

NEW MOSSMITES FROM THE NETHERLANDS (ACARI: ORIBATIDA)

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Mossmites are small micro-arthropods which live in the soil. In a number of ongoing Alterra-projects and checks of the Plant Disease Control Unit nine mossmite species have been recorded which were not yet included in the recently published Dutch checklist, nor in the supplements. The total number of mossmite species in the Netherlands is now 336. More species are to be expected in underexplored areas and habitats, some of which are to be investigated in the near future.

INTRODUCTION

In ongoing projects of Alterra and regular checks of the Plant Disease Control Unit in the Netherlands nine new mossmite species (Acari, Oribatida) have been discovered. These species were not included in the Dutch checklist (Siepel et al. 2009), nor in the supplement (Siepel & Dimmers 2010). Four new species have been found during a project on restoration of Dutch nutrient-poor grassland slopes (containing a gradient from acid to calcareous grasslands) (Smits 2010, Smits et al. 2010a, b, Van Noordwijk et al. 2012). Two others were discovered when reexamining the older data on the comparison of old forest locations with hedgerows (Siepel in prep.). One species has been found in Dutch public greens (data Vierbergen)

and at a heathland (military training site); at the latter site together with the eighth new species. Finally, at two grassland locations on a sea clay soil we found the ninth new species, which must have been overlooked before because it was not included in the identification keys used in the Netherlands. The total number of species for the Dutch fauna is now 336 (318 in the original checklist and 18 in the later supplements, including this one).

NEW SPECIES

Adelphacarus sellnicki

Sampled from twigs with leaves in the province of Zuid-Holland by Wietse den Hartog for a NVWA-project focusing on Phytoseiidae. *Adelphacarus*



Figure 1. *Rhinoppia epilata*, found at the Schiepersberg (Bemelerberg-complex, Limburg), length 300 µm. Photo Wim Dimmers.

Figuur 1. *Rhinoppia epilata*, gevonden op de Schiepersberg (Bemelerberg-complex, Limburg), lengte 300 µm.

Foto Wim Dimmers.



Figure 2. Habitat of *Nothrus borussicus*, *Microzetorches emeryi*, *Rhinoppia epilata* and *Scutovertex alpinus*, a slope of a calcareous grassland at the Bemelerberg (Limburg). Photo Nina Smits.
 Figuur 2. Biotoop van *Nothrus borussicus*, *Microzetorches emeryi*, *Rhinoppia epilata* en *Scutovertex alpinus*, een helling van het kalkgrasland van de Bemelerberg (Limburg). Foto Nina Smits.

sellnicki was found on cornel (*Cornus*) on 27.IX.2010, Bleiswijk, 52°00'00,31"N 04°32'35,74"E; 1 specimen, nr. 4992510, on hawthorn (*Crataegus*) on 28.IX.2010 Pijnacker, 52°01'28,83"N 04°25'23,90"E; 1 specimen, nr. 5431598, on *Crataegus* on 28.IX.2010, Berkel & Rodenrijs, 52°00'45,44"N 04°29'04,24"E; 1 specimen, nr. 5431571 on *Prunus* on 4.X.2010, Kwintsheul, 51°59'52,16"N 04°15'18,54"E, 2 specimens.

A sixth specimen was sampled from a butt at a military training site Leusderheide, Leusden, province of Utrecht, 52°07'11,86"N 05°21'06,78"E on 4.XI.2010. The butt has been renewed recently. No vegetation was present, just bare white sand, possibly from another location.

Nothrus borussicus

The species has been confused regularly with other *Nothrus* species and older records appeared to be misidentified. Two specimen have been collected in one sample at the Bemelerberg (Bemelen, province of Limburg) (fig. 2), site: Bemelerberg-midden-2, 50°51'03,62"N 05°46'07,05"E on 2.VI.2010 in the topsoil of a matgrass sward grassland (pH H₂O 5,5). Although nutrient-poor, this vegetation is known to contain relatively high ammonium levels, due to repressed nitrification activity (the process to convert ammonium into nitrate). Ammonium is known to have negative effects on the growth of the characteristic vegetation.

Microzetorches emeryi

Both species and genus are new for the Netherlands. *Microzetorches* belongs to the family Zetorchestidae with one other representative in the Netherlands (*Zetorchestes flabarius* Grandjean, 1951). The species in this family are easy recognisable by their jump legs. *Microzetorches emeryi* has been collected in two samples and three specimens at Cadier en Keer, province of Limburg, site: Schiepersberg boven-3, (2 specimens), 50°49'54,64"N 05°46'42,40"E and site: Schiepersberg boven-4, (1 specimen), 50°49'53,82"N 05°46'43,62"E. Both samples come from the topsoil of an acid grassland (both pH H₂O 4.7) and were collected on 2.VI.2010.

Carabodes tenuis

Two specimens have been collected from two different samples at the same locality Leusderheide, military training site, Leusden, province of Utrecht, on 4.XI.2010. One specimen has been collected from a butt (52°07'10,95"N 05°21'08,88"E) and the other one from the topsoil just in front of a butt (52°07'09,37"N 05°21'16,76"E). The vegetation of the butt consisted of mosses and heather *Calluna vulgaris*, the strip was covered with mosses, heather and purple moor grass *Molinia caerulea*.

Berniniella conjuncta

This species was found during a re-examination of older samples from Dutch hedgerows (especially those from a camp landscape, i.e. a situation where the hedgerows are left-over woodland and the soil may have not been disturbed ever). One specimen of *B. conjuncta* has been found in a sample from site Stroe-2, province of Gelderland, 52°10'56,89"N 05°41'42,58"E. The sample was taken from the topsoil, moss and litter on 25.IX.1997. The hedgerow is flanked by non-permanent grassland and arable land with maize, both intensively used and heavily fertilized.

Ramusella elliptica

Due to the absence of this species in earlier identification keys it has probably been overlooked before. In a sampling in the national monitoring scheme for soil quality we found this species in 2010 at two localities: Britswerd, province of Friesland, 53°06'20,57"N 05°40'14,25"E on 19.IV.2010 (5 specimens) and Beemster, province of Noord-Holland, 52°31'55,33"N 04°55'27,50"E on 22.IV.2010 (9 specimens). Both samples were taken from the topsoil of a grassland on sea clay soil. Both grasslands had an organic cultivation. As *R. elliptica* is mentioned in Weigmann (2006), but not included in the key, prof. Weigmann kindly confirmed the identity of our specimens.

Rhinoppia epilata

One specimen (fig. 1) has been sampled from soil meant for restorative inoculation of calcareous grasslands. The sample was taken from a well-developed calcareous grassland topsoil at Cadier en Keer, Schiepersberg, province of Limburg, 50°49'53,99"N 05°46'41,88"E, on 22.XI.2011.

Scutovertex alpinus

Several specimens have been collected from three well-developed calcareous grassland sites all in the province of Limburg on 2.VI.2010: Bemelen, Bemelerberg (pH H₂O 8.1), 50°51'02,71"N 05°46'07,24"E (3 specimens), Bemelen, Het Hoefijzer (pH H₂O 8.6) 50°50'57,53"N - 05°46'28,41"E (5 specimens) and Cadier en Keer, Schiepersberg,

(pH H₂O 8.4), 50°49'51,98"N 05°46'43,65"E (2 specimens).

Ceratozetes minimus

Re-examination of older data of the old forest locations project revealed one specimen of *C. minimus*, sampled at Ugchelen, province of Gelderland, 52°09'51,10"N 05°53'53,45"E on 3.V.1994.

Analysis of this soil fauna has been published before (Siepel 1996), wherein the old forest locations appeared to have a rather diverse fauna, comprising a complete set of life-history tactics and feeding guilds among the microarthropods, contrary to most sites where specific life-history tactics or feeding guilds are filtered out due to environmental conditions. The site is a beech forest with some oaks, having a rather thick litter layer of fragmented and humic substances (ca. 8 cm.) and hardly any herb layer.

ADDITIONS TO DUTCH ORIBATIDA CHECKLIST

ADELPHACARIDAE

Adelphacarus Grandjean, 1932
2a *sellnicki* Grandjean, 1952

NOTHRIDAE

Nothrus Koch 1836
77a *borussicus* Sellnick, 1928
biciliatus; Trägårdh 1904 [misidentification]
silvestris; Jørgensen 1934 [misidentification]

ZETORCHESTIDAE

Microzetorchestes Balogh, 1943
Diorchestes Grandjean, 1951
132a *emeryi* (Coggi, 1898)
Zetorchestes consanguineus Oudemans, 1902

CARABODIDAE

Carabodes Koch, 1835
156a *enuis* Forsslund, 1953

OPPIIDAE

Berniniella Balogh, 1983

- 170a *conjuncta* (Strenzke, 1951)
sigma conjuncta Strenzke, 1951
Ramusella Hammer, 1962
 176a *elliptica* (Berlese, 1908)
abarkouhiensis Bayartogtokh & Akrami,
 2000
Insculptoppia lamellata Perez-Inigo jr., 1991
Rhinoppia Balogh 1983
 189a *epilata* Miko, 2006 (in Weigmann, 2006)

SCUTOVERTICIDAE

- Scutovertex* Michael, 1879
 238a *alpinus* Willmann, 1953

CERATOZETIDAE

- Ceratozetes* Berlese, 1908
 274a *minimus* Sellnick, 1928

DISCUSSION

Given the sample sites *A. sellnicki* must be rather drought resistant and it feeds probably on lichens, which were abundantly present on all sampled trees. In the United Kingdom, in a public herbarium *A. sellnicki* was observed to damage dry specimens of lichens (Orange 2006). It is the first representative of its family (Adelphacaridae) in the Netherlands.

Species such as *Microzetorchestes emeryi*, *Scutovertex alpinus* and *Rhinoppia epilata* have a more southern distribution in Europe. Therefore it is not surprising to find these species in the warm chalk grasslands in Limburg in the south of our country. *Ramusella elliptica* may be a species bound to the west of the Netherlands, as both locations were on a sea clay soil. It has not been included in earlier identification keys from Germany (Willmann 1931, Sellnick 1928, 1960) and even in the newest (Weigmann 2006) it is not included in the key, but mentioned as a note in the species description of a congeneric species. An Atlantic (and Mediterranean) distribution may be the case here. Polderman (1974, 1977) and Polderman & De Vries (1978) did some extensive sampling during earlier decades on this

substrate, but some species may have been overlooked due to the imperfection of keys at the time. The other five species must have been overlooked due to under sampling, and many more are to be expected in the near future (Siepel 2010).

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SAMENVATTING

Nieuwe mosmijten uit Nederland (Acari: Oribatida)

Bemonsteringen van Zuid-Limburgse kalkgraslanden, zeekleigraslanden, openbaar groen en heidevelden leverden negen nieuwe soorten mosmijten op voor de Nederlandse fauna.

De totaalstand voor Nederland uit de checklist en eerdere aanvullingen bedraagt nu 336 soorten.

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