

Two new species of *Dorsipes* (Acari: Podapolipidae)
from *Pterostichus niger* (Schall.) (Coleoptera: Carabidae)
from Germany, including a key to *Dorsipes* species

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(With 7 figures)

Abstract

Two new species of podapolipid mites, *Dorsipes rackae* sp. n. and *D. nigeri* sp. n. are described, illustrated and compared with related species of *Dorsipes* in the *platysmae*-group. Both species are ectoparasites of *Pterostichus niger* (Schall.) (Carabidae) collected in Germany. Keys to twelve species of *Dorsipes* are provided.

Introduction

Mites in the family Podapolipidae (Acari: Tarsonemini) are highly specialized ecto- and endoparasites of the insect orders Blattaria, Orthoptera, Heteroptera, Hymenoptera and, especially, Coleoptera.

Four genera of podapolipid mites are exclusive parasites of carabid beetles: *Ovacarus* Stannard & Vaishampayan, 1971 in North America, *Regenpolipus* Husband, 1986 in Africa, *Eutarsopolipus* Berlese, 1913 world wide and *Dorsipes* Regenfuss, 1968 in Europe, Africa and North America. Adult male mites of these genera emerge directly from eggs. Larval females emerge from eggs, mate with males, disperse, and molt to the adult female stage. Female podapolipids which are parasites of carabid beetles have 3 pairs of legs while female podapolipids which are parasites of other insects may have 0, 1, 2, 3 or 4 pairs of legs.

Regenfuss (1968) erected the genus *Dorsipes* and described 7 species of *Dorsipes* from carabid beetles found in Germany. Husband and Rack (1991) added *D. evarthrusi* from Georgia, U.S.A. Husband (2000) added *D. teffii* and *D. auncinius* from Central Africa. Two new species, *D. tricuspидatus* and *D. opisthobius*, were mentioned by Regenfuss (1972), but he became ill and was unable to finish this work before his death in 1978. It is the purpose of this paper to describe two new *Dorsipes* species found by Hans Regenfuss under elytrae of *Pterostichus niger* in Germany, compare them with other *Dorsipes* species in the *platysmae*-group, and provide a key to *Dorsipes* species found in Europe, Africa and North America.

Methods and Materials

In 1985, Gisela Rack acquired the Regenfuss Collection of Podapolipidae for the Zoologisches Museum, Universität Hamburg, Germany (ZMH). Included in unknown material in the collection were slides labeled *Dorsipes tricuspidatus* and *D. opisthobius*. No description appears for these species and the names are invalid. These mites were measured and comparisons were made with type specimens of *D. platysmae* and other species in the *platysmae*-group of *Dorsipes*.

In addition to *Dorsipes* species in the Regenfuss Collection at the ZMH, we examined *Dorsipes cryptobius* Regenfuss, 1968 from *Pterostichus* sp. collected by S. Mahunka in Mecsek, Hungary in May 1968, *D. platysmae* Regenfuss, 1968 from *Pterostichus niger* in Forcula, Lombardy, Italy in July 1960 and *Dorsipes notopus* Regenfuss, 1968 from *Amara aulica* (Panz.) collected July 1920 in Valsutis, Switzerland, at 1253 meters.

Measurements were taken with the aid of a ZEISS compound microscope with an ocular micrometer. All measurements are in micrometers (μm). Setae that are no longer than the diameter of the acetabulum are listed as microsetae (m). The terminology used here follows Lindquist (1986). Often long setae are obscured, bent, broken or at an angle which makes measurement difficult. Setae are at least as long as indicated.

Systematics

Family Podapolipidae Ewing, 1922

Genus *Dorsipes* Regenfuss, 1968

DIAGNOSIS: The genus *Dorsipes* is characterized by: males with a dorsal genital capsule, 4 pairs of legs, dorsal 4th pair of legs and ambulacrum I with one claw; females with 3 pairs of legs, usually with short setae h_1 , with at most 1 μm femora II and III setae, 3-4 μm genu I setae and 0-3 μm genua II, III setae; larval females with leg setation as in adult females, long setae h_1 and shorter adjacent setae h_2 . Tibial and tarsal I solenidia usually present and long (5-12 μm).

Type species: *Dorsipes dorsipes* Regenfuss, 1968

Dorsipes rackae sp. n.
(Figs 1-4)

Dorsipes opisthobius: Regenfuss 1972 (p. 45, 50, 62: *nomen nudum*).

TYPE DATA: Holotype. Female, 10 March 1971. ZMH, Reg. No. A30/1985-538; collected from *Pterostichus niger* (Stall.) (Coleoptera: Carabidae) by H. Regenfuss at Ehrenstetten near Freiburg, Germany.

Paratypes. Allotype male (ZMH, Reg. No. A30/1985-298) and 2 larval female paratypes, same locality as holotype, collected 19 March 1971 and deposited with holotype. Adult female paratypes (27), same locality as holotype, collected between 20 January 1968 and 19 March 1971, deposited with the holotype.

ETYMOLOGY. The new species is named for Dr. Gisela Rack in tribute to her support in the quest to understand the mite family Podapolipidae.

DIAGNOSIS: Except for *D. cryptobius*, setae c_1 , c_2 , d , e and h_1 are shorter in adult female *D. rackae* sp. n. than in other species in the *platysmae*-group of *Dorsipes* (Table 2). Cheliceral stylets are longer than stylets of *D. nigeri* sp. n. (see below) and lack the hook present in stylets of *D. cryptobius*. Cheliceral stylets of larval females are shorter (36-41) than stylets of larval *D. platysmae* (48 μ m). Prodorsal setae v_2 are small but conspicuous in larval *D. rackae* sp. n. but not present in *D. platysmae*. More setae are recorded for tarsi I, II, III in *D. rackae* sp. n. (Table 1). Excellent preparations by Hans Regenfuss are responsible for revealing additional setae in this species.

DESCRIPTION: ADULT FEMALE (Figs 1, 2). G n a t h o s o m a length 63-71, width 68-74 (n= 7). Palp length 14-18; cheliceral stylet length 57-63, pharynx width 15-18, dorsal gnathosomal setae 24-31, ventral setae 12-20, distance between ventral setae 23-38. Stigmata small, weakly sclerotized, tracheae and atria evident.

I d i o s o m a. Length 303-530, width 240-365. Prodorsal plate length 90-111, setae v_1 6-10, v_2 vestigial (not visible in most specimens), sc_2 48-65. Distance between setae v_1 57-63; distance between bases of setae sc_2 and posterior margin of prodorsal plate 30-35. Plate C length 57-90; setae c_1 11-13, setae c_2 10-12. Plate D length 50-73, setae d 8-13, distance between setae d 162-175. Plate EF length 45-57, setae e 10-15; distance between setae e 94-119. Plate H length 30-39, width 35-74; setae h_1 3-5, distance between setae h_1 34-40.

Venter with apodemes 1 moderately developed, meeting sternal apodeme medially; apodemes 2 not extending to sternal apodeme. Coxal setae thin, $1a$ 9-11, $2a$ 8-11, $3a$ 6-11, $3b$ 8-10.

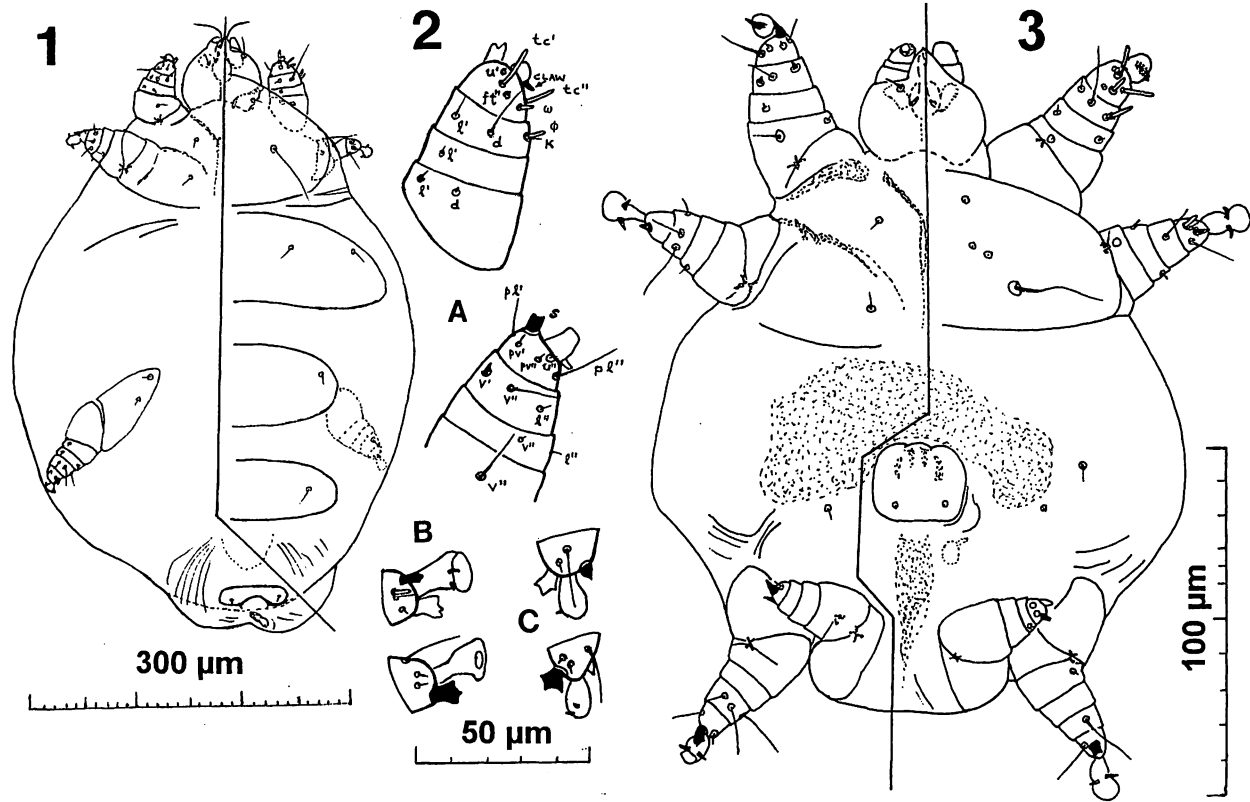
L e g s (Fig. 2). Leg setation as in Table 1. Ambulacrum I with a single posteriorly directed small claw, ambulacra II, III each with small claws (4-5). Tibia I seta v_1 spine-like. Tarsus I solenidion *omega* 5-6 μ m. Tibia I solenidion *phi* 7-10 μ m, seta k 3-4 μ m. Tibiae I, II, III setae d maximum length 36, 23, 18 μ m, respectively. Subunguinal and unguinal setae appear 3-tined in some specimens.

ADULT MALE (Fig. 3). G n a t h o s o m a length 32, width 35. Palp length 10; cheliceral stylet length 19, pharynx width 8, dorsal gnathosomal setae 5, ventral setae 7 μ m.

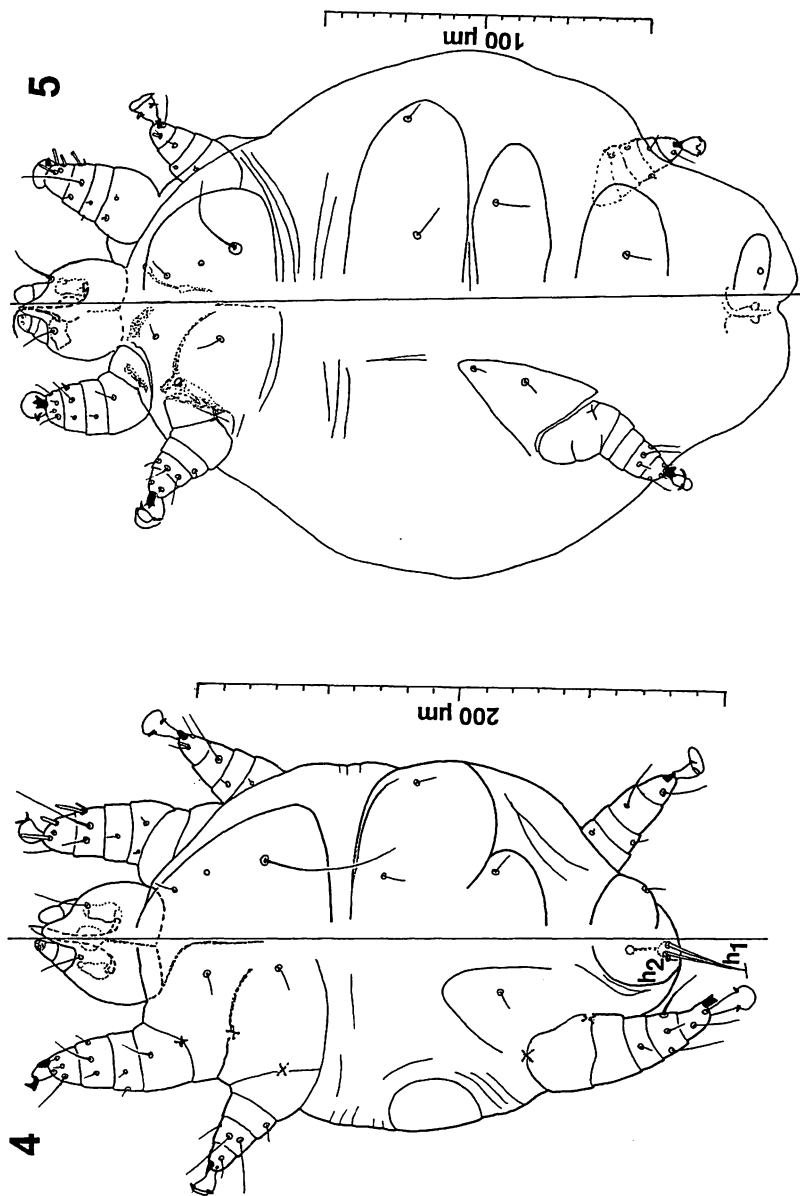
I d i o s o m a. Length 156, width 152. Setae v_1 , v_2 and sc_1 (m); sc_2 24 μ m. Distance between setae v_1 24, v_2 medial to a line connecting v_1 and sc_2 . Setae c_2 6 μ m, d (m). Genital capsule nearly square, length 21, width 23.

Venter with apodemes 1 moderately developed, meeting sternal apodeme medially; apodemes 2 nearly extending to sternal apodeme. Coxal setae thin, $1a$ 4, $2a$ 5, $3a$ obscured, $3b$ 5 μ m.

L e g s. Ambulacrum I with moderately developed claw 7, ambulacra II, III with weakly developed claws 3-4 μ m. No ambulacral IV claws. Tarsus I solenidion *omega* 5. Tibia I solenidion *phi* 8, seta k 2 μ m, seta v_1 spine-like. Tibiae I, II, III setae d 12, 8, 5 μ m respectively. Tibia IV setae v'' (m), tarsus IV pv' spine-like 3, u' spine-like 5 μ m.



Figs 1-3. *Dorsipes rackae* sp. n.: 1 - adult ♀, ventral (left) and dorsal aspects; 2 - adult ♀: a) leg I dorsal (left) and ventral aspects, b) tarsus II dorsal (top) and ventral aspects, c) tarsus III dorsal (top) and ventral aspects; 3 - ♂, ventral (left) and dorsal aspects.



Figs 4-5. *Dorsipes rackae* sp. n.: 4 - larval ♀, ventral (left) and dorsal aspects; *Dorsipes nigeri* n. sp.: 5 - adult ♀, ventral (left) and dorsal aspects.

LARVAL FEMALE (Fig. 4). G n a t h o s o m a length 42-47, width 39-48. Palp length 14; cheliceral stylet length 36-41, pharynx width 9-10, dorsal gnathosomal setae 32-33, ventral setae 17-23, distance between ventral setae 15-16.

I d i o s o m a. Length 202-210, width 140. Prodorsal plate length 67, width 101, setae v_1 9-10, v_2 (m), sc_2 86 μ m. Distance between setae v_1 36, v_2 nearly on a line connecting v_1 and sc_2 . Plates *CID* fused, length *CD* 72, width 140; setae c_1 8-11, setae c_2 15-18, setae d 6-9. Plate *EF* length 26, width 47; setae e 7 μ m. Plate *H* length 30, width 28; setae h_1 265, setae h_2 6-7.

Venter with apodemes 1 moderately developed, meeting sternal apodeme medially; apodemes 2 not extending to sternal apodeme. Coxal setae thin, $1a$ 8, $2a$ 8-9, $3a$ 3-4, $3b$ 7 μ m.

L e g s. Leg setation as in Table 1. Ambulacrum I with moderately developed claws (6), ambulacra II, III with weakly developed claws (3 μ m). Tarsus I solenidion *omega* 5. Tibia I solenidion *phi* 10, seta k 2-3 μ m. Tibiae I, II, III setae d 28, 24, 22 μ m, respectively.

Dorsipes nigeri sp. n.
(Figs 5, 6)

Dorsipes tricuspidatus: Regenfuss 1972 (p. 45, 50: *nomen nudum*).

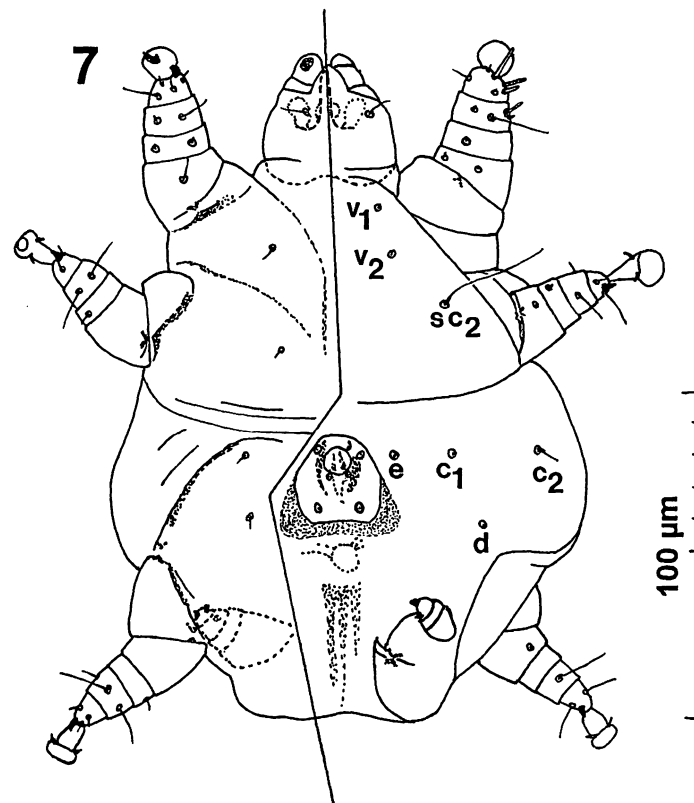
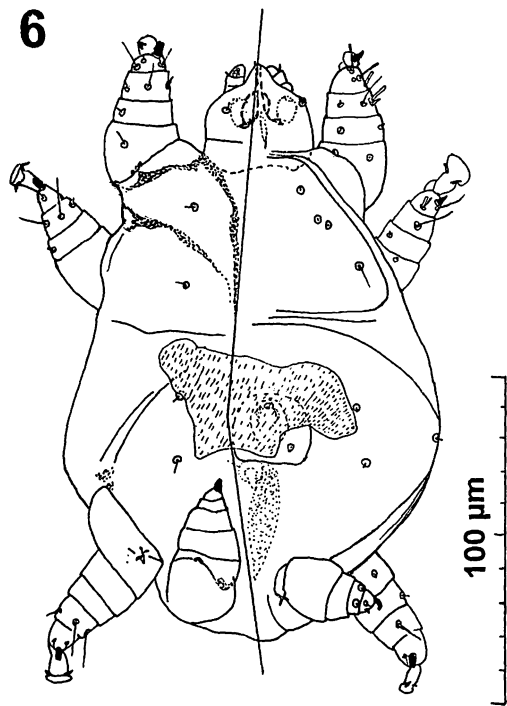
TYPE DATA: H o l o t y p e; Female, 19 March 1971. ZMH A30/1985-550; collected by H. Regenfuss at Ehrenstetten near Freiburg, Germany, from *Pterostichus niger* (Stall.) (Coleoptera: Carabidae).

P a r a t y p e s: Allotype male, 5 October 1971, ZMH A30/1985-561A: collected by H. Regenfuss at Tiengen, Germany, from *Pterostichus niger*; 5 adult females, same locality as holotype; 2 adult females, Freiburg, Germany, 21 May 1971; 6 adult females, Tiengen, Germany, 5 October 1971.

ETYMOLOGY. *Dorsipes nigeri* sp. n. is named for the host beetle, *Pterostichus niger* (Stall.) (Coleoptera: Carabidae).

DIAGNOSIS: Male *D. nigeri* sp. n. has shorter gnathosomal setae (2-3 μ m) in comparison with gnathosomal setae (5-8 μ m) of related species of European *Dorsipes* (Table 2). The genital capsule of male *D. nigeri* sp. n. is more round than the capsule of *D. rackae* sp. n. and less narrowed anteriorly than the capsule of *D. platysmae* (Fig. 7). Setae c_1 , c_2 , d and h_1 are longer in adult female *D. nigeri* sp. n. than in *D. rackae* sp. n. Chelicera stylets are shorter (Table 2). The holotype of *D. platysmae* has long setae e and very short setae f . No vestige of setae f is found in *D. nigeri* sp. n.

DESCRIPTION: ADULT FEMALE (Fig. 5). G n a t h o s o m a length 56-70, width 60-70. Palp length 15-21; cheliceral stylet length 48-55, pharynx width 15-20, dorsal gnathosomal setae 27-35, ventral setae 15-20, distance between ventral setae 22-28. Stigmata small; tracheae and atria evident under prodorsal plate.



Figs 6-7. *Dorsipes nigeri* sp. n.: 6 - ♂, ventral (left) and dorsal aspects; *Dorsipes platysmae* Regenfuss: 7 - ♂, ventral (left) and dorsal aspects.

Idiosoma. Length 325-405, width 260-330. Prodorsal plate length 70-93, setae v_1 10-13, v_2 m, sc_2 52-63. Distance between setae v_1 40-47. Plate C length 57-73, setae c_1 18-22, distance between setae c_1 94-99; setae c_2 15-19. Plate D length 40-60, setae d 16-20. Plate EF length 42-50, setae e 13-18, distance between setae e 63-73. Plate H length 25-28, setae h_1 7 μ m.

Venter with apodemes 1 moderately developed, meeting sternal apodeme medially; apodemes 2 not extending to sternal apodeme. Coxal setae thin, $1a$ 7-10, $2a$ 9-15, $3a$ 7-12, $3b$ 8-10 μ m.

Legs. Leg setation as in Table 1. Ambulacra I with single claw 3-6 μ m; ambulacra II, III with small claws 5-6. Tarsus I solenidion *omega* 7-8. Tibia I solenidion *phi* 8-11, seta k 3-5 μ m, seta v , spine-like. Tibiae I, II, III d maximum length 55, 18, 13 μ m, respectively. Subunguinal and unguinal setae are three tined in some specimens.

ADULT MALE (Fig. 6). Gnathosoma length 27, width 30. Palp length 7; cheliceral stylet length 20, pharynx width 8, dorsal gnathosomal setae 3, ventral setae 2 μ m.

Idiosoma. Length 135, width 105. Setae v_1 , v_2 and sc_1 (m); sc_2 14 μ m. Distance between setae v_1 18, v_2 nearly on a line connecting v_1 and sc_2 . Setae c_2 (m), d (m). Genital capsule length 20, width 25, sides slightly convex.

Venter with apodemes 1 moderately developed, meeting sternal apodeme medially; apodemes 2 nearly extending to sternal apodeme. Coxal setae thin, $1a$ 3, $2a$ 6, $3a$ 3, $3b$ 5 μ m.

Table 1. Setation of femora, genua, tibiae and tarsi for species in the *platysmae*-group of *Dorsipes* (solenidia, unguinal and subunguinal setae are included in counts of setae per segment).

Species	Leg I				Leg II				Leg III			
	F	G	Ti	Ta	F	G	Ti	Ta	F	G	Ti	Ta
<i>D. platysmae</i>	3	3	7	9	1	2	4	6	1	2	4	5
<i>D. adelosiae</i>	3	3	7	8	1	2	4	6	1	2	4	5
<i>D. evarthrusi</i>	3	3	7	8	1	2	4	6	1	1	4	5
<i>D. rackae</i> sp. n.	3	3	7	11	1	2	4	8	1	2	4	7
<i>D. nigeri</i> sp. n.	3	3	7	11	1	2	4	8	1	2	4	7
<i>D. tefflii</i>	3	4	7	8	0	3	4	6	0	3	4	5
<i>D. auncinius</i>	3	3	7	8	0	2	4	6	0	1	4	5
<i>D. cryptobius</i>	3	3	7	11	1	2	4	7	0	1	4	5

Table 2. Comparison of maximum measurements (in μm) for *Dorsipes platysmae*, *D. rackae* sp. n., and *D. nigeri* sp. n. Measurements of *D. platysmae* are based on the holotype adult female and paratype specimens.

Character	<i>D. platysmae</i>	<i>D. rackae</i> sp. n.	<i>D. nigeri</i> sp. n.
ADULT FEMALES			
Idiosomal length	610	530	405
Idiosomal width	310	365	330
Cheliceral stylets	70	63	55
Pharynx width	18	18	20
Setae c_1	19	13	22
Setae c_2	19	12	19
Setae d	16	13	20
Coxal seta 3a	7	11	12
Tibia I d	30	36	55
Tarsus I solenenidion ω	5	6	8
MALES			
Idiosomal length	160	156	135
Idiosomal width	130	152	105
Cheliceral stylets	22	19	20
Dors. gnathos. setae	7	5	3
Vent. gnathos. setae	7	7	3
Setae sc_2	30	24	14
Tibia I d	20	12	12
Genital capsule length	27	21	20
Genital capsule width	27	23	25
LARVAL FEMALES			
Idiosomal length	200	210	(not known)
Idiosomal width	130	155	-
Cheliceral stylets	48	41	-
Plate C, setae c_7	15	12	-
Plate EF setae e	10	7	-
Distance, coxal setae 3a-3b	17	12	-
Distance, base sc_2 -post. PD	30	22	-

L e g s. Ambulacrum I with moderately developed claw 5 μm , ambulacra II, III with weakly developed claws 3 μm . No ambulacral IV claws. Tarsus I solenenidion *omega* 4. Tibia I solenenidion *phi* 6, seta *k* 2 μm . Tibiae I, II, III setae *d* 12, 12, 11, respectively. Tibia IV setae v'' (m), tarsus IV pv' spine-like 3, u' spine-like 5 μm .

Discussion

Species descriptions of the Podapolipidae are based on shape of adult females, lengths of cheliceral stylets, shape of genital capsules and a variety of structures (Regenfuss 1968).

Regenfuss (1968, 1972) recognized not only isolation of podapolipid mites which utilized different host species but isolation at different sites on the same host. Thus, it is not unusual to find 3 species, *D. platysmae*, *D. rackae* sp. n. and *D. nigeri* sp. n., as parasites of *Pterostichus niger*. Cheliceral stylets may be long enough to penetrate one region but not another. In light infections, adult females of a given species are found primarily at a specific site on a beetle (Regenfuss 1968). Differences in structures associated with mating such as genital capsules, opisthosomal setae in larval females, and gnathosomal setae, tibial I seta *d* and tarsi I, II solenidia in males are significant in species isolation. Species are defined on the basis of physical characteristics with the assumption that they are physically, behaviorly and genetically isolated from related species.

The genus *Dorsipes* was proposed by Regenfuss (1968) for *D. dorsipes*. Twelve species are described, seven by Regenfuss (1968), *D. evarthrusi* Husband and Rack (1991), *D. tefflii* and *D. auncinius* Husband (2000) and two new species herein. The genus *Dorsipes* is one of eight genera discussed in a preliminary investigation of the phylogeny of *Tarsopolipus*, a comparison with other early derivative podapolipid genera (Husband 1991). One of 100 characters for which transformation series were proposed was reduction of the ambulacral claw of tarsus I in adult females. This series is illustrated in *Dorsipes*. *D. dorsipes* has a well developed ambulacral I claw, the claw of *D. tefflii* is moderately well developed and the claw of *D. auncinius* is poorly developed. Regenfuss (1968) used two synapomorphic characters in adult females to separate the *dorsipes* and *inflatus*-groups of *Dorsipes* from the *platysmae*-group: tarsus II solenidion *omega* and coxal setae *3a* not present in the *dorsipes*- and *inflatus*-groups but present in the *platysmae*-group. In addition, he noted the following plesiomorphic characters for the *platysmae*-group: vagina straight, not expanded, tarsus I with solenidion, setae *v*, conspicuous and larval females with femoral III seta (most). He considered the following traits but could not assign plesiomorphic or apomorphic status: larval female with setae *h*, not widely separated and male with genital capsule wider at base than at apex.

D. rackae sp. n. and *D. nigeri* sp. n. share the characters listed above for the *platysmae*-group. In addition, males and larval females have claws I, II, and III reduced. Solenidion *omega* of tarsus II found in males in the *platysmae*-group is present in *D. rackae* sp. n. and *D. nigeri* sp. n. but the genital capsule is not wider at the base than the apex. The wide base of *D. platysmae* is due to a sclerotized internal region of the genital capsule. The genital capsules of *D. rackae* sp. n. and *D. nigeri* sp. n. are partially obscured by crystals.

The following key, based in part on a key to European *Dorsipes* by Regenfuss (1968), is presented for the identification of the 12 species of *Dorsipes* found in Europe, Africa, and North America.

Key to adult females of *Dorsipes*

1. Seta v_1 much shorter than seta c_1 , seta d extends to posterior margin of plate D ; seta f longer than 5 μm 2
 - Seta v_1 as long as seta c_1 , seta d does not extend to the margin of plate D ; seta f , if present, no longer than the width of the acetabulum 3
2. Seta e closer to posterior margin of plate EF , seta e much shorter than seta f . Dorsally, tarsus II bears a very long seta tc'' and shorter seta pl' both of which extend beyond ambulacrum II. Idiosoma elongate, cheliceral stylet length about 70 μm *D. dorsipes* Regenfuss
 - Seta f closer to posterior margin of plate EF , seta e only slightly shorter than seta f . Tarsus II bears a very long seta tc'' and a much shorter seta pl' which does not extend beyond ambulacrum II. Idiosoma rather short, almost round, cheliceral stylet length about 60 μm *D. carabi* Regenfuss
3. Cheliceral stylets without a hook 4
 - Cheliceral stylets with a hook *D. cryptobius* Regenfuss
4. Tarsus II solenidion *omega* not present, seta c_1 at least 2 times length of seta c_2 , ambulacrum I bears a strong claw, vagina widened proximal to genital opening 5
 - Tarsus II solenidion present, seta c_1 less than 2 times length of seta c_2 , ambulacrum with a small claw, vagina not widened proximal to vaginal opening 6
5. Genu III with seta v'' , trachea and stigmata present, length gnathosoma about 60 μm , cheliceral stylet length about 50 μm *D. notopus* Regenfuss
 - Genu III without seta v'' , trachea and stigmata not present, length of gnathosoma about 50 μm , cheliceral stylet length about 40 μm *D. inflatus* Regenfuss
6. Seta h_1 not as long as width of base of tarsus I, 2 genual II, III setae 7
 - Seta h_1 much longer than the width of the base of tarsus I, 3 genual II, III setae *D. teffii* Husband
7. Pharynx width 14-20 μm , ventral gnathosomal setae at least 2 times length of setae h_1 , 2 genu III setae 8
 - Pharynx width 8-10 μm , ventral gnathosomal setae shorter than setae h_1 , 1 genu III seta *D. auncinius* Husband
8. Length of cheliceral stylets shorter than 40 (31-39 μm) 9
 - Length of cheliceral stylets longer than 40 (48-64 μm) 10
9. Length of seta sc_2 less than width of gnathosoma, cheliceral stylets about 31 μm *D. adelosiae* Regenfuss
 - Length of seta sc_2 longer than width of gnathosoma, cheliceral stylets about 39 μm *D. evarthrusi* Husband & Rack
10. Setae c_1 , d longer (16-22 μm) 11
 - Setae c_1 , d shorter (8-13 μm) *D. rackae* sp. n.

- 11. Cheliceral stylets shorter (48-55 μm), setae v_2 represented by a microseta *D. nigeri* sp. n.
- Cheliceral stylets longer (64 μm), seta v_2 not evident *D. platysmae* Regenfuss

Key to larval females of *Dorsipes*

(Larval female instars of *D. nigeri* sp. n. are unknown).

- 1. Seta v_1 no longer than width of acetabulum, seta c_1 much longer than seta c_2 2
- Seta v_1 at least 1/2 length of seta c_1 , seta c_1 shorter than or nearly equal to seta c_2 3
- 2. Seta e present. Dorsally, tarsus II bears a very long seta tc'' and a much shorter seta pl' which does not extend beyond ambulacrum II. Cheliceral stylets about 49 μm *D. carabi* Regenfuss
- Seta e not present. Dorsally, tarsus II bears a very long seta tc'' and somewhat shorter seta pl' both of which extend beyond ambulacrum II. Cheliceral stylets about 61 μm *D. dorsipes* Regenfuss
- 3. Genua II, III with 0-2 setae 4
- Genua II, III with 3 setae *D. tefflii* Husband
- 4. Tarsus II without solenidion ω , setae h , widely separated 5
- Tarsus II with solenidion ω , setae h , adjacent 6
- 5. Genu III with 1 seta *D. notopus* Regenfuss
- Genu III with no seta *D. inflatus* Regenfuss
- 6. Femoral II, III setae not present 7
- Femoral II, III setae present 8
- 7. Cheliceral stylet with hook, tarsus I broader than long *D. cryptobius* Regenfuss
- Cheliceral stylet without hook, tarsus I longer than broad *D. auncinius* Husband
- 8. Femur I seta v'' 12-16, about equal to width of base of tarsus I, setae 3a (3-7 μm) longer than diameter of acetabulum, cheliceral stylet length more than 25 (27-48 μm) 9
- Femur I seta v'' 20, longer than width of base of tarsus I, setae 3a (m) no longer than diameter of acetabulum, cheliceral stylet length less than 25 (22 μm) *D. evarthrusi* Husband & Rack
- 9. Length of cheliceral stylet longer than 40 (41-48 μm) 10
- Length of cheliceral stylet shorter than 30 (27 μm) *D. adelosiae* Regenfuss

10. Genu III with 1 seta, cheliceral stylet length about *D. rackae* sp. n.
 - Genu III with 2 setae, cheliceral stylet length about
 *D. platysmae* Regenfuss

Since at most 500 of 25000 species of carabid beetles have been examined for podapolipid mites, it is essential that many potential hosts be studied to gain a better understanding of the Podapolipidae associated with this group of beetles.

A c k n o w l e d g m e n t s

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Z u s a m m e n f a s s u n g

Zwei neue Milbenarten aus der Familie Podapolipidae (Acari, Prostigmata, Tarsonemini), *Dorsipes rackae* sp. n. und *D. nigeri* sp. n., werden aus Süddeutschland beschrieben und mit verwandten Taxa der *platysmae*-Gruppe verglichen. Beide neue Arten sind Ektoparasiten des Laufkäfers *Pterostichus niger* (Schall.) (Coleoptera, Carabidae). Ein Bestimmungsschlüssel für alle zwölf Arten dieser Gattung wird präsentiert.

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