

STUDIES ON THE MYRMECOFAUNA OF TURKEY I. ANTS OF SİİRT, BODRUM AND TRABZON

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Ö z e t : Türkiye Karınca Faunası Üzerine Araştırmalar. I. Siirt, Bodrum ve Trabzon Karıncaları — Siirt, Bodrum ve Trabzon bölgelerindeki karınca türleri ve bu türlerin dağılımları karşılaştırmalı olarak araştırıldı.

I — Araştırma sırasında 48 tür, 5 alttür ve 8 varyete saptandı (Tablo I). Bunlardan aşağıda belirtilen 12 tür, 1 alttür ve 3 varyete Türkiye için yeni kayıtlardır: *Amblyopone denticulatum* (Rog.), *Myrmica ruginodis* Nyl., *M. bergi* Ruzs., *Aphaenogaster kervillei* For., *Cremastogaster laestrygon* Em., *Monomorium kusnezowi* Sant., *Tetramorium sculptum* Poldi, *T. schmidti* For., *T. semilaeve semilaeve* var. *siciliensis* Sant., *T. semilaeve syriacum* var. *cyprum* Sant., *Bothriomyrmex communista* (Sant.), *Camponotus jaliensis* ssp. *shaqualavensis* Pisarski, *Formica cinereofusca* Karaw., *F. cinerea* var. *armeniaca* Ruzs., *Proformica kobachidzei* Arnoldi, *Cataglyphis kurdistanicus* Pisarski (Harita 1).

II — Literatürdeki kayıtlara göre Türkiye’de mevcudiyeti şüpheli olan *Manica rubida* (Latr.), *Liometopum microcephalum* (Panzer), *Camponotus kiesenwetteri* Rog. ve *C. sylvaticus* ssp. *baldaccii* Em. araştırma bölgelerimizde bulunmuştur.

III — Siirt, Bodrum ve Trabzon bölgelerinde bulunduğunu saptadığımız türleri coğrafik dağılımlarına göre karşılaştırdığımızda, Trabzon’daki türlerin çoğunlukla "Eurosibirian", Siirt ve Bodrum’daki türlerin ise "Mediterranean" elemanlar olduklarını görüyoruz. Fakat Siirt bölgesinde bulunan *Tetramorium sculptum* Poldi ve *Cataglyphis kurdistanicus* Pisarski türleri şimdiye kadar bilinen dağılımlarına göre muhtemelen "Iranoturanian" elemanlardır.

Summary : The ant species of the Siirt, Bodrum and Trabzon regions have been studied, and the distribution of these species compared.

I — During the course of the research, 48 species, 5 subspecies and 8 varieties have been identified (Table I). Of these, 12 species, 1 subspecies and 3 varieties are new findings for Turkey: *Amblyopone denticulatum* (Rog.), *Myrmica ruginodis* Nyl., *M. bergi* Ruzsky, *Aphaenogaster kervillei* For., *Cremastogaster laestrygon* Em., *Monomorium kusnezowi* Sant., *Tetramorium sculptum* Poldi, *T. schmidti* For., *T. semilaeve semilaeve* var. *siciliensis* Sant., *T. semilaeve syriacum* var. *cyprum* Sant., *Bothriomyrmex communista* (Sant.), *Camponotus jaliensis* ssp. *shaqualavensis* Pisarski, *Formica cinereofusca* Karaw., *F. cinerea* var. *armeniaca* Ruzs., *Proformica kobachidzei* Arnoldi, *Cataglyphis kurdistanicus* Pisarski (Fig. 1).

II — In the early literature the distribution of *Manica rubida* (Latr.), *Liometopum microcephalum* (Panzer), *Camponotus kiesenwetteri* Rog. and *C. sylvaticus* ssp. *baldaccii* Em., in Turkey was in doubt. This distribution has now been confirmed.

III — When the species found in the regions of Siirt, Bodrum and Trabzon are compared, it is seen that the species in Trabzon are mostly "Eurosibirian" while those in Siirt and Bodrum are "Mediterranean". According to their distribution reported so far the species *Tetramorium sculptum* Poldi and *Cataglyphis kurdistanicus* Pisarski found in Siirt are probably "Iranoturanian" elements.

INTRODUCTION

Our knowledge of the ants of Turkey is based on reports by Forel (1895, 1906, 1911, 1913), Emery (1898, 1921), Kohl (1905), Schkaff (1924), Santschi (1920, 1921, 1934), Wiehmeier (1922), Donisthorpe (1946, 1950), Bytinski-Salz (1953), Baroni Urbani (1964a, 1969), Baş (1973) and Kutter (1975).

Though research on Turkey ants began quite a long time ago there has been no revision and revaluation of the information accumulated so far. Of the previously published reports, that by Donisthorpe (1950) covers the most ground. Other authors usually deal with the ant fauna of western Anatolia only. As most of these studies were based on an insufficient supply of material, the information given should be revised, which will necessitate further detailed research on the ant fauna of Turkey.

In the present investigation, we considered areas either not studied previously or only summarily so and chose three whose ecological characteristics differ considerably: Siirt in southeast Anatolia, near the Syrian border; Bodrum in the southwest, on the Aegean coast; and Trabzon on the Pontic Mountains, in the northwest (Fig. 1). The ant species in those three areas were studied comparatively. Except for a few species identified in the Bodrum area by Emery in 1921, no information is available on the ant fauna of the regions under study.

MATERIAL and METHOD

Field trips were conducted in the spring and autumn seasons of each year between 1972 and 1975.

A description of the regions and the localities studied and some of their properties is given below:

Region I — SİİRT: Latitude 37°56' N, Longitude 41°56' E. A city in south-eastern Anatolia. Certain localities were chosen in this region; their site and distance from Siirt and dominant flora are as follows:

a - Botan Barajı: 6.5 km southeast. Located near a dam, predominantly grassy.

b - Reşan Dağı: 12 km northwest. Altitude 900 m, stony and rocky.

c - Billoris: 20 km south. A village and its surroundings, occasional maple trees.

d - Ç a t k ı l ı : 15 km northeast. A village and its surroundings. Very occasional maple trees and uncultivated agricultural fields.

e - Ç a y ö n ü : 17 km southwest. Orchards and vegetable gardening.

f - B r e n e t e p e (E r u h) : 34 km southeast. Altitude 1300 m. Scanty maple forests.

g - K ı l k e s e n (P e r v a r i) : 40 km east. Altitude 1400 m. A village surrounded by maple and oak forests.

h - B e y k e n t (K u r t a l a n) : 34 km west. Altitude 850 m. Poplar forest.

Region II — BODRUM : Latitude 37°02' N, Longitude 27°21' E. A coastal city in southwestern Anatolia. Certain localities were chosen in this region; their site and distance from Bodrum and dominant flora are as follows :

a - A k ç a b ü k : 2 km southeast. A valley interspersed with large rocky formations; *Pistacia lentiscus* dominant.

b - M a n a s t ı r t e p e : 1 km southeast. Totally covered with *Poterium spinosum*.

c - K ı ş l a : 1 km south. Mainly rocky with interspersed grassy fields.

d - Y e n i k ö y : 20 km southeast. Banks of a stream; occasionally rocky.

e - G ö k t e p e : 2.5 km southwest. Typical machia field.

f - K ı z ı l a ğ a ç : 24 km east. Surroundings of a village, red-pine forest in the periphery.

g - G ö l k ö y : 8 km west. Surroundings of a village. Grassy area.

h - B i t e z - y a l ı : 6 km west. Rocky, occasional pistachio trees.

ı - M u m c u l a r : 35 km east. Olive trees dominant.

j - K u m k ö y : 12 km northeast. At the periphery of a forest.

Region III — TRABZON : Latitude 41°00' N, Longitude 39°43' E. A coastal city in northeastern Anatolia. Certain localities were chosen in this region; their site and distance from Trabzon and dominant flora are as follows:

a - H a m s i k ö y : 41 km south. Dense forests and grassy fields. Altitude 1400 m.

b - B e k ç i l e r : On the province border between Trabzon and Gümüşhane. Altitude 1650 m. On the river banks, occasionally rocky areas.

c - B a l a h o r : 5 km southeast of Hamsiköy. Altitude 1600 m. Spruce forests.

d - *Güzelyayla* : 40 km south, near Hamsiköy. Altitude 1350 m. Meadow.

e - *Zigana Pass* : Altitude 2030 m. Western banks of the pass, mostly grassy.

f - *Esiroğlu* : 15 km south. On the banks of a stream. Walnut trees dominant.

g - *Boztepe* : 3 km northeast. Rocky and stony. Grassy fields dominant.

h - *Telsiztepe* : 5 km southwest. Grassy fields with occasional orchards.

In the confirmation of the collected samples, we have made use of the Basel Natural Science Museum collection, P.A.N. Warsaw Zoological Institute collection and Poldi's private collection of *Tetramorium* genus. The research material is being kept at the University of İstanbul, Department of General Zoology.

NOTES ON THE SPECIES

In this section, we present the species determined in a list. To aid future research on the subject, we have included in our list, the known distribution of each species in regions of Anatolia other than the three dealt with in our study.

The abbreviation OR indicates "Old Records" and M the "Material collected."

Family *FORMICIDAE*

Subfamily *PONERINAE*

Amblyopone denticulatum (Roger, 1859)

OR : ———

M : BODRUM - Mumcular : 2 workers.

Brown, Jr. (1960) mentions males of *denticulatum* group found in Latakia, a region in Syria very close to the Turkish border. No information is available for Turkey. Two workers of this species were found in a *Lasius alienus* nest in a grove of olive trees.

Subfamily *MYRMICINAE*

Manica rubida (Latreille, 1802)

OR : Emery, 1908 - Asia Minor.

M : TRABZON - Hamsiköy, Bekçiler : workers ; Güzelyayla: 1 ♀ ; Balahor : workers, ♀♀, ♂♂.

According to Emery (1908) this species is found as far southeast the Anatolian frontier, however no confirmed information based on material is available. In the Zigana region, nests belonging to this species were found under large and flat stones in grassy fields at altitudes ranging between 1300-1650 m. On the stream banks, similar nests were found among the moss growing on small rocks.

Myrmica lobicornis Nylander, 1846

OR : Donisthorpe, 1950 - Kars.

M : TRABZON - Zigana pass : workers.

Myrmica ruginodis Nylander, 1846

OR : ———

M : TRABZON - Hamsiköy, Bekçiler : workers; Güzelyayla : workers, ♀♀ ; Balahor : workers, ♀♀, ♂♂.

Although there is no record of this species in Turkey, it was the most common species among the other *Myrmica* we determined at altitudes ranging between 1400 - 1600 m. Nests were generally found at the periphery of forests in grassy fields and under rocks on the stream banks.

Myrmica scabrinodis Nylander, 1846

OR : Santschi, 1921 - Ankara district; Donisthorpe, 1950 - Ödemiş (İzmir), Dinar (Afyonkarahisar).

M : TRABZON - Hamsiköy, Balahor : workers.

Myrmica sulcinodis Nylander, 1846

OR : Donisthorpe, 1950 - Uludağ (2200 m).

M : TRABZON - Zigana pass : workers.

Myrmica bergi Ruzsky, 1902

OR : ———

M : TRABZON - Esiroğlu : workers; Bekçiler: workers, ♀♀.

This is a new finding in Turkey. Specimens of this species were found in walnut gardens in Esiroğlu and in grassy fields in Bekçiler.

Aphaenogaster simonellii var. *balcanica* Emery, 1898

OR : Forel, 1911 - Yedikule (İstanbul), İzmir; Emery, 1921 - Bodrum; Schkaff, 1924 - İstanbul; Santschi, 1934 - İstanbul, İzmir.

M : BODRUM - Akçabük, Kızılağaç, Kışla, Manastırtepe, Göktepe, Gölköy, Kumköy: workers.

Aphaenogaster subterranea (Latreille, 1798)

OR : Forel, 1895 - İstanbul, Schkaff, 1924 - İstanbul; Donisthorpe, 1950 - Bebek (İstanbul), Antalya.

M : TRABZON - Esiroğlu : workers.

Aphaenogaster kervillei Forel, 1910

OR : ———

M : SİİRT - Botan barajı, Reşan dağı : workers.

This is a new finding in Turkey. It is known to exist in Syria and Lebanon (Forel, 1910) and we found specimens in the barren fields of Siirt (a Turkish province near the Syrian border).

Aphaenogaster holtzi Emery, 1898

OR : Emery, 1898 - Mersin.

M : SİİRT - Beykent (Kurtalan) : workers.

Messor semirufus (André, 1881)

OR : Donisthorpe, 1950 - Antalya.

M : SİİRT - Botan barajı, Billoris, Reşan dağı, Çayönü, Kilkese (Pervari), Brenetepe (Eruh): workers.

BODRUM - Akçabük, Göktepe, Manastırtepe, Yeniköy, Kızılağaç, Bitez - yalı, Gölköy: workers; Kışla : workers, ♀♀.

Messor semirufus var. *dentata* Forel, 1910

OR : Forel, 1911 - İstanbul.

M : SİİRT - Reşan dağı, Çatkılı, Brenetepe (Eruh) : workers.

Baroni Urbani (1974) indicates that in samples collected in the Middle East workers had epinotal teeth that differed in size and that in some individuals these were totally missing. He indicates also that because of this discrepancy, samples described as var. *dentata* could be synonymous with *Messor semirufus*. In our samples, all individuals have distinct epinotal teeth, hence we chose to classify them as var. *dentata*. For a definitive classification more samples are required.

Messor structor var. *aegaea* (Emery, 1921)

OR : Emery, 1921 - Bodrum; Santschi, 1934 - İstanbul; Baroni Urbani, 1964a-İzmir.

M : BODRUM - Akçabük, Yeniköy, Bitez - yalı : workers.

Messor structor var. *orientalis* Emery, 1898

OR : Forel, 1911 - Buca (İzmir); Santschi, 1934 - Mersin, İstanbul.

M : BODRUM - Bitez-yalı; Mumcular: workers.

Pheidole pallidula (Nylander, 1848)

OR : Forel, 1895 - Edirne, 1906 - İzmit, Sultandağı, 1911 - Büyükdere (İstanbul), İzmit, İzmir; Donisthorpe, 1950-Ankara, Cihanbeyli (Konya), Ödemiş (İzmir), Bebek (İstanbul), Antalya; Baroni Urbani, 1964a - İzmir.

M : SİİRT - Botan barajı, Çatkılı, Billoris, Çayönü, Brenetepe (Eruh) : workers, soldiers, Kılkesen (Pervari) : workers.

BODRUM : Gölköy, Bitez - yalı : workers ; Kızılağaç, Kumköy, Mumcular : workers, soldiers; Akçabük : workers, soldiers, ♀♀.

Cardiocondyla elegans Emery, 1869

OR : Donisthorpe, 1950 - Ankara.

M : SİİRT - Botan barajı : workers.

Cremastogaster laestrygon Emery, 1869

OR : ———

M : SİİRT - Çatkılı, Kılkesen (Pervari) : workers.

Baroni Urbani (1964b, 1971) classifies the *C. laestrygon* he found in Sicily as a species while it is generally known to be a subspecies of *C. auberti*. There is no record of the existence of *C. laestrygon* in Turkey. Forel (1906) does mention having recorded *C. auberti* in İzmit, but gives no description. We compared our material with *C. laestrygon* Em. from Nicolasi - Italy, with var. *cretica* Karaw. from Crete, and with *C. jehova* For. from Palestine. The petiol of our samples resembles that found in the *C. jehova* For. The mesonotal carina while resembling that of var. *cretica* in some workers, in others it is not inclined so far backwards as is usual in var. *cretica*. On the other hand, our material resembles *C. laestrygon* in that the epinotal spines are strong, and the edges of the clypeus are wrinkled. However, while *C. laestrygon* is brown all over and has dense hair on the head, in our material the head and the thorax are reddish-brown and the gaster is dark brown, the hair is also far less dense than that of the typical sample. These observations led us to classify this species temporarily as *C. laestrygon*.

The nests of this species were found under small stones in areas containing a few oak trees.

Cremastogaster scutellaris (Olivier, 1791)

OR : Forel, 1895 - Edirne, 1911 - Büyükdere (İstanbul); Donisthorpe, 1950 - Baltalımanı (İstanbul); Baroni Urbani, 1964a - İzmir.

M : BODRUM - Bitez-yalı, Mumcular : workers.

Cremastogaster sordidula ssp. *mayri* (Mayr, 1853)

OR : Forel, 1911 - Büyükdere (İstanbul), İzmit; Schkaff, 1924 - İstanbul.

M : BODRUM - Akçabük, Yeniköy, Gölköy : workers.

Diplorhoptrum fugax (Latreille, 1798)

OR : *Solenopsis fugax* Latr. Forel, 1906 - Bursa, Sultan dağı, 1911 - Büyükdere (İstanbul); Schkaff, 1924 - İstanbul; Donisthorpe, 1950 - Kars, İstanbul.

M : TRABZON - Esiroğlu : workers.

Monomorium minutum Mayr, 1855

OR : Forel, 1911 - İzmir; Schkaff, 1924 - İstanbul.

M : BODRUM - Gököy : workers.

Monomorium dentigerum (Roger, 1862)

OR : Forel, 1906 - Toroslar, 1911 - Buca (İzmir).

M : SİİRT - Botan barajı, Billoris : workers, soldiers.

BODRUM - Akçabük : workers, soldiers.

Monomorium kusnezowi Santschi, 1928

OR : ———

M : SİİRT - Botan barajı, Billoris : workers.

This is a new finding for Turkey. We discovered 2 nests in the Botan Dam area and only one nest under small stones in the village of Billoris.

Leptothorax muscorum (Nylander, 1846)

OR : ———

M : TRABZON - Hamsiköy, Balahor : workers.

This is a new finding for Turkey. Nests made by this species were found under small stones in spruce forests at altitudes ranging between 1400-1600 m.

Tetramorium caespitum (Linné, 1758)

OR : Forel, 1895 - Edirne, 1906 - Bursa, Sultandağı; Santschi, 1921 - Ankara district; Schkaff, 1924 - İstanbul; Donisthorpe, 1950 - Uludağ (Bursa), Kars, Hopa (Artvin); Baroni Urbani, 1964a - İzmir, İstanbul.

M : TRABZON - Hamsiköy, Balahor, Güzelyayla, Bekçiler, Zigana Pass, Esiroğlu, Telsiztepe, Boztepe: workers.

Tetramorium sculptum Poldi, 1975 (personal communication)

OR : ———

M : SİİRT - Billoris, Reşan dağı, Kılkesen (Pervari) : workers.

This can be considered a new finding for Turkey, as this species has not been recorded in Turkey before. First found by Poldi in Iran. The original description of the species is as yet still in print so we shall merely record the presence of the species in Turkey. Nests were found under small stones at altitudes of 900 m and 1400 m.

Tetramorium schmidtii Forel, 1904

OR : ———

M : SİİRT - Çayönü : workers.

This is a new finding for Turkey. The nests were found in orchards and vegetable gardens. Our material has denser hair and relatively non-flattened metathorax than the Palestine type.

Tetramorium lucidula Emery, 1909

OR : Santshci, 1921 - Ankara district.

M : SİİRT - Billoris, Çatkılı, Reşan dağı : workers ; Botan barajı : workers, ♀♀, ♂♂.

Tetramorium semilaeve semilaeve var. *siciliensis* Santschi, 1927

OR : ———

M : BODRUM - Mumcular : workers; Kumköy: workers, 1 ♀.

This is a new finding for Turkey. *T. semilaeve s. l.* has been found everywhere from the Mediterranean Basin to Central Asia. Some records exist on its presence in Anatolia (Donisthorpe, 1950-Afyonkarahisar, Uludağ, Gaziantep; Baroni Urbani, 1964a-İzmir). Var. *siciliensis* Sant., on the other hand, has been determined in Sicily and the Aegean Islands. The nests of this variety were found under small pebbles.

Tetramorium semilaeve var. *hippocratis* Emery, 1921

OR : Emery, 1921 - Bodrum; Schkaff, 1924 - İstanbul.

M : BODRUM - Kızılağaç, Kumköy: workers, Akçabük: workers, ♀♀.

Tetramorium semilaeve ssp. *syriacum* var. *cyprium* Santschi, 1934

OR : ———

M : BODRUM - Mumcular : workers.

This is a new finding for Turkey. Workers in our material were 0.5 mm longer and darker in color than typical *cyprium*. Only one nest was found.

Subfamily DOLICHODERINAE

Liometopum microcephalum (Panzer, 1798)

OR : Baş, 1973 - Anatolia.

M : SİİRT - Çatkılı, Kılkesen (Pervari), Brenetepe (Eruh): workers.

A study of the literature indicates that this species may be present in Turkey (Stitz, 1939; Baroni Urbani, 1971). Furthermore, Baş (1973) includes this species in the list of ants determined in forests in Anatolia, but without specifying locality. We found this species in three of the localities under observation in maple forests. We also come across nests belonging to this species in Manyas Bird Sanctuary.

Tapinoma erraticum (Latreille, 1798)

OR : Forel, 1906, 1911 - İzmit; Santschi, 1921 - Ankara district; Schkaff, 1924 - İstanbul; Donisthorpe, 1950 - Armutlu (Bursa), Antalya, Gaziantep, Ahlat (Bitlis); Baroni Urbani, 1964a - İstanbul.

M : SİİRT - Reşan dağı, Kılkesen (Pervari): workers, Botan barajı, Çatkılı: workers, ♀♀.

Bothriomyrmex communista (Santschi, 1920)

OR : ———

M : SİİRT - Çatkılı : workers, Botan barajı: workers, ♀♀, ♂♂.

We have found no reports of the location of this species other than Crimea. When comparing our samples to typical Crimean material we referred to Kutter's (1971) description of *Bothriomyrmex* species. We found nests belonging to this species under embedded rocks in sparsely vegetated fields.

Subfamily FORMICINAE

Plagiolepis pygmaea (Latreille, 1798)

OR : Forel, 1895 - Edirne, 1906 - İzmit, 1911 - Buca (İzmir), İzmit; Schkaff, 1924 - İstanbul; Donisthorpe, 1950 - Baltalimanı (İstanbul), Nurhakköy (Elbistan - Maraş), Gaziantep.

M : TRABZON - Boztepe: workers; Esiroğlu: workers, ♀♀, ♂♂.

Plagiolepis pallescens Forel, 1888

OR : Forel, 1911 - İzmir.

M : BODRUM - Göktepe, Yeniköy: workers; Kışla, Kumköy: workers, ♂♂; Akçabük, Mumcular: workers, ♀♀, ♂♂.

Acantholepis frauenfeldi (Mayr, 1855)

OR : Forel, 1895 - Edirne, 1911 - Buca (İzmir), İzmit; Schkaff, 1924 - İstanbul; Donisthorpe, 1950 - Armutlu (Bursa), Bebek, Yeşilköy (İstanbul), Soğukluk (İskenderun).

M : SİİRT - Reşan dağı, Çatıklı, Kılkesen (Pervari), Brenetepe (Eruh): workers;
Botan barajı: workers, ♀♀.

BODRUM - Akçabük, Göktepe, Kışla, Yeniköy, Kızılağaç: workers;
Kumköy: workers, ♂♂; Mumcular: workers, ♀♀, ♂♂.

Camponotus herculeanus (Linné, 1758)

OR : Donisthorpe, 1950 - Uludağ (Bursa); Emery, 1908 - Taurus mountains.

M : TRABZON - Bekçiler : workers, ♀♀.

Componotus aethiops (Latreille, 1798)

OR : Forel, 1906 - İzmit; Santschi, 1921 - Ankara district, İzmir; Schkaff, 1924-
İstanbul; Donisthorpe, 1950 - Uludağ (Bursa); Baroni Urbani, 1964a-
İstanbul.

M : SİİRT - Kılkesen (Pervari): workers.

BODRUM - Akçabük, Kızılağaç, Gölköy, Kumköy: workers.

TRABZON - Telsiztepe : workers.

Camponotus samius Forel, 1888

OR : Forel, 1911 - İstanbul, İzmit, İzmir.

M : BODRUM - Gölköy: workers.

Camponotus ionius Emery, 1901 *n.status*

OR : Santschi, 1921 - İzmir and environs.

M : BODRUM - Manastırtepe, Yeniköy: workers.

As material available for comparison, 6 workers from the Bosphorus and 1 worker from Syria of typical *C. samius* For., plus some additional workers of var. *ionia* from the İzmir and Ankara regions were used. Purely on chromatic characteristics *C.ionius* can be easily distinguished from *C.samius*. This was especially true of our material. We also determined that *C.samius* var. *spagnolinii* Em. previously recorded for Turkey (Schkaff, 1924) seems to be very near to the true *C. samius* and is distinguishable from *C.ionius*. For a final decision on the status of *C. ionius*, more material is needed. At present, this provisional treatment seems to be the most appropriate.

Camponotus compressus ssp. *sanctus* Forel, 1904

OR : Emery, 1921 - Bodrum; Santschi, 1921 - İzmir, Ankara.

M : SİİRT - Botan barajı, Reşan dağı: workers.

BODRUM - Kumköy: workers; Manastırtepe, Mumcular: workers, ♀♀, ♂♂.

Camponotus sylvaticus ssp. *aldaccii* Emery, 1894

OR : Emery, 1908 - Anatolia.

M : BODRUM - Akçabük, Göktepe, Manastırtepe, Yeniköy, Kızılağaç, Gölköy: workers.

Camponotus festai Emery, 1894

OR : Forel, 1906 - Taurus mountains, 1913-Mersin, Taurus mountains.

M : SİİRT - Beykent (Kurtalan): workers.

Camponotus jaliensis ssp. *shaqualavensis* Pisarski, 1971

OR : ———

M : SİİRT - Billoris, Çatkılı, Beykent (Kurtalan): workers.

This is a new finding for Turkey. It coincides with typical Iraq material (Pisarski, 1971). The nests were found under rocks at an altitude of 1300 m.

Camponotus dalmaticus (Nylander, 1848)

OR : Schkaff, 1924 - İstanbul.

M : BODRUM - Mumcular: workers, Gölköy: workers, ♀♀, ♂♂.

Camponotus gestroi ssp. *creticus* Forel, 1888

OR : Forel, 1911 - İzmir, 1913 - Ephesus; Santschi, 1921 - İzmir district.

M : SİİRT - Billoris, Çatkılı: workers.

Camponotus kiesenwetteri Roger, 1859

OR : Emery, 1925 - Asia Minor.

M : BODRUM - Gölköy: workers, ♀♀.

The geographical distribution of this species includes Greece, Aegean Islands, Cyprus and Asia Minor. No record exists as to how the species is distributed within Anatolia. We determined this species in the region mentioned above in red-pine forests and thus its presence in Anatolia has been confirmed.

Lasius alienus (Förster, 1850)

OR : Forel, 1906 - Bursa, Sultan dağı, 1911 - İzmir, Schkaff; 1924 - İstanbul; Donisthorpe, 1950 - Uludağ (Bursa), Baltalimanı (İstanbul), Hopa (Artvin), Ankara; Baroni Urbani, 1964a - İstanbul.

M : SİİRT - Kalkesen (Pervari), Brenetepe (Eruh): workers; Beykent (Kurtalan): workers, ♀♀, ♂♂.

BODRUM - Mumcular: workers.

TRABZON - Hamsiköy, Güzelyayla, Esiroğlu, Boztepe, Telsiztepe:workers.

Lasius flavus (Fabricius, 1781)

OR : Donisthorpe, 1950 - Uludağ (Bursa).

M : TRABZON - Zigana Pass, Esiroğlu: workers; Hamsiköy, Balahor: workers, ♀♀; Güzelyayla: workers, ♂♂.

Formica sanguinea Latreille, 1798

OR : Baş, 1973 - Değirmenevrek (Balıkesir).

M : TRABZON - Güzelyayla: workers, 1 ♀.

Formica fusca Linné, 1758

OR : Forel, 1906 - Bursa; Schkaff, 1924 - Belgrad ormanı (İstanbul); Santschi, 1934 - İzmir; Donisthorpe, 1950 - Uludağ (Bursa).

M : TRABZON - Bekçiler: workers; Hamsiköy: workers, ♀♀; Balahor: workers, ♀♀, ♂♂.

Formica cinereofusca Karawajew, 1919

OR : ———

M : TRABZON - Bekçiler: workers; Zigana Pass: workers, ♀♀.

This is a new finding for Turkey. The workers of this species, which is related to *F.cinerea* Mayr, have a pair of hairs on the gula. On the pronotum and metanotum, there are numerous strands of erect hairs. The nests were found under rocks above an altitude of 1650 m in grassy fields in Bekçiler and in wet grassy fields on the Ziganas.

Formica cinerea var. *armeniaca* Ruzsky, 1905

OR : ———

M : TRABZON - Esiroğlu : workers.

Var. *armeniaca* is known to exist in the mountainous regions of Crimea, in western Caucasus, in Trans-Caucasus and in Georgia. This variety, which is a new finding for Turkey, is distinguished from nominative *cinerea* by the presence of erect hairs only on the pronotum, mesonotum and metanotum and by the relative thickness of the single spine on the tibia. The natural habitat of *F. cinerea* in Europe is damp sandy soil (Collingwood, 1971). We found nests made by var. *armeniaca* along river banks in Değirmendere near Esiroğlu.

Formica cunicularia Latreille, 1798

OR : Forel, 1906 - Bursa, Sultandağı, 1911 - Bebek (İstanbul); Schkaff, 1924 - İstanbul; Donisthorpe, 1950 - Hopa (Artvin).

M : TRABZON - Hamsiköy, Balahor, Telsiztepe: workers; Bekçiler: workers, ♀♀.

Proformica kobachidzei Arnoldi, 1968

OR : ———

M : TRABZON - Esiroğlu : workers.

The relevant literature indicates that of the genus *Proformica*, only *Proformica corbi* Em. is known in Turkey (Emery 1909-Sultandağ). *P. kobachidzei* is a new finding for Turkey. We found the nests under rocks in walnut gardens.

Cataglyphis nodus (Brulle, 1832)

OR : Forel, 1895 - Edirne, 1906 - İzmir, Bursa, Sultandağı, 1911 - İzmir, Buca (İzmir); Schkaff, 1924 - İstanbul; Donisthorpe, 1950 - Gaziantep; Santschi, 1921 - İzmir district, 1934 - İzmir, Mersin.

M : SİİRT - Reşan dağı, Çatkılı, Çayönü, Kılkesen (Pervari): workers; Botan barajı: workers, ♀♀, ♂♂.

BODRUM - Akçabük, Bitez - yalı, Kumköy: workers.

Cataglyphis viaticoides André, 1881

OR : Santschi, 1934 - İzmir.

M : SİİRT - Botan barajı: workers.

BODRUM - Akçabük vadisi: workers.

Cataglyphis livida André, 1881

OR : Forel, 1906 - Taurus mountains; Donisthorpe, 1950 - Ahlat (Bitlis).

M : SİİRT - Reşan dağı: workers; Botan barajı: workers, ♀♀.

Cataglyphis kurdistanicus Pisarski, 1965

OR : ———

M : SİİRT - Brenetepe (Eruh) : workers.

This is a new finding for Turkey. In this species which is related to *C. nodus*, the petiol is higher compared to that of the *C. nodus* and the hair on the tibia is thicker. The palpus maxillaris has 6 joints, the first being short and broad, while the 5th and 6th are of the same length. The teeth on the masticatory edge of the mandibula are strong and pointed. The nests of the ants of this species were found under calcareous stones in diseased oak forests at an altitude of 1300 m. It should be noted that this region borders on Iraq, the terra typica of this species (Pisarski, 1965).

DISCUSSION

We deliberately chose regions as ecological different as possible so as to be able to compare the distribution of the species under observation.

Siirt is a region in southeastern Anatolia, with dry summers and with typical steppe climate and vegetation. Bodrum lies on the southwestern coast of Anatolia and has a typical Mediterranean climate with hot, dry summers and mild and rainy winters; machia is the typical vegetation in this region. Trabzon, on the other hand, has cold winters, warm summers but is generally wet and rainy all year round; steep hills and forests dominate this region.

According to the geographical situation of the three regions, Siirt should exhibit "Iranoturanian", Bodrum "Mediterranean" and Trabzon "Eurosibirian" fauna characteristics.

When the distribution of species is examined, we note that only two species, *Lasius alienus* and *Camponotus aethiops*, have been found to exist in all three regions (Table I). These species are the most abundant species. In spite of the fact that in Bodrum and Siirt, the ecological conditions are not similar, some of the species determined were common to both regions. The species determined in Trabzon, however, were quite different (Table I). The fact that a large number of genera has been found to common to the three regions compared to the number of species, can be explained by the wider ecological tolerance of the genus compared to its species.

We can assume 16 of the 21 species we determined in Trabzon at altitudes ranging between 1300-2000 m to be Eurosibirian. In the same region in areas extending from the coast to the lower altitudes of 200 m were found Mediterranean species such as *Aphaenogaster subterranea*, *Diplorhoptrum fugax*, *Tetramorium caespitum*, *Plagiolepis pygmaea*, and *Camponotus aethiops*. While *Camponotus herculeanus* found at 1650 m was a species distinctly Eurosibirian, it has been recorded as present in the Mediterranean area on the Taurus Mountains (Emery, 1908).

It is surprising that the *Formica rufa* group, (*Formica rufa* s.l.) which is known to have a wide distribution in Europe and Asia and which has been determined at altitudes varying between 1200 - 1900 m in Anatolia in Bursa, Eskişehir, Bolu, Karabük, Zonguldak, Ankara, Sinop, Samsun, Giresun, Artvin, Isparta, Antalya (Kutter, 1975) was not found in Trabzon. The species of the *Formica rufa* group make about 1 m high conical nests out of coniferous needles; the bases of these nests are underground. That there are no *Formica rufa* group in Trabzon region may be due to the fact that the slopes here are very steep and the annual rainfall somewhat heavy, so that the nests are washed away.

In the Siirt and Bodrum regions, which display Iranoturanian and Mediterranean fauna characteristics, respectively we determined 27 species in the former region and 25 in the latter. Nine of these species are common to both: *Messor*

semirufus, *Pheidole pallidula*, *Monomorium dentigerum*, *Acantholepis frauenfeldi*, *Camponotus aethiops*, *C. Compressus* ssp. *sanctus*, *Lasius alienus*, *Cataglyphis nodus* and *C. viaticoides*. We believe that these nine species possess a high degree of ecological adaptability which enables them to habitate regions with Iranoturanian and Mediterranean climates.

Of the 27 species determined in the Siirt region, only two (*Tetramorium sculptum*, *Cataglyphis kurdistanicus*) can be considered Iranoturanian elements according to their known distribution up till the present. The remaining species are Mediterranean. Hence, in spite of the fact that Siirt possesses Iranoturanian climate, it is quite Mediterranean in terms of its ant fauna. The species *Camponotus samius*, *C. lateralis* and *C. sylvaticus* which show a wide distribution in the Mediterranean region as we found out in Bodrum, were not found in Siirt. It is likely that these species cannot adapt to the eremial conditions in Siirt. On the other hand, the related species *Camponotus compressus* ssp. *sanctus* and *C. aethiops* which are of the Mediterranean group are known to exist beyond Siirt, to the east, in Afghanistan (Collingwood, 1960; Pisarski, 1969).

As expected, all the species we determined in Bodrum are Mediterranean species. However the species *Tapinoma erraticum* and *Liometopum microcephalum*, which are clearly Mediterranean were not found in Bodrum, but in Siirt. The fact that a Mediterranean species was not found in a Mediterranean region seems rather illogical and we think it is purely coincidental. It is very possible that a more extensive search will reveal the presence of the species in the Bodrum area too. Although not found in the Bodrum region we investigated, *Tapinoma erraticum* is known to exist in western Anatolia (Baroni Urbani, 1964a). *Liometopum microcephalum* has been determined by us elsewhere in Anatolia namely in the Manyas Bird Sanctuary.

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REFERENCES

- BARONI URBANI, C. (1964a) : Su alcune formiche raccolte in Turchia. *Ann. Ist. Mus. Zool. Univ. Napoli*, **16**: 1-12.
- (1964b) : Studi sulla mirmecofauna d'Italia. II. Formiche di Sicilia. *Atti Accad. Gioenia Sci. Nat. Catania*, **16**: 43-44.
- (1969) : Una nuova *Cataglyphis* dei monti dell'Anatolia (*Hymenoptera-Formicidae*). *Fragm. Entomol.*, **6** : 213-222.
- (1971) : Catalogo delle specie di formiche d'Italia (Studi sulla mirmecofauna d'Italia-X). *Mem. Soc. Entom. Ital.*, **50** : 5-287.
- (1974) : Studi sulla mirmecofauna d'Italia. XII. Le isole Pontine. *Fragm. Entom.*, **9**: 226-230.

- BAŞ, R. (1973) : Türkiyede orman ağaçlarında zarar yapan Zar Kanatlılar (*Hymenoptera*) üzerine araştırmalar. *Tarım Bakanlığı Orman Genel Müdürlüğü yayınlarından*, **23**: 130-134.
- BROWN, W.L., Jr. (1960) : Contributions toward a reclassification of the *Formicidae*. III. Tribe *Amblyoponini* (*Hymenoptera*). *Bull. Mus. Comp. Zool.*, **122**: 197-198.
- BYTINSKI-SALZ, H. (1953) : The zoogeography of ants in the Near East. *Rev. Fac. Sci. Univ. Ist. Ser. B.*, **18**: 67-74.
- COLLINGWOOD, C.A. (1960) : The 3rd Danish Expedition to Central Asia. Zoological results 27. *Formicidae* (*Insecta*) from Afghanistan. *Vidensk. Medd. fra Dansk naturh. Foren.*, **123**: 51-79.
- (1971) : A synopsis of the *Formicidae* of North Europe. *The Entomol.*, **104**: 150-176.
- DONISTHORPE, H. (1946) : A new subspecies of *Messor* For. and a new variety of *Aphaenogaster* Mayr (*Hym. Formicidae*) from Turkey. *Proc. R. Ent. Soc. London*. (B), **15**: 53-54.
- (1950) : A first instalment of the ants of Turkey. *Ann. Mag. Nat. Hist. London.*, **3**: 1057-1067.
- EMERY, C. (1898) : Beitrage zur Kenntnis der palaearktischen Ameisen. *Oefvers. Finsk. Vet. Soc. Förh.*, **40**: 124-151.
- (1908) : Beitrage zur Monographie der Formiciden des palaearktischen Faunengebietes. I. *Myrmica* und *Camponotus*. *Deutsch. Ent. Zeitschr.*, **6**: 165-205.
- (1909) : Beitrage zur Monographie der Formiciden des palaearktischen Faunengebietes. VII. *Formica*. *Deutsch. Ent. Zeitschr.*, **7**: 179-204.
- (1921) : Formiche raccolte a Budrum (Anatolia) da Raffaele Varriale, Cap. Medico nella R. Marina. *Ann. Mus. Civ. St. Nat. Genova, Ser. 3a*, **19**: 208-218.
- (1925) : I *Camponotus* (*Myrmentoma*) paleartici del gruppo lateralis. *Rend. Acc. Sci. Ist. Bologna*, 62-72.
- FOREL, A. (1895) : Südpalaearktische Ameisen. *Mitt. Schw. Ent. Ges.*, **9**: 227-234.
- (1906) : Fourmis d'Asie Mineure et de la Dobrudscha. *Ann. Soc. Ent. Belg.*, **50**: 187-190.
- (1910) : Glanures Myrmecologiques. I. Fourmis de Palestine et de Syrie. *Ann. Soc. Ent. Belg.*, **54**: 12-13.
- (1911) : Fourmis nouvelles ou intéressantes. *Bull. Soc. Vaud. Sci. Nat.*, **47**: 331-400.
- (1913) : Fourmis de la faune méditerranéenne récoltées par. M M. U. et J. Sahlberg. *Rev. Suisse de Zool.*, **21**: 427-438.
- KOHL, F.F. (1905) : Ergebnisse einer naturwissenschaftlichen Reise zum Erdschias-dagh (Kleinasien): *Hymenopteren*. *Ann. k. k. Naturhist. Hofmus. Wien.*, **20**: 1-28.
- KUTTER, H. (1971) : Taxonomische Studien an Schweizer Ameisen (*Hymenopt.*, *Formicidae*). 2- Beitrage zur Systematik der Gattung *Bothriomyrmex* Em. *Mitt. Schw. Ent. Ges.*, **43**: 265-271.
- (1975) : Über die Waldameisenfauna der Türkei. *Mitt. Schw. Ent. Ges.*, **48**: 159-163.
- PISARSKI, B. (1965) : Les fourmis du genre *Cataglyphis* Foerst. en Iraq. (*Hymenoptera-Formicidae*). *Bull. Ac. Pol. Sci.*, **13**: 417-422.
- (1969) : Beitrage zur Kenntnis der Fauna Afghanistan. *Acta Mus. Moraviae.*, **54**:305-326.
- (1971) : Nouvelles espèces de fourmis (*Hymenoptera-Formicidae*) du sous-genre *Tanaemyrmex* Ashm. d'Iraq. *Bull. Ac. Pol. Sci.*, **19**: 671-675.
- SANTSCHI, F. (1920) : Cinq nouvelles notes sur les fourmis. *Bull. Soc. Vaud. Sci. Nat.*, **53**: 163-186.

- (1921) : Notes sur les fourmis paléarctiques. II. Fourmis d'Asie Mineure récoltées par M.H. Gadeau de Kerville. *Bol. R. Soc. Esp. Hist. Nat.*, **21**: 110-116.
- (1934) : Fourmis d'une croisière. *Bull. Soc. Ent. Belg.*, **74**: 275-282.
- SCHKAFF, B. (1924) : Fourmiche di Constantinopoli. *Boll. Soc. Ent. Ital.*, **56**: 90-96.
- STITZ, H. (1939) : Hautflügler oder *Hymenoptera* I: Ameisen oder *Formicidae*. In *Die Tierwelt Deutschlands und der angrenzenden Meeresteile nach ihren Merkmalen und nach ihrer Lebensweise* (F. Dahl, ed.), 428pp. G. Fischer Verl., Jena.
- WIEHMEYER, D. (1922) : Neue Ameisen. *Arch. Naturgesch. Abt.A*, **7**: 205-206.

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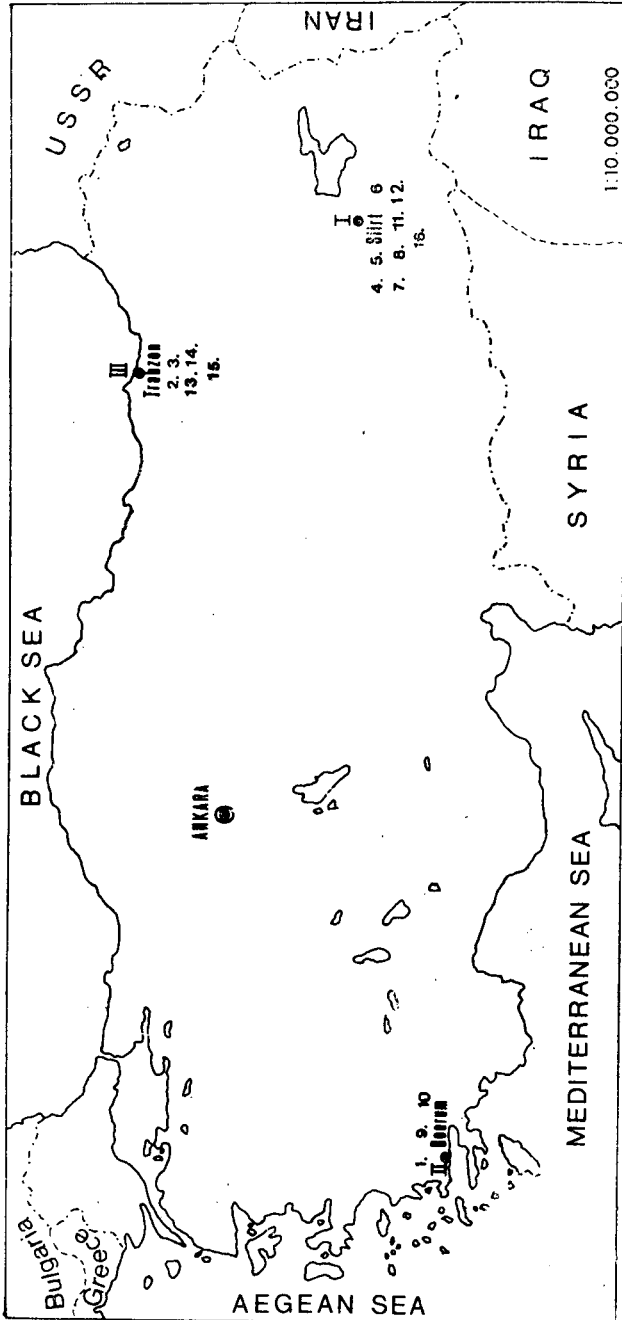


Fig. 1 — Map showing the research areas (I-Siirt; II-Bodrum; III-Trabzon) and distribution of the new findings in these three areas. 1 — *Amblyopone denticulatum* (Rog.), 2 — *Myrmica ruginodis* Nyl., 3 — *Myrmica bergi* Ruzs., 4 — *Aphaenogaster kervillei* For., 5 — *Cremastogaster laestrygon* Em., 6 — *Monomorium kusnezovi* Sant., 7 — *Tetramorium sculptum* Poldi, 8 — *Tetramorium schmidti* For., 9 — *Tetramorium semilaeve* var. *siciltenis* Sant., 10 — *Tetramorium semilaeve* *syriacum* var. *cypricum* Sant., 11 — *Bothriomyrmex communista* (Sant.), 12 — *Camponotus jaltensis* ssp. *shaqatalavensis* Pisarski, 13 — *Formica cinereofusca* Karaw., 14 — *Formica cinerea* var. *armeniaca* Ruzs., 15 — *Proformica kobachidzei* Arnoldi, 16 — *Cataglyphis kurdistanicus* Pisarski.

