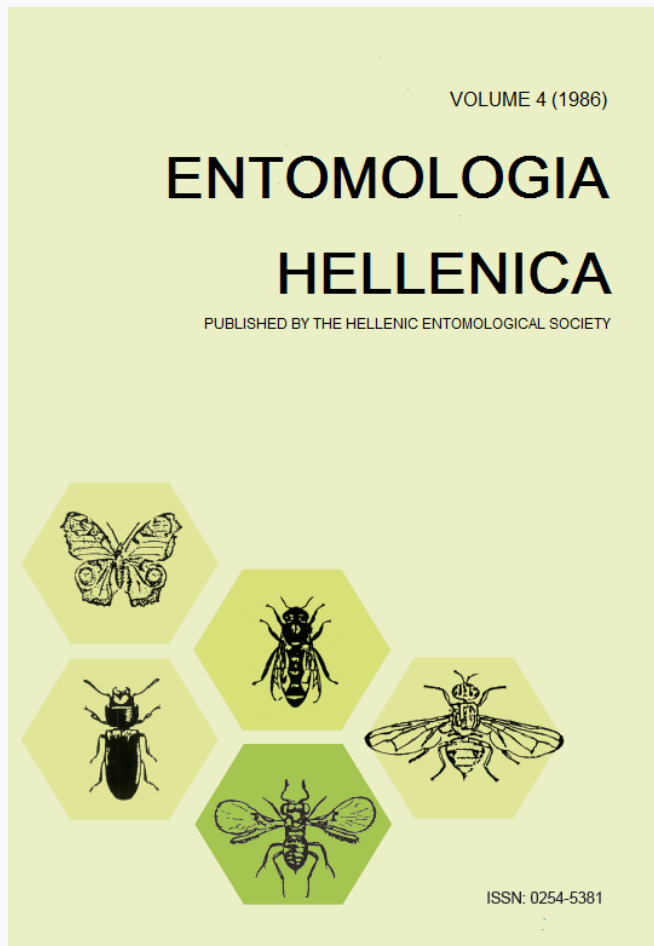


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The Genus *Brevipalpus* in Greece (Acari: Tenuipalpidae)¹

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ABSTRACT

The genus *Brevipalpus* from Greece is revised and a key to 18 species is provided, with illustrations of the nymphs. Twelve species were formerly recorded: *B. atalantae* (Hatzinikolis), *B. californicus* (Banks), *B. chalkidicus* (Hatzinikolis), *B. hellenicus* (Hatzinikolis and Kolovos), *B. lewisi* McGregor, *B. macedonicus* (Hatzinikolis), *B. obovatus* Donnadieu, *B. oleae* Baker, *B. olearius* Sayed, *B. olivicola* (Pegazzano and Castagnoli), *B. phoenicis* (Geijskes) and *B. russulus* (Boisduval). The following six species are now recorded for the first time from Greece: *B. cuneatus* (Canestrini and Fanzago), *B. essigi* Baker, *B. lilium* Baker, *B. mallorquensis* Pritchard and Baker, *B. pini* Baker and *B. sayedi* Baker. A review of hosts, distribution and economic importance is presented for each species.

Introduction

Brevipalpus Donnadieu, 1875 is a large genus of mites which contains a number of species of economic importance which attack a wide range of host plants and have a world-wide distribution. The mites may be recognized by a four-segmented palpus and the absence of dorso-sublateral setae. Nymphs may differ significantly in the shape of the dorsal body setae, which are often of great significance in species determination. The fauna of *Brevipalpus* in Greece is poorly known. Our knowledge on Greek Brevipalpid mites is confined to those species reported from olive trees (Hatzinikolis 1978, 1983, 1985 and Hatzinikolis and Kolovos 1985). Bouchelos et al. (1965) reported *B. phoenicis* from orange trees, later, Hatzinikolis (1970, 1982) reported *B. obovatus* from quince trees, *B. russulus* from *Echinocactus*, and *B. californicus* and *B. lewisi* from citrus.

Materials and Methods

The material for this study was collected at the Lycovrysi Acarology Laboratory, during the period 1966-85, from plant samples which were received from Agricultural Institutions, local Agricultural Services, individuals, or were collected by the author. Methods of collecting, killing, preservation, clearing, pigmentation, fixing and mounting were described by Hatzinikolis (1982). Most of the samples were collected in eastern mainland Greece, including Macedonia and Thrace, and to a lesser extent in western Greece and the Islands. The great majority of samples were taken from cultivated fruit trees, vegetables, ornamental plants, fodder, grapes and crops cultivated for the food processing industry. A limited number of samples was also taken from cereals, forest trees and various indigenous plants. All the material is deposited in the collection of the Acarology Laboratory of the Agricultural Research Centre, Athens.

Results

The present investigation of the genus *Brevipalpus* in Greece deals with the following 18 species: *B. atalantae*, *B. californicus*, *B. chal-*

¹Received for publication November 24, 1986.

kidicus, *B. cuneatus*, *B. essigi*, *B. hellenicus*, *B. lewisi*, *B. lilium*, *B. macedonicus*, *B. mallorquensis*, *B. obovatus*, *B. oleae*, *B. olearius*, *B. olivicola*, *B. phoenicis*, *B. pini*, *B. russufus* and *B. sayedi*. The symptoms induced by these mites are briefly described and their host range is also included under each species. A key based on females and nymphs is provided. Illustrations of nymphs (dorsal view showing setae) to facilitate the separation of the species of *Brevipalpus* in Greece are given (Figs. 1-18).

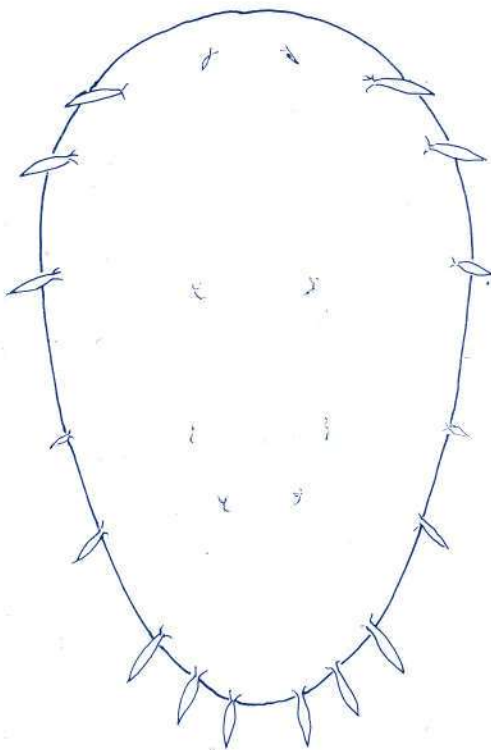


FIG. 1. *B. obovatus*, nymph, dorsal view showing setae.

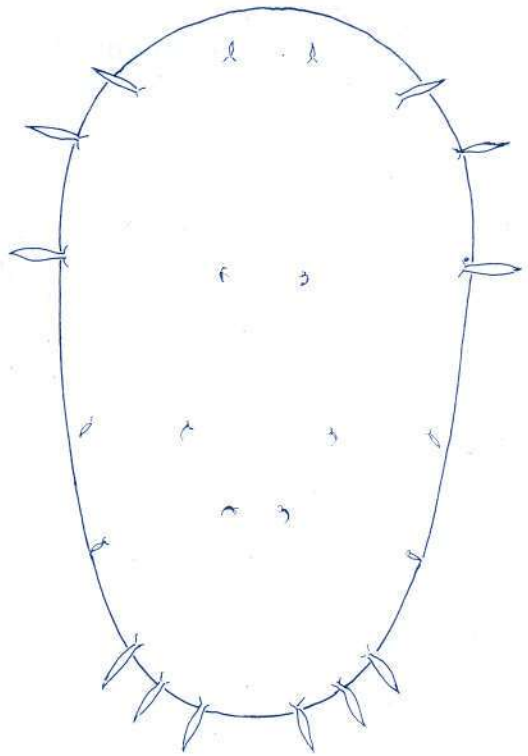


FIG. 2. *B. phoenicis*, nymph, dorsal view showing setae.

a. Key to species based on females and nymphs

1. Hysterosoma with five pairs of dorsolaterals 2
 - Hysterosoma with six pairs of dorsolaterals 3
2. Tarsus II with a single sensory rod. Nymphs 3, 4, 5 dorsolateral setae long; 2 middle; 1 small *obovatus*
 - Tarsus II with two sensory rods. Nymphs 3, 4, 5 dorsolateral setae long; 1, 2 small *phoenicis*
3. Tarsus II with a single sensory rod 4
 - Tarsus II with two sensory rods. Nymphs 3, 4, 5, 6 dorsolateral setae long; 1, 2 small *californicus*
4. Rostrum extending beyond distal end of femur I 5
 - Rostrum not extending beyond distal end of femur I 9
5. Rostrum reaching middle of genu I. Propodosoma with reticulation mediolaterally, smooth mediodorsally; body setae broadly lanceolate. Nymphs 1, 4, 6 dorsolateral setae long; 2, 3, 5 small *olivicola*
 - Rostrum reaching distal part of genu I. Propodosoma with irregular coalesced areolae; body setae subclavate. Nymphs with 1, 2, 4, 6 dorsolateral setae long; 3, 5 small *olearius*
6. Rostrum reaching distal end of genu I 7
 - Rostrum reaching distal end of tibia I. Propodosoma and hysterosoma with pores. Nymphs with 1 and 4 dorsolateral setae long; 2, 3, 5, 6 small *atalantae*
7. Propodosoma with reticulation but

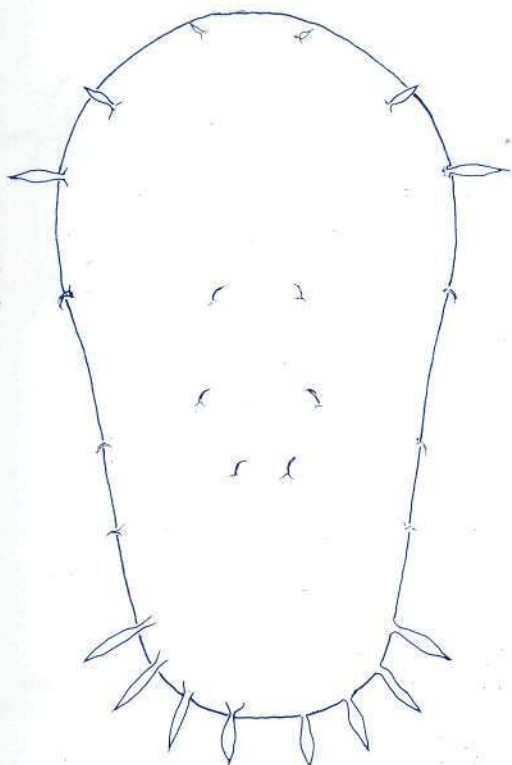


FIG. 3. *B. californicus*, nymph, dorsal view showing setae.

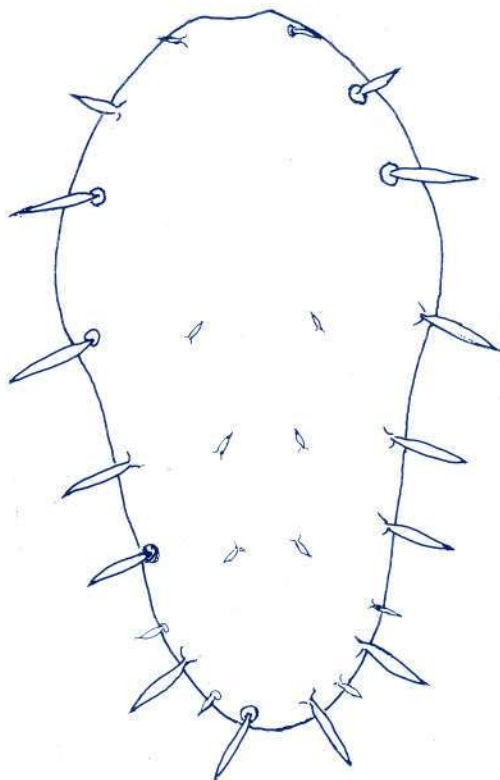


FIG. 5. *B. olearius*, nymph, dorsal view showing setae.

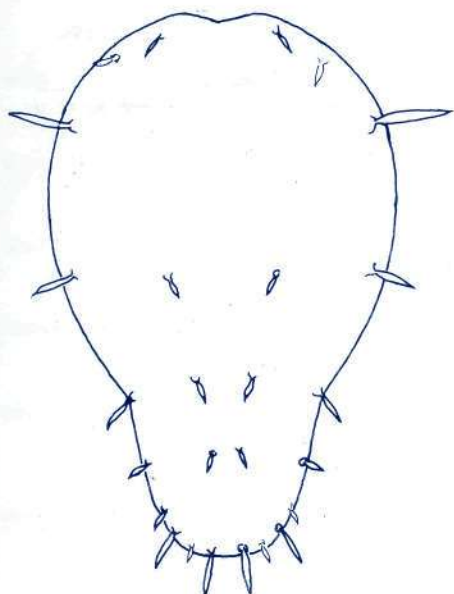


FIG. 4. *B. olivicola*, nymph, dorsal view showing setae.

- smooth mediodorsally; body setae lanceolate tapering.
- Nymphs with 4, 6 dorsolateral setae long; 1, 2, 4 small *oleae*
- Propodosoma with reticulation but with areolae prosteriorly; body setae lanceolate. Nymphs with 1, 4, 6 dorsolateral setae long; 2, 3, 5 small *macedonicus*
8. Hysterosoma with pores; Propodosoma with reticulation elements of different shapes and sizes. Nymphs with fourth dorsolateral seta long; 1, 2, 3, 5, 6 small *hellenicus*
- Hysterosoma without pores. Propodosoma with reticulation elements of similar shapes and sizes. Nymphs with 1, 2, 4 dorsolateral setae long; 3, 6 medium; fifth small *chalkidicus*
9. Podosoma with anterior medioventrals considerably shorter than posterior pair 10
- Podosoma with medioventral setae subequal in length. Nymphs with third dorsolateral seta flagellate; 1, 2, 4, 5, 6 small *cuneatus*
10. Rostral shield with 4 median lobes 11

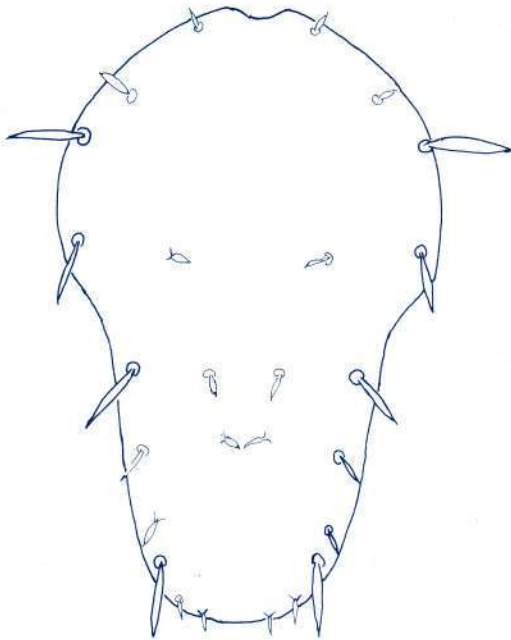


FIG. 6. *B. atalantae* nymph, dorsal view showing setae.

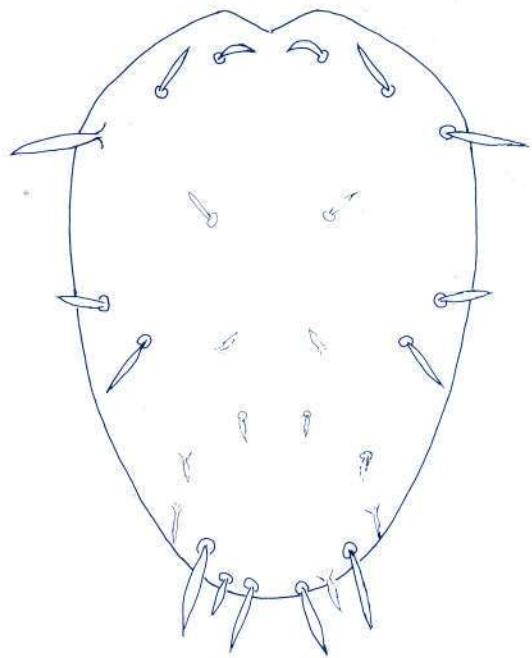


FIG. 8. *B. macedonicus*, nymph, dorsal view showing setae.

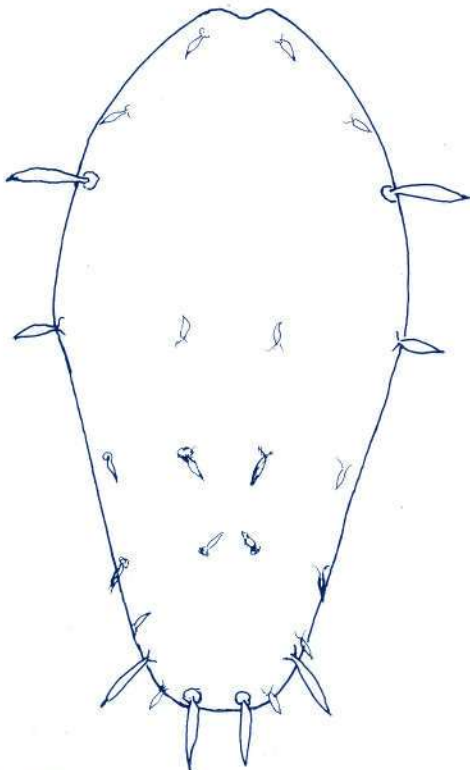


FIG. 7. *B. oleae*, nymph, dorsal view showing setae.

- Rostral shield with 2 median lobes.
Nymphs with 1, 2, 4 dorsolateral setae long; 3, 5, 6 small *sayedi*
- 11. Hysterosomal pores present 12
- Hysterosomal pores absent 13
- 12. Propodosoma with an even reticulation pattern mediolaterally. Nymphs with 3rd propodosomal seta long; 1, 2 small *lilium*
- Propodosoma with a very irregular reticulation pattern mediolaterally. Nymphs with 2, 3 propodosomal setae long; 1 small *lewisi*
- 13. Propodosoma with reticulation elements being of equal length and width. Nymphs with 4th dorsolateral seta long; 1, 2, 3, 5, 6 small *essigi*
- Propodosoma with reticulation elements of different shapes and sizes. Nymphs with 3, 4, 5, 6 dorsolateral setae long; 1, 2 small *russulus*
- 14. Hysterosoma with very wide oval area of transverse striae on the posteromedial portion. Nymphs with all dorsolateral setae minute *pini*
- Hysterosoma with narrow, almost triangular, area of transverse striae on the posteromedial portion. Nymphs 4, 6 dorsolateral setae long; 1, 2, 3, 5 small *mallorquensis*

b. Notes on the species

Brevipalpus atalantae (Hatzinikolis)

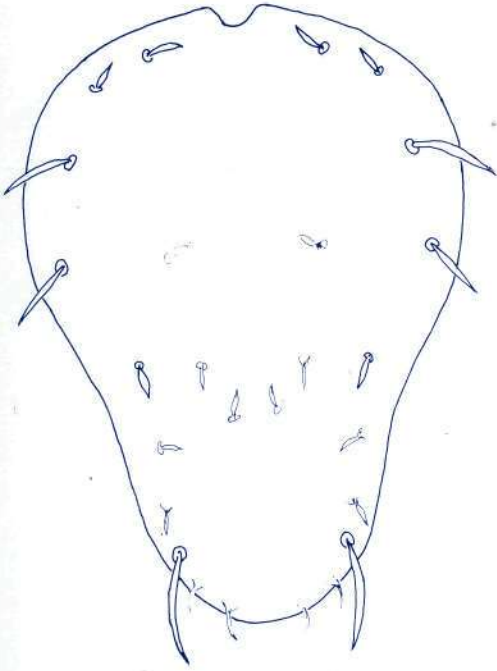


FIG. 9. *B. hellenicus*, nymph, dorsal view showing setae.

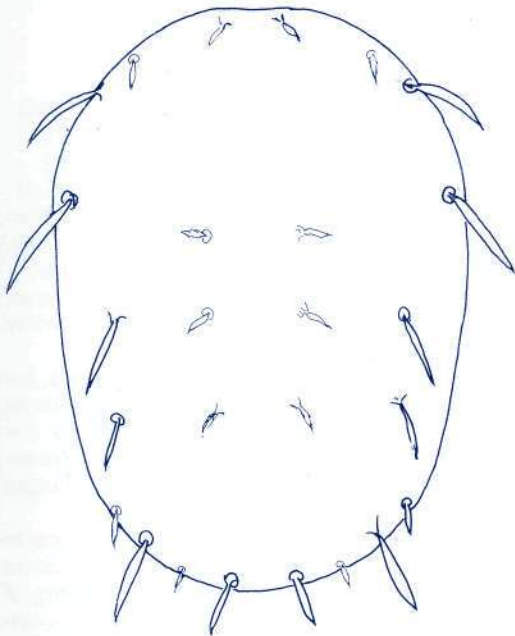


FIG. 10. *B. chalkidicus*, nymph, dorsal view showing setae.

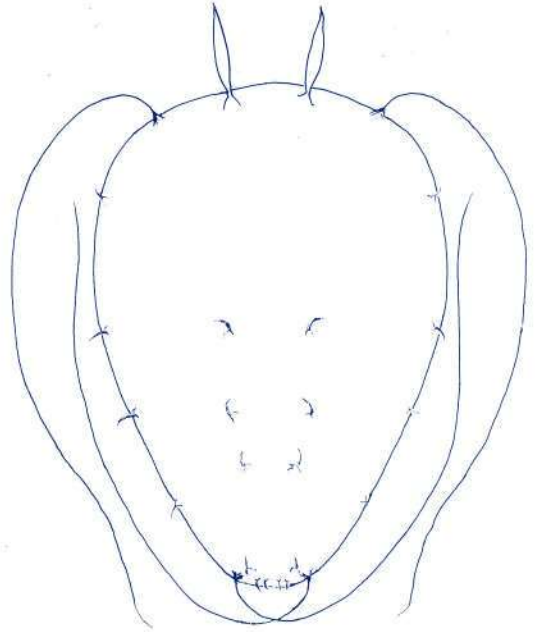


FIG. 11. *B. cuneatus*, nymph, dorsal view showing setae.

Hystripalpus atalantae Hatzinikolis, 1978.

Brevipalpus atalantae Hatzinikolis, 1986.

Records: Greece (Attiki, Phthiotis, island Evvia).

Host: *Olea europaea* (olive).

New records: Korinthos, Viotia, Rethimno (Crete) on olive trees.

Relation to host: It is found in large populations on buds and leaves of young shoots. It causes damage to the young stems, inflorescences and fruit.

Brevipalpus californicus (Banks)

Tenuipalpus californicus Banks, 1904.

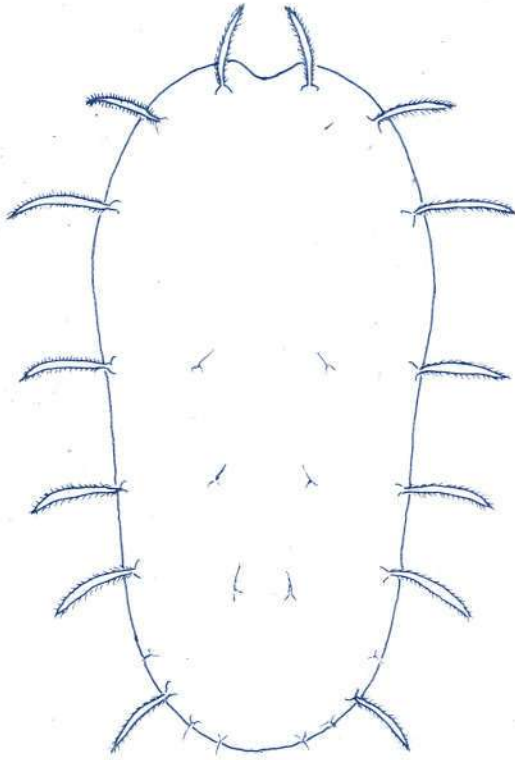
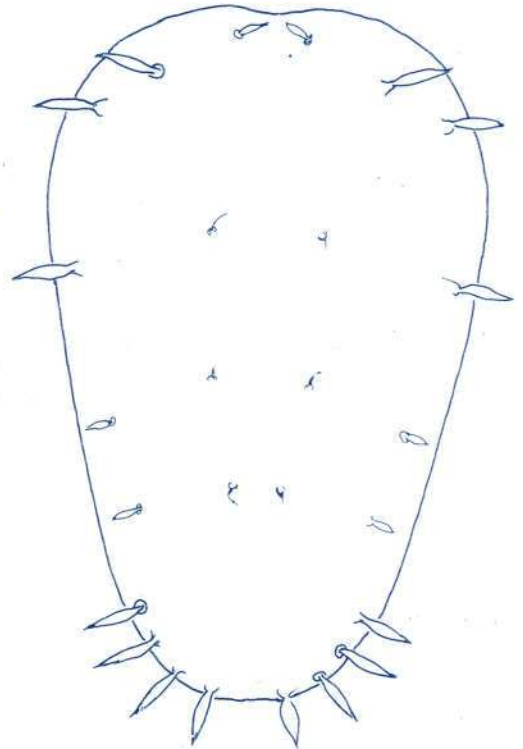
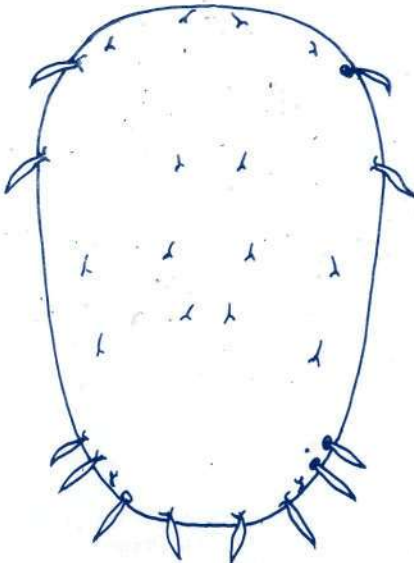
Tenuipalpus australis Tucker, 1926; Womersley, 1941; Lawrence, 1943. Ney synonymy.

Tenuipalpus vitis Womersley, 1940. Ney synonymy.

Brevipalpus australis Baker, 1949; Pritchard and Baker, 1952; Attiah, 1956; McGregor, 1956. Ney synonymy.

Brevipalpus confusus Baker, 1949; André, 1953. Ney synonymy.

Brevipalpus californicus McGregor, 1949; Pritchard and Baker, 1952; McGregor, 1956; Pritchard and Baker, 1958; Baker and Pritchard, 1960; Meyer and Rodrigues, 1966; Livshitz and

FIG. 12. *B. sayedi*, nymph, dorsal view showing setae.FIG. 14. *B. lewisi*, nymph, dorsal view showing setae.FIG. 13. *B. lilium*, nymph, dorsal view showing setae.

Mitrofanov, 1967; - Rodrigues, 1968; Wafa, 1968-69; Yousef, 1970; Jeppson et al., 1975. *Hystripalpus californicus* Hatzinikolis, 1982. Records: Asia, Africa, Australia, Middle East, Pacific Islands, Greece, France, Israel, Portugal, Spain, Taiwan, Turkey, U.S.S.R., North, Central and South America, West Indies. Hosts: *Citrus*, *Cocos*, *Ficus*, *Malus*, *Prunus*, *Pyrus*, *Solanum*, *Thea*, *Vitis* and a wide variety of ornamental plants.

New records: Arta, Crete, Etoloakarnania, Ionian Islands, Peloponnisos, Preveza, Rodos on *Citrus*: *C. limonium* (lemon), *C. media* (citron), *C. nobilis* (mandarin), *C. sinensis* (orange, sweet citrus) and on *Fuchsia*, *Hydrangea macrophylla*, *Scindapsus aureus*.

Relation to host: It is a serious pest of *Citrus* in Greece, where it causes a silvering of lemon and mandarin fruits and a brown speckling of oranges and sweet oranges. It also causes cellular necroses of the epidermis of *Citrus* fruits.

Brevipalpus chalkidicus (Hatzinikolis)

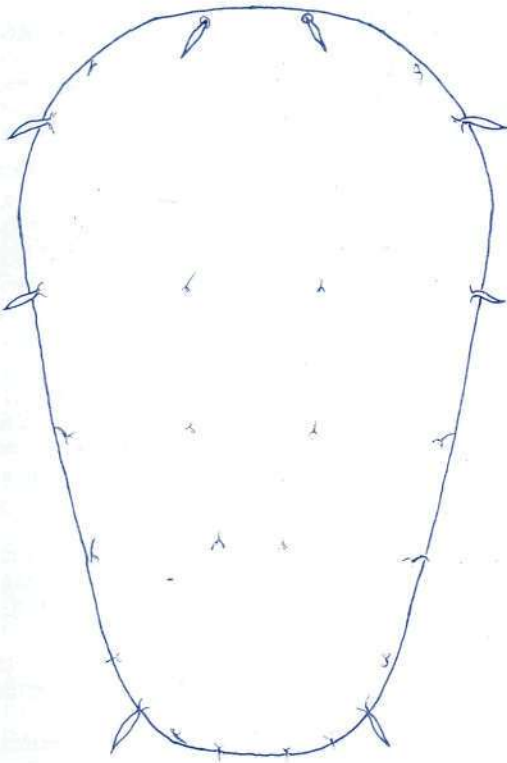


FIG. 15. *B. essigi*, nymph, dorsal view showing setae.

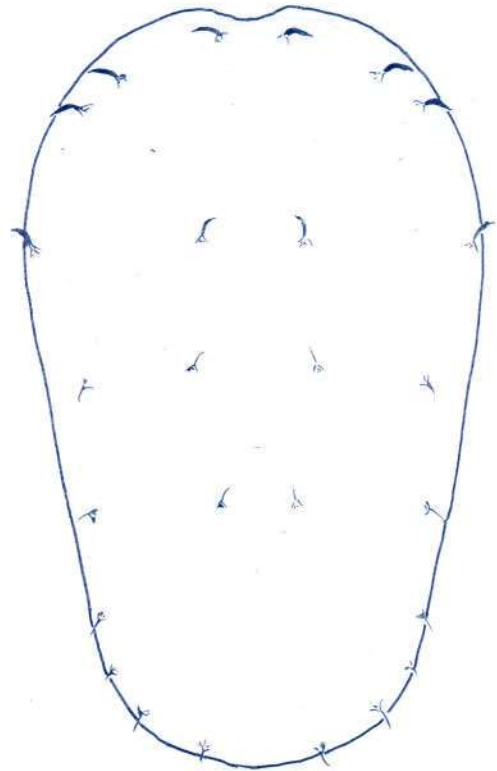


FIG. 17. *B. pini*, nymph, dorsal view showing setae.

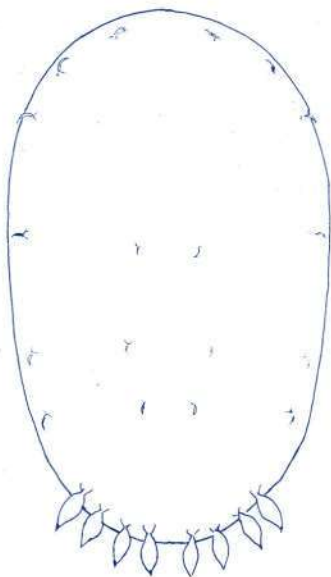


FIG. 16. *B. russulus*, nymph, dorsal view showing setae.

Hystripalpus chalkidicus Hatzinikolis, 1985.
Brevipalpus chalkidicus Hatzinikolis, 1986.
 Record: Greece (Ormylia Chalkidiki).
 Host: *Olea europaea* (olive).
 New records: Cavala, Chalkidiki, Thessaloniki
 on olive trees.
 Relation to host: The mites are found on yo-
 ung shoots.

Brevipalpus cuneatus (Canestrini and Fanza-
 go)

Caligonus cuneatus Canestrini and Fanzago,
 1876.
Tenuipalpus cuneatus Berlese, 1877; Geijskes,
 1939.
Brevipalpus cuneatus Baker, 1949; Livshitz
 and Mitrofanov, 1967.
 Records: Italy, U.S.S.R.
 Host: *Hedera taurica*.
 New record: Chalkidiki, Stavros 15 September
 1977 on *Hedera helix*.

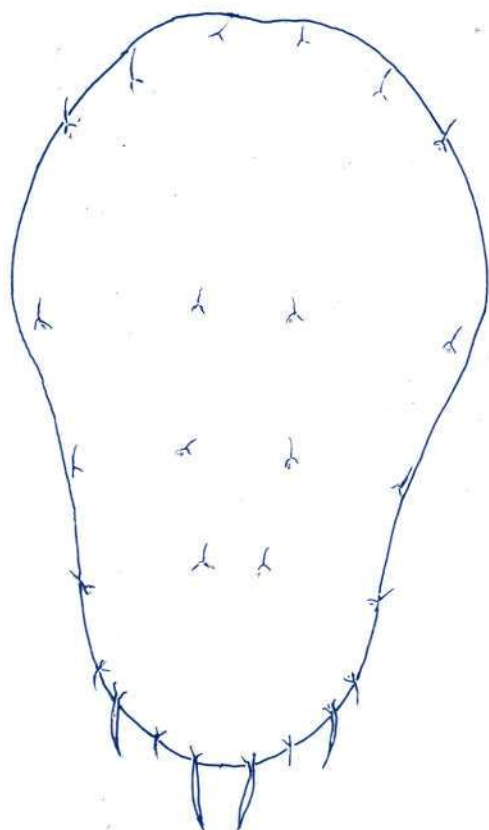


FIG. 18. *B. mallorquensis*, nymph, dorsal view showing setae.

Relation to host: It is found in small populations on both leaf surfaces.

Brevipalpus essigi Baker

Brevipalpus essigi Baker, 1949; Pritchard and Baker, 1952.

Records: Mexico, U.S.A.

Hosts: Orchidaceae, *Aucuba*, *Buttleja*, *Ficus*, *Fuchsia*, *Howea*, *Kentia*, *Pittosporum*, *Salvia*, *Veronica*.

New records: Attiki, Menidi 20 October 1975 on *Chrysantemum* sp.; Crete, Hania 18 July 1978 on *Ficus carica*; Rodos 2 September 1981 on *Ficus sycomorus*.

Relation to host: It is found in small populations on both leaf surfaces.

Brevipalpus hellenicus (Hatzinikolis and Kolovos)

Hystripalpus hellenicus Hatzinikolis and Kolovos, 1985.

Brevipalpus hellenicus Hatzinikolis, 1986.

Records: Messinia, Phthiotis.

Host: *Olea europaea* (olive).

New records: Attiki, Viotia on *Olea europaea* and Evvia on *Olea sylvestris*.

Relation to host: It is found on young shoots, buds, leaves and fruits of *O. europaea* causing malformations, spots and drying. It only occurs on young shoots of *O. sylvestris*.

Brevipalpus lewisi (McGregor)

Brevipalpus lewisi McGregor, 1949; Baker, 1949; Pritchard and Baker, 1952; Attiah, 1956; McGregor, 1956; Ehara, 1956; Livshitz and Mitrofanov, 1967; Yousef, 1970; Jeppson et al., 1975.

Hystripalpus lewisi Hatzinikolis, 1982.

Records: Algeria, Australia, Bulgaria, Canada, Egypt, France, Greece, Iran, Israel, Japan, Lebanon, Mexico, Taiwan, Turkey, U.S.A., U.S.S.R.

Hosts: *Citrus*, *Juglans*, *Punica granatum*, *Vitis* (grape) and over 40 species of ornamental plants.

New records: Attiki, Chalkidiki, Imathia, Kavala, Peloponnisos, Phthiotis, Pieria, Thessaloniki, Thessalia, Viotia on *Aphelandra squarosa*, *Azalea*, *Begonia radicans*, *Eriobotrya japonica* (loquat), *Ficus carica* (fig), *Juglans redia* (persian walnut), *Justicia adhatoda*, *Morus alba* (mulberry), *Parthenocissus*, *Prunus avium* (cherry), *P. cerasus* (sour-cherry), *P. persica* (peach), *Syringa vulgaris*, *Vitis vinifera* (grape).

Relation to host: It is a serious pest of citrus, grapes and pomegranates in Greece. In citrus, damage appears in the form of scablike scars on the skin of fruit. It produces a brownish discoloration, malformations (lines, mesh) and cracking of the skin of the stems of grapes and pomegranate. Mite damage to grapes also gives delayed rise to berry set and eventually causes drying out.

Brevipalpus lilium Baker

Brevipalpus lilium Baker, 1949; Pritchard and Baker, 1952.

Records: U.S.A., Hawaii.

Hosts: *Acalypha*, *Allamanda*, *Azalea*, *Cedrela*, *Croton*, *Dipladenia*, *Hibiscus*, *Ixora*, *Jasminium*, *Lagestromia*, *Malus*, *Rhus*, *Rubus*, *Sida*, *Thunbergia*, *Vitex*, *Vitis*, *Lilium*.

New records: Rodos 12 August 1975 on *Hibiscus*, Rethimno (Crete) 18 October 1986 on *Jasminium revolutum* and Chania (Crete) 17 October 1986 on *Ficus carica*.

Relation to host: It is found on both leaf surfaces.

Brevipalpus macedonicus (Hatzinikolis)

Hystripalpus macedonicus Hatzinikolis, 1983.

Brevipalpus macedonicus Hatzinikolis, 1986.

Record: Thessaloniki.

Host: *Olea europaea* (olive).

New records: Chalkidiki, Thessaloniki.

Relation to host: This mite is found on young shoots, buds, leaves and fruits producing malformations and spots.

Brevipalpus mallorquensis Pritchard and Baker

Brevipalpus mallorquensis Pritchard and Baker, 1958.

Records: Palma, Mallorca, Spain.

Host: *Adenostoma* sp.

New record: Messinia 5 September 1983 on *Rubus*.

Relation to host: It is found on both leaf surfaces.

Brevipalpus obovatus Donnadieu

Brevipalpus obovatus Donnadieu, 1875; Baker, 1949; Reck, 1951; Livshitz and Mitrofanov, 1967; Meyer and Ryke, 1959; Wainstein, 1960; Baker and Pritchard, 1960; Rodrigues, 1968; Wafa, 1968-69.

Brevipalpus pereger Donnadieu, 1875; Baker, 1949.

Tenuipalpus bioculatus McGregor, 1914; McGregor, 1916.

Tenuipalpus pseudocuneatus Blanchard, 1940.

Brevipalpus inornatus Baker, 1945; McGregor, 1949; Baker, 1949; Pritchard and Baker, 1952; Morishita, 1954; Attiah, 1956.

Brevipalpus bioculatus Reck 1951.

Records: Angola, Argentina, Australia, Azores, Canada, Cyprus, Egypt, France, Greece, India, Iran, Israel, Hawaii, Japan, Kenya, Libya, Malawi, Mozambique, New Zealand, Pakistan, Portugal, South Africa, Spain, Sri Lanka, Thailand, Turkey, Uganda, U.S.A., U.S.S.R., Venezuela, Zimbabwe.

Hosts: It attacks plants of more than 60 genera of ornamentals, *Citrus*, *Pirus* and *Cydonia oblonga*.

New records: Argolis, Attiki, Corinthos, Evvia, Crete, Phthiotis, Thessalia, Viotia, island

Rodos on *Camelia japonica*, *Citrus* (lemon, orange), *Eriobotrya japonica* (loquat), *Gossypium* (cotton), *Hedera helix* (ivy), *Punica granatum* (pomegranate), *Lycopersicum esculentum* (tomato), *Euphorbia pulcherrima*, *Vitis* (grape).

Relation to host: It feeds on the ventral surfaces of the leaves, stems and petioles. It is a serious pest of grapes and citrus in Greece causing yellow or dark spots and necroses on the leaves and fruit. Heavy infestation results in leaf drop.

Brevipalpus oleae Baker

Brevipalpus oleae Baker, 1949.

Records: Greece, Italy, Morocco, Portugal, Tunisia.

Host: *Olea europaea* (olive).

New records: Attiki, Achaia, Chalkidiki, Etoiakarnania, Evvia, Corinthos, Magnissia, Preveza, Viotia.

Relation to host: It attacks the stems, leaves, inflorescences and fruit of olive trees in Greece.

Brevipalpus olearius Sayed

Brevipalpus olearius Sayed, 1950; Attiah, 1956.

Records: Egypt, Crimea U.S.S.R., Greece, Italy, Libya, Turkey.

Host: *Olea europaea* (olive).

New records: Chalkidiki, Fokis, Crete, Lakonia, Phthiotis, Rodos, Samos, Skyros, Thessaloniki, Viotia on olive trees.

Brevipalpus olivicola (Pegazzano and Castagnoli)

Hystripalpus olivicola Pegazzano and Castagnoli, 1972.

Brevipalpus olivicola Hatzinikolis, 1986.

Records: Greece, Italy.

Host: *Olea europaea* (olive).

New records: Kerkyra, Messinia, Preveza, Thesprotia, Zakynthos on olive trees.

Relation to host: It is found on stems, leaves and small fruits.

Brevipalpus phoenicis (Geijskes)

Tenuipalpus phoenicis Geijskes, 1939.

Brevipalpus yothersi Baker, 1949.

Brevipalpus mobrideri Baker, 1949.

Brevipalpus papayensis Baker, 1949.

Brevipalpus phoenicis Sayed, 1946; Baker, 1949; Pritchard and Baker, 1952; De Leon,

1956; Attiah, 1956; Baker and Pritchard, 1960; Meyer and Rodrigues, 1966; Livshitz and Mitrofanov, 1967; Haramoto, 1969; Chandra and Channabasavanna, 1974; Gongalez, 1975.

Records: Argentina, Australia, Azores, Brazil, Burma, Colombia, Cuba, Dominican Republic, Egypt, Ethiopia, Germany, Greece, France, Hawaii, Netherlands, India, Iran, Italy, Kenya, Lebanon, Madagascar, Malaysia, Mauritius, Mexico, New Zealand, Jamaica, North Africa, Philippines, Portugal, Puerto Rico, Okinawa, Sri Lanka, Sudan, Syria, Taiwan, Tanzania, Thailand, Trinidad, Turkey, U.S.A., U.S.S.R., Venezuela.

Hosts: *Citrus*, *Coffea* (coffee), *Gossypium* (cotton), *Gydonia* (quince), *Ficus*, *Juglans*, *Ipomoea* (sweet potato), *Morus* (mulberry), *Olea* (olive), *Phoenix* (palm), *Prunus*, *Pyrus*, *Camellia* (tea), *Vitis* (grape), and some deciduous and subtropical fruits. It also attacks more than 60 genera of ornamental plants.

New records: Ahaia, Arta, Etoloakarnania, I-lia, Ionian Islands, Messinia, Preveza, on *Citrus* (lemon, mandarin, orange); in Attiki on *Begonia* sp. and in Ahaia on *Gardenia jasminoides* and *Jasminum sambac*.

Relation to host: It is an important pest of citrus in Greece. It infests leaves, twigs, bulbs and fruits. The injured areas become pale and change to a rust brown colour. When infestation is heavy, the leaves become dry and fall.

Brevipalpus pini Baker

Brevipalpus pini Baker, 1949; Pritchard and Baker, 1952.

Record: U.S.A.

Host: *Pinus*.

New records: Attiki, Ekali 12 September 1969 and Skinias 2 September 1971 on *Pinus halepensis*.

Brevipalpus russulus (Boisduval)

Acarus russulus Boisduval, 1867.

Tenuipalpus cactorum Oudemans, 1929; Geijskes, 1939.

Brevipalpus cactorum Sayed, 1946; André, 1953.

Brevipalpus russulus Oudemans, 1938; Baker, 1949; Pritchard and Baker, 1952; Livshitz and Mitrofanov, 1967.

Records: Argentina, Belgium, Brazil, England, France, Germany, Greece, Japan, Netherlands, Mexico, Peru, U.S.A., (California). Hosts: *Cerus*, *Chamaecerus*, *Coryphanta*, *E-*

chinocactus, *Echinocereus*, *Ferocactus*, *Lobinia*, *Mammillaria*, *Pilocereus*, *Mesembryanthemum*, *Euphorbia*.

New records: Attiki on *Aporocactus*, *Echinocactus*, *Mammillaria*, *Opuntia*, *Zygocactus*.

Relation to host: Infested plants have a uniform reddish brown colour.

Brevipalpus sayedi Baker

Brevipalpus sayedi Baker, 1949; Pritchard and Baker, 1952; Pritchard and Baker, 1958.

Records: U.S.A. (Florida, Indiana, Maryland).

Hosts: *Carya illionensis* (pecan), *C. cordiformis* (hickory), *C. ovata* (hickory).

New records: Naoussa Imathia 12 August 1973 on *Juglans* (walnut): *J. californica*, *J. nigra*, *J. regia*.

Relation to host: This mite has been found on leaf surfaces.

References

- André, M. 1953. Acariens Phytotipalpidae parasites des Orchidées, Cactées et plantes grasses cultivées en serres. I. *Tenuipalpus orchidarum* Parfitt. Bull. Mus. Hist. nat. Paris 25: 463-468.
- Attiah, H.H. 1956. The genus *Brevipalpus* in Egypt. Bull. Soc. ent. Egypte 40: 433-448.
- Baker, E.W. 1945. Mites of the genus *Tenuipalpus* (Acarina: Trichadenidae). Proc. Ent. Soc. Wash. 47: 33-38.
- Baker, E.W. 1949. The genus *Brevipalpus* (Acarina: Pseudoleptidae). Amer. Midl. Nat. 42: 350-402.
- Baker, E.W. and A.E. Pritchard. 1960. The tetranychoid mites of Africa: *Hilgardia* 29: 455-574.
- Banks, N. 1904. Four new species of injurious mites. Jour. N. Y. Ent. Soc. 12: 53-56.
- Berlese, A. 1887. Acari, Myriopoda, et Scorpionida, fasc. 36.
- Blanchard, E.E. 1940. Tree ácaros daninos para los cultivos argentinos. Rev. Fac. Agron. La Plata 24: 11-18.
- Boisduval, A. 1867. Essai sur l'entomologie horticole. Paris: 1-648.
- Bouchelos, T., S. Soueref and A. Tsoka. 1965. List of the principal pests of crops recorded during the year 1963-1964. Patras Plant Prot. Res. Sta. Ann. Rep. 1965: 1-34.
- Canestrini, G. and F. Fanzago. 1876. Nuovi Acari Italiani (ec. ser.). Atti. Acc. Sci. ven. trent. istr. 5: 130-142.
- Chandra, B.K. and G.P. Channabasavanna. 1974. Biology of *Brevipalpus phoenicis* (Geijskes) (Acarina: Tenuipalpidae). *Acarology* 4: 167-176.
- De Leon, D. 1956. Six new false mites from southern Florida (Acarina: Tenuipalpidae). *Florida Ent.* 39: 55-60.
- Donnadieu, A.L. 1875. Recherches pour servir á l'histoire des Tétranyques. Ann. Soc. Linn. Lyon 22: 29-136.
- Ehara, S. 1956. Two false spider mites from Japanese orchards (Phytotipalpidae). *Annot. zool. Jap.* 29: 234-238.
- Geijskes, D.C. 1939. Beiträge zur Kenntnis der europäischen Spinnmilben (Acari, Tetranychidae), mit besonderer Berücksichtigung der niederländischen Arten. *Meded. LanbHoogesch. Wageningen* 42: 1-68.

- Gongalez, R.H. 1975. Revision of the *Brevipalpus phoenicis* (complex) with descriptions of new species from Chile and Thailand (Acarina, Tenuipalpidae). *Acarologia* 18: 81-91.
- Haramoto, F.H. 1969. Biology and control of *Brevipalpus phoenicis* (Geijskes) (Acarina: Tenuipalpidae). *Hawai Agr. Exp. Sta. Bull.* 68: 1-61.
- Hatzinikolis, E.N. 1970. Acariens de la famille des Tenuipalpidae observés sur des plantes cultivées en Grèce. *Annls Inst. phytopath. Benaki* 9: 242-244.
- Hatzinikolis, E.N. 1978. A new species of genus *Hystripalpus* on *Olea europaea* (Acarina: Tenuipalpidae). *Agricultural Research* 2: 46-52.
- Hatzinikolis, E.N. 1982. New phytophagous mites found in Greece. *Agricultural Research* 6: 67-76.
- Hatzinikolis, E.N. 1983. A new species of *Hystripalpus* (Acarina: Tenuipalpidae). *Entomologia Hellenica* 1: 71-75.
- Hatzinikolis, E.N. 1985. Description of *Hystripalpus chalkidicus* new species from olive trees in Greece (Acari: Tenuipalpidae). *Entomologia Hellenica* 3: 35-39.
- Hatzinikolis, E.N. 1986. Tenuipalpid mites (Acari: Tenuipalpidae) of *Olea europaea* with a key to *Brevipalpus* from the genus *Olea*. *Entomologia Hellenica* 4: 23-27.
- Hatzinikolis, E.N. and A. Kolovos. 1985. Tenuipalpid mites of olive trees in the Mediterranean area (Acarina: Tenuipalpidae). *Biologia Gallo-Hellenica* 10: 201-212.
- Jeppson, L.R., H.H. Keifer and E.W. Baker. 1975. Mites injurious to economic plants. Berkeley, University of California press: 1-614.
- Lawrence, R.F. 1943. New South African mites of the genus *Tenuipalpus* Donnadieu (Tetranychidae). *Trans. R. Soc. sth. Afr.* 30: 35-48.
- Livshitz, I.Z. and V.I. Mitrofanov. 1967. Materials to the recognition of the Acariformes, Tenuipalpidae. fauna. *Trudy gos. Nikit. Bot. sada, Yalta* 39: 3-72 (in Russian).
- McGregor, E.A. 1914. Four new Tetranychids. *Ann. Ent. Soc. Amer.* 7: 354-364.
- McGregor, E.A. 1916. The privet mite in the South. *Jour. Ent.* 9: 556-561.
- McGregor, E.N. 1949. Nearctic mites of the family Pseudoleptidae. *Mem. S. Calif. Acad. Sci.* 3: 1-45.
- McGregor, E.A. 1956. Mites of citrus in Southern California. *Mem. S. Calif. Acad. Sci.* 3: 1-42.
- Meyer, M.K.P. and M.C. Podrigues. 1966. Acari associated with cotton in Southern Africa: with reference to other plants. *Garcia de Orta* 13: 1-33.
- Meyer, M.K.P. and P.A.J. Ryke. 1959. South African plant parasitic mites of the families Tenuipalpidae and Tuckerebellidae (Acarina: Prostigmata). *J. ent. Soc. sth. Afr.* 22: 316-329.
- Morishita, F.S. 1954. Biology and control of *Brevipalpus inornatus* (Banks). *Jour. Econ. Ent.* 47: 449-456.
- Oudemans, A.C. 1929. *Acarologische Aanteekeningen XCV*. *Ent. Ber.* 7: 393-399.
- Oudemans, A.C. 1938. Nieuwe vondsten op het Gebied der Systematiek en der Nomenclatuur der Acari. II. *Tijdschr. Ent.* 81: 70-80.
- Pegazzano, F. and M. Castagnoli. 1972. *Brevipalpus olivicola* sp. nov. (Acarina, Tenuipalpidae) descrizione e note sulla sua biologia. *Redia* 53: 139-149.
- Pritchard, A.E. and E.W. Baker. 1952. The false spider mites of California (Acarina: Phytotipalpidae). *Univ. Calif. Publ. Ent.* 9: 1-93.
- Pritchard, A.E. and E.W. Baker. 1958. The false spider mites (Acarina: Tenuipalpidae). *Univ. Calif. Publ. Ent.* 14: 175-274.
- Reck, G.P. 1951. Kleshchi rodov *Tenuipalpus*, *Brevipalpus* i *Brevipalpoides* (Trichadenidae, Acarina) po materialam iz gruzii. *Trudy Zool. Inst. Akad. Nauk. Gruz. S.S.R.* 10: 289-297 (in Russian).
- Rodrigues, M. 1968. Acarina de Mocambique; catálogo das espécies relacionadas com a agricultural. *Agron. Mo-camb.* 2: 215-256.
- Sayed, M.T. 1946. Description of *Tenuipalpus granati* nov. spec. and *Brevipalpus pyri* nov. spec. *Bull. Soc. Fouad 1er Ent.* 10: 99-104.
- Sayed, M.T. 1950. Description of a new genus and two new species of the family Tenuipalpidae Sayed (Acarina). *Proc. 8th Internat. Congr. Ent.*: 1012-1017.
- Tucker, R.W.E. 1926. Some South African mites. Mainly Tetranychidae and Eriophyidae. *Union S. Africa Dept. Agr. Div. Ent. Mem.* 5: 3-15.
- Wafa, A.K. 1968-69. Survey of the tenuipalpid mites in U.A.R. (Acarina: Tenuipalpidae). *Bull. Zool. Soc. Egypt.* 22: 52-59.
- Wainstein, B.A. 1960. Tetranychoid mites of Kazakhstan. *Kazakh. Akad. Seišk. nauch. Issled. Inst. Rast. Trudy* 5: 1-276 (in Russian).
- Womersley, H. 1940. Studies in Australian Acarina Tetranychidae and Trichadenidae. *Trans. Roy. Soc. S. Aust.* 64: 691-697.
- Womersley, H. 1941. Revisional notes on the Australian species of *Tenuipalpus* (Acarina, Tetranychidae). *Trans. Roy. Soc. S. Austr.* 65: 42-43.
- Yousef, A.E.A. 1970. Mites associated with vine trees in the U.A.R. (Acarina). *Z. angew. Ent.* 67: 1-6.

KEY WORDS: Acari, Tenuipalpidae, *Brevipalpus*, *Brevipalpus* in Greece, *B. atalantae*, *B. californicus*, *B. chalkidicus*, *B. cuneatus*, *B. essigi*, *B. hellenicus*, *B. lewisi*, *B. lilium*, *B. macedonicus*, *B. mallorquensis*, *B. obovatus*, *B. oleae*, *B. olearius*, *B. olivicola*, *B. phoenicis*, *B. pini*, *B. russulus*, *B. sayedi*

**Το Γένος *Brevipalpus* στην Ελλάδα
(Acari: Tenuipalpidae)**

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ΠΕΡΙΛΗΨΗ

Το γένος *Brevipalpus* αναθεωρείται και δίνεται ένα κλειδί για τα 18 ανευρεθέντα στην Ελλάδα είδη, με σχεδίαση των νυμφικών σταδίων. Δώδεκα είδη έχουν αναφερθεί στην Ελλάδα: *B. atalantae* (Hatzinikolis), *B. californicus* (Banks), *B. chalkidicus* (Hatzinikolis), *B. hellenicus* (Hatzinikolis), *B. lewisi* McGregor, *B. macedonicus* (Hatzinikolis), *B. obovatus* Donnadieu, *B. oleae* Baker, *B. oloearius* Sayed, *B. olivicola* (Pegazzano and Castagnoli), *B. phoenicis* (Geijskes), *B. russulus* (Boisduval). Έξι είδη αναφέρονται τώρα για πρώτη φορά στην Ελλάδα: *B. cuneatus* (Canestrini and Fanzago), *B. essigi* Baker, *B. lilium* Baker, *B. mallorquensis* Pritchard and Baker, *B. pini* Baker and *B. sayedi* Baker. Δίνονται στοιχεία της παγκόσμιας εξάπλωσης και ξενιστών των παραπάνω ακάρεων. Επίσης παρουσιάζεται η οικονομική σημασία κάθε είδους ακάρεος για την Ελλάδα.