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İstanbul Park ve Bahçelerindeki Tetranychidae Türleri

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Özet – Bu çalışma, İstanbul ili park ve bahçelerinde, yaprağını döken ağaçlar, ibreliler ve çalılarda bulunan fitofag tetranynhidleri belirlemek amacıyla yapılmıştır. 2006-2008 yıllarında haftalık olarak yapılan sörveyler sonucunda,; on adet tetranychid tür tespit edilmiştir. Bu türlerden bir tanesi, *Platytetranychus libocedri* McGregor (Acar: Tetranychidae) Türkiye faunası için yeni kayıt niteliğindedir.

Anahtar Kelimeler – *Platytetranychus libocedri, Eotetranychus bryobia, süs bitkileri, İstanbul, Türkiye*

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Tetranychidae (Acari: Prostigmata) species from parks and ornamental plants in Istanbul, Turkey

Abstract – This research was conducted to determine phytophagous tetranychid mites occurring on deciduous trees, conifers and shrubs in the parks and ornamental plants of Istanbul province. Weekly surveys were carried out between 2006 and 2008. As a result of the surveys, 10 Tetranychidae species were identified. One of these species, *Platytetranychus libocedri* McGregor (Tetranychidae) was the first record for the Tetranychidae fauna of Turkey.

Keywords *– Platytetranychus liboedri, Eotetranychus , Bryobia, ornamental plants, Istanbul, Turkey*

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1. Introduction

There are many reports available on mites that are parasitic to plants and cause economic damage on the ornamental plants throughout the world (Jeppson *et al*., 1975; Kropczynska *et al*., 1992; Ripka, 1997, 1998; Ripka *et al*., 2005; Mesa *et al*., 2009). In Turkey, different phytophagous mite species were reported from ornamental plants (Yüksel, 1999; Uysal *et al*., 2001; Çobanoğlu *et al*., 2003; Elma and Alaoğlu, 2008; Yeşilayer and Çobanoğlu, 2009, 2011, 2013).

Tetranychidae (Acari: Prostigmata), spider mites, is the most important families of the Acari because many species can be serious pests for ornamental and agricultural crops

(Jeppson *et al.*, 1975). There are 70 genera of tetranychid mites in the world, and these contain 1275 species (Hoy, 2011; Migeon and Dorkeld, 2006-2013). The serious economic damage caused by spider mites is because of their large host plant range, high fecundity and rapid developmental rates (Smiley and Baker, 1995).

However, prior to this study, there was no detail data available on the tetranychid mites of the Istanbul province, located on the Marmara coast.There are many studies about predatory mites in different locations in Turkey and Istanbul (Uysal *et al*., 2001; Çobanoğlu *et al*., 2003; Yeşilayer and Çobanoğlu, 2011, 2013). The objective of this study was to determine and make a quantitative assessment of phytophagous tetranychid mites occurring on deciduous trees, conifers and shrubs in the parks and ornamental plants of Istanbul province between 2006 and 2008.

2. Materials and Methods

Tetranychids were surveyed in parks and urban areas of Istanbul at weekly intervals between April to October in 2006 and 2008. Samples were taken in different localities (Kadıköy, Küçükçekmece, Tuzla, Beşiktaş, Bakırköy, Florya, Fatih, Sultanahmet, Büyükçekmece) mainly from unsprayed areas during the growing seasons in Istanbul. They were transferred to the laboratory in an icebox. In total, 1200 samples were taken from branches and leaves of ornamental plants. Mites were removed from the leaves under a stereomicroscope and extracted using Berlese funnels. The specimens were preserved in 70% alcohol. After they were cleaned in lactophenol solution, they were mounted in Hoyer's medium for identification. The slides were kept for 2-4 weeks at 35°C in an incubator (Düzgüneş, 1980). The slides of the mounted specimens were deposited in both authors' collection at the University of Ankara, Department of Plant Protection, Ankara and University of GOP (University of Gazi Osman Paşa, Tokat) Department of Plant Protection, Tokat. For identification, following references were used: Pritchard and Baker (1955), Jeppson *et al*. (1975) and Seeman and Beard (2011).

3. Results and Discussion

Ten species belonging to the family Tetranychidae were identified; *Tetranychus urticae* Koch, *Panonychus ulmi* Koch, *Oligonychus ununguis* Jacobi, *Oligonychus coniferarum* McGregor, *Eotetrantchus populi* Koch, *Eotetranychus uncatus* Garman, *Eotetrantchus carpini* Oudemans, *Bryobia rubrioculus* (Scheuten), *Bryobia praetiosa* Koch, *and Platytetranychus libocedri* McGregor. The latter one is a new record for Turkey. *Tetranychus urticae*, *O. ununguis* and *Platytetranychus* sp. most common harmful mite species in Istanbul parks (Yeşilayer and Çobanoğlu 20111).
Magnolia soulangeana L. (Magnoliaceae) was the most preferred and populated host plant (40.7%) while *Picea pungens* (Engelm) Pinaceae was rarely populated by mites (0.39%).

3.1.Tetranychidae

3,1.1. *Tetranychus urticae* Koch, 1836

Material examined: Yıldız Parkı: *Quercus robur* L. 01.11.2006 (3♀♀); *Acer negundo* L. (15♀♀); Istanbul Sabahattin Zaim University: *Pinus pinea* L. 13.09.2007 (1♂); *Cupressus arizonica* Green 25.09.2007 (1♀); Halkalı: *Pitosporum tobira* Thunb 01.10.2007 (3♀♀V);

Prunus avium L. 10.11.2008 (1 nymph); Aliağaoğlu Nursery: *Chamaerops excelsa* Hort 17.07.2007 (1♀); Ada Park: *Lagostermia indica* L. 23.07.2007 (1♀), *Cupressus macrocarpha* Hartw. 23.10.2007 (1♀); Haliç Hospital Garden: *Erobrtyria japonica* L. (Thunb.) 21.10.2007 (1♀); Zirai Karantina Province: *Magnolia soulangeana* L. 17.06.2008 (17♀♀, 2♂, 3 nymphs, 1 larva), *Prunus domestica* L. 10.11.2008 (1♀, 2♂); Özgürlük parkı: *Ulmus* sp. 04.07.2008 (5♀♀, 3♂, 4 nymphs).

Comments: *T. urticae* is a very common and well known harmful mite species globally. It has been reported from Afghanistan, Algeria, America, Australia, Belgium, Bulgaria, Canada, Denmark, Finland, France, Germany, Holland, Hungary, Iran, Iraq, Italy, Korea, Lebanon, Lithuania, Mexico, Morocco, New Zealand, Norway, Pakistan, Portugal, Sri Lanka, Syria, Spain, Yugoslavia, Yemen, Turkey (Zhang and Henderson, 2002; Migeon and Dorkeld, 2006-2013). This species was reported from *Buddleia* sp., *Capsicum annum*, *Chrysanthemum* sp., *Citrus* spp., *Cucumis sativus*, *Dianthus caryophyllus*, *Fuchsia* sp., *Gardenia* sp., *Glycine max*, *Hydrangea* sp, *Juglans regia*, *Prunus* sp., *Salix* sp., *Solanum* sp. ,*Ulmus* spp. (Zhang and Henderson, 2002).It was previously reported from cultural, ornamental plants and weeds. This is a very common and cosmopolitan species in Turkey (Düzgüneş 1954; Aydemir and Toros, 1990; Uysal *et al.*, 2001).

3.1.2. *Bryobia rubrioculus* (Scheuten), 1857

Material examined: Bahçeşehir: *Pinus nigra* L. 11.12.2007 (1♀); Dostlar Park: *Nerium oleander* L. (1♀).

Comments: *B. rubrioculus* was reported from Austria, Belgium, Cyprus, England, Finland, France, Germany, Ireland, Italy, Netherlands, Poland, Portugal, Spain, Sweden, Switzerland, and Turkey (Anonymous, 2008). This species was previously recorded on *Malus*, *Prunus*, *Juglans*, *Medicago sativa*, *Trifolium* sp., *Hedera helix* and *Rubus* sp. (İyriboz, 1940; Düzgüneş, 1954; Yiğit and Uygun, 1982; Erol and Yaşar, 1996). *B. rubrioculus* was also recorded on *Cotoneaster horizontalis* and *Malus floribunda* (Uysal *et al.*, 2001),

3.1.3. *Bryobia pretiosa* Koch, 1836

Material examined: Dostlar Parkı: *Picea pungens* L., 11.08.2006 (1♀).

Comments: This species was previously recorded on deciduous trees in USA, Europe, Greece and Japan (Anonymous, 2008). *B. pretiosa* was also recorded on *Muscari longipes* in Ankara, Turkey (Bayram and Çobanoğlu, 2006). It was recorded on *Fragaria ananassa* Duch. in Izmir (Madanlar and Yoldaş 1996); *Malus communis* L. in Van (Erol and Yaşar, 1996), *Ficus carica* in Izmir (İyriboz, 1940)

3.1.4. *Panonychus ulmi* Koch, 1929

Material examined: Sultanahmet: *Pittosporum tobira* (Thunb) 01.10.2007 (1♀).

Comments: *P. ulmi* was reported from deciduous trees in the USA, Argentina, Bermuda, Canada, China, Georgia, Hungary, India, Iran, Japan, Morocco, Russia, South Africa, Spain, Sweden, Switzerland, Uruguay, Venezuela and Yugoslavia (Jeppson et al., 1975; Zhang and Henderson, 2002).

It was recorded on *M. communis*, *Prunus persica* L., *Prunus domestica* L., *Pyrus communis* L., *Cydonia oblonga* Miller, *Prunus avium* L., *Prunus cerasus* L., *Corylus avellana* L., *Ficus carica* L., in Amasya, İçel, Bursa, Yalova, Thrace region, Van, Adana and Niğde (Düzgüneş, 1963; Göksu and Atak 1968; Yiğit and Uygun, 1982; Ulusoy *et al.*, 1999; İncekulak and Ecevit, 2002; Akşit *et al.*, 2003; Çakmak and Akşit, 2003; Gencer *et al*., 2002; Kasap *et al.*, 2004)

3.1.5. *Oligonychus ununguis* (Jacobi, 1920)

Material examined: Ozgürlük Parkı: *P. pungens* 06.06.2006, 31.08.2006 (16♀, 1 larva); *Euonymus fortunei* L. (Celastraceae) 03.07.2006 (1♀); *Cedrus. atlantica* Endl. 31.08.2006 (1♀); *E. fortunei* 29.09.2006 (1♀); Istanbul Sabahattin Zaim University: *Berberis* sp. 13.09.2006 (1♀); Başakşehir Hospital: *Picea orientalis* L. 01.10.2007 (2♀); İkitelli Housing: *Aesculus hippocastanum* L. 27.09.2007 (1♂); *Ulmus* sp. 04.07.2008 (1♀); Halkalı: *Prunus domestica* L. 10.11.2008 (1♀).
Comments: *O. ununguis* was recorded on *P. pungens*, *Pinus*, *Juniperus*, *Thuja*, *Alnus*, *Taxus*, *Cedrus* , *Abies* spp., *A. hippocastanum*, *Buxus sempervirens* L. and, *Quercus* sp. (Jeppson *et al.*, 1975). This species was reported from *Picea* sp. in the East Blacksea region (Yüksel and Ulusoy, 1999).

3.1.6. *Oligonychus coniferarum* (McGregor), 1950

Material examined: Atatürk Park: *P. pinea* 19.10.2006 (1♀); İkitelli: *A. hippocstaneum* 27.09.2007 (1♀).

Comments: *O. coniferarum* was found on *Cupressus sempervirens* L., *Cupressus lusitanica* Mill., *Juniperus depeana*, *Juniperus* sp. (Pritchard and Baker, 1955; Tuttle and Baker, 1968; Smiley and Baker, 1995).
This species was recorded on *P. sylvestris* in Erzurum (Ecevit, 1977); *Cornus alba* Sibirica, *Juniperus horizontalis* Moench, *Juniperus sabina* L. in Ankara (Uysal *et al*., 2001). It was also recorded on *P. nigra* (needle), *P. sylvestris*, *P. pungens* in Turkey (Bayram and Çobanoğlu, 2007) and *Quercus* sp. in Konya (Elma and Alaoğlu, 2008).

3.1.7. *Eotetranychus populi* (Koch), 1838

Material examined: Dostlar Park: *Ligustrum vulgarae* Aurea 11.07.2006 (1♀); Yıldız Park: *Laurus nobilis* L. 01.11.2006 (1♀); Yeniçiftlik: *Salix babylonica* L. 13.10.2007 (1♀).

Comments: *E. populi* was recorded on poplar and willow trees in Russia, Serbia and England (Jeppson et al., 1975). This species was found on *Salix* sp. and *Platanus orientalis* L. in Konya, Turkey (Elma and Aloğlu, 2008).

3.1.8. *Eotetranychus carpini* Oudemans, 1905

Material examined: Belgrad Forest: *Carpinus betilus* L. 23.10.2007 (2♀, 1♂); Istanbul Sabahattin Zaim University: *P. domestica* 10.11.2008 (1♀).
Comments: This species was recorded on *Alnus* sp., *Carpinus* sp. *Fagus* sp., *Quercus* sp., and *Vitis vinifera* L. (Hatzinikolis, 1970; Jeppson *et al.*, 1975). *E. carpini* was found on *Ficus* sp. in Gaziantep (Düzgüneş, 1965), Chestnut in West Anotolia (Önuçar and Ulu, 1988), and on *Berberis thunbergii* DC in Ankara (Uysal *et al*., 2001).

3.1.9. *Eotetranychus uncatus* (Garman), 1952

Material examined: Sabahattin Zaim University: *P. domestica*, 10.11.2008 (1♀).

Comments: *E. uncatus* was found *Acer campestre* Binazzi and Blackman, *Acer negundo* L., *Acer platanoides* L., *Alnus* sp., *Betula alba* L., *Malus domestica* L. (Pritchard and Baker, 1952; Reeves, 1963, Dobosz *et al*., 1995). In Turkey, this species was recorded on Chestnut and apple trees (Düzgüneş 1963; Önuçar and Ulu, 1988; Yanar and Ecevit, 2005).

3.1.10. ***Platytetranychus libocedri*** (McGregor, 1936)

Synonyms:
Eotetranychus libocedri (McGregor, 1936)
Mononychus libocedri (McGregor, 1936)
Tetranychus libocedri McGregor, 1936
Platytetranychus libocedri has short dorsocentral hysterosomals and dorsolateral hysterosomals are longer than dorsocentrals (Figure 1). On females, Tibia I nine; tarsus I five and tibia II five bear tactile setae.
The aedeagus has a long and narrowing rounded and emarginated at the tip (Figure 2)

P. libocedri is similar *P. thujae* (McGregor). *P. thujae*'s dorsal setae longer than *P. libocedri.*

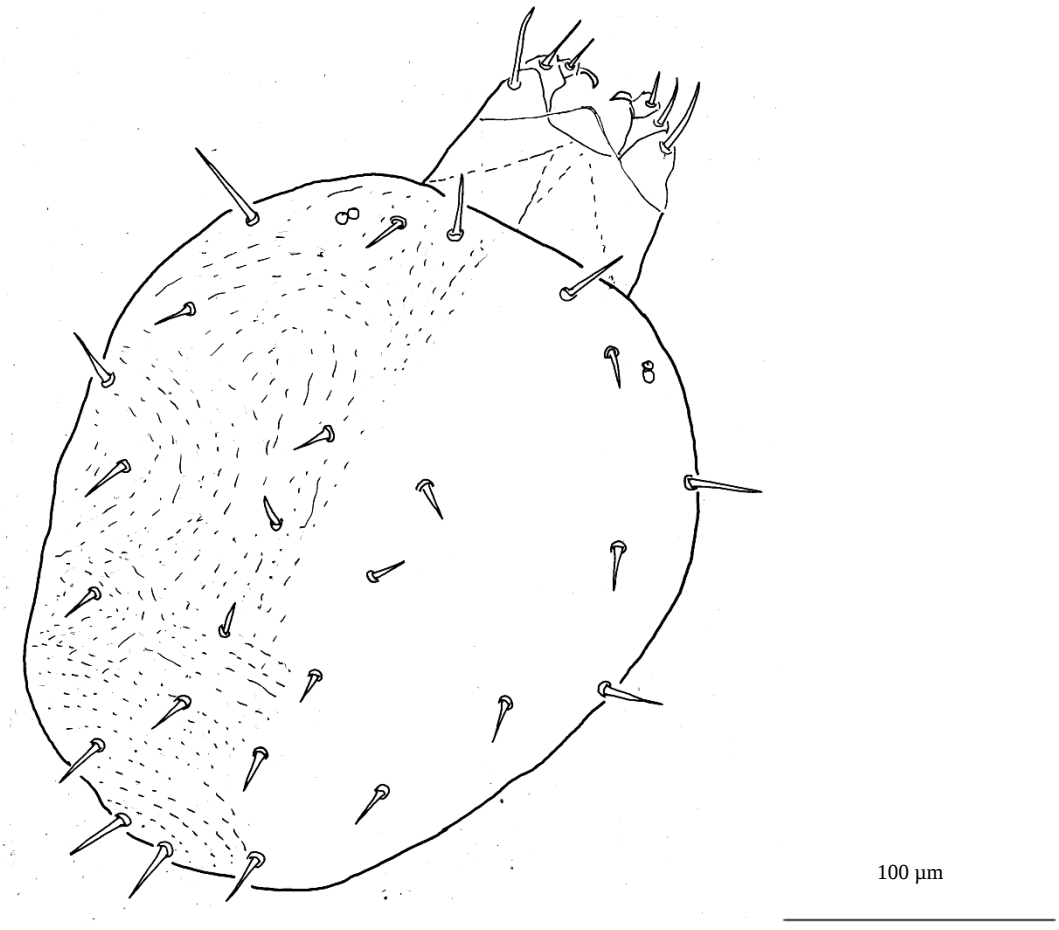

Figure 1. *Platytetranychus libocedri* McGregor female

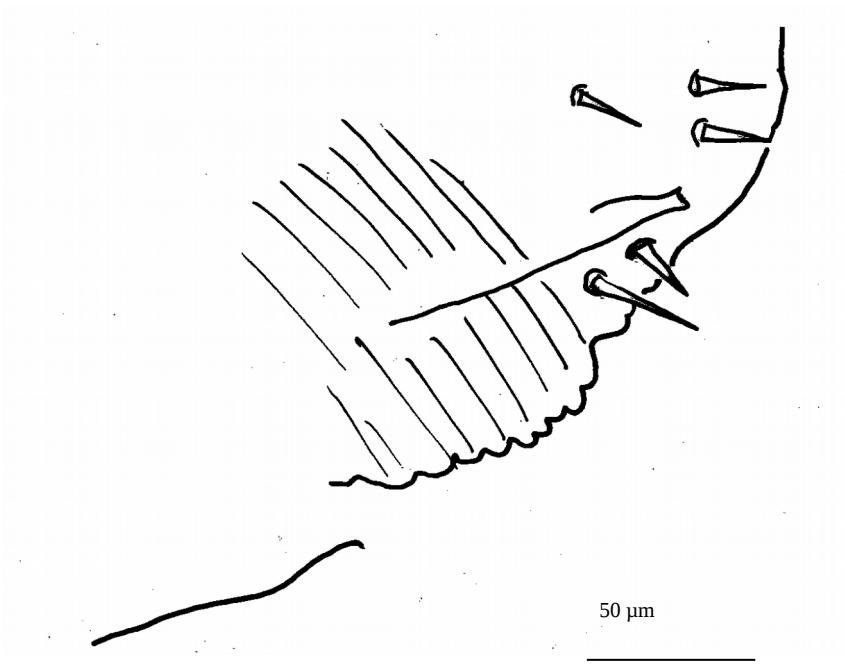

Figure 2. *Platytetranychus libocedri* McGregor aedeagus

Material examined University of Istanbul Sabahattin Zaim: *E. fortunei* 29.09.2006 (2♀♀); Özgürlük Park: *Thuja occidentalis* Aurea 06.06.2007 (1♀), *C. arizonica* 18.10.2007 (1♀, 1 larva, 1 nymph); Park of Ada: *C. macrocarpha* 23.10.2007 (3♀♀, 1 nymph); Kurtköy Nursery: *Cupressocyparis leylandii* L., 12.12.2007 (1♀); Istanbul Sabahattin Zaim University: *C. arizonica* (litter) 10.11.2008 (2♂♂, 2 nymph); Özgürlük Park: *E. fortunei* 29.09.2006 (1♀).

This is a new record for Turkey.

Comments: Specimens were recorded on *Thuja occidentalis* L. and it was also found in Utah on junipers (Pritchard and Baker, 1955). This species was recorded on *C. arizonica Cupressus* sp., *C. sempervirens Juniperus* sp., *Libocedrus decurrens* Torrey, *Thuja* sp., *Pinus* sp., *Abies religiosa* (Kunth.) Schltdl. and Cham., *Tamarix* sp. (Pritchard and Baker, 1955; Tuttle and Baker, 1964).

CONCLUSION

From the surveys of the parks and ornamental plants of Istanbul, 10 Tetranychidae species were identified. *P. libocedri* was first reported for the mite fauna of Turkey. It is necessary to research on the biology, morphology, distribution, symptomatology and control measures of this species. In this study *T. urticae* and *O. unungius* are the most common phytophagous mite species on the parks and ornamental plants in Istanbul. It is also very important to study natural enemies, and their importance in the integrated pest control of this phytophagous mite species..

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