol
<i>Oppiella keilbachi</i> (MORITZ, 1969) (<i>Moritzoppia</i>)	Oppiidae	07I 08 09 10 11 12 13 15 16	pr si xe	pal
<i>Oppiella maritima</i> (WILLMANN, 1929) (<i>Oppiella</i>)	Oppiidae	08S 16	si al	hol
<i>Oppiella nova</i> (OUDEMANS, 1902) (<i>Oppiella</i>)	Oppiidae	03 04 05 06 08 09 10 12 15 16	eu	hol-cos
<i>Oppiella obsoleta</i> (PAOLI, 1908) (<i>Rhinoppia</i>)	Oppiidae	06S 08 09 10	eu (li ar mh)	hol-cos
<i>Oppiella splendens</i> (C.L. KOCH, 1841)	Oppiidae	08S	si	hol
<i>Oppiella subpectinata</i> (OUDEMANS, 1900) (<i>Rhinoppia</i>)	Oppiidae	06S 08 09 10 11 12 13 15 16	eu (si pr)	hol-cos
<i>Oppiella uliginosa</i> (WILLMANN, 1919) (<i>Oppiella</i>)	Oppiidae	07I 08 09 10 11 12 13 14 15 16	ar mu si	cseur
<i>Oppiella uncarinata</i> (PAOLI, 1908) (<i>Moritzoppia</i>)	Oppiidae	06 09 10 13 14 15 16	hy mu si al	hol
<i>Oribatella calcarata</i> (C.L. KOCH, 1835)	Oribatellidae	06S 08 09 12 13 15 16	hy mu si ar	hol
<i>Oribatella longispina</i> BERLESE, 1915	Oribatellidae	06S 07 08 09 10 11 12 13 14 15 16	pr mu si al	cseur (south)
<i>Oribatella quadricornuta</i> (MICHAEL, 1880)	Oribatellidae	06S 08 09 11 12 13 14 15 16	eu (ar pr si xe)	hol
<i>Oribatella superbulba</i> (BERLESE, 1904)	Oribatellidae	10	mu xe	pal (south)
<i>Oribatula amblyptera</i> BERLESE, 1916	Oribatulidae	07S 10 11 12 13 14 15 16	xe	cseur (south)
<i>Oribatula interrupta</i> (WILLMANN, 1939)	Oribatulidae	05 06 07 08 09 10 12 13 14 15 16	li mu al	pal
<i>Oribatula longelamellata</i> SCHWEIZER, 1956	Oribatulidae	08I 10 11 13 16	mo al	cseur
<i>Oribatula tibialis</i> (NICOLET, 1855)	Oribatulidae	04 06 08 09 10 11 12 13 16	eu (mu li si)	hol-cos
<i>Oromurcia sudetica</i> WILLMANN, 1939	Ceratozetidae	07I 08 10 12 14 15	hy pr ty mo al	cseur
<i>Pantelozetes alpestris</i> (WILLMANN, 1929)	Thyrisomidae	07 16	mu al	hol
<i>Pantelozetes paolii</i> (OUDEMANS, 1913)	Thyrisomidae	05S 06 07 08 09 10 12 13 15 16	eu (pr si)	hol (south)

SPECIES	FAMILY	RECORDED ON EVENT	HABITAT PREFERENCES	GENERAL DISTRIBUTION
<i>Parachipteria fanzagoi</i> JACOT, 1929	Achipteriidae	06 07 08 09 10 11 14 15	hy pr si ty	hol
<i>Parachipteria punctata</i> (NICOLET, 1855)	Achipteriidae	05 13 15 16	eu (ar mh pr si mu)	hol
<i>Passalozetes africanus</i> GRANDJEAN, 1932	Passalozetidae	04 06 08 10 11 16	pr xe	hol (south)
<i>Passalozetes intermedius</i> MIHELČIĆ, 1954	Passalozetidae	06S 07 08 10 16	pr xe	pal (south)
<i>Passalozetes perforatus</i> (BERLESE, 1910)	Passalozetidae	08 11	pr xe	pal
<i>Peloptulus phaenotus</i> (C.L. KOCH, 1844)	Phenopelopidae	06 08 09 11 13 14	eu (pr)	pal
<i>Peloribates europaeus</i> WILLMANN, 1935	Haplozetidae	05S 08 11 14 15	pr xe	hol (south)
<i>Peloribates longipilosus</i> CSISZAR, 1962	Haplozetidae	10S 15 16	pr xe	pal (south)
<i>Pergalumna altera</i> (OUDEMANS, 1915)	Galumnidae	05 06 14 15 16	xe	hol-cos
<i>Pergalumna formicaria</i> (BERLESE, 1914)	Galumnidae	08 11 15	mu	hol
<i>Pergalumna nervosa</i> (BERLESE, 1914)	Galumnidae	07 08 09 10 12 14 15 16	eu (hy pr si ty xe)	hol-cos
<i>Pergalumna willmanni</i> (ZACHVATKIN, 1953)	Galumnidae	10I	si	eur
<i>Phauloppia lucorum</i> (C.L. KOCH, 1840)	Oribatulidae	05 07 08 09 10 11 12 13 14 16	ar li xe	hol
<i>Phauloppia nemoralis</i> (BERLESE, 1916)	Oribatulidae	09 12 14	li mu pr xe	cseur (south)
<i>Phauloppia pilosa</i> (MICHAEL, 1888)	Oribatulidae	09S	ar mu si xe	hol
<i>Phthiracarus anonymus</i> GRANDJEAN, 1934	Phthiracaridae	07S	si	hol-cos
<i>Phthiracarus compressus</i> JACOT, 1930	Phthiracaridae	13S 15	si hy	hol
<i>Phthiracarus ferrugineus</i> (C.L. KOCH, 1841)	Phthiracaridae	09S	si	hol
<i>Phthiracarus globosus</i> (C.L. KOCH, 1841)	Phthiracaridae	09 10 11 12 13 14 15 16	eu (si ty)	hol
<i>Phthiracarus laevigatus</i> (C.L. KOCH, 1841)	Phthiracaridae	03 04 05 06 07 08 09 10 11 12 13 14 15 16	si mu xe	pal-cos
<i>Phthiracarus longulus</i> (C.L. KOCH, 1841)	Phthiracaridae	15 16	si	hol
<i>Pilogalumna crassiclava</i> (BERLESE, 1914)	Galumnidae	03 08 11 12 15 16	pr si xe	pal (south)
<i>Pilogalumna tenuiclava</i> (BERLESE, 1908)	Galumnidae	04 06 08 10 12 13 14 15 16	hy mu si ty	hol
<i>Platylodes scaliger</i> (C.L. KOCH, 1839)	Neoliodidae	05S 08 09 10 11	mu pr xe	hol (south)
<i>Platynothrus peltifer</i> (C.L. KOCH, 1839)	Crotoniidae	04 05 06 08 09 10 12 13 14 15 16	eu (ar hy pr si ty)	hol-cos
<i>Platynothrus thori</i> (BERLESE, 1904)	Crotoniidae	05S 07 08 10 13 15	hy si	hol
<i>Poecilochthonius italicus</i> (BERLESE, 1910)	Brachychthoniidae	16	pr xe	hol (south)
<i>Porobelba spinosa</i> (SELLNICK, 1920)	Damaeidae	10 11 12 13 15 16	eu (li mu si xe)	pal
<i>Protoribates capucinus</i> BERLESE, 1908	Haplozetidae	05S 08 09 10 11 12 14 16	eu (si pr)	hol-cos
<i>Pseudoppia mediocris</i> (MIHELČIĆ, 1957)	Oribatulidae	12S 13 16	xe	cseur (south)
<i>Punctoribates punctum</i> (C.L. KOCH, 1839)	Mycobatidae	08 09 13 14	eu (ar mh mu pr si)	hol-cos
<i>Punctoribates sellnicki</i> WILLMANN, 1928	Mycobatidae	06	aq si hy pr ty	pal
<i>Quadroppia hammerae</i> MINGUEZ, RUIZ & SUBIAS, 1985	Quadropiidae	07I	si	pal-cos
<i>Quadroppia longisetosa</i> MINGUEZ, RUIZ & SUBIAS, 1985	Quadropiidae	07I 15 16	si?	cseur (south)
<i>Quadroppia maritalis</i> LIONS, 1982	Quadropiidae	13I	pr si	eur
<i>Quadroppia quadricarinata</i> (MICHAEL, 1885)	Quadropiidae	05S 06 07 08 09 10 11 12 13 14 15 16	eu (xe ar si)	hol-cos
<i>Ramusella clavipectinata</i> (MICHAEL, 1885) (<i>Ramusella</i>)	Oppiidae	11S	eu (pr si)	hol-cos
<i>Ramusella furcata</i> (WILLMANN, 1928) (<i>Insculptoppia</i>)	Oppiidae	09S 12	si hy ty	eur
<i>Ramusella insculpta</i> (PAOLI, 1908) (<i>Insculptoppia</i>)	Oppiidae	09S 11	si xe	pal (south)
<i>Ramusella mihelcici</i> (PÉREZ-ÍÑIGO, 1965) (<i>Rectoppia</i>)	Oppiidae	08I	pr xe	pal neot
<i>Rhysotritia ardua</i> (C.L. KOCH, 1841)	Euphthiracaridae	03 05 06 08 09 10 11 12 13 14 16	eu (li ar mh si)	hol-cos
<i>Scapheremaeus reticulatus</i> (BERLESE, 1910)	Cymbaeremaeidae	15S	si	eur
<i>Scheloribates ascendens</i> WEIGMANN & WUNDERLE, 1990	Scheloribatidae	05I 09 12 16	eu (ar si)	ceur
<i>Scheloribates circumcarinatus</i> WEIGMANN & MIKO, 1998 (<i>Topobates</i>)	Scheloribatidae	07I 08 13 14 15	hy pr ty	ceur
<i>Scheloribates laevigatus</i> (C.L. KOCH, 1835)	Scheloribatidae	03 04 05 06 07 08 09 10 11 12 13 14 15 16	eu (hy pr)	hol-cos
<i>Scheloribates latipes</i> (C.L. KOCH, 1844)	Scheloribatidae	03 05 08 09 11	eu (si pr)	hol
<i>Scheloribates pallidulus</i> (C.L. KOCH, 1841)	Scheloribatidae	06S 07 09 10 11 12 14 16	eu (hy pr ty si)	hol-cos
<i>Scutovertex ianus</i> PFINGSTL et al., 2010	Scutoverticidae	11I	xe	ceur
<i>Scutovertex minutus</i> (C.L. KOCH, 1835)	Scutoverticidae	08 09 10 16	mu li xe	pal-cos
<i>Scutovertex sculptus</i> MICHAEL, 1879	Scutoverticidae	08	ar li mu pr xe	pal (south)

SPECIES	FAMILY	RECORDED ON EVENT	HABITAT PREFERENCES	GENERAL DISTRIBUTION
<i>Sellnickochthonius immaculatus</i> (FORSSLUND, 1942)	Brachychthoniidae	06 11 13	eu (si)	hol-cos
<i>Sellnickochthonius zelawaiensis</i> (SELLNICK, 1929)	Brachychthoniidae	15S	si ty	hol
<i>Spatiodamaeus fagei</i> BULANOVA-ZACHVATKINA, 1957	Damaeidae	15S 16	hy mu si ty	pal (south)
<i>Spatiodamaeus verticillipes</i> (NICOLET, 1855)	Damaeidae	08 10 12 14	hy si	eur
<i>Sphaerochthonius splendidus</i> (BERLESE, 1904)	Sphaerochthoniidae	11S	pr xe	hol-cos (south)
<i>Sphaerozetes piriformis</i> (NICOLET, 1855)	Ceratozetidae	04 06 07 10 12 13 15 16	ar mu si xe	pal
<i>Steganacarus applicatus</i> (SELLNICK, 1920)	Phthiracaridae	06S 12 14	si	eur
<i>Steganacarus carinatus</i> (C.L. KOCH, 1841) (<i>Tropacarus</i>)	Phthiracaridae	04	si xe	pal
<i>Steganacarus herculeanus</i> WILLMANN, 1953	Phthiracaridae	12I	si al	ceur
<i>Steganacarus vernaculus</i> NIEDBALA, 1982	Phthiracaridae	08 11 12 14 15	si?	ceur
<i>Subiasella quadrimaculata</i> (EVANS, 1952) (<i>Lalmoppia</i>)	Oppiidae	05I	si xe	pal
<i>Suctobelba aliena</i> MORITZ, 1970	Suctobelbidae	16	ar si	cseur (south)
<i>Suctobelba altvateri</i> MORITZ, 1970	Suctobelbidae	08 09 10 11 12 13 14 15 16	hy mu si	cseur (south)
<i>Suctobelba regia</i> MORITZ, 1970	Suctobelbidae	09S 15	si	eur
<i>Suctobelba secta</i> MORITZ, 1970	Suctobelbidae	11	si	eur
<i>Suctobelba trigona</i> (MICHAEL, 1888)	Suctobelbidae	05 06 12 13 14	eu (mu si)	pal
<i>Suctobelbata prelli</i> (MÄRKEL & MEYER, 1958)	Suctobelbidae	08I	ar si	cseur
<i>Suctobelbella acutidens</i> (FORSSLUND, 1941)	Suctobelbidae	05 06 10 11 12 15 16	eu (hy si)	hol
<i>Suctobelbella acutidens lobata</i> (STRENZKE, 1950)	Suctobelbidae	08S 10 13	si ty mu	eur
<i>Suctobelbella arcana</i> MORITZ, 1970	Suctobelbidae	11	ar si	pal
<i>Suctobelbella falcata</i> (FORSSLUND, 1941)	Suctobelbidae	12	si hy	pal, New Zealand
<i>Suctobelbella forsslundi</i> (STRENZKE, 1950)	Suctobelbidae	09 15 16	eu (hy pr si)	pal
<i>Suctobelbella hamata</i> MORITZ, 1970	Suctobelbidae	10I	si	cseur
<i>Suctobelbella longirostris</i> (FORSSLUND, 1941)	Suctobelbidae	10I	hy si ty	pal
<i>Suctobelbella nasalis</i> (FORSSLUND, 1941)	Suctobelbidae	10 11 13	eu (si mh)	pal-cos
<i>Suctobelbella palustris</i> (FORSSLUND, 1953)	Suctobelbidae	05I 06 07 08 11 12 15 16	aq hy pr si ty	hol
<i>Suctobelbella perforata</i> (STRENZKE, 1950)	Suctobelbidae	10 12	si hy	pal
<i>Suctobelbella prominens</i> (MORITZ, 1966)	Suctobelbidae	11	si xe	pal
<i>Suctobelbella sarekensis</i> (FORSSLUND, 1941)	Suctobelbidae	05S 06 08 09 10 11 12 13 14 15 16	eu (si ty)	hol
<i>Suctobelbella similis</i> (FORSSLUND, 1941)	Suctobelbidae	12	si ty	pal
<i>Suctobelbella singularis</i> (STRENZKE, 1950)	Suctobelbidae	12I 14	hy pr	pal
<i>Suctobelbella subcornigera</i> (FORSSLUND, 1941)	Suctobelbidae	03S 05 06 07 08 09 10 11 12 13 14 15 16	eu (si)	pal-cos
<i>Suctobelbella subtrigona</i> (OUDEMANS, 1900)	Suctobelbidae	08 09 10 11 12 13 15 16	eu (si)	hol-cos
<i>Synchthonius elegans</i> FORSSLUND, 1957	Brachychthoniidae	07S	pr si xe	hol
<i>Tectocephus alatus</i> BERLESE, 1913	Tectocephidae	10S 14	mu pr xe	pal
<i>Tectocephus minor</i> BERLESE, 1903	Tectocephidae	12 15 16	mh si xe?	hol-cos
<i>Tectocephus sarekensis</i> (TRÄGARDH, 1910)	Tectocephidae	05 06 07 08 09 10 11 12 13 14 15 16	eu	hol-cos
<i>Tectocephus</i> sp.	Tectocephidae	07I 14 15 16	al	alpin end?
<i>Tectocephus tenuis</i> KNÜLLE, 1954	Tectocephidae	16	xe	pal
<i>Tectocephus velatus</i> (MICHAEL, 1880)	Tectocephidae	03 04 05 06 07 08 10 12 13 15 16	eu	hol-cos
<i>Tegoribates latirostris</i> (C.L. KOCH, 1844)	Tegoribatidae	07S 13	hy pr	pal
<i>Trhypochthoniellus longisetus</i> (BERLESE, 1904) f. <i>longiseta</i>	Trhypochthoniidae	15	aq hy mu ty	hol-cos
<i>Trhypochthonius cladonicolus</i> (WILLMANN, 1919)	Trhypochthoniidae	10I	pr xe mu li ty al	pal
<i>Trhypochthonius tectorum</i> (BERLESE, 1896)	Trhypochthoniidae	05 07 08 09 10 11 12 14 15	mu pr xe al	hol-cos
<i>Tricheremaeus travei</i> MIKO, 1993	Eremaeidae	08	ar?	ceur
<i>Trichoribates berlesei</i> JACOT, 1929 *	Ceratozetidae	04 05 06 07 08 09 10 11 12 13 14 15 16	eu (ar mu pr xe)	hol
<i>Trichoribates incisellus</i> (KRAMER, 1897) (<i>Latilamellobates</i>)	Ceratozetidae	05S 07 08 10 12 16	eu (pr xe)	hol
<i>Trichoribates monticola</i> (TRÄGARDH, 1902)	Ceratozetidae	12	pr si al	eur
<i>Trichoribates novus</i> (SELLNICK, 1929)	Ceratozetidae	07S 08 09 10 12 13	hy pr ty	hol
<i>Trichoribates scilierensis</i> BAYARTOGTOKH & SCHATZ, 2008	Ceratozetidae	07 09 10 13	al	alpin end

SPECIES	FAMILY		RECORDED ON EVENT											HABITAT PREFERENCES	GENERAL DISTRIBUTION
<i>Tritegeus bisulcatus</i> GRANDJEAN, 1953	Compactozetidae		06S 07 08 09 12 13 14 15 16											si	eur (south)
<i>Tyrphonothrus glaber</i> (MICHAEL, 1888)	Malaconothridae		05I											aq hy pr ty	hol
<i>Tyrphonothrus maior</i> (BERLESE, 1910)	Malaconothridae		04S 10 12 14 15											aq mu si ty hy	hol-cos
<i>Unduloribates undulatus</i> (BERLESE, 1914)	Unduloribatidae		07											pr al	pal (south)
<i>Verachthonius laticeps</i> (STRENZKE, 1951)	Brachychthoniidae		08I 11											si xe	pal (south)
<i>Xenillus salamoni</i> MAHUNKA, 1996	Liacaridae		11I											si xe	ceur
<i>Xenillus tegeocranus</i> (HERMANN, 1804)	Liacaridae		03 04 05 06 07 09 10 14 16											eu (si xe)	pal (south)
<i>Zetomimus furcatus</i> (WARBURTON & PEARCE, 1905)	Zetomimidae		05S 15											hy si ty	pal
<i>Zetorchestes flabrarius</i> GRANDJEAN, 1951	Zetorchestidae		11											mu si xe	cseur (south)
<i>Zygoribatula excavata</i> BERLESE, 1916	Oribatulidae		15											pr xe	pal (south)
<i>Zygoribatula exilis</i> (NICOLET, 1855)	Oribatulidae		03 04 05 07 09 10 12 13 15 16											eu (ar mu xe)	hol
<i>Zygoribatula frisiae</i> (OUDEMANS, 1900)	Oribatulidae		05S 08 09 10 11											ar li mu si xe	hol
biodiversity event	03	04	05	06	07	08	09	10	11	12	13	14	15	16	total
species total	23	41	72	92	91	128	121	133	91	126	112	94	129	137	311
new records for Italy	1	0	6	2	10	6	3	5	2	3	3	0	0	1	41
new records for South Tyrol (incl. new for Italy)	6	11	26	25	23	11	13	8	5	6	4	1	5	2	144

Only two species were found on all 14 events (*Phthiracarus laevigatus*, *Scheloribates laevigatus*), four species during 13 events (*Atropacarus striculus*, *Chamobates pusillus*, *Suctobelbella subcornigera*, *Trichoribates berlesei*). On the other hand, 37 spp. were found during two events and 88 spp. only once. The highest number of exclusive species was recorded in #09 Valle di Tures. Also #11 Val Monastero and #16 Val Mazia have high numbers of species restricted to these areas.

Taxonomic update

While working on this compilation some synonymies and nomenclatorial unclarities were detected which differ from the hitherto published data:

- *Anachipteria alpina* (SCHWEIZER, 1922) nec HALBERT, 1915, is a homonym, replaced by *A. shtanchaevae* SUBÍAS, 2009
- *Chamobates borealis* (TRÄGÅRDH, 1902) considered as synonym of *Ch. pusillus* (BERLESE, 1895), according to MAHUNKA & MAHUNKA-PAPP (1995)
- *Chamobates spinosus* SELLNICK, 1928 *sensu auct.* considered as synonym of *Ch. rastratus* (HULL, 1914) according to MAHUNKA & MAHUNKA-PAPP (2004)
- *Coronoquadroppia gumista* (GORDEEVA & TARBA, 1990): records in the Alps (#09) considered as synonym of *C. monstrosa* (HAMMER, 1979) according to WEIGMANN & SCHATZ (2015)
- *Coronoquadroppia parallela* OHKUBO, 1995: record in the Alps (#10) considered as synonym of *C. monstrosa* (HAMMER, 1979)
- *Nothrus biciliatus* C. L. KOCH, 1841 *sensu* WILLMANN (1931) considered as synonym of *N. anauniensis* CANESTRINI & FANZAGO, 1876 according to WEIGMANN (2006)
- *Trichoribates trimaculatus* (C. L. KOCH, 1835) *sensu* SELLNICK (1928) considered as unavailable name, replaced by *Trichoribates berlesei* JACOT, 1929 according to WEIGMANN & NORTON (2009)
- *Zygoribatula exarata* BERLESE, 1916 *lapsus* in HÖPPERGER & SCHATZ (2013) is *Zygoribatula excavata* BERLESE, 1916

New records

Overall 41 species (including 2 unidentified species) were first recorded for Italy. The highest number of new records for Italy was found in #07 Sciliar – Sassopiatto in the Dolomites. Additional 103 species were not found in South Tyrol before the respective event which gives a total of 144 new records for South Tyrol. The majority of new records were found in the families Oppiidae (20 spp.), Ceratozetidae (12 spp.), Suctobelbidae (9 spp.), Brachychthoniidae, Damaeidae, Scheloribatidae (7 spp. each). A possible explanation for the prominence of these families could be that most of these families (except Oppiidae) contain Central European or alpine species which do not occur in the warmer parts of Italy.

General distribution

Fig. 3 shows the general distribution of the species encountered in all biodiversity events. Most species have a wide distribution. Species with palaeartic (87 spp., 28%) and holarctic distribution (94 spp., 30%) provide more than half of all species. Above the Holarctic region („(semi)cosmopolitan“: in common also with the Neotropical region or New Zealand) 58 spp. (18,6%) are known. A total of 70 species (22,5%) are reported from Europe, among them 14 spp. (4,5%) are restricted to central Europe, and 34 spp. (10,9%) to central-south Europe. Two species (*Kunstitidamaeus tecticola*, *Trichoribates scilierensis*) can be considered as alpine endemic. Two species could not be identified at species level (*Eupelops* sp., *Tectocepheus* sp.), possibly they are new for science. More than 20% of all species can be considered as „southern species“. Their distributional focus lies in south and southeast Europe, around the Mediterranean Sea or around the Black and Caspian Sea. Some of them occur also in the southern Palaeartic region in dry grasslands, steppes or semideserts (SCHUSTER 1959, TARMAN 1977, BAYARTOGTOKH et al. 2011). In South Tyrol this species group was also mainly encountered in dry grassland (see below).

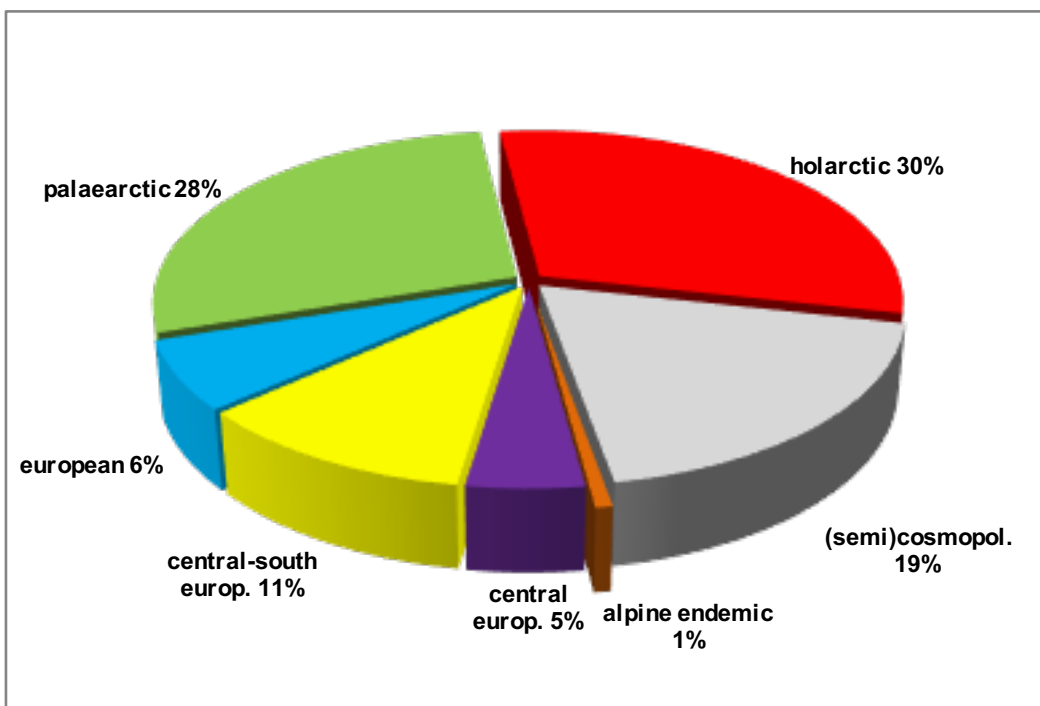


Fig. 3: Oribatid mites (Acari: Oribatida) from the biodiversity days in South Tyrol (Italy). General distribution of the species (309 spp. = 100%, 2 undetermined species omitted)

Habitats

On most biodiversity events different habitat types in a defined area were offered. Additional samples were taken from lichens on tree bark and in a pool as a sample of submerged algae. Habitats with oribatid mite collections are listed in Table 3. This table lists also the species number found in each habitat. The habitats can be clustered roughly into 12 habitat types which belong to 3 larger units (arid, humid habitats, montane forests and subalpine habitats) (Table 4).

Table 3: Biodiversity days („GEO-Tage der Artenvielfalt“) in South Tyrol (Prov. Bolzano, Italy). Sites (habitats) collected, altitude, total number of oribatid species on each biodiversity day and number of oribatid species in each site.

NR	YEAR	LOCALITY	SPECIES TOTAL	SITE (HABITAT)	m a.s.l.	SPECIES HABITAT
03	2003	Talfer bei Bozen / Talvera a Bolzano	23	riparian forest	270	23
04	2004	St. Konstantin - Völs am Schlern / San Constantino - Fié allo Sciliar	41	bog	900	38
				dry grassland	910	3
05	2005	Natz - Schabs / Naz - Sciaves	72	bog	835	33
				dry grassland	860	49
06	2006	Rosengarten / Catinaccio	92	lower montane forest	1500	27
				higher montane forest	1910	50
				subalpine meadow	1910	8
				riparian forest	1880	46
				dry grassland	1890	17
				wet meadow	1460	37
07	2007	Plattkofel / Sassopiatto	91	wet meadow	2050	26
				montane pine forest	2060	46
				bark on pine trees	2060	22
				scree slope	2200	34
				subalpine meadow	2300	22
08	2008	Reschenpass / Passo di Resia	128	bog	1910	36
				larch forest pasture	1830	50
				subalpine meadow	2060	52
				dry grassland	1550	67
09	2009	Ahrntal - Bruneck / Valle di Tures – Brunico	121	riparian forest	820	74
				riparian pool	830	24
				montane spruce forest	900	39
				scree slope	920	28
				cold air cave (montane forest)	870	29
				wet meadow	830	37
10	2010	Pfelders / Val di Plan	133	subalpine meadow	1890	14
				montane forest	1820	77
				bog	1775	20
				dry grassland	1772	20
				limestone scree slope	1880	67
11	2011	Münstertal / Val Monastero	91	dry grassland	1500	25
				larch forest pasture	1600	50
				mixed forest on scree slope	1200	71
12	2012	Ridnauntal / Val Ridanna	126	dwarf shrub heath	1710	77
				montane forest	1510	67
				dry grassland, rocky steppe	1600	38
				dry grassland	1450	32
				bark on trees, lichens	1500-1600	18
				bog	1700	4
				submerged habitat	1507	24
13	2013	Wengen / La Valle	112	larch forest pasture	1916-2045	45
				bark on trees	1947	6
				Rhododendretum	2036	64
				wet meadow, Nardetum	2028-2034	16
				subalpine meadow	1834-1836	16
				limestone scree slope	2034	51
14	2014	Unsere Liebe Frau im Walde - St.Felix / Senale - San Felice	94	montane spruce forest	1370 - 1430	26
				bog	1450 - 1610	36
				larch forest pasture	1530	66

NR	YEAR	LOCALITY	SPECIES TOTAL	SITE (HABITAT)	m a.s.l.	SPECIES HABITAT
15	2015	Sarntal / Val Sarentino	129	subalpine meadow	1617 - 1637	68
				subalpine needle forest	1587	63
				montane forest	1484-1565	70
				bog „Gisser Au“	1296	34
16	2016	Matschertal / Val Mazia	137	dry grassland	1850 -1870	45
				larch forest pasture	1845 -1870	79
				lichens on tree	1845	16
				bog	1645	43
				montane forest	1650	70
				Rhododendretum	1650	62

Table 4: Biodiversity days („GEO-Tage der Artenvielfalt“) in South Tyrol (Prov. Bolzano, Italy). Habitats grouped. Number of sites from different biodiversity events are indicated. The number of oribatid species refer to all respective habitats.

HABITAT TYPE	SITES	m a.s.l.	ORIBATID SPECIES	COMMENTS
Arid habitats:				
dry grassland colline	2	860 - 910	51	
dry grassland montane	7	1450 - 1890	126	incl rocky steppes
larch forest pastures	5	1530 - 2045	164	open larch forests
limestone scree slopes	5	920 - 2034	155	incl a downy oak forest on a scree slope (#11)
Humid habitats:				
riparian forests	3	270 - 830	96	incl a riparian pool (#09)
wet meadow colline	1	830	37	moist pasture (#09)
wet meadows montane	3	1460 - 2050	63	moist meadows until swampy meadow
bogs	8	835 - 1775	123	
Montane forests and subalpine habitats:				
montane forests	13	870 - 1910	189	incl riparian forest in the montane zone (#06), submerged habitat in a pool (#12), environment of a cold air pool cave (#09)
subalpine meadows	6	1617 - 2300	116	incl subalpine pastures
<i>Rhododendron</i> bushes and dwarf shrub heath	3	1650 - 2036	126	
bark on trees, lichens	4	1500 - 2060	43	

Arid habitats

The colline dry grassland (#04, #05, 860–910 m a.s.l.) has a slightly different species composition than the montane dry grassland which reaches 1900 m a.s.l. (Foto 1). Collections in dry grassland were mainly carried out in the Vinschgau and side valleys (#08, #10, #11, #12, #16) but also in the Dolomites (#06). More than a third of the species in these areas are known to be xerophilous, among them *Ceratozetes minutissimus*, *Micozetorchestes emeryi* (both species restricted to these sites), *Eueremaeus valkanovi*, *Licnodamaeus pulcherrimus*, *Passalozetes* spp., *Poecilochthonius italicus*, *Ramusella mihelcici*, *Scutovertex* spp., *Verachthonius laticeps*.

The species composition of the larch forests can be compared in some respects with the montane dry grassland. These scattered forests contain agriculturally used meadows and pastures, frequently with arid character (Foto 2). Some noteworthy oribatid species recorded from this habitat are *Camisia biverrucata* (with arboricolous juvenile stages), *Haplozetes vindobonensis*, *Micreremus brevipes*, *Peloribates longipilosus*, *Phauloppia nemoralis*, *Ramusella insculpta*, *Suctobelbella arcana*, *Xenillus salamoni*. The rare species *Tricheremaeus travei* was found only in this habitat in #08 (SCHATZ 2009).

Scree slopes are a particularly remarkable habitat type with extreme microclimatic conditions, due to sun exposed rocks, lack of water and little soil formation. The surface of the rocks is sometimes covered with lichens or dry moss (Fotos 3, 4). Specialised, frequently xerophilous or alpine oribatid species were found in this harsh environment, e.g. *Eupelops variatus*, *Kartoeremaeus areolatus*, *Lamellovertex caelatus*, *Licnodamaeus pulcherrimus*, *Mycobates alpinus*, *Phauloppia pilosa*, *Pseudoppia mediocris*, *Tectocephus* sp., *Trichoribates scilierensis*. In Val Monastero (#11) a mixed forest on a scree slope with *Quercus pubescens*, *Larix decidua*, *Betula pendula* and other trees and bushes (Foto 5) represents an intermediate stage to mature soils with slightly advanced colonisation by oribatid species (71 spp. vs. 28–51 spp. in other scree slopes). The undescribed species *Tectocephus* sp. was detected for the first time on a large scree slope on the Sasso Piatto / Plattkofel (#07, Foto 6) and subsequently in different montane areas. Additional findings suggest that this species might be endemic to higher altitudes of the Central Alps.

Humid habitats

Most collections in riparian forests (Foto 7) were carried out at lower altitudes (an exception of the riparian forest in #06 at 1800 m a.s.l. contains a species composition of the surrounding montane forests and was included in that habitat type). These forests have humid soil, are sometimes or regularly inundated and offer appropriate conditions for species with different habitat requirements (47% eurytopic, 76% silvicolous, 26% xerophilous, 24% hygrophilous¹). The edge of a pool in the riparian forest of #09 near Brunico (Foto 8) shows the same species composition as the adjacent forest with mainly silvicolous or hygrophilous species.

Colline (#09, 830 m a.s.l.) and montane moist and wet meadows (1460–2050 m a.s.l.) have a species similarity of 40%. These meadows (Foto 9) consist of a mosaic of dry and moist conditions in small space, frequently traversed by rivulets, and the oribatid species composition is accordingly diverse. Hygrophilous (44%) and xerophilous (10%) species occur in these habitats. Some remarkable findings are the hygrophilous species *Mainothrus badius*, *Punctoribates sellnicki*, *Tegoribates latirostris*, or the xerophilous species *Synchthonius elegans*.

The marshes and peat bogs (Fotos 10, 11, 12) are mainly inhabited and dominated by hygrophilous or even aquatic species as *Astegistes pilosus*, *Eupelops hygrophilus*, *E. strenzkei*, *Galumna obvia*, *Hydrozetes lacustris*, *Limnozetes ciliatus*, *Malaconothrus monodactylus*, *Melanozetes meridianus*, *Nanhermannia comitalis*, *N. nana*, *N. sellnicki*, *Nothrus palustris*, *N. pratensis*, *Oromurcia sudetica*, *Schelorbates (Topobates) circumcarinatus*, *Trhypochthoniellus longisetus*, *Tyrphonothrus glaber*, *T. maior*, *Zetomimus furcatus*, but even there several species with other habitat requirements can be found (54% hygrophilous, 27% tyrphophilous, 23% xerophilous, 67% silvicolous).

A sample of submerged algae and moss in the small pond „Hilbenlacke“ (#12, Val Ridanna, 1507 m a.s.l.) revealed 24 oribatid species. Beside four truly aquatic species (*Hydrozetes lacustris*, *Limnozetes ciliatus*, *L. rugosus*, *Tyrphonothrus maior*) mainly other hygrophilous or tyrphophilous (45%), but also silvicolous (62%) and arboricolous species (25%) were found. Apparently the latter species had fallen into the pond from the trees of the surrounding montane forest.

Montane forests and subalpine habitats

Montane forests (Fotos 13, 14) were the most frequently sampled habitats during all biodiversity events (13), and reach the highest number of species (189) among all habitat types. They harbour species with differing ecological requirements. Beside numerous silvicolous (69%), arboricolous (20%) and xerophilous species (28%, among them *Arthrodamia femoratus*, *Eremaeus hepaticus*, *Ophidiotrichus tectus*, *Pseudoppia mediocris*, *Zygoribatula excavata*), hygrophilous (30%, among them *Belba corynopus*,

¹ It should be noted that many species have more habitat requirements and appear in different categories (see Table 2). Regarding the use of the terms „xerophilous“ versus „xerobiontic“ see HÖPPERGER & SCHATZ (2013).

Berniniella conjuncta, *Sellnickochthonius zelawaiensis*, *Suctobelbella hamata*, *S. longirostris*, *S. perforata*, *S. singularis*) or alpine species (14%, among them *Eulohmannia ribagai*, *Mycobates carli*, *Niphocephus nivalis*, *Steganacarus herculeanus*, *Trhypochthonius cladonicolus*) were found.

A sample of organic litter around a cold air cave near Gais in Val di Tures (#09, 870 m a.s.l., Foto 15) contains a species composition similar to higher montane forests, despite the low altitude. Cold air pools or ice caves are caused by down-slope, cold air streams in a scree slope during the warmer season. The out-flowing air at the lower edge of the talus is strongly cooled down compared with the temperature in the environment, forming extrazonal permafrost. As a result, the vegetation around the caves at the base of the talus contains high alpine elements (BURGA et al. 2005, PUNZ et al. 2005, BRUNNER et al. 2012). This pattern appears also among the oribatid mites: *Fuscozetes intermedius*, *Niphocephus nivalis*, *Oribatella longispina*, *Oribatula interrupta*, *Trichoribates scilierensis* occur predominantly in the alpine belt.

Subalpine meadows and pastures (Fotos 16, 17) were sampled up to 2300 m a.s.l. (#07 Sasso Piatto / Plattkofel). The percentage of „alpine species“ increases slightly (17%), also hygrophilous (28%) and xerophilous species (27%) are represented in considerable numbers as well as muscicolous (31%) and lichenicolous species (10%). Some remarkable findings in this habitat are *Cepheus tuberculatus*, *Epidamaeus tatricus*, *Euphthiracarus monodactylus*, *Kartoeremaeus areolatus*, *Liochthonius simplex*, *Melanozetes interruptus*, *Mycobates bicornis*, *Niphocephus nivalis*, *Oppiella maritima*, *O. splendens*, *Pantelozetes alpestris*.

Dwarf shrub heaths and *Rhododendron* bushes (Foto 18) are mixed into the montane forests but reach also above the timber line. The species composition resembles the montane forests (60%), and the number of silvicolous species (79%) in this habitat is noteworthy. The organic debris and humus layer under the bushes is deeper than in the meadows, sometimes even deeper than in the forests.

Special samples were taken from arboricolous lichens and bark from trees, mostly at about 1,5 m above ground. They contain mainly specialized arboricolous, corticolous and lichenicolous species as *Camisia horrida*, *Cymbaeremaeus cymba*, *Dorycranosus curtispilis*, *Micreremus brevipes*, *Mycobates parmeliae*, *Phauloppia lucorum*, *Ph. nemoralis*, *Scheloribates ascendens*.

Conclusions

This compilation is intended as an overview of all results on oribatid mites of the biodiversity days in South Tyrol (2003 – 2016). Records from the respective events were already published, some nomenclatorial and taxonomical updates could be clarified. It is shown that the collections on the biodiversity days, which were initially projected as one-day events, contain considerably more information than expected. Although the different sites were selected based on their attractiveness and diverse habitat structure, the results demonstrate some patterns regarding species composition and diversity. The number of new records for South Tyrol is remarkable. It should be kept in mind that some habitats were not or rarely investigated yet, especially the higher alpine areas which constitute a large part of the country. Future collections are necessary to add to the picture of oribatid mite diversity in South Tyrol.

Zusammenfassung

Hornmilben (Acari, Oribatida) von den „Tagen der Artenvielfalt“ in Südtirol (Prov. Bozen, Italien)

Diese Arbeit gibt einen Überblick über die Oribatidenaufsammlungen der letzten 14 Veranstaltungen „Tage der Artenvielfalt“ in verschiedenen Regionen Südtirols zwischen 2003 – 2016. Die Aufsammlungen erstreckten sich von 270 m bis 2300 m ü.M. in 60 Flächen in verschiedenen Lebensräumen, wie Auwälder, Moore, Trockenrasen, Felsstürze, Bergwälder, Bergwiesen und -weiden und Zwergstrauchheiden. Auch Rinde und Flechten von Bäumen sowie Moos und Algen aus einem Tümpel wurden besammelt. Insgesamt wurden 311 Oribatidenarten aus 60 Familien identifiziert, darunter 144 Neumeldungen für Südtirol und 41 für Italien. Zwei Arten weisen ein alpin-endemisches Verbreitungsmuster auf, die meisten der anderen Arten sind weit verbreitet. Mehr als 60 Arten haben ihr Verbreitungszentrum in Südeuropa bzw. in der südlichen Paläarktis. Die einzelnen Lebensräume werden in drei Gruppen zusammengefasst: „trockene, feuchte Lebensräume sowie Bergwälder und subalpine Lebensräume“. Ihre jeweiligen Artenzusammensetzungen werden besprochen. Die höchsten Artenzahlen wurden in den Bergwäldern sowie in den Lärchenweiden gefunden.

Riassunto

Oribatidi (Acari, Oribatida) delle „giornate della biodiversità“ in Alto Adige (Prov. di Bolzano, Italia)

Viene fornita una panoramica della fauna di oribatidi raccolti durante le ultime 14 „giornate della biodiversità“ in varie regioni dell' Alto Adige dal 2003 al 2016. I rilievi erano stati effettuati in 60 siti con vari habitat, specialmente boschi ripariali, paludi, prati aridi, ghiaioni, boschi montani, pascoli subalpini e fasce a arbusti nani, da 270 m a 2300 m di altitudine. Inoltre sono stati esaminati alcuni microhabitat come licheni su cortecce e alghe sommerse. In totale sono state censite 311 specie di 60 famiglie, fra quali 144 nuove segnalazioni per l'Alto Adige e 41 per l'Italia. Due specie sono considerate endemiche delle Alpi, mentre la maggioranza delle specie mostra una distribuzione ampia. Più di 60 specie possiedono una distribuzione prevalentemente mediterranea o paleartica meridionale. Gli habitat vengono riuniti in tre gruppi: aridi, umidi e di boschi montani compresi habitat subalpini; vengono discusse le rispettive associazioni di specie. La diversità massima è stata rilevata nei boschi montani e nei pascoli con larici.

Acknowledgements

Thanks to the South Tyrol Museum of Natural History, the Department for Nature, Landscape and Natural Environment of the Autonomous Province Bolzano – South Tyrol for the organisation of the biodiversity days and the collection permits, and the Institutes of Zoology and Ecology, Leopold-Franzens University of Innsbruck, Austria for logistical support. Thanks also to the respective communities and organisations for the phantastic catering, („marend“) at the end of each event and to all colleagues and friends who helped me with support by collecting the material. Special thanks to Barbara M. Fischer who contributed a lot of energy and knowledge into the different events and resulting publications, and to my wife Irene Schatz for her continuous support of my work.

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Foto 1: Dry montane grassland in Val Mazia, 1870 m a.s.l. (25.06.2016, Foto H. Schatz)



Foto 2: Larch pasture Val Mazia, 1860 m a.s.l. (25.06.2016, Foto I. Schatz)

Foto 3: Scree slope in Valle di Tures, 920 m a.s.l. (27.06.2009, Foto I. Schatz)



Foto 4: Scree slope in Valle di Tures, 920 m a.s.l. (27.06.2009, Foto I. Schatz)

Foto 5: mixed forest on a scree slope, Val Monastero, 1200 m a.s.l. (25.06.2011, Foto I. Schatz)



Foto 6: Scree slope on Sasso Piatto/Plattkofel, Dolomites. 2200 m a.s.l. In this habitat the undescribed species *Tectocephus* sp. was discovered for the first time, (10.08.2007, Foto I. Schatz)



Foto 7: Riparian forest on River Aurina near Brunico. 820 m a.s.l. (27.06.2009, Foto I. Schatz)



Foto 8: Pool in riparian forest on River Aurina near Brunico. 830 m a.s.l. (27.06.2009, Foto I. Schatz)



Foto 9: Wet meadow, Sciliar, Sasso Piatto, 2050 m a.s.l. (30.06.2007, Foto I. Schatz)



Foto 10: Bog and rush belt at Lago di Tret, Senale - San Felice 1605 m a.s.l. (28.06.2014, Foto I. Schatz)



Foto 11: Bog at Lago di Tret, Senale - San Felice 1605 m a.s.l. (28.06.2014, Foto I. Schatz)



Foto 12: Bog at „Gisser Au“, Val Sarentino, 1296 m a.s.l. (28.06.2015, Foto I. Schatz)



Foto 13: Montane forest at Riobianco, Val Sarentino, 1590 m a.s.l. (27.06.2015, Foto H. Schatz)



Foto 14: Montane forest at Passo di Resia, 1830 m a.s.l. (28.06.2008, Foto I. Schatz)

Foto 15: Cold air cave near Gais
in Val di Tures, 870 m a.s.l.
(27.06.2009, Foto I. Schatz)



Foto 16: Subalpine meadow,
Riobianco, Val Sarentino,
1630 m a.s.l.
(27.06.2015, Foto H. Schatz)



Foto 17: Subalpine meadow
in Val di Plan, 1890 m a.s.l.
(26.06.2010, Foto H. Schatz)



Foto 18: *Rhododendron* bushes
in montane forest, Val di Plan,
1820 m a.s.l.
(26.06.2010, Foto H. Schatz)

