

**Original article (Orijinal araştırma)**

## **Dolichopodidae (Diptera) fauna of Spil Mountain with four new records**

Dört yeni kayıt ile birlikte Spil Dağı Dolichopodidae (Diptera) Faunası

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### **Summary**

This study was carried out in Spil Mountain where located Aegean Region of Turkey, between the 2013 and 2014. It was determined that the collected specimens were belonging to four subfamilies, 10 genera and 18 species. *Syntormon miki* Strobl, 1899, *Hercostomus tanjusilus* Negrobov & Zurikov, 1988, *Hercostomus thraciensis* Kechev & Negrobov, 2015 and *Sybistroma israelensis* Grichanov, 2000 are recorded for the first time for Turkey Dolichopodidae fauna. In consequence of this study, the dolichopodid species number of Turkey has increased to 192

**Keywords:** Diptera, Dolichopodidae, Turkey, Spil Mountain, new records

### **Özet**

Bu çalışma, 2013-2014 yılları arasında Türkiye'nin Ege Bölgesi'nde bulunan Spil Dağı'nda gerçekleştirilmiştir. Toplanan türlerin dört altfamilya, 10 cins ve 18 türe ait oldukları belirlenmiştir. *Syntormon miki* Strobl, 1899, *Hercostomus tanjusilus* Negrobov & Zurikov, 1988, *Hercostomus thraciensis* Kechev & Negrobov, 2015 ve *Sybistroma israelensis* Grichanov, 2000, Türkiye Dolichopodidae faunası için ilk kez kaydedilmiştir. Bu çalışma sonucunda Türkiye'nin dolichopodid tür sayısı 192'ye yükselmiştir.

**Anahtar sözcükler:** Diptera, Dolichopodidae, Türkiye, Spil Dağı, yeni kayıtlar

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## Introduction

The Dolichopodidae or long legged flies are among the largest families of Diptera with about 246 extant, 31 fossil genera and approximately 7.658 valid species (Grichanov, 2014). The Turkey fauna of Dolichopodidae includes 187 species and one subspecies, 35 genera belonging to 10 subfamilies (Tonguç et al., 2016). The body size of Dolichopodidae species ranges in size 1-9 mm length. They are easily identified by metallic body, reduced wing venation, aristate antennae, slender legs and with genital capsule in male (Lundbeck, 1912; d'Assis Fonseca, 1978; Brooks, 2005; Grichanov, 2007). Most adults flies live on sand, damp ground, grass, leaves, tree trunks and on other surfaces near open water. Almost all adults flies are polyphagous predators and play important role in agriculture and forest ecosystems (Grichanov, 2007).

The research area is Mount Spil located in Aegean Region (38°33'N, 27°42'E) between south of Manisa and west of İzmir provinces. The mountain was declared as National Park in 1966 because it contains mythological, historical points and wide variety of flora and fauna. The national park area is 6.867 hectares and the peak of the mountain is 1200 meters (Anonymous, 2014).

## Material and Methods

Specimens were collected from April to June between 2013 and 2014 in different habitat types from Spil Mountain in Aegean Region of Turkey. The materials for the present work were collected with an entomological hand net. The specimens which were killed in the jars with ethyl acetate were put in vials containing 75% ethanol or dry in envelopes. The specimens were identified in the laboratory with a binocular microscope by first and second authors. A faunistic list of species and their distribution in Turkey are given according to Tonguç et al., (2016). Palearctic distribution is presented by Yang et al., (2006) and Grichanov (2007) subsequently. Ecological remarks of the identified species were given according to Pollet (2000). The material examined was also given only new records.

## Results

18 species, 10 genera and four subfamilies were determined from Aegean Region (Mount Spil) of Turkey (Table 1).

### Subfamily Dolichopodinae Latreille, 1809

Genus *Dolichopus* Latreille, 1809

*Dolichopus signifer* Haliday, 1832

Turkey Distribution: Burdur.

Palearctic Distribution: Afghanistan, Austria, Belgium, Bulgaria, Czech Republic, France, Georgia, Germany, Greece, Hungary, Iran, Ireland, Italy, Kazakhstan, Morocco, Netherlands, Norway, Poland, Portugal, Romania, Russia, Slovakia, Spain, Sweden, Switzerland, Tajikistan, Turkmenistan, Turkey, UK, Ukraine, Uzbekistan.

Habitat preferences: Moderately mixed woodland, fenlands and humid grassland.

Genus *Hercostomus* Loew, 1857

*Hercostomus chetifer* (Walker, 1849)

Turkey Distribution: Antalya.

Palearctic Distribution: Algeria, Austria, Belgium, Bosnia and Herzegovina, Croatia, Czech Republic, Finland, France, Germany, Greece, Hungary, Israel, Italy, Luxembourg, Macedonia, Netherlands, Norway, Poland, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, UK, Ukraine, Former Yugoslavia.

Habitat preferences: Moderately mixed woodland and humid coniferous woodland.

Table 1. The identified species from research area with remarks and specimens number

Species	Specimens Number (♂♂)	Specimens Number (♀♀)	Remarks
<i>Dolichopus signifer</i> Haliday, 1832	10	1	
<i>Hercostomus chetifer</i> (Walker, 1849)	5	-	
<i>Hercostomus thraciensis</i> Kechev & Negrobov, 2015	1	2	New record
<i>Hercostomus tanjusilus</i> Negrobov & Zurikov, 1988	2	1	New record
<i>Sybistroma israelensis</i> (Grichanov, 2000)	15	94	New record
<i>Sybistroma lorifer</i> (Mik, 1878)	6	1	
<i>Hydrophorus balticus</i> (Meigen, 1824)	194	172	
<i>Liancalus virens</i> (Scopoli, 1873)	2	4	
<i>Scellus notatus</i> (Fabricius, 1781)	2	5	
<i>Rhaphium appendiculatum</i> (Zetterstedt, 1849)	5	1	
<i>Rhaphium brevicorne</i> Curtis, 1835	4	-	
<i>Campsicnemus curvipes</i> (Fallen, 1823)	5	-	
<i>Campsicnemus umbripennis</i> Loew, 1856	2	3	
<i>Syntormon denticulatus</i> (Zetterstedt, 1843)	5	3	
<i>Syntormon miki</i> Strobl, 1899	-	1	New record
<i>Syntormon pallipes</i> (Fabricius, 1794)	171	162	
<i>Syntormon zelleri</i> (Loew, 1850)	-	1	
<i>Teuchophorus monacanthus</i> Loew, 1859	3	-	

*Hercostomus thraciensis* Kechev & Negrobov, 2015

New record for Turkey.

Material examined: Manisa, Yunus Emre, Karakoca Village, 38°33'30"N, 27°19'45"E, 425 m, 04.IV.2014, 1 ♂, 2 ♀♀.

Palaearctic Distribution: Bulgaria (Kechev and Negrobov, 2015).

Habitat preferences: Humid grassland.

*Hercostomus tanjusilus* Negrobov & Zurikov, 1988

New record for Turkey.

Material examined: Manisa, Yunus Emre, Spil Mountain National Park, 38°35'14"N, 27°26'19"E, 600 m, 13.VI.2014, 2 ♂♂.

Palaearctic Distribution: Georgia.

Habitat preferences: Poplar and willow grove.

Genus *Sybistroma* Meigen, 1824

*Sybistroma israelensis* (Grichanov, 2000)

New record for Turkey.

Material examined: Manisa, Yunus Emre, Karakoca Village, 38°32'55"N, 27°20'30"E, 460 m, 13.VI.2013, 1 ♂, 38°32'52"N, 27°20'43"D, 410 m, 25.VI.2013, 2 ♂♂, 5 ♀♀; 12.VII.2013, 1 ♂, 7 ♀♀; 21.VIII.2013, 9 ♀♀; 38°32'59"N, 27°21'19"E, 460 m, 12.VII.2013, 10 ♀♀; Urban Forest, 38°35'54"N, 27°23'12"E, 250 m, 25.VI.2013, 3 ♀♀; 12.VI.2013, 2 ♀♀; 21.VIII.2013, 3 ♀♀; Süreyya Nature Park,

38°34'56"N, 27°20'58"E, 190 m, 12.VII.2013, 2 ♀♀; Şehzadeler, Spil Mountain National Park, 38°32'28"N, 27°26'14"E, 965 m, 11.VII.2013, 1 ♂; 2 ♀♀; 21.VIII.2013, 1 ♀, Spil Mountain, 38°35'35" N, 27°23'24"E, 325 m, 12.VII.2013, 6 ♀♀; 21. VIII.2013, 12 ♀♀; Center, Spil Mountain National Park, Ayvacık Village, 38°33'00"N, 27°29'12"E, 995 m, 12.VII.2013, 1 ♂, 1 ♀. İzmir, Kemalpaşa, Spil Mountain, Beşpınar Village, 38°32'09"N, 27°25'34"E, 850 m, 11.VII.2013, 9 ♂♂, 31 ♀♀.

Palaearctic Distribution: Israel.

Habitat preferences: Moderately mixed woodland, humid coniferous woodland, humid grassland.

*Sybstroma lorifer* (Mik, 1878)

Turkey Distribution: Uşak.

Palaearctic Distribution: France, Greece, Italy, Macedonia, Turkey, The former Yugoslavia.

Habitat preferences: Scrub woodland, road edges and meadow.

Subfamily Hydrophorinae Lioy, 1864

Genus: *Hydrophorus* Fallen, 1823

*Hydrophorus balticus* (Meigen, 1824)

Turkey Distribution: Antalya, Aydın, Denizli, Isparta, Kars, Muğla, Rize.

Palaearctic Distribution: Afghanistan, Algeria, Austria, Azerbaijan, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iran, Ireland, Israel, Italy, Mongolia, Morocco, Netherlands, Norway, Former Yugoslavia, Poland, Romania, Russia, Slovakia, Spain, Sweden, Switzerland, Turkey, UK, Ukraine.

Habitat preferences: Humid grassland, Humid mixed woodland, Humid coniferous woodland, Meadow, Garden, Poplar grove.

Genus: *Liancalus* Loew, 1857

*Liancalus virens* (Scopoli, 1873)

Turkey Distribution: Hakkari, Muğla.

Palaearctic Distribution: Abkhazia, Algeria, Austria, Azerbaijan, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Finland, France, Georgia, Germany, Greece, Hungary, Ireland, Israel, Italy, Luxembourg, Kazakhstan, Kyrgyzstan, Madeira, Morocco, Netherlands, Norway, Poland, Portugal, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Tajikistan, Tunisia, Turkey, UK, Ukraine.

Habitat preferences: Road edges, Garden, humid grassland.

Genus: *Scellus* Loew, 1857

*Scellus notatus* (Fabricius, 1781)

Turkey Distribution: Afyonkarahisar.

Palaearctic Distribution: Austria, Belgium, Bulgaria, Denmark, France, Germany, Greece, Hungary, Ireland, Italy, Netherlands, Portugal, Romania, Russia, Slovakia, Sweden, Turkey, UK, Ukraine, Former Yugoslavia.

Habitat preferences: Humid coniferous woodland and grassland.

### **Subfamily Rhaphiniinae Bigot, 1852**

Genus: *Rhaphium* Meigen, 1803

*Rhaphium appendiculatum* (Zetterstedt, 1849)

Turkey Distribution: Adıyaman, İzmir.

Palaearctic Distribution: Abkhazia, Afghanistan, Algeria, Austria, Azerbaijan, Bulgaria, Czech Republic, Denmark, Finland, France, Germany, Georgia, Greece, Hungary, Iran, Ireland, Italy, "Middle Asia", Morocco, Netherlands, Poland, Romania, Russia, Slovakia, Spain, Sweden, Switzerland, Turkey, UK, Ukraine.

Habitat preferences: Humid coniferous woodland and humid grassland.

*Rhaphium brevicorne* Curtis, 1835

Turkey Distribution: Burdur, İzmir.

Palaearctic Distribution: Algeria, Belgium, France incl. Corsica, Germany, Greece, Iraq, Ireland, Israel, Italy, Lebanon, Morocco, Netherlands, North Aegean, Russia, Spain incl. Canary Is., Sweden, Tajikistan, Turkey, UK.

Habitat preferences: Humid mixed woodland, humid grassland and meadow.

### **Subfamily Sympycninae Aldrich, 1905**

Genus: *Campsicnemus* Haliday in Walker, 1851

*Campsicnemus curvipes* (Fallen, 1823)

Turkey Distribution: Antalya, Bolu.

Palaearctic Distribution: Abkhazia, Algeria, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bulgaria, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Luxembourg, Macedonia, Morocco, Netherlands, Norway, Poland, Portugal, Romania, Russia, Slovakia, ?Slovenia, Spain (Canary Is.), Sweden, Switzerland, Turkey, UK, Ukraine, Former Yugoslavia.

Habitat preferences: Humid grassland moderately mixed woodland, humid coniferous woodland, reed marshes, meadow.

*Campsicnemus umbripennis* Loew, 1856

Turkey Distribution: Erzurum, Hakkari, Isparta, Kars, Muğla.

Palaearctic Distribution: Abkhazia, Afghanistan, Armenia, Austria, Azerbaijan, Belgium, Bulgaria, Czech Republic, France, Georgia, Germany, Greece incl. North Aegean, Hungary, Iran, Iraq, Israel, Italy, Poland, Portugal, Romania, Russia, Slovakia, Spain, Switzerland, Tajikistan, Turkey, Turkmenistan, UK, Former Yugoslavia.

Habitat preferences: Humid coniferous woodland, Dry coniferous woodland, Fenlands, Grassland.

Genus: *Syntormon* Loew, 1857

*Syntormon denticulatus* (Zetterstedt, 1843)

Turkey Distribution: Erzurum, Muğla, Van.

Palaearctic Distribution: Abkhazia, Afghanistan, Armenia, Azerbaijan, Belarus, Bulgaria, Estonia, Finland, France, Germany, Greece, Israel, Italy, Kyrgyzstan, Norway, Poland, Romania, Russia, Sweden, Switzerland, Tajikistan, Turkey, UK, Ukraine.

Habitat preferences: Moderately mixed woodland, Grassland, Dry coniferous woodland, Willow Grove.

*Syntormon miki* Strobl, 1899

New record for Turkey.

Material examined: Manisa, *Yunus Emre*, Karakoca Village, 38° 32' 52" N/27° 20' 43" E, 410 m, 12.VII.2013, 1 ♀.

Palaearctic Distribution: Czech Republic, Denmark, England, France, Greece, Ireland, Israel, Italy, Morocco, Poland, Portugal, Slovenia, Spain, Sweden, Switzerland, Tunisia, Former Yugoslavia.

Habitat preferences: Humid mixed woodland.

*Syntormon pallipes* (Fabricius, 1794)

Turkey Distribution: Adıyaman, Ankara, Antalya, Burdur, Denizli, Hakkari, Isparta, İzmir, Muğla, Van.

Palaearctic Distribution: Abkhazia, Afghanistan, Algeria, Armenia, Austria, Azerbaijan, Belgium, Bulgaria, China, Czech Republic, Denmark, Egypt, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Iran, Iraq, Ireland, Israel, Italy, Jordan, Kyrgyzstan, Latvia, Morocco, Netherlands, Norway, Poland, Portugal incl. Madeira, Azores, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Tajikistan, Tunisia, Turkey, UK, Ukraine, Uzbekistan, Former Yugoslavia.

Habitat preferences: Fenlands, reed marshes, moderately mixed woodland, dry coniferous woodland, humid coniferous woodland, poplar grove, willow grove, coastal dunes, grassland, humid grassland, meadow, garden and road edges.

*Syntormon zelleri* (Loew, 1850)

Turkey Distribution: Afyonkarahisar, Uşak.

Palaearctic Distribution: Abkhazia, Austria, Azerbaijan, Belgium, Czech Republic, France, Germany, Greece, Hungary, Iran, Ireland, Italy, "Middle Asia", Netherlands, Romania, Russia, Slovakia, Spain, Switzerland, Turkey, UK.

Habitat preferences: Dry coniferous woodland.

Genus: *Teuchophorus* Loew, 1857

*Teuchophorus monacanthus* Loew, 1859

Turkey Distribution: Antalya, Artvin, Muğla.

Palaearctic Distribution: Austria, Azerbaijan, Belgium, Bulgaria, Czech Republic, Denmark, France, Georgia, Germany, Greece, Hungary, Iraq, Ireland, Israel, Italy, Latvia, Luxembourg, "Middle Asia", Netherlands, Norway, Poland, Romania, Slovenia, Spain, Sweden, Switzerland, Turkey, UK, Former Yugoslavia.

Habitat preferences: Humid coniferous woodland.

## Discussion

During the last decade various authors have identified new species and added new records of Dolichopodidae from various regions of Turkey. Dolichopodid checklist of Turkey has been published by Tonguç et al. (2016). They reported that 188 dolichopodid species number are known from Turkey. *Syntormon miki* (Strobl, 1899), *Hercostomus tanjusilus* Negrobov & Zurikov, 1988, *H. thraciensis* Kechev & Negrobov, 2015 and *Sybistroma israelensis* (Grichanov, 2000) were added to Turkey Dolichopodidae fauna through with this study and the species number of the country list have increased to 192. It is especially worth noting records of *H. tanjusilus*, *H. thraciensis* and *S. israelensis* for the first time after their descriptions.

When new records which are the first for Turkey are evaluated according to zoogeographic perspective, these are thought that *S. miki*, *H. tanjusilus*, *S. israelensis* and *H. thraciensis* can respectively be Mediterranean, Caucasian, Middleeast and also European origin. On the other hand, this species access from different region to Turkey, for example *S. miki* from Southwest Anatolia, *H. tanjusilus* from South Caucasia, *S. israelensis* from Amanos Mountain and *H. thraciensis* through the straits. *Dolichopus signifer*, *Hercostomus chetifer*, *Hydrophorus balticus*, *Liancalus virens*, *Scellus notatus*, *Rhaphium appendiculatum*, *R. brevicorne*, *Campsicnemus curvipes*, *C. umbripennis*, *Syntormon pallipes* and *S. zelleri* detected from the research area have wide distribution in Palearctic.

As a result, eight of this 18 species detected from research area distribute West Palearctic region, other 10 of them distribute not only West Palearctic but also East Palearctic region. However, there was no species distributing in East Palearctic region.

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## References

- Anonymous, 2014. T.C. Orman ve Su İşleri Bakanlığı, Doğa Koruma ve Milli Parklar Genel Müdürlüğü, (<http://www.milliparklar.gov.tr/mp/spildagi/?sflang=tr>). (Erişim tarihi: 2013-2014).
- Brooks, S.E., 2005. Systematics and phylogeny of Dolichopodinae (Diptera:Dolichopodidae). *Zootaxa*, 857: 1-158.
- d'Assis Fonseca, E.C.M., 1978. Diptera, Orthorrhapha, Brachycera, Dolichopodidae Handbooks for the Identification of British Insects. Royal Entomological Society of London, London, 90 pp.
- Grichanov, I.Ya., 2007. A Checklist and Keys to Dolichopodidae (Diptera) of the Caucasus and East Mediterranean. VIZR RAAS, Saint Petersburg, 160 pp.
- Grichanov, I. Ya., 2014. Alphabetic List of Generic and Specific Names of Predatory Flies of the Epifamily Dolichopodidae (Diptera). VIZR RAAS, Saint Petersburg, 547 pp.
- Kechev, M. & O. Negrobov, 2015. A New Species of the Genus *Hercostomus* Loew, 1857 (Diptera: Dolichopodidae) from Bulgaria. *Acta Zoologica Bulgarica*, 67 (2): 199-202.
- Lundbeck, W., 1912. Diptera Danica, Genera and Species of Flies Hitherto Found in Denmark, Dolichopodidae (part IV). G.E.C. GAD, Copenhagen, 414 pp.
- Pollet, M., 2000. Een Gedocumenteerde Rode Lijst Van de Slankpootvliegen Van Vlaanderen. Mededelingen Van Het Instituut Voor Natuurbehoud, Brussel, 190 pp.
- Tonguç, A., I.Ya. Grichanov & S. Naglis, 2016. Checklist of the Dolichopodidae (Diptera, Brachycera) of Turkey. *Turkish Journal of Zoology*, 40: 14-26.
- Yang, D., Y. Zhu, M. Wang & L. Zhang, 2006. World Catalog of Dolichopodidae (Insecta: Diptera). China Agricultural University Press, China, 744 pp.