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Contributions To The Knowledge of Malacostraca (Crustacea) Fauna of the Taurus Mountains District (Southern Anatolia)

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Abstract: In order to determine the Malacostraca fauna of water bodies in the Taurus Mountains, southern Anatolia, 2 field studies were conducted in 1996 and 1997. As a result, *Asellus aquaticus* (L. 1758), *Gammarus balcanicus* Schäferna 1922, *Gammarus longipedis* G.S. Karaman & Pinkster 1987 and *Stygobromus ambulans* (F. Müller 1846) were determined from the investigated area. All the determined taxa are recorded for the first time from these localities.

Key Words: Malacostraca, Fauna, Taurus Mountains, Turkey

Toros Dağları Bölgesi'nin (Güney Anadolu) Malacostraca Faunası'na Katkılar

Özet: Toros dağlarındaki, güney Anadolu, bazı su yapılarının Malacostraca faunasını belirlemek amacıyla 1996 ve 1997 yıllarında iki arazi çalışması yapılmıştır. Sonuç olarak, araştırma bölgesinden *Asellus aquaticus* (L. 1758), *Gammarus balcanicus* Schäferna 1922, *Gammarus longipedis* G.S. Karaman & Pinkster 1987 ve *Stygobromus ambulans* (F. Müller 1846) türleri tanımlanmıştır. Tespit edilen türlerin tümü söz konusu lokaliteler için ilk defa kayıt edilmektedir.

Anahtar Sözcükler: Malacostraca, Fauna, Toros dağları, Türkiye

Introduction

From 9 to 16 July, 1996 a biological expedition was carried out on a number of water bodies of the central middle and western Taurus Mountains, southern Anatolia, Turkey. The goal of the expedition was to collect and taxonomically determine Malacostraca specimens as well as to identify the physico-chemical characteristics of the water bodies. In this expedition, samples were taken from several lakes located up to 2500 m in altitude. The second phase of the research programme on faunistic diversity was accomplished from 9 to 14 July 1997, in the area of the central and eastern Taurus region, in order to obtain additional distribution data about Malacostraca species from water bodies at high altitudes.

Little data on the Malacostraca fauna of this region has been published so far. Only a few records concerning the taxonomy of freshwater Malacostraca fauna of this region are available. Schellenberg (1933), in his pioneering study, determined a new subspecies, *N. aquilex tauri*, of the genus Niphargus from the Taurus Mountains. Both S. Karaman (1950) and G. Karaman (1973) later gave it as an independent species: *N. tauri tauri* in the former study, *N. tauri* in the latter one.

Ruffo (1974) reported the existence of *S. ambulans* from 4 localities (Abant Lake, near Sinop, Beyşehir Lake and Kızılcadağ near Antalya) in Anatolia.

Materials and Methods

Malacostraca specimens were collected by a 500 µ mesh hand-net from the stations (Table 1).

Collected specimens were first fixed in 4% formalin solution in the field and then preserved in 70% ethanol in the laboratory and deposited in the collection of the Faculty of Fisheries at Ege University.

Results and Discussion

Malacostraca specimens were found in 7 of 16 stations in the Taurus Mountains region. A list of the localities and sampling dates is given in Table 1.

Table 1. Investigated localities and sampling dates.

STAT NO	LOCALITIES	SAMPLING DATES	
1	YAZIR LAKE	09.07.1996	--
2	YEŞİL LAKE	10.07.1996	--
3	KARIN LAKE	14.07.1996	13.07.1997
4	KARINCALI LAKE	14.07.1996	13.07.1997
5	KÜLLÜK LAKE	14.07.1996	14.07.1997
6	DURUCA LAKE	15.07.1996	14.07.1997
7	SUSAM LAKE	15.07.1996	14.07.1997
8	İLVAT LAKE	15.07.1996	14.07.1997
9	DİPSİZ LAKE (BOZKIR)	16.07.1996	14.07.1997
10	SÜLÜKLÜ LAKE (BOZKIR)	16.07.1996	--
11	KOVALI LAKE (SEYDİŞEHİR)	17.07.1996	--
12	DİPSİZ LAKE (SEYDİŞEHİR)	17.07.1996	--
13	SÜLÜKLÜ LAKE (SEYDİŞEHİR)	17.07.1996	--
14	GAVUR LAKE (SEYDİŞEHİR)	17.07.1996	--
15	KARAGÖL (BOLKAR)	11.07.1997	--
16	ÇİNİLİGÖL (BOLKAR)	11.07.1997	--

Because of the high altitude, most of the localities studied were covered by a layer of snow and ice for 7-8 months of the year in general; only in warm months, i.e. July and August, does the layer melt but snow masses near the lakes remain almost throughout the year and melting snow feeds the lakes during the warm period.

Some of the lakes have similar ecological characteristics; for example, no aquatic vegetation was observed in most of them and many had a cold character. Because of this, less than expected numbers of Malacostraca species were found in the investigation area. As a consequence, 4 species belonging to 2 orders were identified; all of them are epigean species and are recorded for the first time in their given localities.

Order: Isopoda

Family: Asellidae

Asellus aquaticus (L., 1758)

Previous records from Turkey: İzmir, Muğla, Aydın, Burdur and Konya (Henry et al., 1996); Güzelhisar and Bakırçay streams (Balık et al., 1999); Edirne, Kırklareli, Tekirdağ and İstanbul (Çamur and Kırgız, 2000); İzmir and adjacent areas (Özbek and Ustaoğlu, 2001); Gökova springs- Muğla (Ustaoğlu et al., 2002).

Because of the cold character of the investigated localities and insufficient organic detritus in most localities (field observation), this species was found in only a few localities: Küllük Lake, Dipsiz Lake (Seydişehir) and Gavur Lake (Seydişehir).

Order: Amphipoda

Family : Gammaridae

Gammarus balcanicus SCHÄFERNA, 1922

Previous records from Turkey: Erciyes Mountain (S. Karaman, 1934); Turkey (no locality was given) (G.S. Karaman and Pinkster, 1987).

G. balcanicus was the most abundant species in the sampled localities; many specimens (more than 500) were collected from Yeşil Lake, Sülüklü Lake (Bozkır) and Küllük Lake. This species was mostly found in the upper parts of brooks, springs and other water bodies with a cold character.

Gammarus longipedis G. S. KARAMAN and PINKSTER, 1987

Previous records from Turkey: Konya (Su Çıktığı Cave-Hadim), Isparta (Zindan Cave) (Karaman and Pinkster, 1987).

A few localities were given as its distribution area so far (Karaman and Pinkster, 1987). During the study, this Anatolian endemic species was found in 2 localities (Susam Lake, Karıncalı Lake) in the sampling area.

Stygobromus ambulans (F. MÜLLER, 1846)

Previous records from Turkey: Abant Lake-Bolu, Sinop, Beyşehir Lake, Kızılcadağ-Antalya (Ruffo, 1974).

Five specimens were found in Gavur Lake only. The species is relatively rare in Anatolian freshwaters. As a consequence of the studies reported to date, only 4 localities have been given as the distribution area in Anatolia (Ruffo, 1974).

In addition to the lakes investigated, there are also some small water bodies such as fountains and creeks where samplings was performed. The results of the sampling are given in Table 2.

Table 2. Some other small water bodies and their Malacostraca fauna from the investigated area.

Locality	Type	Sampling Date	Taxa
Macar Plateau	Fountain	12.07.1996	*G. balcanicus*
Suluçukur Plateau	Fountain	12.07.1996	*G. longipedis*
Sarımazı Plateau	Fountain, creek	12.07.1996	*G. longipedis*
Söğütçük Plateau	Fountain	13.07.1996	*G. balcanicus**

** These specimens have a 2- segmented accessory flagellum.*

A. aquaticus, a well known aquatic isopod from Turkish freshwaters, has a wide distribution area which covers Germany, the Alps, Anatolia, the Balkan Peninsula, around the Baltic, Western Europe, Western Greenland, Denmark, the European former part of the USSR, France, England, Iran, Ireland, Sweden, Italy, Iceland, Hungary, Norway and the former Yugoslavia (Çamur and Kırgız, 2000). In previous records, this species was reported many times from Turkish freshwaters both by foreign and Turkish researchers (Henry et al., 1996; Balık et al., 1999; Çamur and Kırgız, 2000; Özbek and Ustaoğlu, 2001; Ustaoğlu et al., 2002). It was also observed in almost all kinds of water bodies in central, southern, western and northern Anatolian inland waters by the authors during field studies (unpublished data).

G. balcanicus is with certainty known from the former Yugoslavia, Bulgaria, Romania, the eastern part of the former Czechoslovakia, SE Poland, northern Italy, Albania, Turkey, Greece, and the SW part of the former USSR and Turkestan (Karaman and Pinkster, 1987). It is a rather tolerant species and can be found in all kinds of surface waters as long as they contain enough oxygen (like karstic springs, brooks, rivers and lakes) and their salinity levels are not too high (Karaman and Pinkster, 1987).

Our *G. balcanicus* specimens showed obvious differences in their body length; most of them were smaller than 10 mm. Some differences were encountered in certain populations like a 2-segmented (first segment almost 2-3 times longer than the second one) accessory flagellum was seen in all specimens collected from Yeşil Göl and Söğütçük Yaylası, whereas the number of these segments was given as 3 or 4 in the description of topotypic material (Karaman and Pinkster, 1987). Three- or 4 segmented accessory flagella were also seen in specimens collected from other lakes.

Because of their characteristic elongate basis of P5-7, unarmed meso and metasome segments, low, not elevated urosome and small eyes, *G. longipedis* specimens were easily distinguished from others. Karaman and Pinkster (1987) reported *G. longipedis* specimens from cave waters (Su Ciktigi Cave, Konya- Hadim and Zindan Cave, Isparta) in the southern part of Asia Minor at altitudes up to 1700 m and called it a hypogean species, but we found the specimens in 2 epigean lakes at altitudes of approximately 2000 m.

S. ambulans, a lesser known species from Turkish continental waters, has been reported from lakes Abant and Beyşehir and from near Sinop by Ruffo (1974) so far. It has relatively restricted distribution area, which covers the Balkan Peninsula, middle and Eastern Europe (Barnard and Barnard, 1983). It is easy to distinguish *S. ambulans* specimens from gammarids because of their characteristic undivided telson and shortened uropod 3.

As a result of the study, 4 taxa of Malacostraca were determined. All the determined taxa are recorded for the first time from the localities mentioned.

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