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Gümüş Creek (Mardin-Kızıltepe), Gastropoda (Mollusca) Fauna

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ABSTRACT

This study was carried out to determine the fauna of the Gümüs Creek in the province of Mardin. The samples collected from 9 different stations were taken into 4% formaldehyde and brought to the laboratory and determined. The samples were labeled into formaldehyde and labeled. During the sampling process at the stations, some physico-chemical values and ecological characteristics of water were determined.
As a result of the studies, 7 species of Gastropoda class were identified. All identified species are new records for Gümüs Creek.
In this study, in our country, and every day it lost by one of the dry creek, the determination of the gastropod species Turkey has been contributing to the Gümüs Creek fauna.

Keywords: Gümüs Creek, Mardin, Gastropoda, Ecology
Note: It is produced from the master's thesis.

INTRODUCTION

Gastropods form the most crowded group of species after Arthropods in the Mollusca phylum. They are found in all three of the marine, freshwater and land environments. Body regions that are characteristic for Molluska are most prominent in gastropods [4, 8]. They have a very well developed head. There are tentacles and a pair of eyes in the head. In the freshwater gastropods, most of the spiral shells are dextral. So, the shell mouth is on the right. Only a few types of crust are left-sided, sinistral [4, 8].

Where the first fold is located in the shell Gastropoda peak (apex), the end which opening the shell opening end folds (aperture), lip at the edge of the shell opening (peristome) called (Figure 1).

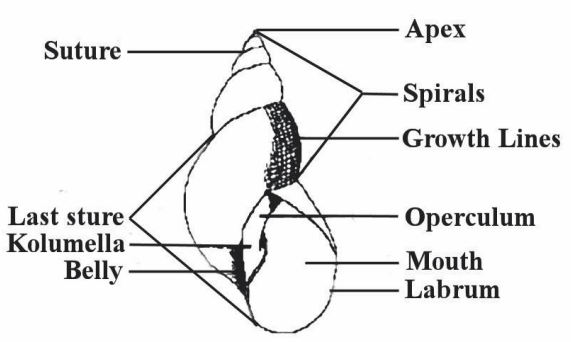

Figure 1. General view and parts of Gastropoda [8].

Many Gastropods can pull the head and foot completely into the shell. The long and ventral surface of the foot is in the form of a flat base. A typical gastropod foot consists of a front part (propodium), a middle part (mesapodium) and a back part (metapodium) [11,12,13]. Since the muscles in the foot area prevent the growth downwards, the internal organs had to rise to the back side like a hump. The dorsal mass that is formed in this way is usually curved spirally, not a simple hump [8, 11, 12, 13].

Gastropods are all symmetrical in young stages. Bilateral symmetry is impaired due to the fact that both sides of the body do not grow evenly during their development [4]. One side usually grows more than the left side; the other side grows either little or no [4]. For this reason, the internal organs make a 180 degree rotation. This rotation is called **Torsion**. Due to the torsion, the mantle cavity, which must be located at the rear due to the rotation of the cavity sac 180 degree, and the organs therein are collected. First torsion occurs later asymmetry [4].

Most of the gastropods are hermaphrodite and some of them are separate equals. Separate agents include a gonad with a branched gonad (testis or ovary) located on the dorsal side of the masses of masses, with a gonoduct (sperm or egg channel). Gonoduct opens to the right of the anus to the mantle cavity [4]. These are a single hermaphrodite cloth ovotestis. Some of the follicles of this gland form eggs and some produce sperm. Usually before the sperm, then the eggs mature [4].

MATERIALS AND METHODS

In order to determine the fauna of the Gümüş Creek Gastropoda, it is planned to collect samples from 9 stations specified in Map 1. However, the 7th station was fed with rain water pouring into the Gümüş Creek and it was a small branch that dried in summer. In the 9th station, the sample could not be obtained because water could not reach because of the use of irrigation water. Sample collection was conducted between 1999-2000. pH, dissolved oxygen, conductivity, NaCl, turbidity and temperature measurements were performed with VWR Water Quality device.Gümüş Creek is within the borders of the province of Mardin and continues within the boundaries of the same province and passes through the bor- ders of Syria (Figure 2).

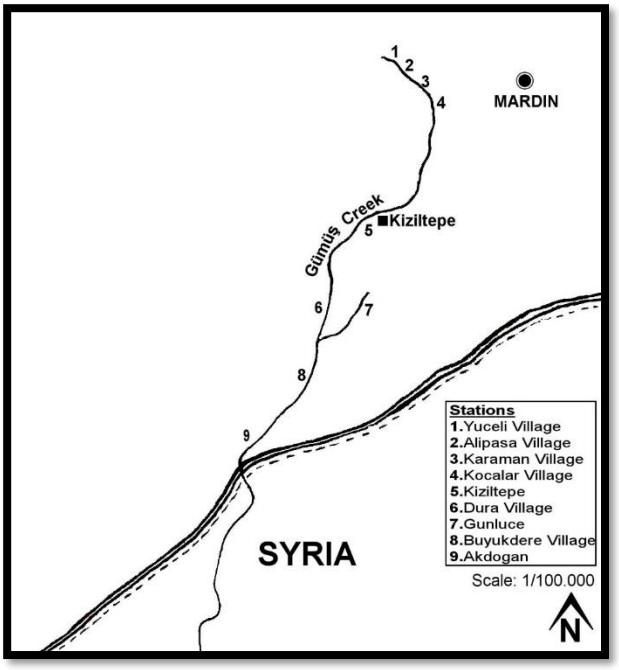

Figure 2. Gümüş Creek and sampling stations.

Gastropods in species identification;

Bilgin, 1967 and 1980; Demirdizen, A., 1996; Hyman, 1967: Macan, 1977, 1980; Pechenik, 1996; Pennak, 1989; Şesen, 1992; Yıldırım and Şeşen, 1994; Yildirim, 1999; used [1, 2, 3, 5, 6, 7, 8, 10, 11, 12, 13].

Gastropoda species identification were made under binocular and stored in 70% alcohol. During the collection of samples, some physico-chemical characteristics of the water along with the baseline structure and the current data were recorded (Table 1).

Table 1. Physico-Chemical Values and Ecological Characteristics of the Stations

Sta.	Flow rate	Depth (cm)	Veg.	Subst.	pH	DO (mg/lt)	Con.	NaCl (%)	Turb. (mg/lt)	Temp. ^{0}C
1	Medium	20-25	⚹	Gravel, sand and less mud	8.0	8.2	53.7* 0.05 **	0.03	4	16.4
2	Slow	30-50	⚹	Gravel, sand and less mud	8,1	7,7	51,4* 0,05**	0,03	5	15.9
3	Medium	75-85	⚹	Gravel and less mud	8,4	7,8	49,9* 0,05**	0,02	2	16
4	Medium	40-50	⚹	Gravel, sand and less mud	8,2	8,2	47,5* 0,05**	0,02	6	16.5
5	Medium	90-110	No plant	Sand and mud	7,9	5,9	40,6* 0,04**	0,02	1	17.4
6	Medium	25-35	No plant	Very muddy	7,9	6,3	54 * 0,05**	0,03	14	20.5
7	**It is a small branch poured into the Gümüş Creek and the sample could not be obtained because it was dried.**									
8	Medium	25-35 cm	No plant	Gravel	9	10,5	50* 0,05**	0,02	6	21.3
9	**The sample was not obtained because the water dried.**									

* Maximum Condictivite Value (ms/m) ** Minimum Condictivite Value (s/m) ⚹ Edge cuts are rich in aquatic plants. Sta.:Station number, Veg.:Vegetation, Subst.:Substratum, DO: Disssolved Oxygen, Con.: Conductivity, Turb.:Turbidity, Temp.:Temperature

RESULTS

Two of the 9 stations identified in the study area Gümüş Creek (7 and 9) did not have any water. There were 7 species belonging to Gastropoda class (Table 2).

Table 2. Systematic Distribution of Gümüş Creek Gastropoda Fauna.

Filum	Classis	Sub-Classis	Ordo	Süper-Familya	Familya	Species
MOLLUSCA	Gastropoda	Prosobranchia	Archaeogastropoda	Neritecea	Neritidae	*Theodokus anatolicus*
				Rissoacea	Hydrobiidae	*Bithynia badiella*
				Valvatacea	Valvatidae	*Valvata cristata*
		Pulmonata	Basommatophora	Hygrophila	Lymnaeidae	*Galba truncatula*
					Planorbidae	*Gyraulus albus*
			Stylommatophora	Succineacea	Succineidae	*Oxyloma elegans*
						Hydrobia pamphylica

The distribution of the identified species according to the stations is given in Table 3.

Table 3. Distribution of the species identification in the study area by stations.

Species		Stations								
		1	2	3	4	5	6	7	8	9
Gastropoda	*Gyraulus albus*	●		●			●			
	Valvata cristata	●	●				●		●	
	Theodokus anatolicus	●								
	Bithynia badiella	●	●		●					
	Oxyloma elegans		●		●					
	Hydrobia pamphylica			●						
	Galba truncatula						●			

No sample could be obtained because the water is dried in the regions where these stations are located.

FILUM: MOLLUSCA
Classis: Gastropoda
Subclassis: Prosobranchıa
Ordo: Archaeogastropoda
Super-Familya: Neritecea
Familya: Neritidae
Species: *Theodoxus anatolicus* Recluz, 1841 (Figure 4-c)

Taxonomic characteristics: Their size varies between 4-10 mm. The average is 3 spiral and the body spiral is very developed. Its shape is like a hemisphere. On the side where the operculum is formed, there are two protrusions called rib and peg connecting the foot muscles to the opercula (Figure 3). These protrusions play an important role in systematic.

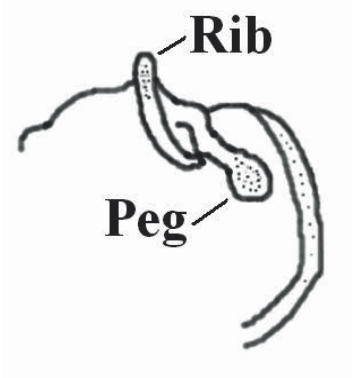

Figure 3. Rib and peg overhangs on the operculum of *Theodoxus anatolicus*.

Areas of life and distribution: In the study area, the water is generally clean and the flow has been determined in the 1st station.

Ordo: Mesogastropoda
Super-Familya: Rissoacea
Familya: Hydrobiidae
Species: *Bithynia badiella* (Küster, 1853) (Figure 4-d,e)

Taxonomic characteristics: The average height of the shell with 4 helices is 4-6 mm and the width is 4 mm. According to other species, umbilikusu is narrow. The sutures are prominent, the aperture is ovalimsi and the operculum is concentric ring.

Areas of life and distribution: In the study area, it is generally found in the clean and flowing stations 1, 2 and 4.

Familya: Valvatidae
Species: *Valvata cristata* (OF. Müler, 1774) (Figure 4-b, f, k, n)

Taxonomic characteristics: The shell is a discoid shape. The spiral is flattened in the dorsal. The shell height is about the height of the mouth. The shell consists of 4 rounds with round lines. The last round is wider than other rounds. Umbilikus is narrow and deep. The shell is yellowish white and the average is 2-3 mm high.

Areas of life and distribution: In the study area, it is generally detected in stations 1,2 and 6, which are flowing and light flow.

Subclassis: Pulmonata
Ordo: Basommatophora
Super-Familya: Hygrophila
Familya: Lymnaeidae
Species: *Galba (Lymnaea) truncatula* (Müler, 1774) (Figure 4-m)

Taxonomic characteristics: The shell is tapered. It is composed of 5 rounds with very convex, separated by deep slabs. Tours gradually increase. The spiral cone is elongated. It is yellowish-white with a semi-transparent and glossy sur-

face. The crustal surface is thin and regular, with an average height of 6 mm.

Areas of life and distribution: It was found in station 6, which is stagnant, run-down, dirty in the study area.

Familya: Planorbidae
Species: *Gyraulus albus* (Müler, 1774) (Figure 4-a, h)
Taxonomic characteristics: They have an average of 4 rounds. The first round is small, the final tour is quite spacious. The shell is white, transparent, thin but not brittle. The final lap is slightly flattened in the dorso-ventral. This gives the shell a less flat appearance. The average shell diameter is 4-4.5 mm.

Areas of life and distribution: In the study area, it has been detected in stations 1, 3 and 6, which are generally stagnant, slow flowing clean or dirty.

Ordo: Stylommatophora
Super-Familya: Succineacea
Familya: Succineidae
Species: *Oxyloma elgans* (Risso, 1826) (Figure 4-g)
Taxonomic characteristics: The crust has an ovalish tower shape and a very thin wall. It is fragile, semi-transparent, yellow colored. The opening of the mouth was widened upwards in the dorsal. The final round was almost extended to form the entire shape of the shell. Umbilikus and kolumella do not exist. Spir quite short apex. The crustal heights are approximately 6 mm. Radula teeth are well developed.

Areas of life and distribution: Since they are real aquatic animals, they are distributed in the water plants near the water. It has been identified in stations 2 and 4 in the study area.

Figure 4. a,h;*Gyraulus albus*, b,f,k,n;*Valvata cristta*, c;*Theodokus anatolicus*, d,e;*Bithynia badiella*, g;*Oxyloma elegans*, m;*Galba truncatula*. **Note:** Each gap on the left side is 1 mm.

DISCUSSION

There are many pollutants in the center of Kızıltepe, the fifth station. Both domestic wastes and chemical wastes cause significant deterioration in water quality. This has a negative impact on biodiversity at station 5.

No water was found at station 7. There are two factors that affect this situation. The first is that the sampling time comes to the summer months and there are irrigation wells around the water source.

No water was found at this station, as there was a large amount of agricultural land irrigated before the 9th station. Therefore, sampling could not be performed.

The highest species diversity was observed at station 1. However, the highest population density was also observed at station 1. However, station 8 is the poorest in terms of both number of species and population density.

Our research has shown that both unconscious water use and pollutants pose a great danger to our waters. This situation adversely affects both water quality and biological diversity.

As a result of the use of unconscious water, the salinity rate in our soils increases. The rain water that falls in the

following year takes the salt in the soil and transports it to underground sources. Due to the amount of salt in the spring waters, the salt ratio increases in the waters coming to earth. The increasing amount of salt causes various effects on biodiversity. Increasing the amount of salt in fresh water does not only affect the salt content. It also affects the pH balance. The deterioration in the pH balance of freshwater has a negative effect on the reproduction and growth of the species. This causes a decrease in population density.

In freshwater, a change in the population of a species affects many species. Both nutritional balance and ecological balance between species are achieved by harmony between species. Therefore, we must preserve our species diversity, which is our biological richness. We can only maintain species diversity with ecological balance.

As a result of this study, 7 Gastropoda species were determined. All identified species are new records for Gümüş Creek.

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