

# The Invasive Flat Mite, *Brevipalpus californicus* (Banks, 1904) in Hungary: Notes to the Morphology, New Locality and New Host

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Three specimens of invasive pest mite, *Brevipalpus californicus* (Banks, 1904) were collected on leaves of *Dracaena marginata* ‘Tricolor’ plant. The collected specimens belong to the Beard et al. (2015) “species B group” on the basis of the morphology of prodorsal and opisthonotal pattern. A new key to the Hungarian *Brevipalpus* is given.

**Keywords:** *Brevipalpus*, new data, Hungary.

Tenuipalpid mites are a diverse group of plant parasitic mites found in majority regions of the Earth. Numerous species are important economical pests, especially some species from the genus *Brevipalpus*. Till today only six species of *Brevipalpus* are listed in Hungary (Kontschán and Ripka, 2017), namely *Brevipalpus californicus* (Banks, 1904); *Brevipalpus lewisi* McGregor, 1949; *Brevipalpus obovatus* Donnadieu, 1875; *Brevipalpus recki* Livschitz and Mitrofanov, 1967; *Brevipalpus tiliae* De Leon, 1961 and *Brevipalpus thelycraniae* Livschitz and Mitrofanov, 1967. Three from the Hungarian species are rarely found and do not have economic impact (*B. recki*, *B. tiliae*, *B. thelycraniae*). Contrary the latter mentioned ones, the other three *Brevipalpus* species are important from plant protection point of view. The *B. lewisi* and *B. obovatus* are widely distributed, both can cause damage on several different plants, but *B. lewisi* is one of the noted pests of the grapevine in Hungary (Kontschán and Ripka, 2017).

The sixth species (*B. californicus*) is not native to Hungary, only one reported occurrence is known. Ripka et al. (2002) mentioned it from leaves of an indoor palm (*Phoenix dactylifera*). *B. californicus* is a widely distributed invasive pest mite, with four different morphotypes (Beard et al., 2015). Beside the important pest role in the agroecosystems,

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this species is also a vector of some different viruses, like nuclear citrus leprosis virus, citrus leprosis virus N (CiLV-N) and citrus necrotic spot virus (CiNSV) (Roy et al., 2015).

## Materials and Methods

Some specimens of *Brevipalpus californicus* (Banks, 1904) were collected on the leaves of *Dracaena marginata* 'Tricolor' plant. The specimens were placed into lactic acid for a week and then slide-mounted in Keifer's F-medium.

All specimens were investigated by Leica 1000 scientific microscope; the illustrations were made with the aid of a drawing tube on this microscope. All measurements and scales are given in micrometers.

## Result

### *Brevipalpus californicus* (Banks, 1904)

*Tenuipalpus californicus* Banks, 1904: 55.

*Brevipalpus californicus*: Ripka et al. 2002.

Material examined. Three females. 1281, Hungary, Budapest, XI. distr., from leaves of *Dracaena marginata* 'Tricolor' 11. November 2011. Leg. G. Ripka.

Diagnosis (Based on female). Tarsus II with two solenidia distally. Prodorsal surface entirely reticulate, with large closed cells; cuticle posterior to *e1-e1* wrinkled, with a few short, weak chevrons to transverse folds, genital plates with transversely aligned elongate cells; sometimes forming transverse band, the ventral plates bear medium to large rounded cells.

Description. Female (n = 3).

Idiosoma reddish-brown, oval in shape, body measured from *v2* to *h1* 496–500; width 350–360 near setae *sc2*; distance between setae *sc2* 320–325; length of legs I–IV (without coxa), leg I 205–210, leg II 175–182, leg III 190–195, leg IV 200–210.

Dorsum (Fig. 1): Propodosoma reticulate, with large close cells. Opisthosoma with polygonal reticulations; smaller cells fused larger, cuticle posterior to *e1-e1* wrinkled, with a few short, weak chevrons to transverse folds. Propodosomal and opisthosomal setae simple finely barbed.

Length of dorsal setae: *v2* 17–18, *sc1* 22–23, *sc2* 21–23, *c1* 17–18, *c3* 20–21, *d1* 17–18, *d3* 22–23, *e1* 15–16, *e3* 17–18, *f2* 17–18, *f3*, *h1* and *h2* 17–19.

Venter (Fig. 2a): Ventral plates bear medium to large rounded cells, genital plates with transversely aligned elongate cells; sometimes forming transverse band.

Length of ventral setae, *1a* 97–100, *3a* 25–27, *4a* 87–90, *1b* 18–19, *2b* 18–19, *3b* 16–17, *4b* 20–22, *1c* 15–16, *2c* 16–17, *ag* 13–14, *g1* 25–26, *g2* 25–26. Pseudanal setae, all 20–22. All ventral setae simple and smooth.

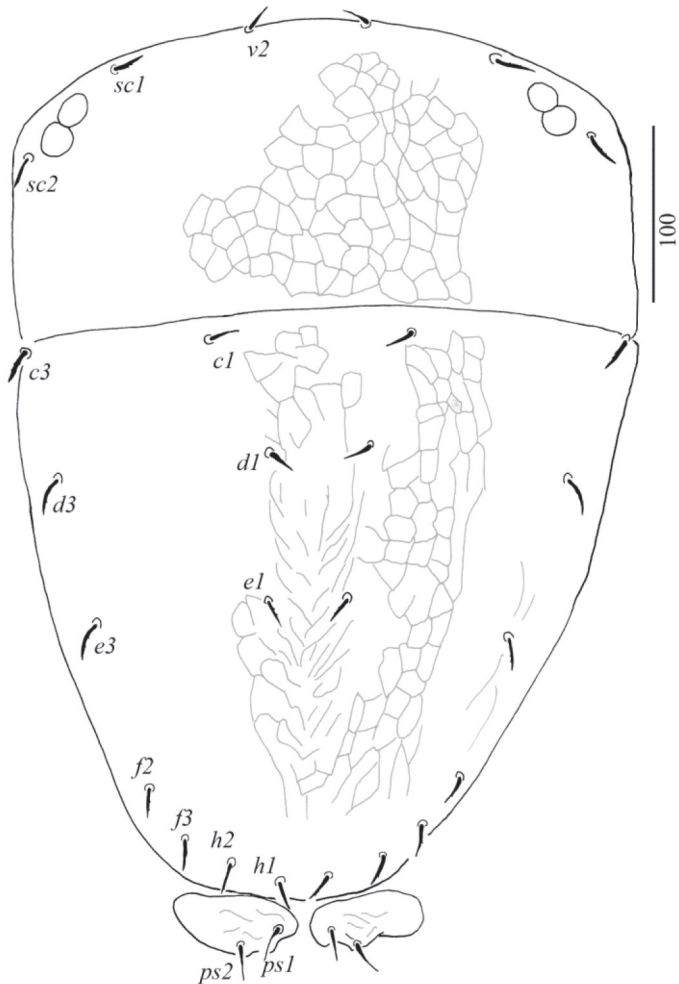


Fig. 1. *Brevipalpus californicus* (Banks, 1904) from Hungary, female: dorsal view of idiosoma

Gnathosoma (Fig. 2b and c): Palp setal counts: tarsus with one solenidion and two eupathidia, tibia with two setae, genu with one seta. All setae barbed. Subcapitulum with setae *m* (7–8).

Legs (Fig. 2d–g): Tarsus II with two solenidia distally. Setal formula for legs I–IV (coxae to tarsi): 3-1-4-3-5-9, 2-1-4-3-5-10, 2-1-2-1-3-5, 2-1-1-1-3-5.

#### Notes to the morphology

Beard et al. (2015) divided into four morphotypes within the *Brevipalpus californicus*. The now presented specimens belong to the species group B based on the following character combinations: (1) prodorsal surface entirely reticulate, with large closed cells; central reticulation usually weak, but cells are usually closed; occasionally central cells

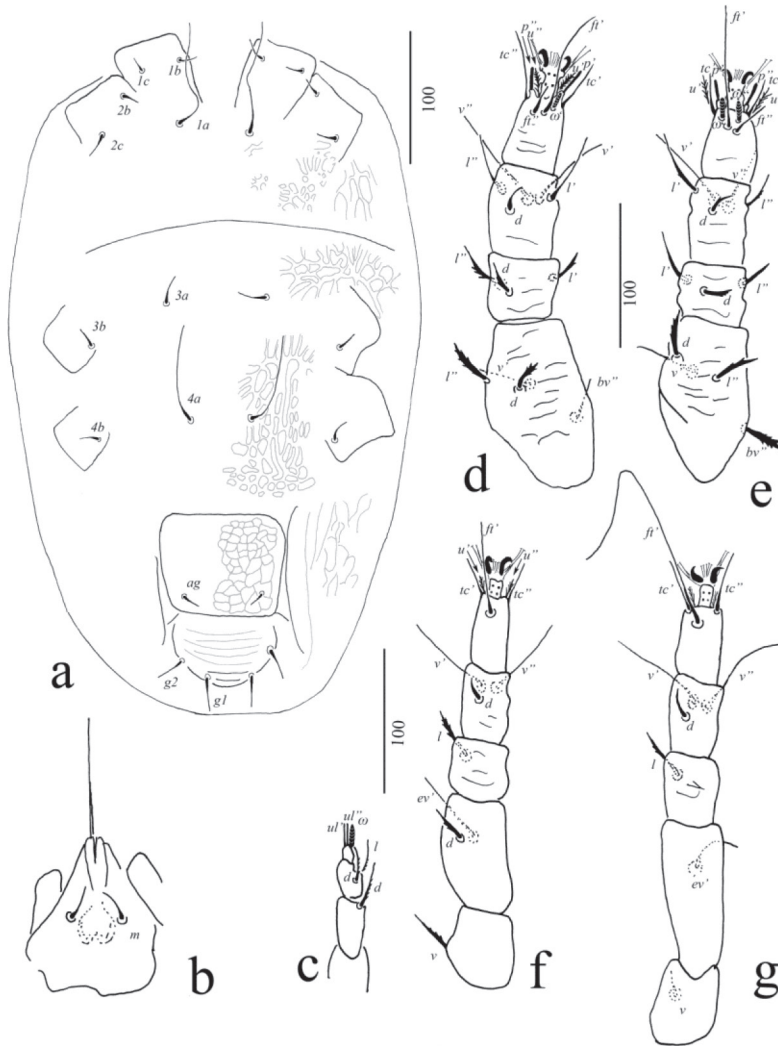


Fig. 2. *Brevipalpus californicus* (Banks, 1904) from Hungary, female: a: ventral view of idiosoma, b: ventral view of gnathosoma, c: dorsal view of palp, d: dorsal view of leg I, e: dorsal view of leg II, f: dorsal view of leg III, g: dorsal view of leg IV.

fuse to form larger cells; (2) the cuticle posterior to *e1-e1* is wrinkled, with a few short, weak chevrons (= V-shaped) to transverse folds, (3) the genital plates with transversely aligned elongate cells; sometimes forming transverse band sand (4) the ventral plates bear medium to large rounded cells. This morphotype is reported only from Italy in Europe, this is the first record of Hungary.

*Notes to the host plants*

The two Hungarian host plants of *B. californicus* are indoor, ornamental plants, which are not native to Hungary. Maybe the Hungarian specimens of this mite were introduced by host plants to our country. Due to the climatic change, there are possibilities to the acclimatization of this species to the outdoor habitats and later can cause high risk for the cultivated plants in Hungary.

## Key to the Hungarian species of genus *Brevipalpus*

- 1, All opisthosomal setae short ..... 2
  - One part of opisthosomal setae long ..... 5
- 2, Surface of opisthosoma with transversal striae ..... *Brevipalpus tiliae*
  - Surface of opisthosoma with longitudinal striae ..... 3
- 3, Two solenidia present on tarsi of leg II ..... *Brevipalpus californicus*
  - One solenidion present on tarsi of leg II ..... 4
- 4, Cuticle V-shaped at level of setae *e*<sub>3</sub> ..... *Brevipalpus lewisi*
  - Cuticle transversal at level of setae *e*<sub>3</sub> ..... *Brevipalpus obovatus*
- 5, Setae *c*<sub>1</sub> and *c*<sub>2</sub> wide and phylliform ..... *Brevipalpus recki*
  - Setae *c*<sub>1</sub> and *c*<sub>2</sub> narrow and needle-like ..... *Brevipalpus thelycraniae*

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