Tetranychus kanzawai Kishida 1927

Material examined
- non-types

Taxonomy
- Subfamily Tetranychinae
- Tribe Tetranychini

Common Name
- Kanawa spider mite
- Tea red spider mite

Distribution
- Australia, China, Colombia, Congo, Greece, Hong Kong, India, Indonesia, Japan, Korea, Malaysia, Mexico, Okinawa Island, Papua New Guinea, Philippines, South Africa, Taiwan, Thailand, USA

Taxonomy Changes
- Tetranychus kanzawai Kishida 1927
- Tetranychus hydrangeae Pritchard & Baker 1955, synonymy Wainstein 1960

Diagnosis

Female
- empodia I-IV with minute (usually I-II) or absent (usually III-IV) dorsal spur above proximoventral hairs (Figs 1-5)
- tarsus I with the sockets of four tactile setae proximal to, and one solenidion overlapping, the socket of the proximal duplex seta (Fig. 5)
- pregestational striae longitudinal, with broad band of broken striae anteriorly; striae can be weak or widely spaced (Figs 6, 7)
- peritreme with long recurved hook (Fig. 8)
- prodorsum with longitudinal striae with strong lobes (Fig. 9)
- dorsal striae between dorsal setae \( e_1-f_1 \) forming the classic diamond pattern - i.e. longitudinal or irregular between \( e_1-e_1 \); transverse between \( e_1-f_1 \); longitudinal between \( f_1-f_1 \) (Figs 10, 11)
- dorsal striae between setae \( f_1-f_2 \) irregular (Fig. 11)
- ventral striae without lobes (Davis (1968) recorded mesal ventral striae with broadly triangular to rounded lobes)
- carmine when alive

Male
- empodia I-IV with strong dorsal spur above proximoventral hairs (4 long) (Figs 12-14)
- empodium I with proximoventral hairs fused to form a ventral claw; dorsal spur much smaller than ventral claw (Figs 12, 14)
- tarsus I with the sockets of four tactile setae and two solenidia proximal to, and one solenidion overlapping, the socket of the proximal duplex seta (Fig. 15)
- shape of aedeagus in individuals identified as \( T. kanzawai \) is quite variable, between individuals and within a single individual (as the shape changes with the focus)
  - Japanese specimens: aedeagus dorsally directed, with strong neck and distinct knob; anterior projection broadly rounded (but can appear ventrally truncate); posterior projection short triangular; dorsal margin of knob
strongly convex; dorsal margin of shaft at 10-20° angle to ventral margin, abruptly bending dorsad at 70-80° angle; ventral margin of shaft straight (Figs 16, 17, 20)

**other specimens:** aedeagus directed dorsally with strong neck and distinct knob; anterior projection short broad triangular; posterior projection short tapering triangular, slightly curved ventrally; dorsal margin of knob strongly convex at one focal point or angulate at different focal point; dorsal margin of shaft at approx. 20° angle to ventral margin before abruptly bending dorsally and then anteriorly to form anterior projection; ventral margin of shaft straight (Figs 18, 19)

**yellow-orange**

**Hosts**

Over 100 recorded species of host plant, including: Ageratum sp., Ambrosia ambrosioides (Asteraceae), Artocarpus heterophyllus (Moraceae), Averrhoa carambola (Oxalidaceae), Boehmeria nivea (Urticaceae), Camellia sinensis (Theaceae), Capsicum annuum (Solanaceae), Carica papaya (Caricaceae), Citrullus lanatus (Cucurbitaceae), Citrus grandis, C. limon (Rutaceae), Cordyline fruticosa, C. terminalis (Astelaceae), Cucumis melo, Cucurbita sp. (Cucurbitaceae), Euphorbia pulcherrima (Euphorbiaceae), Ficus religiosa (Moraceae), Fragaria sp. (Rosaceae), Gardenia jasminoides (Rubiacae), Glycine max (Fabaceae), Humulus japonicus, H. lupulus (Cannabaceae), Hydrangea hortensia, H. macrophylla (Hydrangeaceae), Malus domestica (Rosaceae), Manihot esculenta, M. glaziovii, M. maritima (Euphorbiaceae), *Morus alba* (Moraceae), Murraya paniculata (Rutaceae), Phaseolus lunatus, P. vulgaris (Fabaceae), Prunus avium, P. campanulata, P. persica (Rosaceae), Pueraria lobata, P. montana (Fabaceae), Pyrus communis, Rosa sp., Rubus crataegifolius, R. thunbergii (Rosaceae), Saccharum officinarum (Poaceae), Solanum nigrum, S. torvum (Solanaceae), Sorghum bicolor (Poaceae), Tectona grandis, Verbena hortensis, V. phlogiflora (Verbenaceae), Vigna angularis, V. catiann (Fabaceae), Zea mays (Poaceae)

**Similar Taxa**

*Tetranychus parakanzawai* Ehara 1999

*Tetranychus kanzawai* can be separated from *T. parakanzawai* by the length of the knob of the aedeagus (according to Ehara (1999)) (Fig. 21):

*parakanzawai* = 3.3 μm; *kanzawai* = 4 μm

see also Similar Taxa for *T. urticae*

**Biology**

Little has been published on the biology of this mite in Australia. In an anonymous NSW Department of Agriculture Entomology Branch Insect Pest Bulletin it is recorded that the mite may cause severe injury to hydrangeas during early spring, especially in warm, dry situations. Foliation attacked becomes severely mottled and cup-like blisters form on the young leaves. Flower heads are deformed, reduced in size and show an irregular multi-coloured mottled effect.

The species is well studied in Japan. Although tea and hydrangea are recorded as major hosts, *T. kanzawai* does better on mulberry (Gotoh & Gomi 2003). At 25°C, development from egg to adult ranges from 9.3-12.2 days for females and 8.6-11.6 days for males. Variation is apparently caused by seasonal changes in host plant quality. In Japan (moderate temperature region), populations of this mite peak in size during spring (May-June in Japan) and in autumn (September-October in Japan) (Gotoh & Gomi 2000).

*Tetranychus kanzawai* occasionally causes significant damage to crops, nursery plants and plants in urban landscaping (Jeppson et al. 1975), and is listed as a minor pest of citrus (Gerson 2003).

**References**


*Kishida, K. (1927) Notes on Tetranychus kanzawai n. sp. a new tetranychid mite injurious to leaves of the mulberry tree in Japan. Zool. Mag. 39: 105-107


Notes

Davis (1968:58) recorded this species as Tetranychus hydrangeae Pritchard & Baker; and noted that although the species was recorded only from the Nambour district, the host plant Hydrangea macrophylla is a popular introduced garden plant which has been widely distributed in the country, most likely taking the mite with it.

It should be noted from the images provided for this species that there is morphological variation within this species. Images from three different species of host plant have been presented to demonstrate this variation. It is not known if this variation is significant in terms of species limits or not (i.e. there could be more than one species being called T. kanzawai).

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Fig. 18. *Tetranychus kanzawai* adult males (non-types) - detail of variation in aedeagus between individuals, and within an individual (at different focal points; three different individuals).

Fig. 19. *Tetranychus kanzawai* adult males (non-types) - detail of variation in aedeagus between individuals.

Fig. 20. *Tetranychus kanzawai* adult male - detail of variation in aedeagus between individuals from Japan (modified from Ehara 1956).

Fig. 21. Comparison of the aedeagi of the two cryptic species *Tetranychus kanzawai* and *T. parakanzawai* (modified from Ehara 1999).