

The subfamily Rhodacarinae with notes on a new subfamily Ologamasinae (Acarina: Rhodacaridae)

by

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OUDEMANS (1902) proposed the subfamily Rhodacarinae to accommodate the genus *Rhodacarus* Oudemans. WILLMANN (1935) added the genera *Rhodacaropsis* Willm. and *Rhodacarellus* Willm. and EVANS (1955) transferred the genera *Euryparasitus* Oudemans. and *Halolaelaps* Berl., previously included in the Gamasolaelaptidae, to this family. EVANS (1957) extended the concept of the family Rhodacaridae still further to include all parasitoid mites having a divided dorsal shield in the adult stage and a three-pronged specialized seta on the palptarsus. RYKE (1961a-d, 1962a-d) also regarded other genera and subgenera with a divided dorsal shield, including those with a two-pronged palptarsal seta, as belonging to this family. The present author is of the opinion that certain genera in which the dorsal shield is entire in the adult but divided in the deutonymph, should also be referred to the Rhodacaridae.

The family Rhodacaridae can be characterized by the following:

The dorsal surface is, in the adult stages, covered by either two approximately equal sized or one sclerotized shield. All the species are provided with two dorsal shields in the nymphal stages. The surface of the dorsal shield or shields may be smooth, reticulated or scabrous. The dorsal interscutal membrane, where present, often carries a number of setae. The chaetotaxy of the shield and membrane is of taxonomic importance. The nomenclature adopted for the dorsal setae is based on the system introduced by SELLNICK (1944) for the genus *Zercon*. These setae may be considered to form four longitudinal rows on each side of the middle line namely, a dorsal series (j & J), a medial series (z & Z), a lateral series (s & S) and, in addition to SELLNICK's original system, a marginal series (r & R). This system was followed by HIRSCHMANN (1957) and EVANS (1958). EVANS designated the marginal series by using the letter M and divided the entire dorsal shield into an anterior and posterior part. He based the site of division on the chaetotactic pattern of the shield, and indicated it by means of a dotted line. The series on the anterior shield is designated by ordinary letters and those on the posterior shield by using capitals. The setae on different parts of the body may be simple or complex.

The sternal shield is generally fused with the corresponding endopodal shields and with the metasternal shields; it usually bears four pairs of setae. Sternal setae I may be detached from the sternal shield, each being placed on a jugular shield. One or more pairs of pre-endopodal shields frequently occur anterior to the sternal shield. The genital shield of the female is always provided with a pair of setae. In those genera with an entire dorsal shield the genital shield is more or less enclosed in a perigenital shield formed by the fusion of the sternal, podal and ventri-anal shields.

The intercoxal region in the male is occupied by a compound sterniti-genital shield bearing five pairs of setae; this shield may be fused with the ventri-anal

shield to form a holoventral shield. The ventri-anal shield, in both sexes, is either free or shows different degrees of fusion with the peritrematal and dorsal shields. In some forms the posterior part of the venter is only covered by an anal shield. The peritrematal shields are seldom developed posterior to coxae IV; the shields show various degrees of fusion with the exopodal, dorsal and ventri-anal shields.

Both digits of the chelicerae are denticulate and the movable digit of the male carries a spermatophoral process. The tectum usually has a denticulate anterior margin. The palptarsus is provided with either a two- or three-pronged specialized seta. The palp of the male may be provided with spurs. The legs usually bear claws and pulvilli; these may be absent or reduced on leg I. The claws may be sessile or situated on a pretarsus. Leg II of the male is usually armed with one or more spurs.

From the above account of the external morphology of the Rhodacaridae it should be obvious that the adult stages may be divided into two groups on the basis of the structure of the dorsal shield. These two groups are regarded by the present author as separate subfamilies of the family Rhodacaridae.

- (1) Genera in which the divided dorsal shield of the deutonymph is retained in the adult Subfam. Rhodacarinae Oudemans, 1902.
- (2) Genera in which the dorsal shield is divided in the deutonymph but entire in the adult Subfam. Ologamasinae nov.

SUBFAMILY RHODACARINAE

R h o d a c a r i n a e Oudemans, 1902, *Tijdschr. Ent.* 45 : 48.

The following genera and subgenera are regarded as belonging to the subfamily:

Rhodacarus Oudemans

RYKE (1962d) regards this genus as consisting of the subgenera:

R. (Rhodacarus) Oudemans, 1902, *Tijdschr. Ent.* 45 : 50.

This subgenus was recently reviewed and discussed by SHEALS (1958) and RYKE (1962d).

Type: *Rhodacarus roseus* Oudemans

R. (Rhodacaropsis) Willmann, 1935, *Schr. naturw. Ver. Schl.-Holst.* 20 : 426.

Type: *Rhodacaropsis inexpectatus* Willmann

R. (Rhodacarellus) Willmann, 1935, *Schr. naturw. Ver. Schl.-Holst.* 20 : 429.

This subgenus was recently discussed by SHEALS (1956, 1958) and KARG (1961).

Type: *Rhodacarellus subterraneus* Willmann

R. (Rhodacaroides) Willmann, 1959, *Kieler Meeresforsch. Inst. Meeresk. Univ. Kiel* 15, 1 : 97.

Type: *Rhodacaroides aegypticus* Willmann

Cyrtolaelaps Berlese, 1887, nec Berlese, 1892

RYKE (1962a) regards this genus as consisting of the following subgenera:

C. (Cyrtolaelaps) Berlese, 1887, *Acar. Myr. Scorp.* 44 : 5.

(Syn: *Protolaelaps* Trägårdh, 1912 : 519)

RYKE (1962a) reviews this subgenus.

Type: *Gamasus mucronatus* G. & R. Canestrini

C. (*Gamasellus*) Berlese, 1892, *Acar. Myr. Scorp.* 63 : 4.

(Syn: *Laelogamasus* Berlese, 1905a : 167)

This subgenus is reviewed by RYKE (1962a) and transferred from the fam. Ascaidae Oudemans.

Type: *Gamasus falciger* G. & R. Canestrini

C. (*Digamasellus*) Berlese, 1905b, *Redia* 2 : 234.

(Syn: *Dendrolaelaps* Halbert, 1915 : 68)

RYKE (1962b) reviews this subgenus and transferred it from the fam. Digamasellidae Evans.

Type: *Digamasellus perpusillus* Berlese

C. (*Euryparatsitus*) Oudemans, 1902, *Tijdschr. Ent.* 45 : 30.

This monotypic subgenus is discussed by RYKE (1962b).

Type: *Gamasus emarginatus* Koch

C. (*Gamaselliphis*) Ryke, 1961a, *Ann. Natal Mus.* 15 : 99.

Type: *Cyrtolaelaps (Gamaselliphis) potchefstroomensis* Ryke

Asca Von Heyden, 1826, *Vers. syst. Einth. in Isis* 19 (6) : 610.

(Syn: *Ceratozercon* Berlese, 1913 : 204)

This genus was recently reviewed by RYKE (1961d) and transferred from the fam. Digamasellidae.

Type: *Acarus aphidioides* Linnaeus

Evanssellus Ryke, 1961b, *Acarologia* 3 : 245.

Type: *Evanssellus foliatus* Ryke

Antennoseius Berlese, 1916, *Redia* 12 : 303.

(Syn: *Vitzthumia* Thor, 1930 : 114)

RYKE (1962c) gives a review of this genus; it was transferred from the fam. Phytoseiidae Berlese.

Type: *Antennoseius delicatus* Berlese

Halolaelaps Berlese & Trouessart

GOETZ in SELLNICK (1957) distinguished two subgenera in this genus. The genus was also recently reviewed by HYATT (1956) and WILLMANN (1957).

H. (*Halolaelaps*) Berlese & Trouessart, 1889, *Bull. Bibl. Sci. Quest.* 2 (2) : 122.

Type: *Halalaelaps glabriusculus* Berl. & Trouess. = *Gamasus marinus* Brady

H. (*Saprogamasellus*) Goetz, in SELLNICK, 1957, *Kgl. fysiogr. Sällskpt. Lund Förbandl.* 27 (2) : 22.

Type: *Halolaelaps (Saprogamasellus) strenzkei* Goetz

Saprolaelaps Leitner, 1946, *Zbl. Ges. Geb. Ent. Lienz* 1 : 142.

This genus was reviewed by HYATT (1956) and also discussed by KARG (1961).

Type: *Saprolaelaps subtilis* Leitner

Leitneria Evans, 1957, *J. Linn. Soc. Lond. Zool.* 43 : 221.

Type: *Gamasellus (Protolaelaps) granulatus* Halbert

Longoseius Chant, 1961, *Acarologia* 3 : 11.

This genus is transferred from the fam. Digamasellidae.

Type: *Longoseius cuniculus* Chant

Saintdidieria Oudemans, 1939, *Zool. Anz.* 126: 200.

This genus is reviewed by RYKE (1961c) and provisionally referred to the Rhodacaridae.

Type: *Parasitus sexclavatus* Oudemans

Key to the genera and subgenera

1. Some of the setae on the coxae of deutonymph modified into clublike processes *Saintdidieria*
- Setae on coxae not modified into clublike processes 2
2. Posterior dorsal shield with a pair of conspicuous setae-bearing postero-lateral protuberances *Asca*
- Posterior dorsal shield without these protuberances 3
3. Vertical setae situated on prominent protuberances *Evanssellus*
- Vertical setae not situated on prominent protuberances 4
4. Sternal shield free or incompletely fused with endopodal shields; idiosoma without constriction, never very long and narrow 5
- Sternal shield completely fused with endopodals or endopodals absent ... 8
5. Coxae II with an acute or obtuse spur on its anterior margin in both sexes 7
- Coxae II unarmed in either sex *Halolaelaps* 6
6. Peritreme long; anterior margin of posterior dorsal shield without incision Subgen. *Halolaelaps*
- Peritreme very short; anterior margin of posterior dorsal shield with incision Subgen. *Saprogamasellus*
7. Anterior margin of the posterior dorsal shield entire; female with ventri-anal shield considerably broader than long *Leitneria*
- Anterior margin of posterior dorsal shield incised; female with anal shield *Saprolaelaps*
8. Dorsal shield ornamented by punctate lines forming a reticulate pattern; peritrematal shield produced behind coxae IV; leg I usually without claws *Antennoseius*
- Dorsal shields not ornamented by punctate lines to form a reticulate pattern; peritrematal shield not produced behind coxae IV 9
9. Endopodal and exopodal shields absent; body very long and narrow; anterior half of dorsum with less than 15 pairs of setae; specialized seta on palp two-pronged *Longoseius*
- Endopodal shields present and fused with sternal shield; anterior half of dorsum with more than 15 pairs of setae 10
10. Small, weakly sclerotized body usually with constriction behind coxae IV; chelicerae usually well sclerotized and conspicuous; specialized seta on palp three-pronged *Rhodacarus* sens. lat. 11
- Body not constricted; usually well sclerotized; specialized seta on palp two- or three-pronged *Cyrtolaelaps* sens. lat. 12
- 11a. Tarsus I without claws Subgen. *Rhodacarus*
- Tarsus I provided with claws 11b
- 11b. Region anterior to sternal shield provided with pre-endopodal shields 11c

- Region anterior to sternal shield weakly sclerotized and punctured Subgen. *Rhodacarellus*
- 11c. Tarsus I with pretarsus, claws and six long rodlike setae Subgen. *Rhodacaroides*
- Claws on tarsus I without pretarsus and puvillus ... Subgen. *Rhodacaropsis*
- 12a. Vertical setae short, spinelike; integument between posterior margin of ventri-anal shield and genital shield provided with setae; specialized seta on palptarsus three-pronged, one prong being minute; without jugular or pre-endopodal shields Subgen. *Cyrtolaelaps*
- Vertical setae not short and spinelike 12b
- 12b. Specialized seta on palptarsus two-pronged; without jugular or pre-endopodal shields Subgen. *Digamasellus*
- Specialized seta with three prongs; integument between ventri-anal and genital shield not provided with setae 12c
- 12c. Majority of the marginal setae on dorsum situated on integument; para-anal setae placed on a line posterior to anus; one pair of pre-endopodal shields present Subgen. *Euryparasitus*
- Majority of the marginal setae on dorsum situated on the shields; para-anal setae placed in line with the anus or anterior to it; with one or more pairs of pre-endopodal or jugular shields 12d
- 12d. Ventri-anal shield fused with dorsal shield in both sexes; with one pair of pre-endopodal shields but no jugular shields Subgen. *Gamaselliphis*
- Female with ventri-anal shield free; with one or more pairs of pre-endopodal shields or a pair of jugular shields Subgen. *Gamasellus*

SUBFAMILY OLOGAMASINAE

Type genus: *Ologamasus* Berlese

The subfamily Ologamasinae can be recognized by the following characteristics:

The dorsal shield is entire in the adults but divided in the nymphal stages. ventri-anal shield is either free or partially or completely fused with the dorsal shield. The genital shield is usually more or less enclosed in a perigenital shield formed by the fusion of the sternal, podal and ventri-anal shields. The members of this subfamily are free-living mites in soil, organic debris and mosses.

A discussion of the different genera and species of this subfamily falls outside the scope of the present paper. Since it is a new subfamily the author wishes to submit a list of the genera and subgenera which were formerly included in the families Parasitidae, Pseudoparasitidae and Neoparasitidae.

The names are given in alphabetical order and those regarded as synonyms are indicated as such.

Antennolaelaps Womersley, 1956b, *Trans. roy. Soc. S. Aust.* 79 : 112.

Type: *Antennolaelaps affinis* Womersley

Epiphis Berlese, 1916, *Redia* 12 : 302.

Type: *Gamasiphis (Epiphis) ravior* Berlese

Gamasiphis Berlese, 1904, *Redia* 1 : 261.

Type: *Gamasus pulchellus* Berlese

- Gamasiphoides* Womersley, 1956a, *J. Linn. Soc. Lond. Zool.* 42 : 528.
 Type: *Gamasiphis* (*Gamasiphoides*) *propinqua* Womersley
- Gamasitus* Womersley, 1956a, *J. Linn. Soc. Lond. Zool.* 42 : 531.
 Type: *Gamasitus obscurus* Womersley
- Heteroiphis* Trägårdh, 1952, *Ark. Zool.* 4 : 55.
 Type: *Heteroiphis arcuatus* Trägårdh
 (Regarded as a synonym of *Gamasiphis*) (syn. nov.)
- Heydeniella* Richters, 1907.
 (A synonym of *Gamasiphis*)
- Hologamasus* Berlese, 1892.
 (Lapsus for *Ologamasus*)
- Hydrogamasus* Berlese, 1892, *Acar. Myr. Scorp.* 68 : 5.
 Type: *Gamasus salinus* Laboulbene 1851 (= *Gamasus littoralis* G. & R. Canestrini 1881)
- Laelaptiella* Womersley, 1956a, *J. Linn. Soc. Lond. Zool.* 42 : 512.
 Type: *Laelaptiella anomala* Womersley
- Megaliphis* Willmann, 1938, *Ann. Hist. nat. Mus. hung.* 31 : 161.
 Type: *Gamasiphis* (*Megaliphis*) *giganteus* Willmann
- Micriphis* Berlese, 1914, *Redia* 10 : 140.
 Type: *Gamasiphis gamasellus* Berlese
- Neogamasiphis* Trägårdh, 1952, *Ark. Zool.* 4 : 57.
 Type: *Neogamasiphis hamifer* Trägårdh
- Ologamasellus* Berlese, 1914.
 (Synonym of *Ologamasus*)
- Ologamasus* Berlese, 1888, *Bull. Soc. ent. Ital.* 20 : 194.
 Type: *Gamasus aberrans* Berlese
- Onchogamasus* Womersley, 1956b, *Trans. roy. Soc. S. Aust.* 79 : 108.
 Type: *Onchogamasus communis* Womersley
- Pachyseius* Berlese, 1910, *Redia* 6 : 255.
 Type: *Pachyseius humeralis* Berlese
- Parasitiphis* Womersley, 1956a, *J. Linn. Soc. Lond. Zool.* 42 : 535.
 Type: *Parasitiphis littoralis* Womersley
- Periphis* Berlese, 1914, *Redia* 10 : 142.
 Type: *Eumaeus hemisphaericus* Koch
- Physallolaelaps* Berlese, 1908, *Redia* 5 : 13.
 Type: *Physallolaelaps ampulliger* Berlese
- Queenslandolaelaps* Womersley, 1956b, *Trans. roy. Soc. S. Aust.* 79 : 109.
 Type: *Queenslandolaelaps vitzthumi* Womersley
- Sessiluncus* Canestrini, 1898, *Termes. Füz.* 21 : 486.
 Type: *Gamasus heterotarsus* Canestrini
- Trachygamasus* Berlese, 1904, *Redia* 1 : 235.
 Type: *Gamasus pusillus* Berlese

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Saturnia pavonia L. (Lep., Saturniidae). In het voorjaar van 1961 bracht de heer J. W. M. HEIJKE vanaf de heide in de buurt van Eibergen (O.) voor mij mee het bovenste topje van een heidestruik, waaromheen over een lengte van plm. 2 cm 84 eieren van *S. pavonia* L. zaten.

Enige tijd later kwamen de eitjes uit en ik legde de rupsen verschillende soorten boomblad voor. Zij gaven de voorkeur aan meidoorn, waarmee ik ze dan ook opkweekte. Alles ging voorspoedig en 82 rupsen verpopten.

Gedachtig aan de mededeling van B. STUIVENBERG (*Ent. Ber.* 15 : 527, 1955) over een rups van deze soort, die aan de linkerkant rode en aan de rechterkant gele wratten had, welke rups een gynandromorf opleverde, bekeek ik de rupsen zorgvuldig. Ik ontdekte geen exemplaar met verschillend gekleurde wratten, maar door dat observeren heb ik een goede indruk gekregen van de kleurvariabiliteit van de wratten.

De rupsen van deze kweek hadden namelijk witte, citroengele, oranje, lichtbruine, rode, lila en paarse wratten. Deze kleuren waren ongeveer gelijkelijk verdeeld.

M. P. PEERDEMAN, Westlandgracht 175 II, Amsterdam-W. 1.

Drepana falcataria L. in het Hafdistrict (Lep., Drepanidae). Reeds enkele malen zag ik in de *Ent. Ber.* een mededeling over het voorkomen van deze soort. Ik vond enige jaren achtereenvolgend in de herfst rupsen van *falcataria* vlak bij Amsterdam, nl. langs het rijwielpad langs de Utrechtse weg op de rij elzen even voorbij het tankstation. De soort is zeker niet zeldzaam op deze plaats.

S. L. ANDERSEN, Hoendiepstraat 56, Amsterdam-Z 2.