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New records of flat mites (Acari: Tenuipalpidae) from India

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Short note

ABSTRACT

Six species of Tenuipalpidae are reported for the first time from India among the seventeen species from South Bengal in the current collection. Among them, three species belong to the genus *Brevipalpus*, *B. melichrus* Pritchard and Baker, *B. mitrofanovi* (Pegazzano) and *B. turrialbensis* Manson; one species of the genus *Cenopalpus*, *C. picitilis* Chaudhri; and the remaining two species belong to the genus *Tenuipalpus*, *T. crassulus* Baker and Tuttle and *T. leipoldti* Meyer.

Keywords *Brevipalpus*, *Tenuipalpus*, *Cenopalpus*, plant mite

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Introduction

The Tenuipalpidae (Acari: Prostigmata: Tetranychoida) commonly known as flat mites or false spider mites is cosmopolitan in distribution and economically very important pest species as they infest fruit trees, vegetables, crops, medicinal, ornamental and other economic plants and causes economic loss. More than 1100 species under 38 genera of flat mites are reported across the world (Beard *et al.*, 2014). Presently 102 species under 15 genera are found in India as per latest record by Gupta and Mandal (2015). In present study we report seventeen tenuipalpid species from southern part of West Bengal of which six species are new to the Indian fauna.

Materials and methods

We conducted monthly field survey from 3 January 2015 to 29 December 2017 in various agri-horticultural crop fields, as well as forest and grassland of southern part of West Bengal, India. A total of 2762 leaf samples were brought to the laboratory and examined under a stereoscopic research microscope (Motic SMZ-168 Stereo Zoom Microscope). Mite specimens were temporarily preserved in 70% ethyl alcohol and were cleared in lactic acid (50%) for 24-48 hours then mounted on slides in Hoyer's medium (Walter and Krantz, 2009) and slides were dried on a hot-plate at 40°C for further taxonomic identification. Mites were initially examined under Motic DM-B1 Digital Microscope. For further analysis and detailed characterization NIKON Eclipse 50i DIC microscope was used.

The specimens were identified using the key of Mitrofanov (1973 a, b); Meyer (1993); Beard *et al.* (2012, 2015); Gupta and Mandal (2015) and Welbourn *et al.* (2017). For the classification the catalogue of Mesa *et al.*, (2009) and checklist of Khanjani *et al.*, (2013) were consulted. The specimens are deposited in the National Zoological Collection of Zoological Survey of India, Kolkata.

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Results

Genus *Brevipalpus* Donnadieu

Brevipalpus californicus (Banks, 1904)

Material examined — 7♀ and 3♂, Sonarpur [22.4491° N, 88.3915° E], South 24 Parganas, West Bengal on *Nerium oleander* L. 11 April 2015, coll. Subhasree Mitra. 4♀, Duttapukur [22.7712° N, 88.5444° E], North 24 Parganas, West Bengal on *Carica papaya* L. 31 August 2015, coll. Subhasree Mitra. 3♀ and 1♂, Kulpi [22.0815° N, 88.2449° E], South 24 Parganas, West Bengal on *Alstonia scholaris* (L.) R. Br. 16 March 2016, coll. Subhasree Mitra. 3♀ and 2♂, Taki [22.5864° N, 88.9079° E], North 24 Parganas, West Bengal on *Jasminum grandiflorum* L. 24 October 2017, coll. Subhasree Mitra.

Distribution — California, India, Pakistan.

Brevipalpus cucurbitae Mohanasundaram, 1982

Material examined — 3♀ and 1♂, Contai [21.7811°N, 87.7450°E], East Midnapore, West Bengal on *Cucurbita maxima* Duchesne, 12 March 2015, coll. Subhasree Mitra. 2♀ and 1♂, Arambag [22.8728°N, 87.7911°E], Hoogly, West Bengal on *Psidium guajava* L. 23 August 2015, coll. Subhasree Mitra.

Distribution — India.

Brevipalpus essigi Baker, 1949

Material examined — 2♀ and 1♂, Narendrapur [22.4391°N, 88.3968°E], South 24 Parganas, West Bengal on *Theobroma cacao* L. 8 September 2016, coll. Subhasree Mitra. 4♀ and 2♂, Diamond Harbour [22.1987°N, 88.2023°E], South 24 Parganas, West Bengal on *Hibiscus rosa-sinensis* L. 30 March 2015, coll. Subhasree Mitra.

Distribution — California, India, Mexico.

Brevipalpus euphorbiae Mohanasundaram, 1982

Material examined — 1♀ and 1♂, Baharampur [24.0988°N, 88.2679°E], Murshidabad, West Bengal on *Croton* sp., 22 January 2016, coll. Subhasree Mitra. 2♀ and 1♂, Birati [22.6636°N, 88.4273°E], North 24 Parganas, West Bengal on *Terminalia chebula* Retz. 20 August 2015, coll. Subhasree Mitra.

Distribution — India.

Brevipalpus lewisi McGregor, 1949

Material examined — 5♀ and 1♂, Narendrapur [22.4391°N, 88.3968°E], South 24 Parganas, West Bengal on *Justicia adhatoda* L. 11 January 17, coll. Subhasree Mitra. 4♀ and 1♂, Joypur Forest [24.0162°N, 87.2562°E], Bankura, West Bengal on *Morus alba* L. 3 June 2015, coll. Subhasree Mitra. 3♀, Kalyani [22.9751° N, 88.4345° E], Nadia, West Bengal on *Conyza stricta* Willd. 13 May 2016, coll. Subhasree Mitra.

Distribution — California, India, Pakistan.

Brevipalpus melichrus Pritchard & Baker, 1952

Material examined — 5♀ and 2♂, Jayrambati [22.9253°N, 87.6149°E], Bankura, West Bengal on *Nyctanthes arbor-tristis* L. 1 June 2015, coll. Subhasree Mitra. 3♀ and 1♂, Kamarpukur [22.8976°N, 87.6556°E], Bankura, West Bengal on *Ocimum tenuiflorum* L. 2 June 2015, coll. Subhasree Mitra.

Distribution — California, India.

Remarks — New record from India.

***Brevipalpus mitrofanovi* (Pegazzano, 1975)**

Material examined — 6♀ and 1♂, Raidighi [22.0012°N, 88.4354°E], South 24 Parganas, West Bengal on *Rosa chinensis* Jacq. 8 June 2016, coll. Subhasree Mitra. 2♀ and 2♂, Kalikapur [22.5009°N, 88.3949°E], South 24 Parganas, West Bengal on *Citrus aurantiifolia* (Christm.) Swingle 11 April 2016, coll. Subhasree Mitra.

Distribution — India, Italy.

Remarks — New record from India.

***Brevipalpus obovatus* Donnadieu, 1875**

Material examined — 4♀ and 1♂, Kakwip [21.8760° N, 88.1853° E], South 24 Parganas; West Bengal on *Cannabis indica* Lam. 28 May 2016, coll. Subhasree Mitra. 1♀ and 1♂, Bishnupur [23.0679° N, 87.3165° E], Bankura, West Bengal on *Ficus carica* L. 4 June 2015, coll. Subhasree Mitra. 2♀ and 2♂, Liluah [22.6171° N, 88.3191° E], Howrah, West Bengal on *Citrus medica* L. 18 November 2016, coll. Subhasree Mitra. 6♀ and 2♂, Narendrapur [22.4391°N, 88.3968°E], South 24 Parganas, West Bengal on *Justicia adhatoda* L. 1 June 2015, coll. Subhasree Mitra. 4♀ and 1♂, Joypur Forest [24.0162°N,87.2562°E], Bankura, West Bengal on *Morus alba* L. 3 July 2015, coll. Subhasree Mitra. 3♀, Kalyani [22.9751° N, 88.4345° E], Nadia, West Bengal on *Conyza stricta* Willd. 13 May 2016, coll. Subhasree Mitra.

Distribution — Cosmopolitan.

***Brevipalpus phoenicis* Geijskes, 1939**

Material examined — 3♀ and 1♂, Raipur [22.4313° N, 88.2169° E], South 24 Parganas, West Bengal on *Musa sapientum* L. 9 January 2016, coll. Subhasree Mitra. 4♀ and 2♂, Raidighi [22.0012°N, 88.4354°E], South 24 Parganas, West Bengal on *Lantana camara* L. 19 February 2017, coll. Subhasree Mitra. 2♀ and 2♂, Hatibagan [22.5975° N, 88.3707° E], Kolkata, West Bengal on *Clerodendrum indicum* (L.) Kuntze 26 March 2015, coll. Subhasree Mitra. 4♀ and 1♂, Canning [22.3104°N, 88.6579°E], South 24 Parganas, West Bengal on *Carica papaya* L. 19 May 2016, coll. Subhasree Mitra. 3♀ and 2♂, Lake Town [22.6070°N, 88.4028°E], Kolkata, West Bengal on *Carica papaya* L. 21 February 2017, coll. Subhasree Mitra.

Distribution Cosmopolitan.

***Brevipalpus rica* Chaudhri, 1972**

Material examined — 3♀ and 2♂, Joypur Forest [24.0162°N, 87.2562°E], Bankura, West Bengal on *Tecoma grandis* Kraenzl. 4 June 2015, coll. Subhasree Mitra. 5♀ and 1♂, Narendrapur [22.4391°N, 88.3968°E], South 24 Parganas, West Bengal on *Momordica charantia* L. 12 September 2016, coll. Subhasree Mitra.

Distribution — India, Pakistan.

***Brevipalpus turrialbensis* Manson, 1963**

Material examined — 2♀, Narendrapur [22.4391°N, 88.3968°E], South 24 Parganas, West Bengal on *Momordica cochinchinensis* (Lour.) Spreng. 3 February 2015, coll. Subhasree Mitra. 1♀, Dumurjola [22.5958°N, 88.2639°E], Howrah, West Bengal on *Setaria paniculifera* (Steud.) E. Fourn. 24 December 2016, coll. Subhasree Mitra. 1♀, Bandel [22.9274°N,88.3773°E], Hooghly, West Bengal on *Barleria cristata* L. 6 February 2017, coll. Subhasree Mitra.

Distribution — Costa Rica, India.

Remarks — New record from India.

Genus *Cenopalpus* Pritchard & Baker***Cenopalpus picitilis* (Chaudhri, 1971)**

Material examined — 4♀ and 2♂, Joypur Forest [24.0162°N, 87.2562°E], Bankura, West Bengal on *Syzygium jambolanum* (Lam.) DC. 4 July 2015, coll. Subhasree Mitra. 6♀ and 3♂, Narendrapur [22.4391°N, 88.3968°E], South 24 Parganas, West Bengal on *Justicia adhatoda* L. 22 November 2016, coll. Subhasree Mitra.

Distribution — Pakistan, India.

Remarks — New record from India.

Genus *Tenuipalpus* Donnadieu***Tenuipalpus bassaie* Mohanasundaram, 1988**

Material examined — 3♀ and 1♂, Narendrapur [22.4391°N, 88.3968°E], South 24 Parganas, West Bengal on *Hibiscus rosa-sinensis* L. 13 February 2016, coll. Subhasree Mitra.

Distribution — India.

***Tenuipalpus crassulus* Baker and Tuttle, 1972**

Material examined — 4♀ and 1♂, Barasat [22.7228°N, 88.4806°E], North 24 Parganas, West Bengal on *Hibiscus rosa sinensis* L. 11 July 2016, coll. Subhasree Mitra. 3♀ and 1♂, Dumdum [22.6471°N, 88.4317°E], Kolkata, West Bengal on *Aegle marmelos* (L.) Corrêa 24 March 2017, coll. Subhasree Mitra.

Distribution — Guatemala, India, Netherland, Washington.

Remarks — New record from India.

***Tenuipalpus crassus* Andre, 1953**

Material examined — 2♀ and 1♂, Joynagar-Majilpur [22.49716°N, 88.68081°E], South 24 Parganas, West Bengal on *Garcinia indica* (Thouars) Choisy 23 March 2017, coll. Subhasree Mitra.

Distribution — France, India.

***Tenuipalpus leipoldti* Meyer, 1993**

Material examined — 2♀ and 1♂, Barrackpore [22.7674°N, 88.3883°E], North 24 Parganas, West Bengal on *Rosa indica* L. 18 May 2016, coll. Subhasree Mitra. 3♀, Garden Reach [22.5335°N, 88.2996°E], Kolkata, West Bengal on *Ficus hispida* L.f. 27 February 2017, coll. Subhasree Mitra.

Distribution — India, South Africa.

Remarks — New record from India.

***Tenuipalpus leptadeniae* Mohanasundaram, 1995**

Material examined — 2♀, Digha [21.6266° N, 87.5074° E], East Midnapore, West Bengal on *Leptadenia reticulata* (Retz.) Wight and Arn. 19 May 2017, coll. Subhasree Mitra.

Distribution — India.

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References

- Beard J. J., Ochoa R., Bauchan G. R., Trice M.D., Redford A. J., Walters T.W., Mitter C. 2012. Flat Mites of the World [Available from: <http://www.idtools.org/id/mites/flatmites/index.php>. April 2015].
- Beard J.J., Seeman O.D., Bauchan G.R. 2014. Tenuipalpidae (Acari: Trombidiformes) from Casuarinaceae (Fagales). *Zootaxa*, 3778 (1): 1-157. doi:10.11646/zootaxa.3778.1.1
- Beard J.J., Ochoa R., Braswell W.E., Bauchan G.R. 2015. *Brevipalpus phoenicis* (Geijskes) species complex -a closer look. *Zootaxa*, 3944 (1): 1-67. doi:10.11646/zootaxa.3944.1.1
- Gupta S.K., Mandal P. 2015. A monograph on Indian Tenuipalpidae (Acari: Prostigmata) with their economic importance and keys to genera and species. *Memoirs of the Zoological Survey of India*. 22(2): 1-9.
- Khanjani M., Farzan S., Asadi M., Khanjani M. 2013. Checklist of the flat mites (Acari: Trombidiformes: Tenuipalpidae) of Iran. *Persian Journal of Acarology*, 2 (2): 235-251.
- Mesa N.C., Ochoa R., Welbourn W.C., Evans G.A., de Moraes G.J. 2009. A catalog of the Tenuipalpidae (Acari) of the World with a key to genera. *Zootaxa*, 2098: 1-185.
- Meyer M.K.P. 1993. A revision of the genus *Tenuipalpus* Donnadieu (Acari: Tenuipalpidae) in the Afrotropical region. *Entomology Memoir of the Department of Agriculture, Republic South Africa*, 88: 1-84.
- Mitrofanov V.I. 1973a. Revision of the subfamily Brevipalpinae (Trombidiformes, Tenuipalpidae). *Zoologicheskii Zhurnal*, 52: 507-512.
- Mitrofanov V.I. 1973b. Revision of the system of phytophagous mites of the subfamily Tenuiplapinae (Trombidiformes, Tenuipalpidae). *Zoologicheskii Zhurnal*, 52: 1315-1320.
- Walter D.E., Krantz G.W. 2009. Collecting, rearing, and preparing specimens. Krantz G.W., Walter D.E. (Eds.). *A Manual of Acarology*. Texas Tech University Press, 3: 83-94.
- Welbourn W.C., Beard J.J., Bauchan G.R., Ochoa R. 2017. Description of a new species of *Tenuipalpus* (Acari: Trombidiformes) from succulent plants in Florida, USA, and a redescription of *T. crassulus* Baker and Tuttle. *International Journal of Acarology*, 43(2): 112-136. doi:10.1080/01647954.2016.1255253