A NEW SPECIES OF TUCKERELLA (ACARINA, TETRANYCHOIDEA, TUCKERELLIDAE) FROM TASMANIA

by

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(With 11 text figures)

ABSTRACT

A new species of the genus *Tuckerella* Womersley 1940 is described from native plants in Tasmania. Descriptions of males and immature stages are included. The record of *T. pavoniformis* (Ewing) from Australia is questioned.

INTRODUCTION

The family Tuckerellidae was erected by Baker & Pritchard (1953) to include the single genus *Tuckerella* Womersley. At that time only two species *T. ornata* (Tucker) and *T. pavoniformis* (Ewing) were known. Subsequently Womersley (1957) described a further species *T. spechtae* from South Australia.

A fourth species has now been found in Tasmania breeding on native host plants. The collections included females, males, larvae and nymphs, whereas in the three previously described species only females had been recorded.

Womersley (1957) however, had described *T. spechtae* from a single specimen designated as a female. In his description he stated that it had a dorsal sensory rod on Tarsi III and IV similar to those on Tarsi I and II.

Examination of the males of the new species described herein revealed that the presence of a sensory rod on Tarsi III and IV was a male character only. A re-examination was therefore made of the holotype slide of *T. spechtae* Womersley. Although the specimen is in poor condition it is a male and not a female as designated.

A revised key suitable for adults of either sex and including the new species has therefore been prepared.

TUCKERELLA FLABELLIFERA sp.n.

Female Figs. 1, 2, 3.

Colour in life red with dorsal and caudal setae pale brown. Body elongate oval, dorsum reticulated, with suture lines between propodosoma and metapodosoma and between latter and opisthosoma. Eyes two on each side. Body with 4 pairs of palmate dorsals propodosomals and 18 pairs of similar dorsal hysterosomals. Last 4 palmate setae on dorsum with outer pair larger than inner pair and placed anterior to inner pair. Caudum with 5 pairs of ciliated flagellate setae each longer than the body. Two small foliaceous setae in a mediocaudal position between the long flagellate setae and a similar seta between the second and third and fourth and fifth flagellate setae on each side. All caudal setae arising from tubercles arranged in a straight line. Palpus five segmented, first segment short, fifth segment long and slender, bearing distally, a blunt sensory rod and two curved sensory setae. Three tactile setae along length of fifth segment. Fourth segment with a slender spur slightly shorter than fifth segment and bearing three tactile setae. Peritremes protruding as long narrow tubes laterally over. Legs I. Legs eight, short and stubby. Legs I-III with palmate dorsal setae on tibiae, femora and genua; Leg IV with slender dorsal setae. Tarsi with two stout claws and pulvillus; pectinate series of tenent hairs from bases of claws and on pulvillus. Tarsus I with two blunt sensory rods, the distal one being the longer (ratio, distal rod : proximal rod, 1 : 0.6) Tibia I and Tarsus II each with a single short sensory rod. Ventral setation of body as in Fig. 2. In genito-anal region there are nine pairs of setae arranged as follows:—3 pairs of primary genital setae along sides of vulva, 2 pairs of secondary

KEY TO ADULTS OF THE KNOWN SPECIES OF TUCKERELLA WOM.

1. Last four palmate setae on dorsum with outer pair smaller or subequal to inner pair 2
   Last four palmate setae on dorsum with outer pair larger than inner pair 3
2. Caudum with five pairs of long flagellate setae .... *ornata* (Tucker)
   Caudum with seven pairs of long flagellate setae .... *spechtae* Wom.
3. Caudum with five pairs of long flagellate setae .... *flabellifera* sp.n.
   Caudum with six pairs of long flagellate setae .... *pavoniformis* (Ewing)

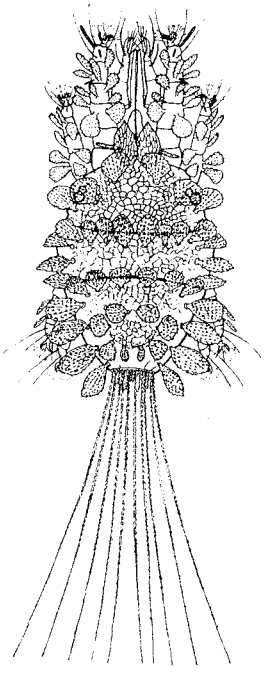

FIG. 1.—*Tuckerella flabellifera*: dorsal aspect of female.

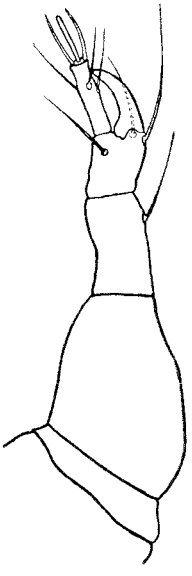

FIG. 3.—Female palp.

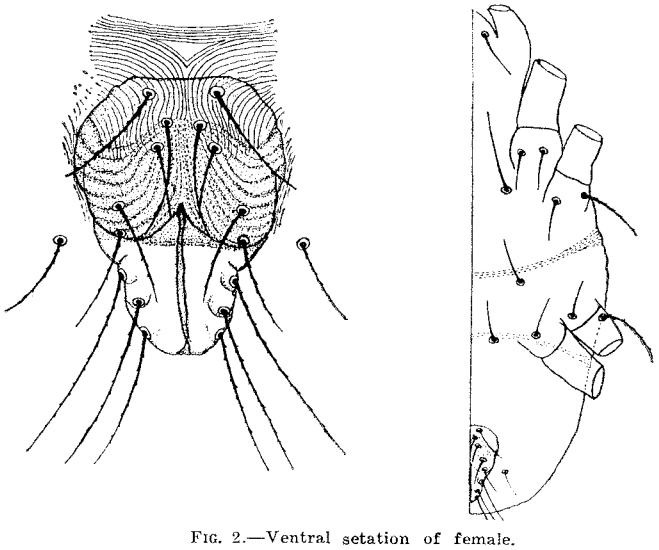

FIG. 2.—Ventral setation of female.

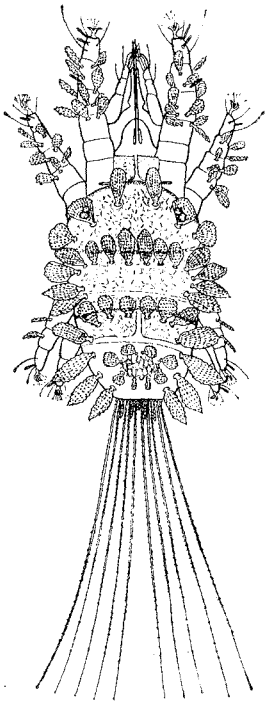

FIG. 4.—Dorsal aspect of male.

genital setae anterior to these on folds of oviduct; 2 pairs of ventral setae close to anterior margin of folds of oviduct. Anterior to these a single pair of medioventral setae and a single mediolateral seta on each side of the genital area. Dimensions of female idiosoma shown in Table 1.

Male Figs. 4, 5, 6, and 7.

Similar in general appearance to female. Dorsal reticulation on opisthosoma in a pattern with two clear transverse bands joined by a clear medial band. Dorsal and caudal setae similar to female in number, distribution and shape except that anterior pair of dorsal propodosomals are broad and truncate rather than pointed. Tarsus I with 2 sensory rods, the distal one being the longer. This distal rod is equal in length to that in female but the proximal one is longer than the equivalent rod in female. (Ratio, distal rod : proximal rod, 1 : 0.8) Tibia I with a single sensory rod. Tarsi II, III and IV each with a blunt sensory rod. Phallic organs consisting of two curved genital stylets and a pointed sclerotized aedeagus. Ventral setation of body as in Fig. 5. In genito-anal region there are 5 pairs of setae arranged as follows:—3 pairs primary genital setae, a single pair of ventral setae, and anterior to these a pair of anterior ventral setae. Dimensions of idiosoma shown in Table 1.

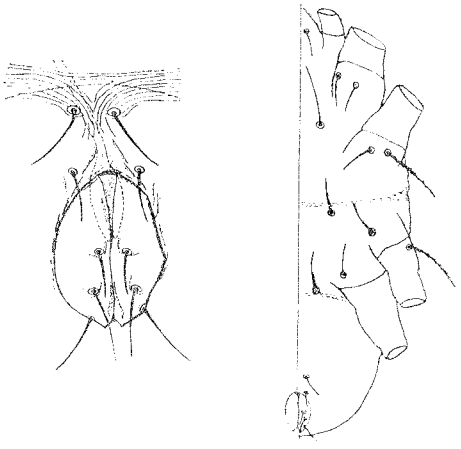

FIG. 5.—Ventral setation of male.

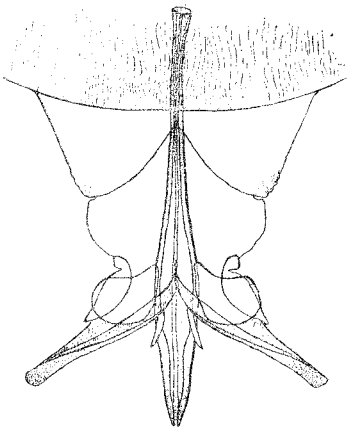

FIG. 7.—Aedeagus.

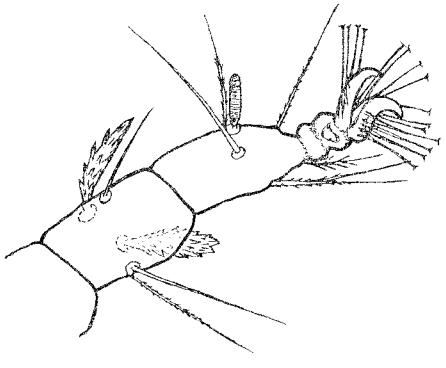

FIG. 6.—Tibia and Tarsus III of male.

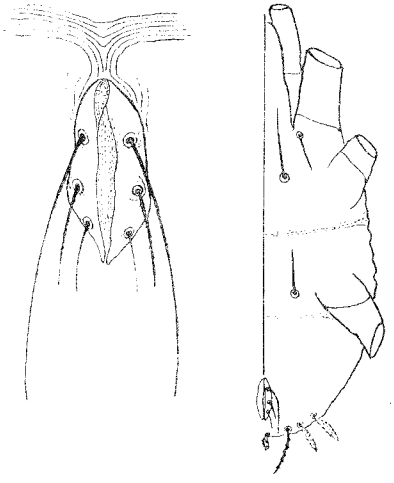

FIG. 8.—Ventral setation of larva.

Larva.

Similar to female but dorso-lateral foliaceous setae on both prodosoma and hysterosoma more pointed. Last four palmate setae on dorsum in a straight line. Caudum with only four pairs of ciliated flagellate setae and without foliaceous setae between these. Fifth segnemt of palpus bearing distally a blunt sensory rod and only one curved setae; only two tactile setae along length of segment. Fourth segment with spur reaching tip of segment five and bearing only two tactile setae. Peritreme not protruding ending in simple hook. Legs, 6, short and stubby. Tarsus I with only one sensory rod. Tibia I and Tarsus II each with single sensory rod. Ventral setation of body as in Fig. 8. At caudal end four pairs of setae, three pairs of which are foliaceous and one pair of coarsly ciliated setae. Genito-anal region with three pairs of primary genital setae. Dimensions of idiosoma shown in Table 1.

Protonymph.

Dorso-lateral setae of similar shape to those in larva. Last four palmate setae on dorsum arranged as in female. Caudum with five pairs of long ciliated flagellate setae of which outer pair are shortest. Small foliaceous setae between the long caudal setae as in female. Palpi and peritremes as in adults. Legs 8, Tarsus I with single sensory rod as in larva. Ventral setation of body as in Fig. 9. Genital region with four pairs of setae, of which three pairs are primary genital setae and anterior to these a pair of medio-ventral setae. Dimensions of idiosoma shown in Table .1

Deutonymph.

May be distinguished from protonymph by presence of two sensory rods on Tarsus I, and from the female by size and ventral setation (Fig. 10). In the genital region there are five pairs of setae, i.e., a pair of mediolateral setae additional to those of the protonymph. Dimensions of idiosoma shown in Table 1.

Tritonymph.

Similar to deutonymph except for size and ventral setation (Fig. 11). In the genital region seven pairs of setae, i.e., two pairs of secondary genital setae anterior to the primary genital setae in addition to those of the deutonymph. Dimensions of idiososma shown in Table 1.

Holotype female and allotype male—Mt. Wellington (c. 335m), Tasmania 10.VIII.61 on *Bedfordia salicina* D.C. (Compositae), in Australian National Insect Collection, Canberra, A.C.T.

Paratypes—9 males, 16 females, 8 larvae, 10 nymphs, Mt. Wellington, Tasmania 10.VIII.61 and 15.VIII.61 on *Bedfordia salicina* D.C. in Australian National Insect Collection, Canberra, A.C.T., South Australian Museum, Adelaide, British Museum (Natural History), London, and Department of Agriculture, Hobart.

Material Examined—In addition to the type material listed above, the following specimens were examined:—

Tasmania. Grevillea robusta, Cunn. (Proteaceae), Hobart, Tas. 13.XII.57 (larva); *Notelaea ligustrina,* Vent. (Oleaceae), Hayes, Tas. 20.II.62 (nymph); *Leucopogon parviflorus* (Andr.) Lindl. (Epacridaceae), Nubeena, Tas. 22.III.63 (nymph); *Bedfordia salicina* D.C., Mt. Wellington, Tas. 10.VIII.61 and 15.VIII.61 (8 females, 26 nymphs); *Callitris tasmanica* (Benth) B. & S. Cupressaceae), Orford 24.VII.63 (2 females, 1 nymph); *Acacia dealbata* Link. (Leguminosae), Hayes, Tasmania 19.IX.63 (female).

N.S.W. Galled twig, Privet, Sydney, N.S.W. Oct. 1916; Privet, Mosman, N.S.W. 7.VII.34 and 8.VIII.34; Eucalypt with apiomorpha gall, Boomi, N.S.W. 16.VIII.34 (3 slides); Cypress pine, Castle Hill, N.S.W. 23.VIII.34; Guava fruit N.S.W. 26.IV.55.

TABLE 1.

Table of measurements of *Tuckerella flabellifera.*

Stage	No. specimens examined	Size of Idiosoma (μ)				No. pairs setae in Genito-anal Region
		Length		Greatest Width		
		Range	Mean	Range	Mean	
Larva	8	210-225	214	135-180	153	3
Protonymph	14	235-280	265	150-200	180	4
Deutonymph	13	280-335	311	170-215	199	5
Titronymph	5	325-360	350	215-240	229	7
Adult:						
Male	12	290-340	312	175-210	196	5
Female	25	355-465	403	270-300	260	9

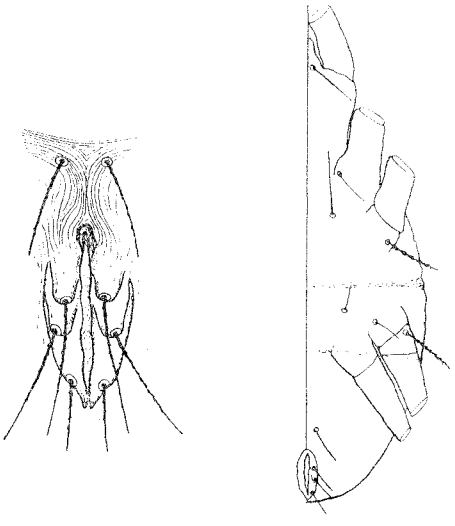

FIG. 9.—Ventral setation of protonymph.

DISCUSSION

Females of *T. flabellifera* are intermediate between *T. ornata* (Tucker) and *T. pavoniformis* (Ewing) in that they have five pairs of long caudal setae as in the former species but the last four palmate setae on the dorsum are similar to those in the latter species.

Males of *T. flabellifera* and the male of *T. spechtae* Womersley (previously designated as a female) have a single blunt sensory rod on Tarsi III and IV thus showing similarities between the males of the family Tuckerellidae and those of the related tetranychoid family Linotetranidae.

On the basis of measurements and ventral setation, the male of *T. flabellifera* appears to have only one nymphal stage, whereas the female has three. Even though the occurrence of a titronymphal stage in a tetranychoid mite may be unusual, no other interpretation could be placed on the data since analysis showed that the differences in size between deutonymphs (with 5 pairs of genital setae) tritonymphs (with 7 pairs of genital setae) and adult females (with 9 pairs of genital setae) were highly significant.

In 1940 Womersley erected the genus *Tuckerella* for the species *Tenuipalpus ornatus* described by Tucker from South Africa. In his paper Womersley figured and described a mite which he identified as *Tuckerella ornata* (Tucker). Baker & Pritchard (1953) considered that this was a misidentification for *T. pavoniformis* (Ewing). This opinion was apparently based on Womersley's figure which was of a mite with six pairs of long caudal setae and with the inner pair of the last four dorsal hysterosomals smaller and posterior to the outer pair. These characters would justify placement in *pavoniformis*.

In his description however, Womersley had stated that the caudum had " a tuft of 10-12 ciliated setae ".

Since the numbers of caudal setae have been considered as diagnostic characters for separation of the known species of the genus, an effort was made to obtain the material identified by Womersley.

Seven slides were located covering all the localities and hosts listed by Womersley. Only two of the slides were of adult females, the remainder being various nymphal stages. All of these specimens had only five pairs of caudal setae. Since Womersley did not list the number of specimens he examined, it is not possible to say whether all the material has been re-examined. There was, however, one female which was of the size given by Womersley.

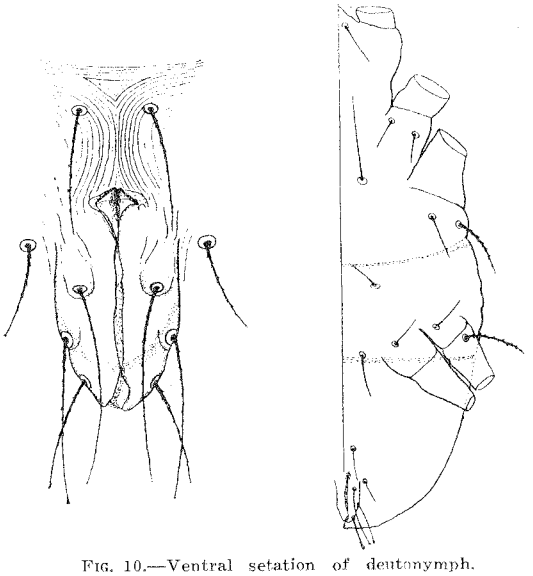

FIG. 10.—Ventral setation of deutonymph.

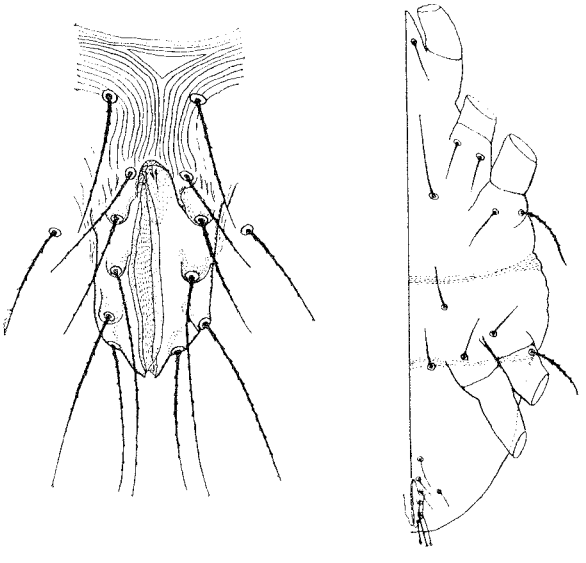

FIG. 11.—Ventral setation of tritonymph.

Since none of the specimens on these slides had six pairs of caudal setae it is most likely that Womersley was in error in his drawing, and this subsequently resulted in Baker & Pritchard considering that the specimens were *pavoniformis* (Ewing).

The specimens on the seven slides originally identified by Womersley as *T. ornata* (Tucker) are however, neither *ornata* nor *pavoniformis*, but are conspecific with the new species described herein.

It is doubtful therefore whether there is a valid record of *pavoniformis* from Australia and further more the host records for this species on eucalyptus, cypress pine, and privet, in Australia should be deleted (Baker & Pritchard (1953) also listed citrus as a further host attributing it to Womersley, but there is no mention of this host in Womersley's list).

ACKNOWLEDGMENTS

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