



Morphological and molecular analyses of the six-spotted spider mite, *Eotetranychus sexmaculatus* (Riley) (Tetranychidae)—a pest more widespread than anticipated?*

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A spider mite species initially identified as the six-spotted spider mite, *Eotetranychus sexmaculatus* (Riley), was recorded defoliating avocado trees, *Persea americana* Mill. (Lauraceae), in the southwestern parts of Western Australia. However, due to morphological inconsistencies in the descriptions of *E. sexmaculatus*, it has recently been suggested that these Australian specimens actually represented the native species *E. queenslandicus* Manson and that *E. sexmaculatus* was in fact not present in Australia (Seeman *et al.* 2017). This conflict resulted in an investigation into the taxonomic history of *E. sexmaculatus* and its possible synonyms, including *E. asiaticus* Ehara, a species that is so morphologically close to *E. sexmaculatus* that it was in fact described (Ehara 1966) from material that was originally identified as the first record of *E. sexmaculatus* in Japan (Ehara 1956). Both Seeman *et al.* (2017) and Gotoh & Arabuli (2019) have previously noted that both these taxa, and *E. queenslandicus*, closely resemble each other and are difficult to separate. Consequently, detailed morphological and molecular analyses were undertaken to test their conspecificity by comparing type specimens of *E. queenslandicus* and *E. asiaticus*, specimens of *E. sexmaculatus* from near the type location (Florida, USA) on the type host (*Citrus*), as well as non-type specimens from Australia (putatively *E. queenslandicus*), New Zealand, Japan (putatively *E. asiaticus*), USA (Florida, Hawaii, California) and Taiwan. Selected non-types were further compared using the cytochrome *c* oxidase subunit I (COI) gene of mitochondrial DNA and the internal transcribed spacer 2 (ITS2) of nuclear DNA. Based on the results of morphological and molecular analyses, we discuss the validity of these three species.

Keywords: Taxonomy, systematics, Tetranychoida

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