

MITES OF THE FAMILIES TENUIPALPIDAE AND TETRANYCHIDAE INTERCEPTED ENTERING NEW ZEALAND FROM OVERSEAS

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Summary

The species of mites and the hosts from which they have been recorded are given for the years 1958-66. The known host range, distribution, and economic importance of most species is also stated. One new species *Eotetranychus queenslandicus* is described.

INTRODUCTION

Mites of these two families can be regarded as some of the most destructive of the plant feeding species. Most of the economic species found in New Zealand are also found overseas, and it is assumed that these have entered the country at some previous date, presumably on nursery stock.

The species covered in this paper have all been taken from infested plant material intercepted by Port Agriculture Officers at ports and airports throughout New Zealand, and this is believed to be the first information giving details of mite interceptions.

Mites are readily overlooked, because they are small and frequently occur on the under surface of plant leaves. In spite of a careful check of plant material arriving in the country, it is likely that new species will periodically establish.

It is of interest therefore, to find what species are being most commonly intercepted, the host material on which they are occurring and the countries of origin. Information of this type may be used as a guide regarding likely future sources of infestation.

Fam. TENUIPALPIDAE Berlese 1913
Tenuipalpidae Berlese, 1913, *Acaroth. Ital.*, p. 17
Genus *Brevipalpus* Donnadieu, 1875

Brevipalpus Donnadieu, 1875, *Rech. Serv. Hist. Tetranych.*, p. 116

Brevipalpus californicus (Banks).

Tenuipalpus californicus Banks, 1904, Jour. N.Y. Ent. Soc. 12: 55.
Brevipalpus australis (Tucker), Baker, 1949, Amer. Midl. Nat. 42: 379.
Brevipalpus californicus (Banks), Baker and Pritchard, 1960, Hilgardia
 29: 11: 562.

Host	Country of Origin	Date of Interception
<i>Cattleya</i> sp.	Australia	17.x.64
(In association with <i>Tenuipalpus pacificus</i>)		
<i>Codiaeum</i> sp.	Western Samoa	26.iv.65
<i>Cymbidium longifolium</i>	India	13.vi.63
<i>Gardenia</i> sp.	Samoa	29.ix.64
<i>Murraya koenigii</i>	Fiji	20.viii.66
<i>Plumeria</i> sp.	Fiji	26.vii.64
<i>Plumeria</i> sp.	Fiji	15.xi.63
(In association with <i>B. phoenicis</i>)		
<i>Solanum Melongana</i>	Samoa	9.ii.65
(In association with <i>B. phoenicis</i>)		

Baker and Pritchard (1960) state that this species is widespread in the tropics and is known to occur outdoors in the very southern United States, Mexico, Hawaii, Ceylon, Malaya, Australia, the Middle East and Africa. They also state that it feeds on a wide variety of hosts, but is of most importance on citrus and orchids.

This species has been taken in New Zealand on *Cymbidium* sp. in a greenhouse at Tauranga on 30.vi.65 (C. S. Rondel) and it seems likely it could be readily introduced on orchids entering New Zealand.

It can be distinguished from the other two species mentioned in this paper by possessing six instead of five pairs of dorsolateral setae on the hysterosoma.

Brevipalpus obovatus Donnadieu

Brevipalpus obovatus Donnadieu, 1875, Rech. Serv. Hist. Tetranych. p. 116.
Brevipalpus inornatus (Banks), Attiah, 1956, Bul. Soc. Ent. Egypte 40: 440.
Brevipalpus obovatus Donnadieu, Baker and Pritchard, 1960 Hilgardia
 29: 11: 562.

Host	Country of Origin	Date of Interception
<i>Gerbera</i> sp.	Cook Is.	2.xi.64
<i>Hibiscus</i> sp.	Norfolk Is.	2.xii.65
<i>Piper Betle</i>	Fiji	10.xii.63
(In association with <i>B. phoenicis</i>)		
<i>Plumeria</i> sp.	Norfolk Is.	4.viii.59

Baker and Pritchard (1960) record this as a widespread species known from the United States, Venezuela, Argentine, Hawaii, Japan, Ceylon, Australia, the Middle East, Europe, Africa and New Zealand. It has a wide host range.

This seems to be the commonest species of *Brevipalpus* encountered in New Zealand. Collyer (1964) stated "it occurred rarely on orchard trees, but was most abundant on some other plants." Collections in the Department of Agriculture, Levin record it from *Rhododendron* sp, Massey College, 15.vi.61 (T. N. Flint); *Viburnum japonicum*, Levin. 6.vi.63 (D. C. M. Manson); Pohutukawa [*Metrosideros* sp.] Auckland, 17.xii.63 (M. McNamara), and *Gerbera* sp., Hastings, 18.xii.64 (N. Gardner).

Brevipalpus phoenicis (Geijskes)

Tenuipalpus phoenicis Geijskes, 1939, Meded. Landbouwh. Wageningen 42 (4): 230.

Brevipalpus phoenicis (Geijskes), Baker and Pritchard, 1960 Hilgardia 29: 11: 563.

Host	Country of Origin	Date of Interception
<i>Acalypha</i> sp.	Norfolk Is.	17.iii.63 26.vii.65
<i>Citrus aurantifolia</i>	Tonga	24.i.65
<i>Citrus limonia</i>	Samoa	28.viii.63
<i>Citrus limonia</i>	Tonga	23.x.63
<i>Citrus limonia</i>	Tonga	13.x.64
<i>Citrus paradisi</i>	Society Is.	17.ix.64
<i>Citrus paradisi</i>	Tahiti	3.ix.63
<i>Citrus sinensis</i>	Cook Is.	16.i.64
<i>Citrus sinensis</i>	Cook Is.	19.v.64
<i>Citrus sinensis</i>	Cook Is.	19.vi.64
<i>Citrus sinensis</i>	? Fiji	23.vi.63
<i>Citrus sinensis</i>	? Fiji	25.v.64
<i>Citrus sinensis</i>	New Caledonia	13.viii.64
<i>Citrus sinensis</i>	Norfolk Is.	15.vi.64
<i>Citrus sinensis</i>	Pitcairn Is.	19.vi.64
<i>Citrus sinensis</i>	Pitcairn Is.	1.iii.65
<i>Citrus sinensis</i>	South Africa	10.ix.62
<i>Citrus</i> sp.	Cook Is.	11.v.65
<i>Citrus</i> sp.	Pitcairn Is.	4.viii.64
<i>Cocos nucifera</i>	Tahiti	21.v.63
<i>Coleus</i> sp.	Fiji	25.vii.63

<i>Gardenia</i> sp.	Fiji	15.ix.65
<i>Hibiscus</i> sp.	Cook Is.	2.xi.64
<i>Hibiscus</i> sp.	Fiji	9.x.63
<i>Hibiscus</i> sp.	Fiji	21.i.64
<i>Hibiscus</i> sp.	Fiji	7.ix.64
<i>Hibiscus</i> sp.	Fiji	22.ix.64
<i>Hibiscus</i> sp.	Fiji	21.x.64
<i>Murraya koenigii</i>	Fiji	20.viii.66
<i>Piper Betle</i>	Fiji	19.xii.63
<i>Piper Betle</i>	Fiji	31.vii.64
<i>Plumeria</i> sp.	Fiji	9.x.63
<i>Plumeria</i> sp.	Norfolk Is.	22.vi.63
<i>Solanum Melongana</i>	Samoa	9.ii.65
Mixed Cuttings	Cook Is.	22.vii.66
Mixed Cuttings	Samoa	11.iv.66
Unknown	Fiji	28.iv.64

Of the species intercepted, *B. phoenicis* is the commonest, particularly on citrus fruit and all the above records from citrus are of fruit. It can be distinguished from other species of *Brevipalpus* in that the female possesses two sensory rods on tarsus II (Fig. 1B) and has five dorsolateral hysterosomal setae (Fig. 1A). That *B. phoenicis* shows certain structural variation is indicated by Pritchard and Baker (1952), and Manson (1963). Variation is also shown in the above intercepted material, particularly in the extent of the reticulation of the dorsolateral areas of the propodosoma and the size of the dorsal body setae. Specimens from citrus frequently have a reduced amount of reticulation on the propodosoma (Fig. 1C) and the body setae are quite broad (Fig. 1E). Specimens from *Hibiscus*, on the other hand, tend to have extensive reticulation (Fig. 1A) and the body setae are narrow (Fig. 1D). Specimens from other hosts may show characters intermediate to these.

In spite of the frequency with which this species has been intercepted, it seems to have been taken only occasionally in New Zealand. In the collection of the Department of Agriculture, Levin, it has been recorded from orchids, Tauranga, 30.vi.65 (C. S. Rondel), where it was found in association with *B. californicus*; on orchids, Wanganui, 26. vii. 65 (L. Marter) and from grass, Levin, 31.viii.66 (D. C. M. Manson).

Overseas, it is known to be widespread in tropical areas, occurring on a variety of host plants.

Genus *Tenuipalpus* Donnadieu 1875

Tenuipalpus Donnadieu, 1875, Rech. Serv. Hist. Tetranych., p. 111.

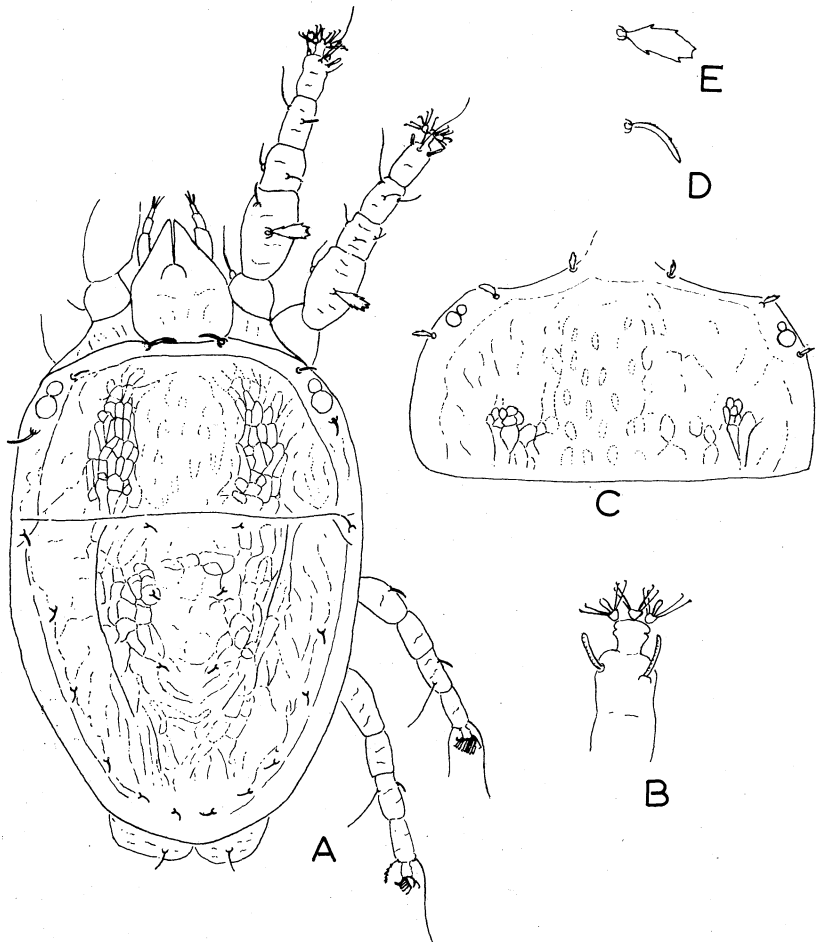


FIG. 1—*Brevipalpus phoenicis*—female. A. Dorsal view of specimen on *Hibiscus* from Cook Is. B. Tarsus II showing two sensory rods. C. Dorsal view of propodosoma of specimen on *Citrus* sp. from Fiji. D. Enlarged view of dorsal body seta of specimen from *Hibiscus*. E. Enlarged view of dorsal body seta of specimen from *Citrus*.

Tenuipalpus pacificus Baker

Tenuipalpus pacificus Baker 1945, Proc. Ent. Soc. Wash., 47: 38.

Host	Country of Origin	Date of Interception
<i>Cattleya</i> sp.	Australia	17.x.64
Orchidaceae	Singapore	22.vi.63

Orchidaceae	? Fiji	18.i.64
<i>Platyserium</i> sp.	Australia	27.viii.63

This species is known to be a pest of orchids. I do not believe it is present in New Zealand.

Overseas countries from which it has been recorded are Holland, Australia, the Philippine Islands, Java, and the U.S.A. It frequently occurs in greenhouses.

Fam. TETRANYCHIDAE Donnadieu, 1875

Tetranychides Donnadieu, 1875, Recher, Serv. Hist. Tetranych., p. 9.

Genus *Eotetranychus* Oudemans, 1931

Eotetranychus Oudemans, 1931, Ent. Ber. 8 (178): 224.

Eotetranychus queenslandicus n. sp.

This species was taken once on croton plants (*Codiaeum* sp.) from Queensland, Australia on 23.iv.64. It appears to be distinct from any known species of *Eotetranychus* and is described as a new species at the end of this paper.

Genus *Schizotetranychus*, Tragardh, 1915

Schizotetranychus Tragardh, 1915, Stockholm Landtbr. Akad. Handl. 54: 277.

Schizotetranychus baltazarae Rimando

Schizotetranychus baltazari Rimando 1962, Phil. Agric. 45 (10): 540.

Schizotetranychus ?baltazari Rimando, Manson, 1963, Acarologia V: 3: 360.

Several specimens of this species were taken from the leaves of *Murraya koenigii*, from India on 21.ix.65.

This species has been recorded previously only from *Citrus*. It does not occur in New Zealand.

Genus *Tetranychus* Dufour 1832

Tetranychus Dufour, 1832, Ann. Sci. Natl. Paris 25: 276.

Tetranychus ludeni Zacher

Tetranychus ludeni Zacher, 1913, Mitt. kais bid. Arst. Land-Forstw., 14: 40.

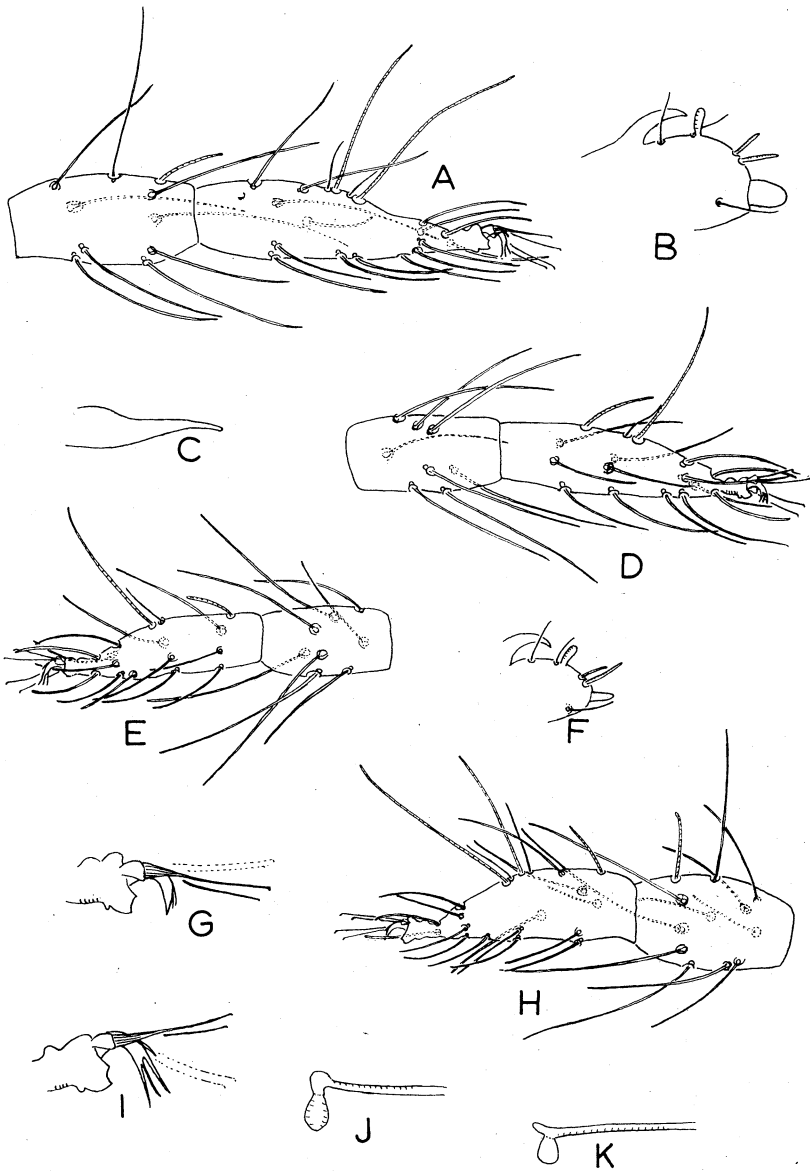


FIG. 2—*Eotetranychus queenslandicus* n. sp. A. Leg I of female. B. Terminal segment of palpus of female. C. Aedeagus. D. Leg II of female. E. Leg II of male. F. Terminal segment of palpus of male. G. Empodium I of male. H. Leg I of male. I. Empodium I of female. J. Termination of peritreme of female. K. Termination of peritreme of male.

Normal number of setae on each leg segment, excluding duplex setae (t = tactile, s = sensory).

Tarsus I 14t + 1s; tibia I 9t + 1s; genu I 5t; femur I 10t.

Tarsus II 13t + 1s; tibia II 8t; genu II 5t; femur II 7t.

Tarsus III 10t + 1s; tibia III 6t; genu III 4t; femur III 4t.

Tarsus IV 10t + 1s; tibia IV 7t; genu IV 4t; femur IV 3t.

MALE (Fig. 2C, E, F, G, H, K). Description from five specimens. Length of body $239 \pm 5 \mu$, greatest width of body 156μ (from 1 specimen only). Distal margin of stylophore rounded. Terminal sensillum of palpus more slender than in female, about three times as long as broad. Peritreme terminating with a sharp right angle bend, almost "hatchet shaped". Dorsal body setae long, slender, tapering, finely pubescent. Length of dorsocentral setae $55-75 \mu$. Empodium I with a few slender dorsal hairs, empodial spur lacking.

Leg. lengths (excluding empodium and coxa)

Leg I $185 \pm 6 \mu$ (tarsus $53 \pm 2 \mu$, tibia $36 \pm 2 \mu$, genu $32 \pm 1 \mu$, femur $64 \pm 4 \mu$).

Leg II $147 \pm 8 \mu$ ($48 \pm 3 \mu$, $29 \pm 2 \mu$, $26 \pm 4 \mu$, $45 \pm 4 \mu$).

Leg III $150 \pm 5 \mu$ ($51 \pm 4 \mu$, $32 \pm 2 \mu$, $25 \pm 1 \mu$, $44 \pm 1 \mu$).

Leg IV $180 \pm 11 \mu$ ($55 \pm 4 \mu$, $38 \pm 2 \mu$, $29 \pm 2 \mu$, $58 \pm 4 \mu$).

Normal number of setae on each leg segment, excluding duplex setae (t = tactile, s = sensory).

Tarsus I 13t + 3s; tibia I 9t + 4s (sometimes 9t + 3s); genu I 5t; femur I 7t or 8t.

Tarsus II 13t + 1s; tibia II 8t; genu II 5t; femur II ? 6t or 7t.

Tarsus III 10t + 1s; tibia III 6t; genu III 4t; femur III 4t.

Tarsus IV 10t + 1s; tibia IV 7t; genu IV 4t; femur IV 3t.

Aedeagus directed caudad, slender, tapering, terminating bluntly.

HOST AND LOCALITY: Five specimens were found in association with *Tetranychus neocaledonicus* on the undersurface of a leaf of a croton (*Codiaeum* sp.) plant from Queensland, Australia on 23.iv.64.

HOLOTYPE: Male, in the collection of the United States National Museum, Washington D.C., U.S.A.

PARATYPES: Four males, eighteen females. In the United States National Museum and the collection of the Department of Agriculture, Levin.

This species most closely resembles *Eotetranychus pamela* Manson but can be distinguished by the more elongate aedeagus, and also by the shape of the terminal sensillum of the palpus in the males, this being rather sharply tapered and pointed in *E. pamela* whereas in *E. queenslandicus* it terminates more bluntly.

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