

A New Mite (Acari, Acaridae)
from a Nest of the Wasp *Paragia tricolor* Smith in Australia

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Abstract

Tyroborus houstoni sp. nov., is described from females, tritonymphs, protonymphs and larvae from a brood cell of the pollen-collecting masarine wasp *Paragia tricolor* Smith in Western Australia, and *Tyroborus* is redefined.

Introduction

Until now the genus *Tyroborus* Oudemans (1924b and c) was represented only by the type species *Tyroborus lini* Oudemans (1924b and c). This species was described from old linseed in Holland and it was also recovered from the same habitat from New Zealand (Robertson 1946), Belgium (Fain, personal observation), as well as from wheat, old flour and deep litter of a broiler house (Hughes 1976).

Described herein is a new species of acarid mite *Tyroborus houstoni* found by Dr T.F. Houston in a brood cell of the wasp *Paragia tricolor* (Hymenoptera: Vespidae: Masarinae) in Western Australia. The mites appeared to be breeding in unused pollen provision. This mite had been recorded previously under the name *Tyrolichus casei* by Houston (1984).

A new definition of the genus *Tyroborus* based on both *T. lini* and *T. houstoni* sp. nov. is provided.

The holotype of this species is deposited in the Western Australian Museum. Paratypes are also deposited there, in the Institut royal des Sciences naturelles de Belgique, Bruxelles, and in the British Museum (Natural History), London.

All measurements given herein are in μm .

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Systematics

Genus *Tyroborus* Oudemans, 1924

Definition

With the characters of the Tyrophagini (Acarinae): Sejugal furrow well developed, dorsal setae flexible, sparsely pectinate and attenuated apically; setae *sc i* longer than *sc e* in postlarval stages; setae *ve* as long as or longer than genu I and situated along lateral margin of propodental shield almost at same transverse line as *vi*; setae *s*, *u* and *v* are short spines; setae *p* and *q* variable, either thin, spinous or absent; other setae of tarsi I-II flexible and thin; male with leg I normal, not inflated.

Diagnosis

Tyroborus is distinguished from the three other genera of this tribe (viz. *Tyrophagus* Oudemans, 1924a, *Tyrolichus* Oudemans, 1924a and *Kuzinia* Zachvatkin, 1941) by the combination of the following characters:

1. Dorsoapical seta *e* of tarsi is a spine.
2. Setae *p* and *q* either absent or reduced to small or very small setae or spinelets.
3. Absence of keel on tarsi and tibiae I and II (these keels present only in *Kuzinia*).
4. Seta *s cx* compressed laterally and strongly expanded dorsoventrally, bearing numerous projections.
5. In larvae of *T. lini* and *T. houstoni* setae *sc i* are much shorter than *sc e*. In *Tyrophagus putrescentiae* and *Tyrolichus casei* setae *sc i* are longer than *sc e*.

These characters are regarded as sufficient to separate the genus *Tyroborus* from other genera of Tyrophagini.

Remarks on the Genus *Tyroborus*

Some authors have contested the validity of the genus *Tyroborus*. Nesbitt (1945) proposed its reduction to a subgenus of *Tyrophagus*. Zachvatkin (1941) and Robertson (1946) synonymised *Tyroborus* with *Tyrolichus*. The last author found numerous specimens of a mite that she tentatively referred to *Tyrolichus lini* in old linseed in New Zealand.

Hughes (1976) considered *Tyroborus* a valid genus and redescribed *T. lini* from the male and female. According to her, setae *p* and *q* are completely lacking. A figure of the larva shows that the setae *sc i* are shorter than *sc e*. I have examined adults and immatures of *T. lini* collected in Belgium from linseed. These specimens correspond closely with Hughes' description except that in some specimens setae *p* and *q* are present but very small and difficult to see. My larvae agree with the figures given by this author.

Tyrophagus putrescentiae (Schrank, 1781), the type species of *Tyrophagus*, differs from *Tyroborus* by the normal development of setae *p* and *q*, thin or slightly expanded, by the needle-shaped aspect of setae *e* and in the larva by setae *sc i* longer than *sc e*.

Tyrolichus casei (Oudemans, 1910)(type species) differs from *Tyroborus* by the aspect of the setae *s, u, v, p* and *q* forming distinct spines, by the great length of *l2* about three to four times longer than *d1* and in the larva by the *sc i* longer than *sc e* and the aspect of setae *ve* short, almost bare and situated far behind the *vi*.

Kuzinia laevis (Dujardin, 1849)(type species) is distinguished from *Tyroborus* by the presence of a longitudinal keel on tarsi and tibiae I and II and by the shape and situation of setae *d2* very long and almost on the same transverse line as *d1*. In the larva the setae *sc i* and *sc e* are strongly pectinate and the *sc i* are shorter (10-12) than *sc e* (15-18 long). This species lives in the nests of bees of genus *Bombus* in Europe.

Tyroborus houstoni sp. nov.

Figures 1-9

I previously misidentified this species as *Tyrolichus casei* (see Houston, 1984).

The new species is named after Dr T.F. Houston, Western Australian Museum, who found this mite and sent it to me for study.

Holotype

WAM 85/1168, female on slide, from brood cell of *Paragia tricolor*, Noble Falls, c. 30 km SW Toodyay, Western Australia, 30 March 1983 (collected by T.F. Houston).

Paratypes

35 females, 21 tritonymphs, 10 protonymphs and 10 larvae, all from same brood cell as holotype.

Diagnosis

Distinguished from *Tyroborus lini* in the female, by the presence of small setae *p* and *q*, greater length of setae *d1* and *d2* (100 and 220 respectively for 27 and 25 in *T. lini*), greater length of anal setae *a1* to *a3* (75 long for 11 to 30 in *T. lini*), greater length of tarsi I-IV (69-69-75-90 for 45-45-45-57 in *T. lini*), shape of solenidion *w1* distinctly dilated at apex (cylindrical in *T. lini*), shape of spine *e* narrower than in *T. lini*.

Description

Female

Holotype ovigerous, 730 long and 480 wide (idiosoma). Length and width in three ovigerous paratypes (containing 1 to 4 eggs): 550 x 335; 570 x 340; 600 x 400. A non-ovigerous female is 460 long and 290 wide. Dorsum: Propo-

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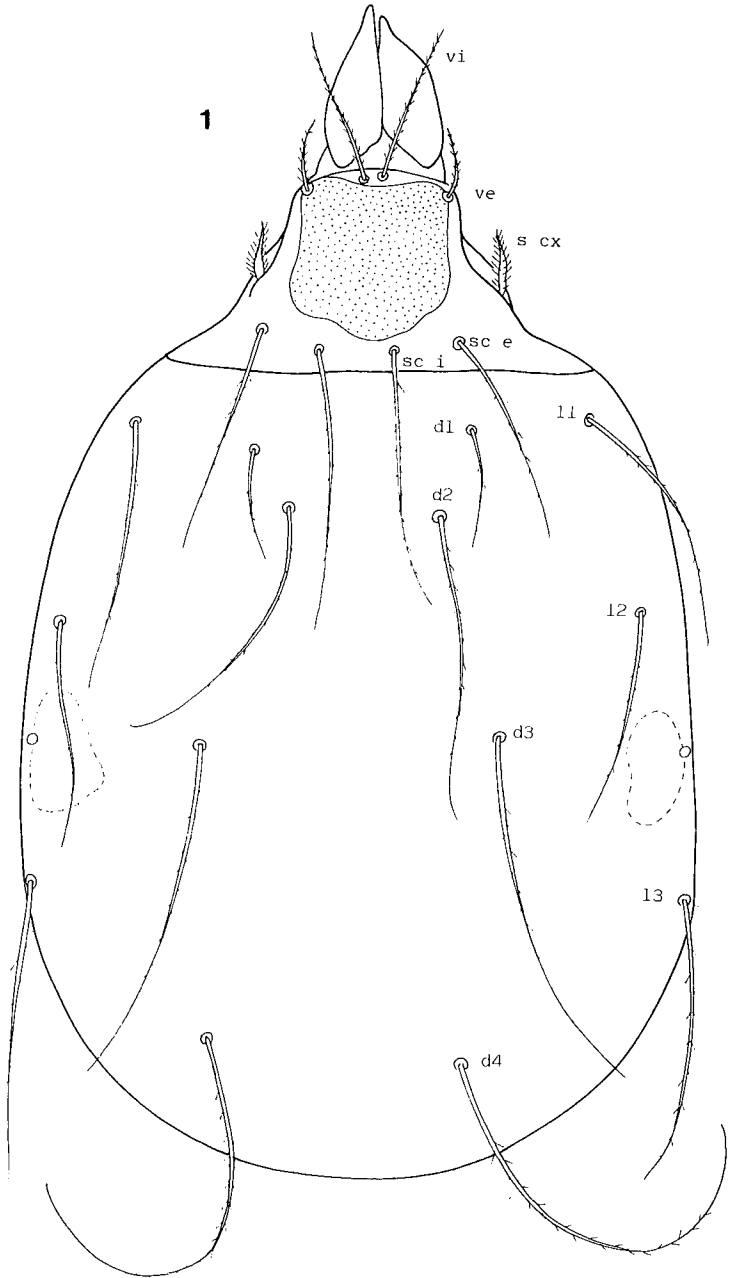
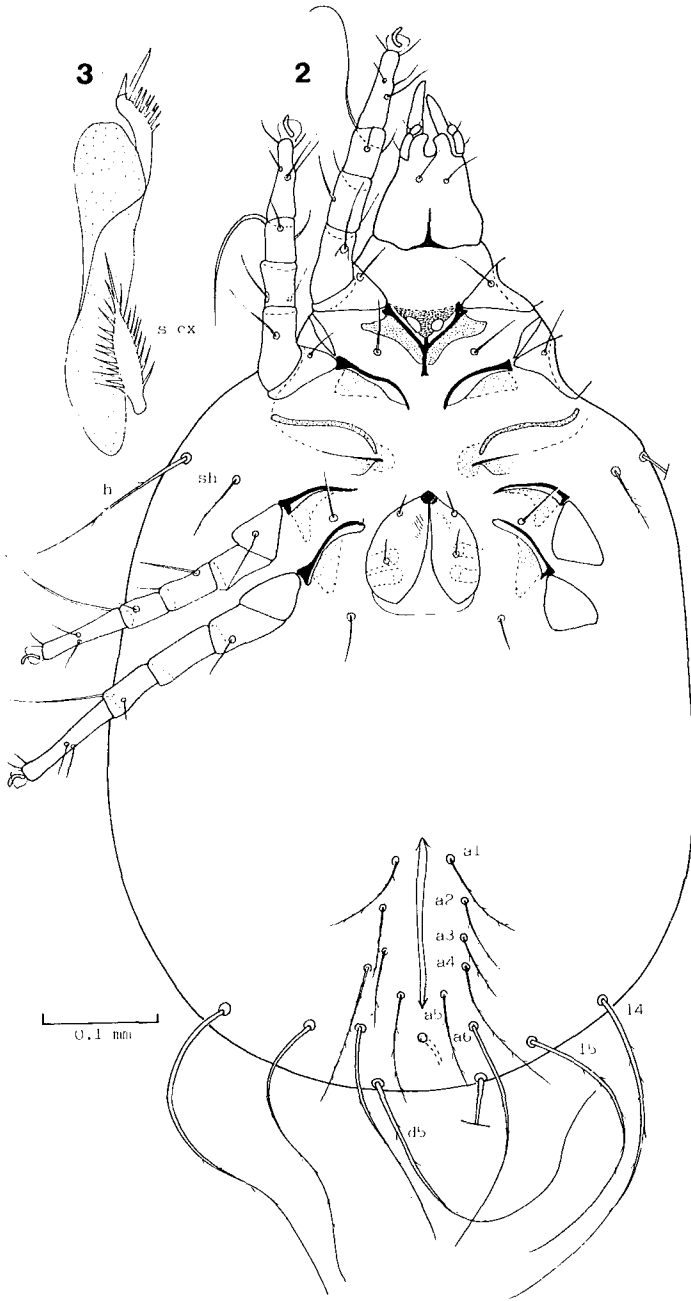
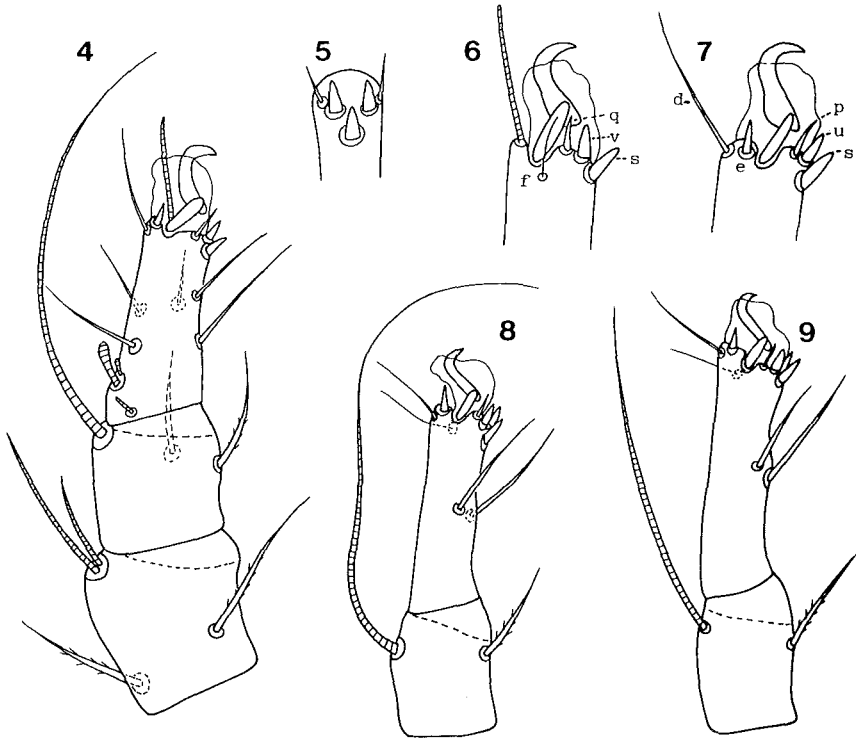


Figure 1 *Tyroborus houstoni* sp. nov. Female in dorsal view.



Figures 2-3 *Tyroborus houstoni* sp. nov. Female in ventral view (2), organ of Grandjean and seta *s cx* (3).

donotal shield broad. Venter: Epimera fused in a short sternum. Other epimera free. Epimerites II well developed. Vulva situated between coxae IV. Genital suckers relatively small. A small epigynum present. Anus slightly remote from posterior margin. Copulatory pore ventral behind anus. Tarsal claws well developed and almost completely embedded in a membranous caruncle. Chelicerae 110 long. Legs relatively small, strongly sclerotised and yellowish in colour. Lengths of tarsi I-IV: 69-69-75-90. Genu I 45 long. Chaetotaxy of idiosoma: *vi* 100 to 120; *ve* 50; *sci* 205; *sc e* 180; *d1* 100; *d2* 220; *d3* 270-300; *d4* 300; *d5* 300; *l1* to *l3* 200 to 215; *l4* 270; *l5* 240; *h* 195; *sh* 60; *a1* to *a3* 75; *a4* 140; *a5* 90; *a6* 190. Chaetotaxy of legs: Tarsi I with 13 setae. Setae *s*, *u*, *v* and *e* are spines; setae *p* and *q* short and thin, with base slightly thickened, and very close to *v* and *u* setae. Other setae thin and flexible. Tarsi II with only 12 setae, *aa* lacking. Tarsi III and IV with 10 setae. Tibiae 2-2-1-1. Genua 2-2-1-0. Femora 1-1-0-1. Trochanters 1-1-1-0. Solenidiotaxy: Tarsus I with *w1* short, dilated apically; *w3* generally more basal than *w1*; *w3* apical.



Figures 4-9 *Tyroborus houstoni* sp. nov. Female. Leg I (4). Apical part of leg I: ventral surface (5), antero-internal surface (6) and postero-external surface (7); tibia and tarsus III (8); tibia and tarsus IV (9).

Male

Unknown. The absence of males is rather unusual in this group of mites and is difficult to explain.

Tritonymph

Length and width of two specimens: 300 x 180 and 375 x 210. Number of setae as in female except that there are only three pairs of anals.

Protonymph

A specimen is 228 long and 140 wide. Differing from tritonymph mainly in chaetotaxy. Only one pair of genitals, trochanters bare and legs IV lacking several setae (tarsus with 7 setae, tibia genu and femur lacking setae). Solenidia *w* 3 of tarsus I and φ of tibia IV lacking. Setae *sc i* longer (75) than *sc e* (60).

Larva

Two specimens measure (idiosoma) 155 x 90 and 160 x 96. Number of setae of idiosoma as in protonymph except that genitals and *l*4 and *l*5 lacking and *sc i* much shorter (13) than *sc e* (50). Organ of Claparéde 14 long. Solenidion *w* 2 lacking.

Acknowledgements

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References

- Houston, T.F. (1984). Bionomics of a pollen-collecting wasp *Paragia tricolor* (Hymenoptera: Vespidae: Masarinae) in Western Australia. *Rec. West. Aust. Mus.* 11 (2): 141-151.
- Hughes, A.M. (1976). The mites of stored food and houses. *Tech. Bull.* 9 Min. of Agric., Fisheries and Food, London. pp. 1-400.
- Nesbitt, H.H.J. (1945). A revision of the family Acaridae (Tyroglyphidae) order Acari, based on comparative morphology studies. *Canada J. Res. D.* 23: 139-188.
- Oudemans, A.C. (1924a). Acarologische Aanteekeningen 74. *Ent. Ber.* VI, 136: 249-268.
- Oudemans, A.C. (1924b). Acarologische Aanteekeningen 76. *Ent. Ber.* VI, 139: 300-310.
- Oudemans, A.C. (1924c). Acarologische Aanteekeningen 77. *Ent. Ber.* VI, 140: 317-336.
- Robertson, P.L. (1946). Tyroglyphid mites in stored products in New Zealand. *Trans. Proc. Roy. Soc., N.Z.* 76: 185-207.
- Zachvatkin, A.A. (1941). Arachnoidea, Acariens Tyroglyphoides. *Faune de l'U.R.S.S. Vol. 6, No. 1, Inst. Zool. Acad. Sci., U.R.S.S. Moscou, N.S.* 28: 1-475.

