

Distribution and diversity of fish from Seyhan, Ceyhan and Orontes river systems

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Abstract

In this study, the current ichthyofauna of the Seyhan, Ceyhan and Orontes River drainages were presented and actual taxonomic positions of the species were assessed. Sixty-seven species belonging to 32 genera and 17 families of fishes were reported from these river drainages in Turkey and Syria. *Acanthobrama centisquama* and *Tinca tinca* could not be observed in the study area and *Alburnus sellal* and *Esox lucius* are recorded for the first time respectively in the Lake Gölbaşı (connected to the Ceyhan River) and Seyhan River.

Key Words

Freshwater fish, ichthyology, Syria, taxonomy, Turkey

Introduction

The Orontes, Seyhan and Ceyhan rivers are some of the largest rivers in the northern Mediterranean Sea. The Seyhan and Ceyhan rivers form Turkey's largest delta plain, the Çukurova. These three river basins are host to many endemic species. Three of them can only be found in the Seyhan, seven of them only in the Ceyhan, and ten of them only in the Orontes. Their contribution to biodiversity is, without doubt, considerable. Several studies have been conducted on the distribution or/and taxonomy of fish species inhabited in the Seyhan, Ceyhan and Orontes rivers. Bostancı (2006) conducted the first ichthyofaunistic study in the area and revised the fish of these three rivers, after which Dağlı (2008) investigated only two north-eastern tributaries of the Orontes River (streams Kınacık and Afrin). Kara et al. (2010) examined the fish of the upper and middle parts of the Ceyhan River. Erk'akan and Özdemir (2011) studied the fish of the Seyhan and Ceyhan rivers. Alagöz Ergüden and Göksu (2012) studied the fish in the Seyhan Dam Lake and Özcan (2013) researched a study on the ichthyofauna of the Orontes River. A recent study by İnal (2020) reported on the fish diversity and abundance in the Seyhan River estuary

(Table 2). A comprehensive study has not yet reached the Orontes River in Syria. Unlike the research above, Geiger et al. (2014) conducted a comprehensive genetic study of the freshwater fish of the Mediterranean basin. Consequently showing different data.

Taxonomic problems have continued to increase while different researchers have conducted faunistic studies related to these rivers (e.g. identifies incorrectly or misrecords the species, see Table 2). This study aims to eliminate these ambiguities and reveal the actual taxonomic status of the species in the area; in addition, the rate of endemism in the region is determined.

Materials and methods

Study area

The Ceyhan River originates from Pınarbaşı Village (Kahramanmaraş prov.). It forms a wide delta in Çukurova and pours into the Gulf of İskenderun in the Mediterranean Sea. Its main tributaries are the Söğütlü, Hurman, Göksun, Mağra Gözü, Fırınız, Tekir, Körsulu and Aksu streams. The Seyhan River has two important

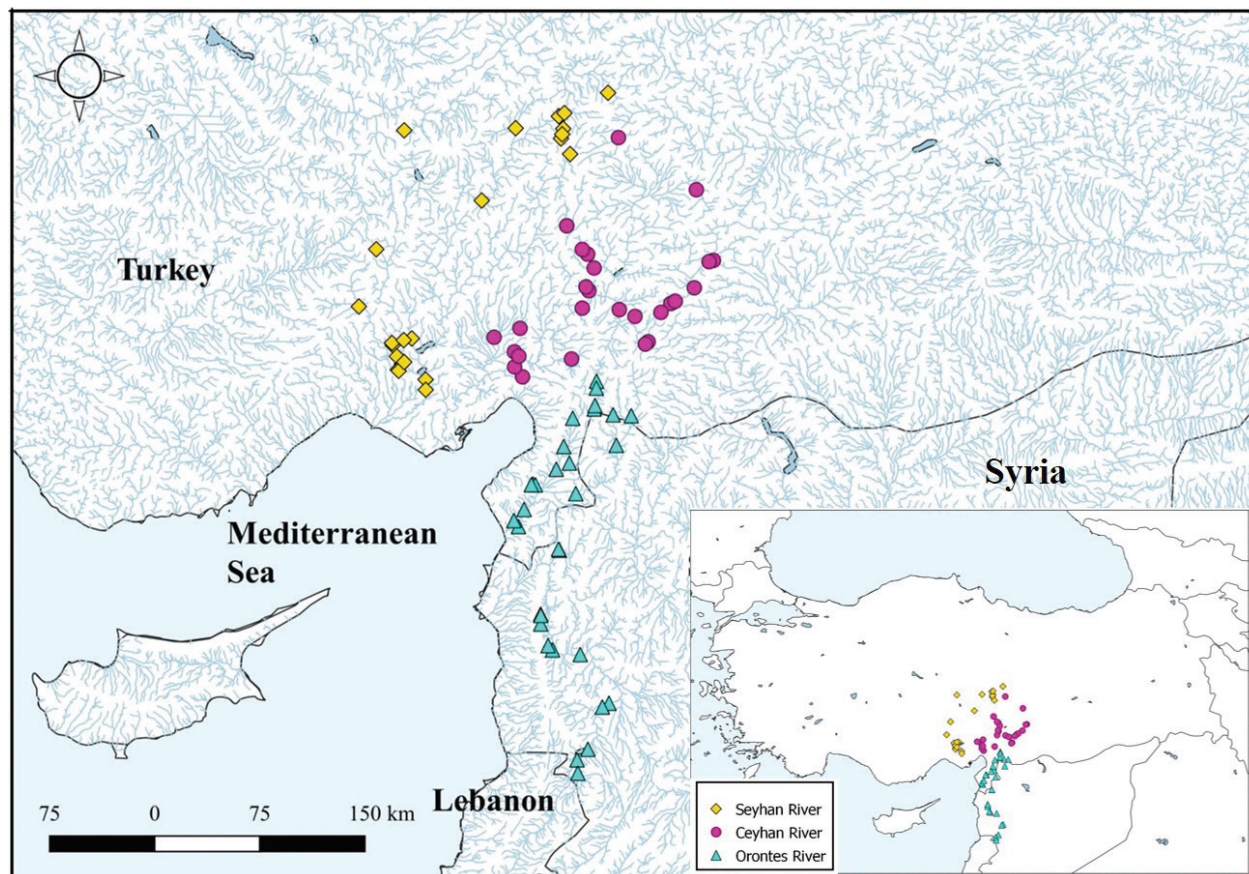


Figure 1. Map of the northeastern Mediterranean Sea Basin of Turkey and Syria with sampling points.

tributaries: the long one is the stream Zamantı, which originates from Uzun plateau (Kayseri prov.). This water flows in the direction of the stretch of the Middle Taurus Mountains (Tahtalı Mountains), merges with the Göksu that is the second tributary of the Seyhan, and pours from Adana into the Mediterranean Sea. The Orontes is a transboundary river, which originates from the eastern part of the Bekaa Valley in Lebanon, then through into Syria and flows into the Mediterranean Sea near Samandağ, Turkey.

Data collection and analyses

All the materials collected from the Seyhan and Ceyhan were gathered in Turkey, while the Orontes materials were collected from Syria and Turkey. The fish were caught from 82 sampling sites by using Samus 1000 pulsed DC electro-fishing equipment, cast net and gill net (Figs 1, 10, Table 1). After anaesthesia, fish samples were fixed in 4% formaldehyde and transferred to the laboratory for classifying the species level. Nomenclature and taxonomy almost all followed Eschmeyer's Catalog of Fishes (Fricke et al. 2020) except for *Capoeta turani* (Kaya 2019). Common and Turkish names of the species were provided by FishBase (Froese and Pauly 2020). The names recommended in this study were denoted by an asterisk (*) at the end of the

name. The global conservation status of the species was provided by the International Union for Conservation of Nature (IUCN 2020). The species photos were shown in Figs 2–9. The dataset was visualised using the open-source Geographic Information System QGIS version 3.8 (Zanzibar, 2019).

Abbreviations:

FFR Recep Tayyip Erdogan University Zoology Museum of the Faculty of Fisheries, Rize.

FSJF Fischsammlung J. Freyhof, Berlin.

Results

With this study, 18 species belonging to the family Leuciscidae were listed, followed by Cyprinidae with 12 species, Salmonidae with 5 species, Cobitidae and Aphanidae with 5 species, Cichlidae with 2 species, Mugilidae with 2 and Anguillidae, Blenniidae, Poeciliidae, Atherinidae, Esocidae, Clariidae, Bagridae and Siluridae with 1 species. The highest species diversity among these three river systems was observed in the Orontes (32 species), followed by Seyhan (29 species) and Ceyhan (27 species). According to data presented in this study, *Capoeta damascina*, *Luciobarbus pectoralis*, *Squalius kottelati* and *Atherina boyeri* are the species that are present in all three rivers.

Table 1. List of sampling locations, coordinates and the fish species recorded.

No	Sampling Site	Coordinates	Geographic information	Observed Species
Orontes River				
1	Lake Balik	36.5081, 36.4948	Turkey, Hatay prov.: Lake Balik at Kırıkhan	<i>Anguilla anguilla</i> , <i>Capoeta barroisi</i> , <i>Carasobarbus chantrei</i> , <i>Luciobarbus pectoralis</i> , <i>Chondrostoma kinzelbachi</i> , <i>Pseudophoxinus libani</i> , <i>Mystus pelusius</i> , <i>Planiliza abu</i> , <i>Coptodon zillii</i>
2	Stream Söğütlüöz	36.6117, 36.4404	Turkey, Hatay prov.: stream Söğütlüöz at Kırıkhan	<i>Anguilla anguilla</i> , <i>Carasobarbus chantrei</i> , <i>Luciobarbus pectoralis</i> , <i>Alburnus orontis</i> , <i>Squalius kottelati</i> , <i>Oxynoemacheilus hamwii</i> , <i>Oxynoemacheilus namiri</i>
3	Orontes River-I	36.0974, 36.0785	Turkey, Hatay prov.: Orontes River-I at Sinanlı	<i>Anguilla anguilla</i> , <i>Capoeta damascina</i> , <i>Carasobarbus chantrei</i> , <i>Carassius gibelio</i> , <i>Garra caudomaculata</i> , <i>Garra</i> sp., <i>Luciobarbus pectoralis</i> , <i>Alburnus orontis</i> , <i>Chondrostoma kinzelbachi</i> , <i>Pseudophoxinus zeregi</i> , <i>Pseudophoxinus libani</i> , <i>Squalius kottelati</i> , <i>Cobitis anabelae</i> , <i>Gambusia holbrooki</i> , <i>Paraphanius orontis</i>
4	Stream Afrin-I	36.8061, 36.9821	Turkey, Kilis prov.: stream Afrin-I 15 km northwest of Kilis 36.8061 36.9821.	<i>Capoeta barroisi</i> , <i>Luciobarbus pectoralis</i> , <i>Alburnus magnificus</i> , <i>Oxynoemacheilus hamwii</i> , <i>Planiliza abu</i>
5	Stream Afrin-II	36.8133, 36.9837	Turkey, Kilis prov.: stream Afrin-II about 16 km west of Kilis	<i>Capoeta damascina</i> , <i>Acanthobrama thisbeae</i> , <i>Alburnus magnificus</i> , <i>Oxynoemacheilus hamwii</i> , <i>Oxynoemacheilus namiri</i>
6	Stream Afrin-III	36.3080, 36.5350	Turkey, Hatay prov.: stream Afrin-III at northeastern Reyhanlı	<i>Alburnus orontis</i> , <i>Cobitis anabelae</i> , <i>Clarias gariepinus</i> , <i>Oxynoemacheilus namiri</i> , <i>Gambusia holbrooki</i> , <i>Planiliza abu</i>
7	Stream Bedirge	36.3710, 36.1938	Hatay prov.: stream Afrin-III at northeastern Reyhanlı	<i>Alburnus magnificus</i> , <i>Oxynoemacheilus hamwii</i> , <i>Oxynoemacheilus namiri</i>
8	Stream Karasu-I	37.0306, 36.7064	Turkey, Gaziantep prov.: stream Karasu-I at İslahiye (upper Tahtaköprü Dam)	<i>Anguilla anguilla</i> , <i>Carasobarbus chantrei</i> , <i>Carassius gibelio</i> , <i>Garra caudomaculata</i> , <i>Garra</i> sp., <i>Alburnus orontis</i> , <i>Chondrostoma kinzelbachi</i> , <i>Cobitis anabelae</i> , <i>Clarias gariepinus</i> , <i>Atherina boyeri</i>
9	Stream Karasu-II	36.8520, 36.6861,	Turkey, Gaziantep prov.: stream Karasu-II at İslahiye (below Tahtaköprü Dam)	<i>Capoeta barroisi</i> , <i>Capoeta damascina</i> , <i>Carasobarbus chantrei</i> , <i>Carassius gibelio</i> , <i>Cyprinus carpio</i> , <i>Garra caudomaculata</i> , <i>Garra</i> sp., <i>Luciobarbus pectoralis</i> , <i>Pseudophoxinus turani</i> , <i>Squalius kottelati</i> , <i>Oxynoemacheilus hamwii</i> , <i>Atherina boyeri</i> , <i>Gambusia holbrooki</i>
10	Stream Karasu-III	36.9864, 36.7046	Turkey, Gaziantep prov.: stream Karasu-III at İslahiye	<i>Alburnus orontis</i> , <i>Pseudophoxinus turani</i> , <i>Squalius kottelati</i>
11	Stream Karasu-IV	36.4653, 36.3803	Turkey, Hatay prov.: stream Karasu-IV about 4 km south of Kırıkhan	<i>Garra</i> sp., <i>Alburnus orontis</i> , <i>Cobitis anabelae</i> , <i>Oxynoemacheilus namiri</i> , <i>Planiliza abu</i>
12	Tahtaköprü Dam	36.8743, 36.6923	Turkey, Gaziantep prov.: the lower part of Tahtaköprü Dam Lake at İslahiye	<i>Chondrostoma kinzelbachi</i> , <i>Squalius kottelati</i>
13	Stream Büyükkara	36.1355, 36.0422,	Turkey, Hatay prov.: stream Büyükkara at Karaçay	<i>Capoeta damascina</i> , <i>Garra</i> sp., <i>Alburnus magnificus</i> , <i>Pseudophoxinus zeregi</i> , <i>Oxynoemacheilus namiri</i> , <i>Gambusia holbrooki</i>
14	Stream İncesu	36.7932, 36.5137	Turkey, Hatay prov.: stream İncesu at Hassa	<i>Capoeta damascina</i> , <i>Pseudophoxinus turani</i>
15	Stream Hanne	36.2072, 36.1236	Turkey, Hatay prov.: stream Hanne 3 km west of Antakya	<i>Anguilla anguilla</i> , <i>Pseudophoxinus zeregi</i> , <i>Oxynoemacheilus namiri</i> , <i>Clarias gariepinus</i>
16	Stream Serinyol	36.3655, 36.2138	Turkey, Hatay prov.: stream Serinyol at Serinyol	<i>Capoeta damascina</i> , <i>Garra</i> sp., <i>Gambusia holbrooki</i>
17	Stream Yıldırım	36.3662, 36.1811	Turkey, Hatay prov.: stream Yıldırım at Serinyol	<i>Capoeta damascina</i> , <i>Alburnus magnificus</i> , <i>Garra</i> sp., <i>Oxynoemacheilus hamwii</i> , <i>Clarias gariepinus</i> , <i>Coptodon zillii</i> , <i>Chelon</i> sp.
18	Lake Qattinah-I	34.6619, 36.6183	Syria, Lake Qattinah-I southeast of Homs	<i>Capoeta barroisi</i> , <i>Capoeta damascina</i> , <i>Carasobarbus chantrei</i> , <i>Garra</i> sp., <i>Luciobarbus pectoralis</i> , <i>Oxynoemacheilus namiri</i>
19	Lake Qattinah-II	34.5939, 36.5336	Syria, Lake Qattinah-II at Al Gassaneyah	<i>Pseudophoxinus libani</i> , <i>Paraphanius mento</i>
20	Orontes River-II	35.2717, 36.5628	Syria, Orontes River-II at Shayzar	<i>Garra caudomaculata</i> , <i>Garra variabilis</i> , <i>Pseudophoxinus libani</i> , <i>Oxynoemacheilus namiri</i> , <i>Paraphanius mento</i>
21	Orontes River-III	35.9444, 36.4025	Syria, Orontes River-III at north of Ain al Zarqa	<i>Carasobarbus chantrei</i> , <i>Garra caudomaculata</i> , <i>Garra</i> sp., <i>Alburnus orontis</i> , <i>Pseudophoxinus libani</i> , <i>Cobitis anabelae</i> , <i>Oxynoemacheilus namiri</i>
22	Orontes River-IV	35.9508, 36.3958	Syria, River Orontes-IV at Mashr'a al Bouz	<i>Garra caudomaculata</i> , <i>Garra</i> sp., <i>Alburnus orontis</i> , <i>Pseudophoxinus libani</i> , <i>Oxynoemacheilus namiri</i> , <i>Paraphanius mento</i>
23	Orontes River-V	34.0764, 36.8431	Syria, Orontes River-V at Jinan	<i>Garra</i> sp.
24	Orontes River-VI	34.5086, 36.5389	Syria, Orontes River-VI at Jinan	<i>Alburnus orontis</i> , <i>Pseudophoxinus libani</i> , <i>Oxynoemacheilus namiri</i>
25	Orontes River-VII	34.9333, 36.7333	Syria, Orontes River-VII at roadside north of Homs (fish market)	<i>Leuciscus vorax</i>
26	Stream Al Dawwar	35.4697, 36.2531	2713 Syria, stream Al Dawwar South of Haydariyeh	<i>Oxynoemacheilus namiri</i>
27	Nahr'Ifrin River	36.6172, 36.8608	Syria, Nahr'Ifrin River below reservoir north of Afrin	<i>Pseudophoxinus zeregi</i> , <i>Oxynoemacheilus namiri</i>
28	Spring Al Fawwar	35.5333, 36.2528	Syria, spring Al Fawwar north of Mashta Bayth Darwish	<i>Garra caudomaculata</i> , <i>Pseudophoxinus libani</i>
29	Lake Shadha	35.5253, 36.2536	Syria, Lake Shadha	<i>Garra caudomaculata</i> , <i>Garra</i> sp., <i>Oxynoemacheilus namiri</i> , <i>Planiliza abu</i>
30	Stream Nahr al-Barid	35.3022, 36.3453	Syria, stream Nahr al Barid at Nahr al Barid	<i>Garra caudomaculata</i> , <i>Garra variabilis</i> , <i>Alburnus orontis</i> , <i>Pseudophoxinus libani</i> , <i>Pseudophoxinus zeregi</i> , <i>Cobitis levantina</i> , <i>Oxynoemacheilus namiri</i> , <i>Paraphanius orontis</i>

No	Sampling Site	Coordinates	Geographic information	Observed Species
31	Spring south of Qala'at	35.3303, 36.3106	Syria, spring south of Qala'at al Jarras	<i>Garra caudomaculata</i> , <i>Carasobarbus chantrei</i> , <i>Garra</i> sp., <i>Garra variabilis</i> , <i>Pseudophoxinus libani</i> , <i>Paraphanius mento</i> , <i>Sarotherodon galilaeus</i> , <i>Tristramella simonis</i>
Seyhan River				
32	Stream Ecemiş	37.8767, 34.9254	Turkey, Niğde prov.: stream Ecemiş at Çamardı	<i>Salmo labecula</i>
33	Stream Üçürgesuyu-I	37.2611, 35.0671	Turkey, Adana prov.: stream Üçürgesuyu-I at Karaisali	<i>Capoeta damascina</i> , <i>Capoeta erhani</i> , <i>Garra culiciphaga</i> , <i>Garra turcica</i> , <i>Luciobarbus pectoralis</i> , <i>Chondrostoma ceyhanensis</i> , <i>Squalius adanaensis</i> , <i>Cobitis aliyeae</i> , <i>Oxynoemacheilus cilicicus</i> , <i>Salaria fluviatilis</i>
34	Stream Üçürgesuyu-II	37.1385, 35.1422	Turkey, Adana prov.: stream Üçürgesuyu-II at Karaisali	<i>Luciobarbus pectoralis</i> , <i>Squalius adanaensis</i>
35	Stream Üçürgesuyu-III	37.2750, 35.0610	Turkey, Adana prov.: stream Üçürgesuyu-III at western Çakallı	<i>Alburnus kotschyi</i> , <i>Squalius adanaensis</i>
36	Stream Üçürgesuyu-IV	37.1390, 35.1423	Turkey, Adana prov.: stream Üçürgesuyu-IV the lower part of Ecemiş stream east of Salbaş	<i>Squalius adanaensis</i> , <i>Oxynoemacheilus cilicicus</i>
37	Stream Üçürgesuyu-V	37.1890, 35.1010	Turkey, Adana prov.: stream Üçürge-V at Çakallı	<i>Oxynoemacheilus seyhanicola</i>
38	Stream Eğlence	37.3050, 35.2201	Turkey, Adana prov.: stream Eğlence 1 km northeast of Eğlence	<i>Oxynoemacheilus cilicicus</i> , <i>Garra turcica</i> , <i>Oxynoemacheilus seyhanicola</i> , <i>Salaria fluviatilis</i> , <i>Luciobarbus pectoralis</i>
39	Stream Çakıtsuyu-I	37.1032, 35.1094	Turkey, Adana prov.: stream Çakıtsuyu-I at Salbaş	<i>Capoeta damascina</i> , <i>Capoeta erhani</i> , <i>Chondrostoma ceyhanensis</i> , <i>Oxynoemacheilus seyhanicola</i> , <i>Salaria fluviatilis</i>
40	Stream Çakıtsuyu-II	37.0961, 35.1170	Turkey, Adana prov.: stream Çakıtsuyu-II, south of Salbaş, the lower part of Pozantı Stream	<i>Capoeta damascina</i> , <i>Garra turcica</i> , <i>Luciobarbus pectoralis</i> , <i>Alburnus kotschyi</i> , <i>Chondrostoma ceyhanensis</i> , <i>Squalius adanaensis</i> , <i>Oxynoemacheilus seyhanicola</i> , <i>Oxynoemacheilus cilicicus</i> , <i>Salaria fluviatilis</i>
41	Stream Çakıtsuyu-III	37.5072, 34.7904	Turkey, Niğde prov.: stream Çakıtsuyu-III between Ulukışla and Pozantı, about 1 km east of Çiftehan	<i>Capoeta damascina</i>
42	Spring Karahalka	38.8857, 36.8194	Turkey, Kayseri prov.: Kayseri prov.: spring Karahalka at Karahalka, Pınarbaşı	<i>Pseudophoxinus firati</i>
43	Stream Zamantı-I	38.6559, 36.4485	Turkey, Kayseri prov.: stream Zamantı-I south of Aşağıbeyçayırı, south of Pınarbaşı	<i>Capoeta damascina</i> , <i>Squalius seyhanensis</i> , <i>Salmo platycephalus</i>
44	Stream Zamantı-II	38.7366, 36.4131	Turkey, Kayseri prov.: stream Zamantı-II at Pınarbaşı	<i>Squalius seyhanensis</i> , <i>Oxynoemacheilus samanticus</i> , <i>Oxynoemacheilus seyhanensis</i>
45	a tributry to Zamantı	38.5935, 36.4299	Turkey, Kayseri prov.: a tributary to Zamantı stream between Sarız and Pınarbaşı	<i>Capoeta damascina</i> , <i>Squalius seyhanensis</i>
46	Stream Pınarbaşı	38.6204, 36.4397	Turkey, Kayseri prov.: stream Pınarbaşı at Pınarbaşı	<i>Salmo platycephalus</i>
47	Stream Kışla	38.6434, 35.1436	Turkey, Kayseri prov.: stream Kışla at İncesu	<i>Squalius seyhanensis</i> , <i>Atherina boyeri</i>
48	Stream Şıvgın	38.6606, 36.0581	Turkey, Kayseri prov.: stream Şıvgın at Bünyan	<i>Esox lucius</i>
49	Stream Karagöz	38.7570, 36.4590	Turkey, Kayseri prov.: stream Karagöz at Pınarbaşı	<i>Squalius seyhanensis</i> , <i>Esox lucius</i>
50	Stream Sarız	38.4930, 36.5040	Turkey, Kayseri prov.: stream Sarız at Sarız	<i>Squalius seyhanensis</i>
51	Stream Sarnaz	38.1950, 35.7810	Turkey, Kayseri prov.: stream Sarnaz at southern Taşçı	<i>Oxynoemacheilus samanticus</i> , <i>Garra turcica</i>
52	Seyhan Dam Lake	37.0414, 35.3333	Turkey, Adana prov.: Seyhan Dam Lake	<i>Cyprinus carpio</i> , <i>Luciobarbus pectoralis</i> , <i>Silurus glanis</i> , <i>Sander lucioperca</i> , <i>Acanthobrama orontis</i> , <i>Squalius kottelati</i> , <i>Oncorhynchus mykiss</i>
53	River Seyhan	36.9757, 35.3354	Adana prov.: River Seyhan below water regulation doors at Yüreyir, south of Adana	<i>Garra culiciphaga</i> , <i>Acanthobrama orontis</i> , <i>Luciobarbus pectoralis</i> , <i>Pseudophoxinus cilicicus</i> , <i>Cobitis aliyeae</i> , <i>Oxynoemacheilus cilicicus</i> , <i>Paraphanius similis</i>
54	Stream Körkün-I	37.2940, 35.1550	Turkey, Adana prov.: stream Körkün-I at Hacılı	<i>Garra turcica</i> , <i>Luciobarbus pectoralis</i> , <i>Cobitis aliyeae</i>
55	Stream Körkün-II	37.1529, 35.1606	Turkey, Adana prov.: stream Körkün-II at Karakuyu	<i>Capoeta damascina</i> , <i>Garra turcica</i> , <i>Luciobarbus pectoralis</i> , <i>Squalius adanaensis</i> , <i>Oxynoemacheilus seyhanicola</i>
Ceyhan River				
56	Lake Gölbaşı	37.7981, 37.6616	Turkey, Adıyaman prov.: Lake Gölbaşı at Gölbaşı	<i>Alburnus sellal</i> , <i>Pseudophoxinus zekayi</i> , <i>Oxynoemacheilus cilicicus</i> , <i>Atherina boyeri</i>
57	Stream Aksu-I	37.4896, 36.8949	Turkey, Kahramanmaraş prov.: stream Aksu-I at Onikişubat	<i>Capoeta damascina</i> , <i>Capoeta erhani</i> , <i>Garra turcica</i> , <i>Squalius kottelati</i> , <i>Planiliza abu</i>
58	Stream Aksu-II	37.5253, 37.3119	Turkey, Kahramanmaraş prov.: stream Aksu-II at Pazarcık (upper Kartalkaya Dam	<i>Capoeta damascina</i> , <i>Garra culiciphaga</i> , <i>Luciobarbus pectoralis</i> , <i>Alburnus kotschyi</i> , <i>Chondrostoma ceyhanensis</i> , <i>Oxynoemacheilus evreni</i> , <i>Oxynoemacheilus cilicicus</i> , <i>Salaria fluviatilis</i>

No	Sampling Site	Coordinates	Geographic information	Observed Species
Ceyhan River				
59	Stream Aksu-III	37.5390, 37.3480	Turkey, Kahramanmaraş prov.: stream Aksu-III at Pazarcık	<i>Capoeta damascina</i> , <i>Capoeta erhani</i> , <i>Garra turcica</i> , <i>Oxynoemacheilus evreni</i> , <i>Oxynoemacheilus cilicicus</i> , <i>Salaria fluviatilis</i>
60	Stream Aksu-IV	37.4452, 37.0207	Turkey, Kahramanmaraş prov.: stream Aksu-IV at Dulkadiroğlu	<i>Pseudophoxinus firati</i>
61	Stream Aksu-V	37.4690, 37.2310	Turkey, Kahramanmaraş prov.: stream Aksu-Vat Pazarcık (below Kartalkaya Dam)	<i>Squalius kottelati</i>
62	Stream Aksu-VI	37.7904, 37.6263	Turkey, Adıyaman prov.: stream Aksu-VI connecting Lakes Gölbaşı and Azaplı south of Gölbaşı	<i>Cobitis erkakanae</i> , <i>Oxynoemacheilus cilicicus</i> , <i>Paraphanius boulengeri</i>
63	Stream Tekir	37.8481, 36.6417	Turkey, Kahramanmaraş prov.: stream Tekir above dam at Tekir, north of Kahramanmaraş	<i>Oxynoemacheilus evreni</i> , <i>Salmo opimus</i>
64	Stream Göksun-I (Terbüzek)	38.0317, 36.4736	Turkey, Kahramanmaraş prov.: stream Göksun-I (Terbüzek) about 2 km north of Göksun	<i>Alburnus kotschyi</i> , <i>Pseudophoxinus firati</i> , <i>Cobitis evreni</i> , <i>Oxynoemacheilus evreni</i> , <i>Oxynoemacheilus cilicicus</i> , <i>Salmo opimus</i>
65	Stream Göksun-II (Terbüzek)	38.0015, 36.4984	Turkey, Kahramanmaraş prov.: stream Göksun-II (Terbüzek) at 7 km south of Göksun	<i>Oxynoemacheilus ceyhanensis</i>
66	Stream Akçasu	37.1746, 36.5065	Turkey, Osmaniye prov.: stream Akçasu about 5 km north Kalecik	<i>Capoeta damascina</i> , <i>Garra turcica</i>
67	Stream Firnız	37.8787, 36.5984	Turkey, Kahramanmaraş prov.: stream Tekir above dam at Tekir, north of Kahramanmaraş	<i>Salmo opimus</i>
68	Stream Kayaözü (Firnız)	37.7588, 36.6940	Turkey, Kahramanmaraş prov.: stream Kayaözü (Firnız)	<i>Capoeta damascina</i> , <i>Luciobarbus pectoralis</i> , <i>Salmo opimus</i>
69	Stream Karasu	37.0606, 36.1122	Turkey, Osmaniye prov.: stream Karasu at Toprakkale	<i>Alburnus kotschyi</i> , <i>Chondrostoma ceyhanensis</i> , <i>Salaria fluviatilis</i> , <i>Pseudophoxinus cilicicus</i>
70	Stream Çelik	37.6239, 37.5034	Turkey, Adıyaman prov.: stream Çelik at road south of Gölbaşı	<i>Capoeta damascina</i> , <i>Alburnus kotschyi</i> , <i>Oxynoemacheilus evreni</i> , <i>Oxynoemacheilus cilicicus</i>
71	a tributary to Ceyhan River-I	37.2215, 36.0471	Turkey, Osmaniye prov.: a tributary of Ceyhan River-I between Tecirli and Kadirli north of Koçyurdu	<i>Capoeta damascina</i> , <i>Capoeta erhani</i> , <i>Pseudophoxinus cilicicus</i> , <i>Cobitis aliyeae</i> , <i>Oxynoemacheilus ceyhanensis</i>
72	a tributary to Ceyhan River-II	37.1247, 36.0486	Turkey, Adana prov.: a tributary of Ceyhan River-II at Tatarlı Village	<i>Garra culiciphaga</i> , <i>Gambusia holbrooki</i>
73	Ceyhan River	37.1933, 36.0828	Turkey, Osmaniye prov.: Ceyhan River at north of Sakarcılık Village (fish market)	<i>Luciobarbus pectoralis</i> , <i>Acanthobrama orontis</i> , <i>Acanthobrama thisbeae</i> , <i>Chondrostoma ceyhanensis</i> , <i>Pseudophoxinus zekayi</i> , <i>Squalius kottelati</i>
74	Stream Geçit	37.6127, 36.6501	Turkey, Kahramanmaraş prov.: stream Geçit on road from Kahramanmaraş to Andırın	<i>Capoeta erhani</i>
75	Spring Çöçelli	37.2812, 37.1248	Turkey, Kahramanmaraş prov.: Spring Çöçelli north of Çöçelli	<i>Garra culiciphaga</i> , <i>Pseudophoxinus zekayi</i> , <i>Oxynoemacheilus cilicicus</i> , <i>Gambusia holbrooki</i> , <i>Paraphanius alexandri</i>
76	Spring Evri	37.2662, 37.1018	Turkey, Kahramanmaraş prov.: Spring Evri south-west of Çöçelli	<i>Garra culiciphaga</i> , <i>Alburnus kotschyi</i> , <i>Pseudophoxinus zekayi</i> , <i>Oxynoemacheilus cilicicus</i>
77	Stream Söğütü (Sevdili)	38.2546, 37.5330	Turkey, Kahramanmaraş prov.: stream Söğütü 40 km east of Elbistan 38.2546 37.5330.	<i>Capoeta damascina</i> , <i>Garra turcica</i> , <i>Alburnus kotschyi</i> , <i>Oxynoemacheilus ceyhanensis</i> , <i>Oxynoemacheilus evreni</i>
78	Sır Dam Lake	37.5011, 36.5955	Turkey, Adana prov.: Sır Dam Lake, Ceyhan River	<i>Silurus glanis</i>
79	Stream Savrun	37.3731, 36.0925	Turkey, Osmaniye prov.: stream Savrun at Kadirli	<i>Garra turcica</i> , <i>Luciobarbus pectoralis</i> , <i>Alburnus kotschyi</i> , <i>Squalius kottelati</i>
80	Stream Köprüağı	37.6375, 36.6272	Turkey, Kahramanmaraş prov.: stream Köprüağı upper Sır Dam	<i>Garra turcica</i>
81	Stream Hurman	38.5966, 36.9011	Turkey, Sivas prov.: stream Hurman (Akdere) at Akdere Village	<i>Salmo chilo</i>
82	Stream Deliçay	37.3152, 35.8834	Turkey, Adana prov.: stream Deliçay 20 km southwest of Kadirli	<i>Pseudophoxinus zekayi</i> , <i>Oxynoemacheilus evreni</i> , <i>Oxynoemacheilus ceyhanensis</i>

Family Anguillidae Rafinesque, 1815

Anguilla anguilla (Linnaeus, 1758)

Common local names. Avrupa yılan balığı / European eel.

Conservation. Critically Endangered (CR).

Material Examined. FFR 02360 St. 1., – FFR 02361 St. 2., – FFR 02365 St. 3., – Not preserved St. 8., – FFR uncat. St. 15.

Distribution in the area. This species is found in the Orontes River drainages and Lake Balık in Turkey. It was also reported in the Ceyhan River (Kara et al. 2010; Erk'akan and Özdemir 2011).

Family Cyprinidae Rafinesque, 1815

Capoeta barroisi Lortet, 1894

Common names. Benekli Asi sirazı / Orontes scraper.

Conservation. Endangered (EN).

Material examined. FFR 01725 St. 1., – FSJF 2455 St. 1., – FFR 01890 St. 4., – FFR 01888 St. 9., – FSJF 2364 St. 9., – FSJF 2704 St. 18.

Distribution in the area. Orontes River drainages and Balık and Qattinah-I Lake basins in Turkey and Syria. Endemic to only the Orontes River.

Taxonomic note. See the taxonomic note of *Capoeta erhani*.

Capoeta damascina (Valenciennes, 1842)

Common names. Şam sirazı / Damascus scraper.

Conservation. Least Concern (LC).

Material examined. FSJF 2423 St. 3., – FSJF 2914 St. 5., – FFR 01887 St. 9., – FSJF 2352 St. 9., – FSJF 2301 St. 13., – FSJF 2275 St. 14., – FFR 01881 St. 16., – FSJF 2436 St. 17., – FSJF 2705 St. 18., – FFR 01886 St. 33., – FFR 01956 St. 39., – FSJF 2330 St. 40., – FSJF 2367 St. 41., – FSJF 2540 St. 43., – FSJF 2896 St. 45., – FSJF 2374 St. 55., – FFR 01879 St. 57., – FFR 01953 St. 58., – FFR 01884 St. 59., – FFR 01880 St. 66., – FFR 01882 St. 68., – FSJF 2571 St. 70., – FSJF 2966 St. 71., – FSJF 2899 St. 77.

Distribution in the area. Orontes, Seyhan and Ceyhan River drainages in Turkey and Lake Qattinah-I in Syria. It was also reported from the Euphrates River (Kaya 2019).

Capoeta erhani Turan, Kottelat & Ekmekçi, 2008

Common names. Benekli Akdeniz sirazı* / Mediterranean scraper*.

Conservation. Least Concern (LC).

Material examined. FFR 01885 St. 33., – FFR 01955 St. 39., – FFR 01878 St. 57., – FFR 01883 St. 59., – FFR 01952 St. 59., – FSJF 2968 St. 71., – FSJF 2456 St. 74.

Distribution in the area. Ceyhan River drainages and streams Çakıtsuyu-I, Üçürgesuyu-I (Seyhan River) in Turkey.

Taxonomic note. Erk'akan and Özdemir (2011) and Özdemir (2013) emphasised that *Capoeta turani* (Seyhan) and *C. erhani* (Ceyhan) are synonyms of *C. barroisi* (Orontes); even Özdemir (2013) claimed that *C. barroisi* is a synonym of *C. trutta* (Tigris-Euphrates). Recent molecular (Levin et al. 2012; Bektaş et al. 2017; 2019) and morphological (Kaya 2019) data showed that *C. erhani*, *C. barroisi* and *C. trutta* are valid species, although they suggest that *C. turani* may be the synonym of *C. turani*. A detailed morphological examination is needed to clarify the taxonomic status of *C. turani*.

Carasobarbus chantrei (Sauvage, 1882)

Common names. Asi himrisi* / Orontes himri*.

Conservation. Near Threatened (NT).

Material examined. FFR 00400 St. 1., – FFR 00427 St. 2., – FFR uncat., St. 3., – FFR uncat., St. 8., – FFR 00407 St. 9., – FSJF 2311 St. 9., – FSJF 2706 St. 18., – FSJF 2676 St. 21., – FSJF 2662 St. 31.

Distribution in the area. Orontes River drainages and Balık and Qattinah-I Lake basins in Turkey and Syria. Endemic to only the Orontes River.

Carassius gibelio (Bloch, 1782)

Common names. Havuz balığı / Prussian carp.

Conservation. Not Evaluated (NE).

Material examined. FFR uncat St. 3., – FFR uncat., St. 8., – FFR 00407 St. 9.

Distribution in the area. This species is found in the Orontes River drainages. It was also recorded from the Seyhan River (Erk'akan and Özdemir 2011; Ergüden Alagöz and Göksu 2012); even so, it was not observed in the Seyhan during the surveys.

Cyprinus carpio Linnaeus, 1758

Common names. Adi sazan / Common carp.

Conservation. Vulnerable (VU).

Material examined. FFR 02750 St. 9., – Not preserved St. 52.

Distribution in the area. Orontes River drainages and Seyhan Dam Lake in Turkey. It was also recorded in the Ceyhan River (Kara et al. 2010).

Garra caudomaculata (Battalgiç, 1942)

Common names. Altın saz balığı* / Golden minnow.

Conservation. Least Concern (LC).

Material examined. FSJF 2433 St. 3., – FFR 04032 St. 8., – FFR 04031 St. 9., – FSJF 2655 St. 20., – FSJF 2673 S St. 21., – FSJF 2755 St. 22., – FSJF 2736 St. 28., – FSJF 2669 St. 29., – FSJF 2681 St. 30., – FSJF 2761 St. 31.

Distribution in the area. Orontes River drainages and Shadha Lake basin in Turkey and Syria. Endemic to only the Orontes River.

Garra culiciphaga (Pellegrin, 1927)

Common names. Kırmızı çizgili saz balığı* / Red stripe barb.

Conservation. Least Concern (LC).

Material examined. FFR 02480 St. 33., – FSJF 2403 St. 53., – FSJF 3512 St. 53., – FFR 02481 St. 58., – FFR 4027 St. 72., – FSJF 2607 St. 75., – FSJF 2496 St. 76.

Distribution in the area. Seyhan and Ceyhan River drainages in Turkey.

Garra sp.

Material examined. FSJF 2414 St. 3., – FFR 04032 St. 8., – FFR 04010 St. 9., – FSJF 2335 St. 9., – FSJF 2449 St. 11., – FSJF 2302 St. 13., – FFR 04007 St. 16., – FSJF 2415 St. 17., – FSJF 2699 St. 18., – FSJF 2671 St. 21., – FSJF 2684 St. 22., – FSJF 2695 St. 23., – FSJF 2667 St. 29., – FSJF 2663 St. 31.

Distribution in the area. Orontes River drainages and Qattinah-I Lake basin in Turkey and Syria.

Taxonomic notes. Geiger et al. (2014) genetically identified some of the Orontes populations as *Garra* sp., Bayçelebi et al. (2018) supported this view and reported that these populations have not been defined yet. A detailed study is needed to reveal the taxonomic status of these populations.

Garra turcica Karaman, 1971

Common names. Seyhan doktor balığı / Seyhan doctor fish*.

Conservation. Not Evaluated (NE).

Material examined. FFR 4009 St. 33., – Not preserved, St. 38., – FSJF 2348 St. 40., – Not preserved, St. 51., – FFR 01267 St. 54., – FSJF 2388 St. 55., – FFR 04000 St. 57., – FFR 04008 St. 59., – FFR 4004 St. 66., – FSJF 2898 St. 77., – FFR 01270 St. 78., – FSJF 2853 St. 79., – FFR 1270 St. 80.

Distribution in the area. Seyhan and Ceyhan River drainages in Turkey.

Taxonomic notes. The species was treated as a synonym of *Garra rufa* for a long time. However, molecular and morphological data strongly showed that *G. turcica* is a valid species (Bayçelebi et al. 2018).

Garra variabilis (Heckel, 1843)

Common names. Yapışkan balık / Variable garra.

Conservation. Least Concern (LC).

Material examined. FSJF 2658 St. 20., – FSJF 2737 St. 30., – FSJF 2661 St. 31.

Distribution in the area. This species is distributed in the lower parts of the Orontes River drainages in Syria. In addition, *Garra variabilis* shows wide distributions in the Euphrates and Tigris rivers in Turkey.

Luciobarbus pectoralis (Heckel, 1843)

Common names. Doğu Akdeniz bıyıklı balığı / Levantina barbe.

Conservation. Least Concern (LC).

Material examined. FFR 00305 St. 1., – FFR uncat. St. 2., – FFR 00346 St. 3., – FFR 00345 St. 4., – FFR 00345 St. 9., – FSJF 2697 St. 18., – FFR 00347 St. 33., – FSJF 2424 St. 34., – Not preserved, St. 38., – FSJF 2329 St. 40., – FFR 00300 St. 52., – FFR 00301 St. 53., – FFR 00321 St. 54., – FSJF 2450 St. 55., – FFR 00358 St. 58., – FFR 00344 St. 68., – FSJF 2988 St. 73., – FSJF 2854 St. 79.

Distribution in the area. Orontes, Seyhan and Ceyhan River drainages and Balık and Qattinah-I Lake basins in Turkey and Syria.

Family Leuciscidae Bonaparte, 1835

Acanthobrama orontis Berg, 1949

Common names. Asi akçapağı* / Orontes bream*.

Conservation. Not Evaluated (NE).

Material examined. Not preserved St. 52., – FSJF 2435 St. 53., – FSJF 2989 St. 73.

Distribution in the area. Seyhan and Ceyhan River drainages in Turkey.

Taxonomic notes. *Acanthobrama orontis* was identified by Berg (1949) in Lake Amik (Orontes) in Turkey. Goren et al. (1973) reported it to be a synonym of *A. marmid*, and Krupp (1985) and Bogutskaya (1997) also supported this view (Freyhof and Özuluğ 2014). Freyhof and Özuluğ (2014) accepted *A. orontis* as valid although they did not find it in the Orontes River. The species, which was not observed in the fieldwork, might prefer the local area in the Orontes.

Acanthobrama thisbeae Freyhof & Özuluğ, 2014

Common names. Ceyhan akçapağı* / Ceyhan bream*.

Conservation. Not Evaluated (NE).

Material examined. FFR uncat., St. 5., – FSJF 2987 St. 73.

Distribution in the area. The lower part of the Ceyhan and Orontes River drainages.

Taxonomic notes. Freyhof and Özuluğ (2014) suspected that *Aspius vorax* (Bostancı 2006: 84) originated from the stream Afrin (Orontes River); it might be *A. thisbeae*. The material examined by Bostancı (2006) in FFR belongs to the species *A. thisbeae*.

Alburnus kotschy Steindachner, 1863

Common names. İskenderun inci balığı* / Iskenderun bleak.

Conservation. Least Concern (LC).

Material examined. FFR 00999 St. 35., – FSJF 504 St. 40., – FFR 04665 St. 58., – FFR 00868 St. 64., – FSJF 2638 St. 64., – FFR 04663 St. 69., – FSJF 2570 St. 70., – FSJF 2497 St. 76., – FSJF 2901 St. 77., – FSJF 2856 St. 79.



Figure 2. Cyprinidae species of the northeastern Mediterranean Sea Basin of Turkey and Syria. **a.** *Capoeta barroisi*, stream Karasu-II; **b.** *C. damascina*, stream Karasu-II; **c.** *C. erhani*, stream Aksu-III; **d.** *Carasobarbus chantrei*, Lake Balık; **e.** *Carassius gibelio*, stream Karasu-II; **f.** *Cyprinus carpio*, stream Karasu-II; **g.** *Garra caudomaculata* stream Karasu-I; **h.** *G. culiciphaga*, stream Aksu-II; **i.** *Garra* sp. Stream Hanne; **j.** *G. turcica*, stream Üçürgesuyu-I; **k.** *G. variabilis*, stream Nahr al Barid photo: JF; **l.** *Luciobarbus pectoralis*, stream Aksu-II.

Distribution in the area. Seyhan and Ceyhan River drainages, in addition to coastal streams between Ceyhan and Arsuz (Freyhof et al. 2018b).

***Alburnus magnificus* Freyhof & Turan, 2019**

Common names. Afrin inci balığı* / Afrin bleak*.

Conservation. Not Evaluated (NE).

Material examined. FFR 00998 St. 4., – FSJF 2915 St. 5., – FFR 00990 St. 7., – FSJF 2298 St. 13., – FSJF 2412 St. 17.

Distribution in the area. The lower part of the Orontes River drainage in Turkey; most probably it occurs also in Syria as the stream Afrin passes from Syrian territory (Freyhof and Turan 2019). Endemic to only the Orontes River.

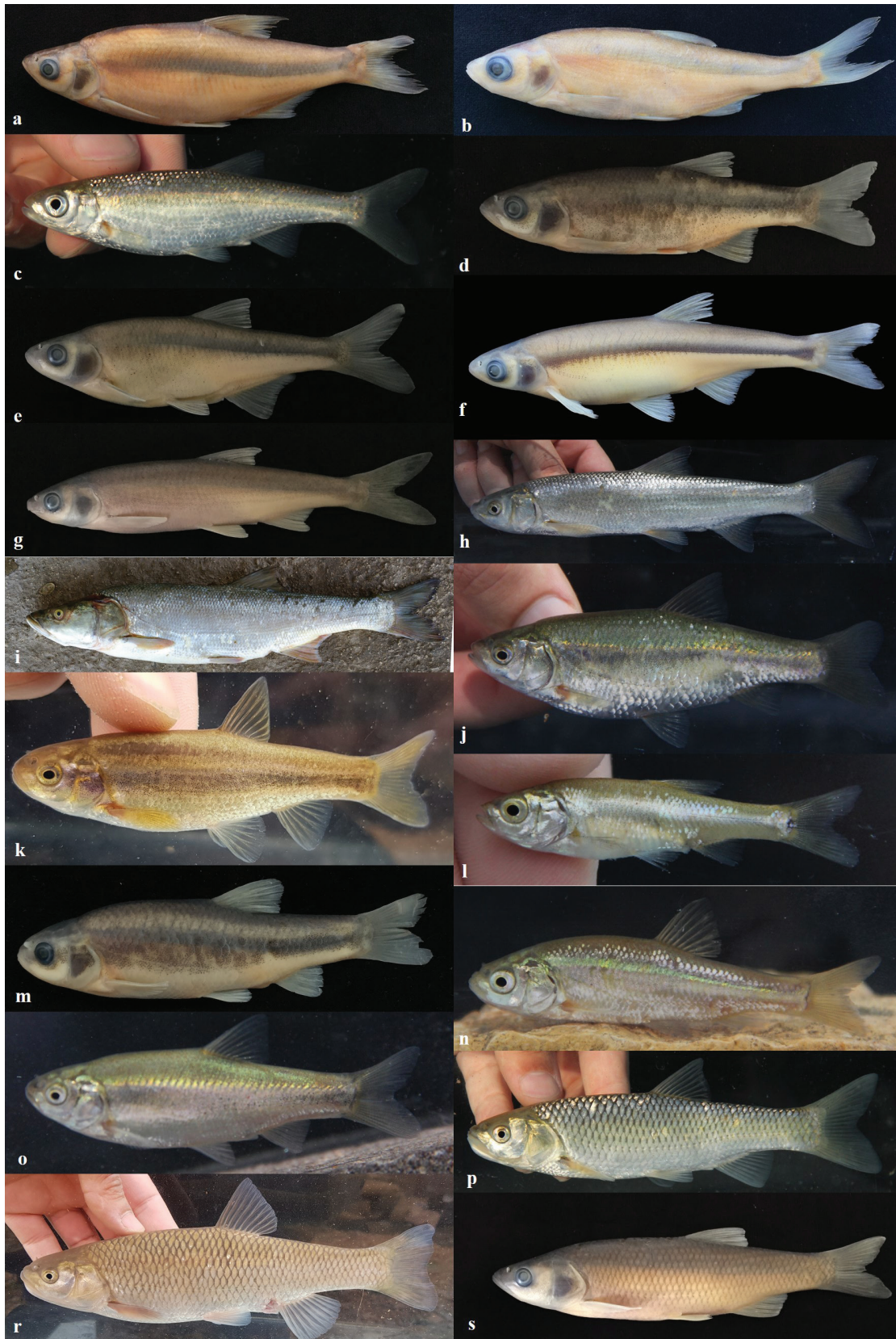


Figure 3. Leuciscidae species of the northeastern Mediterranean Sea Basin of Turkey. **a.** *Acanthobrama orontis*, Seyhan Dam Lake; **b.** *A. thisbeae*, stream Afrin; **c.** *Alburnus kotschyi*, stream Üçürgesuyu-III; **d.** *A. magnificus*, stream Bedirge; **e.** *A. orontis*, stream Karasu-II; **f.** *A. sellal*, Lake Gölbaşı; **g.** *Chondrostoma kinzelbachi*, stream Karasu-I; **h.** *C. ceyhanensis*, stream Karasu-V; **i.** *Leuciscus vorax*, Orontes River-VII photo: JF; **j.** *Pseudophoxinus cilicicus*, stream Karasu-V; **k.** *P. firati*, spring Karahalka; **l.** *P. libani*, Lake Balık; **m.** *P. turani*, stream İncesu; **n.** *P. zekayi*, Lake Gölbaşı; **o.** *P. zeregi*, stream Hanne; **p.** *Squalius adanaensis*, stream Üçürgesuyu-I; **r.** *S. seyhanensis*, stream Zamantı-II; **s.** *S. kottelati*; stream Karasu-II.

Taxonomic notes. *Alburnus qalilus* (Krupp 1992) is distributed in the coastal streams in Syria. Bircikligil et al. (2016) reported *A. qalilus* from the Orontes River in Turkey. However, Freyhof and Turan (2019) revised the genus of *Alburnus* from the lower part of the Orontes and restricted *A. qalilus* to Syria.

Alburnus orontis Sauvage, 1882

Common names. Asi incisi* / Orontes bleak.

Conservation. Vulnerable (VU).

Material examined. FFR 04602 St. 2., – FSJF 2393 St. 3., – FFR 00902 St. 6., – FFR 04696 St. 8., – FSJF 2963 St. 10., – FSJF 2401 St. 11., – FSJF 2675 St. 21., – FSJF 2759 St. 22., – FSJF 2740 St. 24., – FSJF 2751 St. 30.

Distribution in the area. Orontes River drainages in Turkey and Syria. Endemic to only the Orontes River.

Alburnus sellal Heckel, 1843

Common names. Doğu incisi* / Eastern shah kuli.

Conservation. Least Concern (LC).

Material examined. FFR 04697 St. 56.

Distribution in the area. It is only found in the Lake Gölbaşı basin that connected with the stream Aksu (upper part of Ceyhan River). However, this species is widely distributed in the inland waters of eastern Turkey (Freyhof et al. 2018a).

Chondrostoma kinzelbachi Krupp, 1985

Common names. Asi kababurun* / Orontes nase.

Conservation. Endangered (EN).

Material examined. FFR 2033 St. 1., – FFR 2018 St. 3., – FFR 2081 St. 8., – FSJF 2841 St. 12.

Distribution in the area. Known from only the Orontes drainages and Lake Balık basin in Turkey. Endemic to only the Orontes River.

Chondrostoma ceyhanensis Küçük, Turan, Güçlü, Mutlu & Çiftçi, 2017

Common names. Ceyhan kababurunu* / Ceyhan nase*.

Conservation. Not Evaluated (NE).

Material examined. FFR 02057 St. 33., – FFR 02076 St. 39., – FSJF 2346 St. 40., – FFR 02056 St. 58., – FFR 02075 St. 69., – FSJF 2990 St. 73.

Distribution in the area. Ceyhan and Seyhan River drainages and River Berdan, a watershed in the Mediterranean Sea (Küçük et al. 2017).

Leuciscus vorax (Heckel, 1843)

Common names. Sis balığı / Tigris asp.

Conservation. Least Concern (LC).

Material examined. FSJF 1495 St. 25.

Distribution in the area. *Leuciscus vorax* is only found in the Orontes River in Syria.

Pseudophoxinus cilicicus Saç, Özuluğ, Geiger & Freyhof, 2019

Common names. Kilikya ot balığı* / Cilician spring minnow*.

Conservation. Not Evaluated (NE).

Material examined. FSJF 2417 St. 53., – FFR 03301 St. 69., – FSJF 2970 St. 71.

Distribution in the area. The lower part of the Seyhan and Ceyhan River drainages, also the stream Arsuz (Mediterranean Sea Basin) in Turkey (Saç et al. 2019).

Pseudophoxinus firati Bogutskaya, Küçük & Atalay, 2006

Common names. Fırat ot balığı* / Euphrates spring minnow.

Conservation. Endangered (EN).

Material examined. FFR 03308 St. 42., – FSJF 4052 St. 60., – FFR 03283 St. 64.

Distribution in the area. *Pseudophoxinus firati* is found in the streams Göksun and Aksu (Ceyhan) and spring Karahalka (Seyhan). It is also known from the headwaters of the Euphrates (Saç et al. 2019).

Pseudophoxinus libani (Lortet, 1883)

Common names. Asi ot balığı* / Orontes spring minnow.

Conservation. Least Concern (LC).

Material examined. FFR 03314 St. 1., – FSJF 2391 St. 3., – FSJF 2756 St. 19., – FSJF 2646 St. 20., – FSJF 2641 St. 21., – FSJF 2757 St. 22., – FSJF 2644 St. 24., – FSJF 2645 St. 28., – FSJF 2647 St. 30., – FSJF 2643 St. 31.

Distribution in the area. Orontes River drainages and Balık and Qattinah Lake basins in Turkey and Syria.

Taxonomic note. According to morphological and molecular data (COI), *P. libani* and *P. kervillei* were conspecific and *P. kervillei* was a junior synonym of *P. libani* (Bariche and Freyhof 2016).

Pseudophoxinus turani Küçük & Güçlü, 2014

Common names. İncesu ot balığı* / İncesu spring minnow.

Conservation. Not Evaluated (NE).

Material examined. FFR 03286 St. 9., – FSJF 2964 St. 10., – FSJF 2277 St. 14., – FFR 03282 St. 14.

Distribution in the area. Streams İncesu and Karasu (outflow of TahtaKöprü Dam Lake) in Turkey. Endemic to only the Orontes River.

***Pseudophoxinus zekayi* Bogutskaya, Küçük & Atalay, 2006**

Common names. Ceyhan ot balığı* / Ceyhan spring minnow.

Conservation. Vulnerable (VU).

Material examined. FFR 03315 St. 56., – FSJF 2985 St. 73., – FFR 3313 St. 75., – FSJF 2461 St. 75., – FSJF 2478 St. 76., – FSJF 2961 St. 82.

Distribution in the area. Springs Çöçelli and Evri and the Lake Gölbaşı basin (Ceyhan River basin). Endemic to only the Ceyhan River.

***Pseudophoxinus zeregi* (Heckel, 1843)**

Common names. Kueik ot balığı* / Qweik spring minnow*.

Conservation. Least Concern (LC).

Material examined. FSJF 2430 St. 3., – FSJF 2297 St. 13., – FFR 03312 St. 15., – FSJF 2746 St. 27., – FSJF 2749 St. 30.

Distribution in the area. Orontes River drainages in Turkey and Syria. It was also reported from the Qweik River and small coastal streams in Syria (Saç et al. 2019).

***Squalius adanaensis* Turan, Kottelat & Doğan, 2013**

Common names. Adana tatlısu kefalı* / Adana chub.

Conservation. Near Threatened (NT).

Material examined. FFR 06279 St. 33., – FFR 01995 St. 35., – FSJF 2939 St. 36., – FSJF 2419 St. 34., – FFR 00777 St. 40., – FSJF 2382 St. 55.

Distribution in the area. The lower part of the Seyhan River drainages in Turkey. Endemic to only the Seyhan River.

***Squalius kottelati* Turan, Yılmaz & Kaya, 2009**

Common names. Asi tatlısu kefalı* / Orontes dace*.

Conservation. Near Threatened (NT).

Material examined. FFR 00778 St. 2., – FFR 06231 St. 3., – FFR 01567 St. 9., – FSJF 2962 St. 10., – FSJF 2842 St. 12., – Not preserved St. 52., – FFR St. 57., – FFR 06280 St. 57., – FFR 00665 St. 61., – FFR 00567 St. 73., – FSJF 2986 St. 73., – FSJF 2855 St. 79.

Distribution in the area. Seyhan, Ceyhan and Orontes River drainages in Turkey. It may occur in the upper part of the Orontes in Syria.

***Squalius seyhanensis* Turan, Kottelat & Doğan, 2013**

Common names. Seyhan tatlısu kefalı* / Seyhan chub*.

Conservation. Data Deficient (DD).

Material examined. FSJF 2539 St. 43., – FFR 01994 St. 44., – FFR 06275 St. 44., – FSJF 2982 St. 44., – FSJF

2895 St. 45., – FFR 00758 St. 47., – FFR 00730 St. 49., – FFR01993 St. 50.

Distribution in the area. The upper part of the Seyhan River drainages in Turkey. It was also reported in the Euphrates River drainages (Turan et al. 2017).

Family Cobitidae Swainson, 1838***Cobitis aliyeae* Freyhof, Bayçelebi & Geiger, 2018**

Common names. Adana taşemeni* / Adana spined loach*.

Conservation. Not Evaluated (NE).

Material examined. FFR 05501 St. 33., – FSJF 2427 St. 53., – FFR 05506 St. 54., – FSJF 2969 St. 71.

Distribution in the area. The lower part of the Seyhan and Ceyhan River drainages in Turkey (Freyhof et al. 2018c).

***Cobitis anabelae* Freyhof, Bayçelebi & Geiger, 2018**

Common names. Orontes spined loach* / Asi taşemeni*.

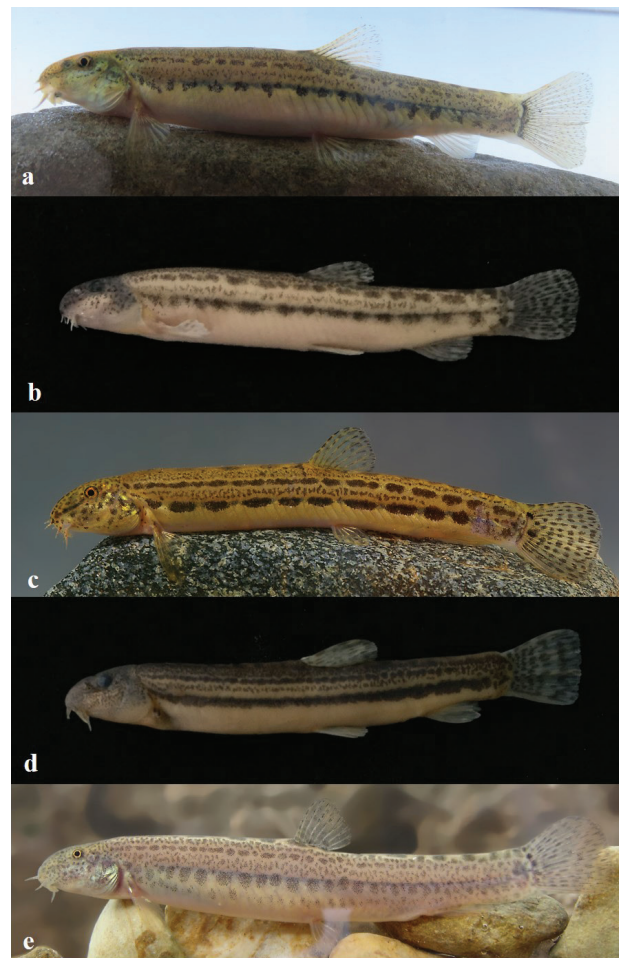


Figure 4. Cobitidae species of the northeastern Mediterranean Sea Basin of Turkey and Syria. **a.** *Cobitis aliyeae*, stream Üçürge-suyu-I; **b.** *C. anabelae*, stream Karasu-I; **c.** *C. erkakanae*, stream Aksu-IV, connecting Lakes Gölbaşı photo: JF; **d.** *C. evreni*, stream Göksun-I; **e.** *C. levantina*, stream Nahr al Barid photo: JF.

Conservation. Not Evaluated (NE).

Material examined. FSJF 2399 St. 3., – FFR 05528 St. 6., – FFR 05564 St. 8., – FSJF 2428 St. 11., – FSJF 2674 St. 21.

Distribution in the area. Orontes River drainages in Turkey and Syria. Endemic to only the Orontes River.

***Cobitis erkakanae* Freyhof, Bayçelebi & Geiger, 2018**

Common names. Gölbaşı spined loach* / Gölbaşı taşemeni*.

Conservation. Not Evaluated (NE).

Material examined. FSJF 2510 St. 62.

Distribution in the area. It is only known from the Lake Gölbaşı basin (Ceyhan) in Turkey. Endemic to only the Ceyhan River.

***Cobitis evreni* Erk’Akan, Özeren & Nalbant, 2008**

Common names. Ceyhan spined loach / Ceyhan taşemeni*.

Conservation. Endangered (EN).

Material examined. FFR 05530 St. 64.

Distribution in the area. It is only distributed in the middle Ceyhan River drainages in Turkey. Endemic to only the Ceyhan River.

***Cobitis levantina* Krupp & Moubayed, 1992**

Common names. Orontes spined loach/ Asi taşemeni*.

Conservation. Not Evaluated (NE).

Material examined. FSJF 2747 St. 30.

Distribution in the area. The upper part of the Orontes River drainages in Syria.

Family Nemacheilidae Regan, 1911

***Oxynoemacheilus ceyhanensis* (Erk’akan, Nalbant & Özeren, 2007)**

Common names. Elbistan çöpçü balığı* / Elbistan loach.

Conservation. Data Deficient (DD)

Material examined. FFR 01479 St. 65., – FSJF 2967 St. 71., – FSJF 2900 St. 77., – FSJF 2960 St. 82.

Distribution in the area. The upper part of the Ceyhan River drainages in Turkey. Endemic to only the Ceyhan River.

***Oxynoemacheilus cilicicus* Kaya, Turan, Bayçelebi, Kalaycı & Freyhof, 2020**

Common names. Kilikya çöpçü balığı* / Cilicia loach*.

Conservation. Not Evaluated (NE).

Material examined. FFR 1491 St. 33., – FSJF 2940 St. 36., – FFR 15559 St. 38., – FSJF 2324 St. 40., – FSJF 2432 St. 53., – FFR 15576 St. 56., – FFR 15578 St. 58., – FFR 1489 St. 59., – FSJF 2507 St. 62., – FSJF 2639 St. 64., – FSJF 2569 St. 70., – FSJF 2606 St. 75., – FSJF 2477 St. 76.

Distribution in the area. It is known from the lower Göksu, Seyhan and Ceyhan rivers, also the Lake Gölbaşı basin (Kaya et al. 2020).

***Oxynoemacheilus evreni* (Erk’akan, Nalbant & Özeren, 2007)**

Common names. Ceyhan çöpçü balığı* / Ceyhan loach*.

Conservation. Least Concern (LC).

Material examined. FFR 1598 St. 58., – FFR 01490 St. 59., – FSJF 2503 St. 63., – FSJF 2640 St. 64., – FSJF 2567 St. 70., – FSJF 2897 St. 77., – FSJF 2959 St. 82.

Distribution in the area. Ceyhan River drainages. Endemic to only the Ceyhan River.

***Oxynoemacheilus hamwii* (Krupp & Schneider, 1991)**

Common names. Asi çöpçü balığı* / Orontes loach*.

Conservation. Endangered (EN).

Material examined. FFR 1501 St. 2., – FFR 1498 St. 4., – FSJF 2917 St. 5., – FFR 1486 St. 7., – FFR 1494 St. 9., – FSJF 2385 St. 17.

Distribution in the area. The upper part of the Orontes River in Turkey. Endemic to only the Orontes River.

***Oxynoemacheilus namiri* (Krupp & Schneider, 1991)**

Common names. Akdeniz çöpçü balığı* / Levantine loach.

Conservation. Least Concern (LC).

Material examined. FFR 01502 St. 2., – FFR 01497 St. 5., – FFR 01503 St. 6., – FFR 1485 St. 7., – FSJF 2395 St. 11., – FSJF 2300 St. 13., – FFR 15556 St. 15., – FSJF 2698 St. 18., – FSJF 2656 St. 20., – FSJF 2672 St. 21., – FSJF 2682 St. 22., – FSJF 2748 St. 24., – FSJF 2713 St. 26., – FSJF 2745 St. 27., – FSJF 2666 St. 29., – FSJF 2750 St. 30.

Distribution in the area. Orontes River drainages and the Lake Shadha basin in Turkey and Syria. Endemic to only the Orontes River.

***Oxynoemacheilus samanticus* (Banarescu & Nalbant, 1978)**

Common names. Zamanti çöpçü balığı / Zamanti loach*.

Conservation. Least Concern (LC).

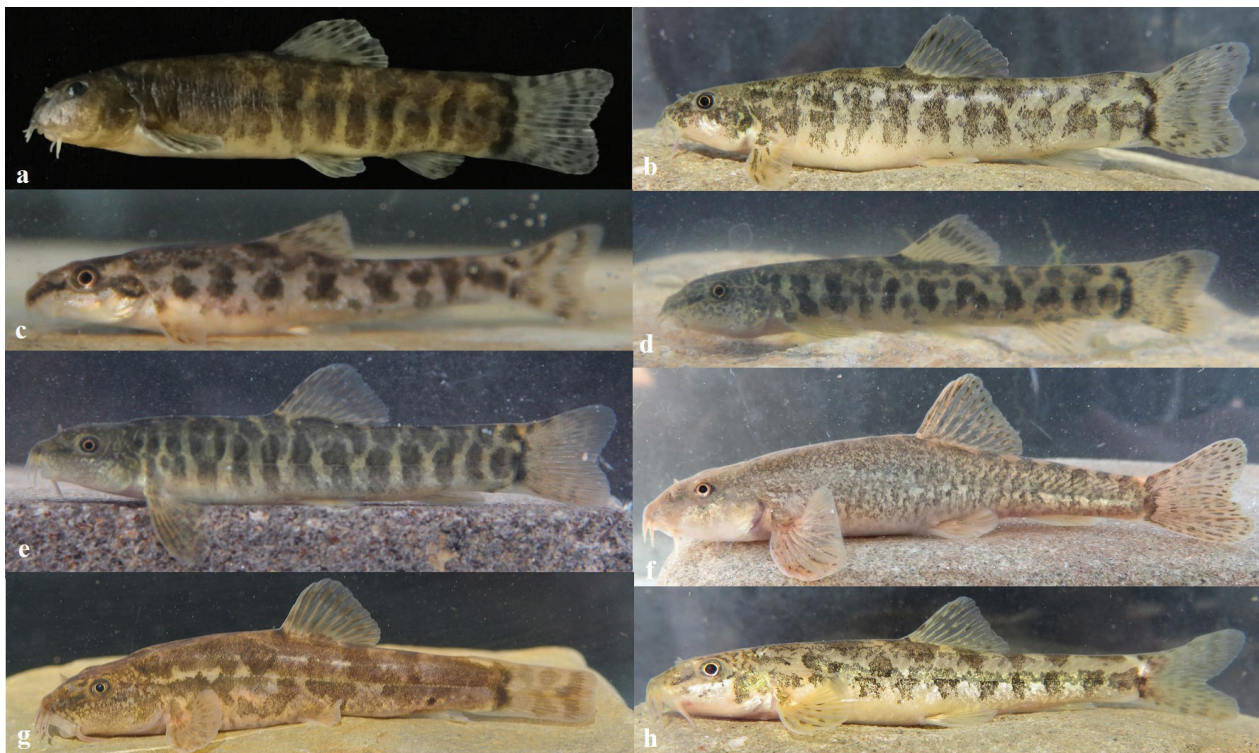


Figure 5. Nemacheilidae species of the northeastern Mediterranean Sea Basin of Turkey. **a.** *Oxynoemacheilus ceyhanensis*, stream Göksun-II; **b.** *O. cilicicus*, stream Eğlence; **c.** *O. evreni*, Lake Gölbaşı; **d.** *O. hamwii*, stream Karasu-II; **e.** *O. namiri*, stream Hanne; **f.** *O. samanticus*, stream Sarnaz; **g.** *O. seyhanensis*, stream Zamanti-II photo: JF; **h.** *O. seyhanicola*, stream Eğlence.

Material examined. FSJF 2983 St. 44., – FFR 15561 St. 51.

Distribution in the area. Stream Zamanti and Sarnaz, the upper Seyhan River drainages. The species is also widespread in Kızılırmak River drainages and stream Mancılık (Euphrates River) (Freyhof et al. 2019).

Oxynoemacheilus seyhanensis (Bănărescu, 1968)

Common names. Seyhan loach* / Seyhan çöpçü balığı*.

Conservation. Critically Endangered (CR).

Material examined. FSJF 2984 St. 44.

Distribution in the area. It is only found in the upper Seyhan River drainages. However, it is known from the Kızılırmak River drainages in Turkey. *Oxynoemacheilus kosswigi* is known from the Kızılırmak drainages and has recently been synonymised with *O. seyhanensis* (Sungur 2020).

Oxynoemacheilus seyhanicola (Erk'akan, Nalbant & Özeren, 2007)

Common names. Adana çöpçü balığı* / Adana loach*.

Conservation. Endangered (EN).

Material examined. FFR 01499 St. 37., – FFR 01492 St. 38., – FFR 15522 St. 39., – FSJF 2327 St. 40., – FSJF 2377 St. 55.

Distribution in the area. The lower part of the Seyhan River drainages in Turkey. Endemic to only the Seyhan River.

Family Bagridae Bleeker, 1858

Mystus pelusius (Solander, 1794)

Common names. Mezopotamya kedi balığı* / Tigris mystus.

Conservation. Least Concern (LC).

Material examined. FFR 02732 St. 1.

Distribution in the area. Known from only the Lake Balık in the area, but it occurs in the Tigris, Euphrates and Queiq River drainages (Kaya et al 2016).

Family Siluridae Rafinesque, 1815

Silurus glanis Linnaeus, 1758

Common names. Yayın / Wels catfish.

Conservation. Least Concern (LC).

Material examined. Not preserved St. 52., – Not preserved St. 78.

Distribution in the area. Seyhan Dam and Sır Dam lakes (Ceyhan). It is also widespread in the Anatolia.

Family Clariidae

Clarias gariepinus (Burchell, 1822)

Common names. Kara balık / North African catfish.

Conservation. Least Concern (LC).

Material examined. FFR 05700 St. 6., – FFR uncat., St. 8., – FFR uncat., St. 15., – FSJF 2381 St. 17.

Distribution in the area. The upper part of the Orontes River drainages in Turkey and it might be found in Syria.

Family Esocidae Rafinesque, 1815

Esox lucius Linnaeus, 1758

Common names. Turna / Pike.

Conservation. Least Concern (LC).

Material examined. FFR 04200 St. 48., – FFR 04201 St. 49.

Distribution in the area. Streams Şıvgın and Karagöz, Seyhan River in Turkey.

Family Salmonidae Jarocki or Schinz, 1822

Salmo chilo Turan, Kottelat & Engin, 2012

Common names. Akdere alası* / Akdere trout*.

Conservation. Vulnerable (VU).

Material examined. FFR 03055 St. 81.

Distribution in the area. Stream Hurman, an uppermost drainage of the Ceyhan River. Endemic to only the Ceyhan River.

Salmo labecula Turan, Kottelat & Engin, 2012

Common names. Seyhan alası* / Seyhan trout.

Conservation. Endangered (EN).

Material examined. FFR 03057 St. 32.

Distribution in the area. Stream Ecemiş in the drainage of the Seyhan River.

Salmo opimus Turan, Kottelat & Engin, 2012

Common names. Ceyhan alası* / Ceyhan trout*.

Conservation. Endangered (EN).

Material examined. FSJF 2504 St. 63., – FSJF 2637 St. 64., – FFR 03051 St. 67., – FFR 03050 St. 68.

Distribution in the area. The middle part of the Ceyhan River drainages.

Salmo platycephalus Behnke, 1968

Common names. Yassıbaş ala* / Flathead trout.

Conservation. Endangered (EN).



Figure 6. Salmonidae species of the northeastern Mediterranean Sea Basin of Turkey. **a.** *Salmo chilo*, stream Human; **b.** *S. labecula*, stream Ecemiş; **c.** *S. opimus*, stream Fırız; **d.** *S. platycephalus*, stream Pınarbaşı; **e.** *Oncorhynchus mykiss*, Seyhan Dam Lake.

Material examined. FSJF 2538 St. 43., – FFR 01160 St. 46.

Distribution in the area. It is only known from the upper basin of the Seyhan River drainages (Turan et al. 2012). Endemic to only the Seyhan River.

Oncorhynchus mykiss (Walbaum, 1792)

Common names. Gökkuşığı alabalığı / Rainbow trout.

Conservation. Not Evaluated (NE).

Material examined. Not preserved St. 52.

Distribution in the area. This species is widely introduced via aquaculture around the world. It was only collected in the Seyhan Dam Lake in the area.

Family Atherinidae Risso, 1827

Atherina boyeri Risso, 1810

Common names. Gümüş balığı / Big-scale sand smelt.

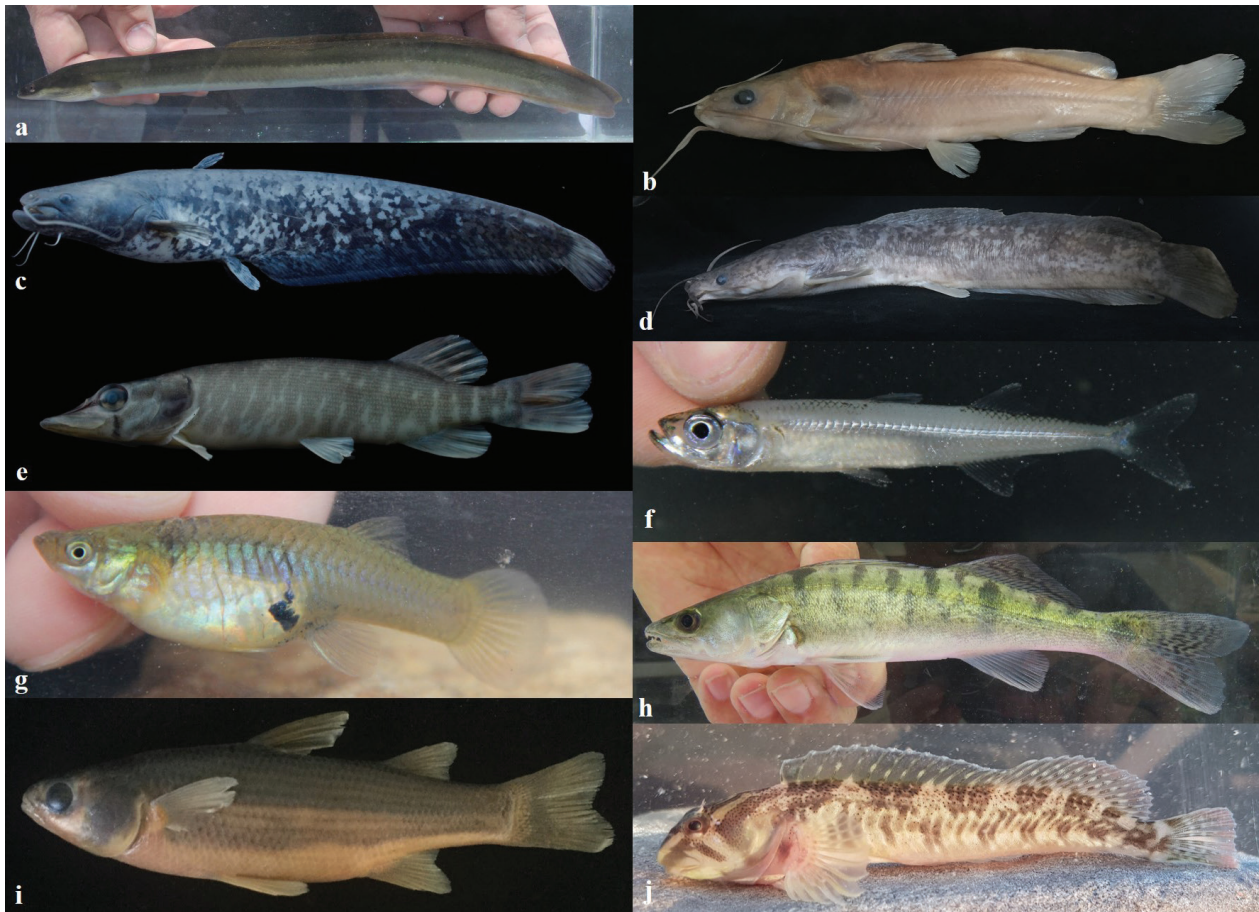


Figure 7. Fishes of the northeastern Mediterranean Sea Basin of Turkey. **a.** *Anguilla anguilla*, Orontes River-I; **b.** *Mystus pelusius*, Lake Balık; **c.** *Silurus glanis*, Seyhan Dam Lake; **d.** *Clarias gariepinus*, stream Afrin-III; **e.** *Esox Lucius*, stream Pınarbaşı; **f.** *Atherina boyeri*, Lake Gölbaşı; **g.** *Gambusia holbrooki*, spring Çöçelli; **h.** *Sander lucioperca* Seyhan Dam Lake; **i.** *Planiliza abu*, stream Afrin-I; **j.** *Salaria fluviatilis*, stream Çakıtsuyu-I.

Conservation. Least Concern (LC).

Material examined. FFR uncat., St. 8., – FSJF 2313 St. 9., – FFR uncat., St. 9., – FFR 04150 St. 47., – FFR 04152 St. 56.

Distribution in the area. Orontes River drainages, stream Kışla (Seyhan) and the Lake Gölbaşı basin (Ceyhan).

Family Poeciliidae Bonaparte, 1831

Gambusia holbrooki Girard, 1859

Common names. Sivrisinek balığı / Eastern mosquito fish.

Conservation. Least Concern (LC).

Material examined. FSJF 2398 St. 3., – FFR 02495 St. 6., – FSJF 2321 St. 9., – FSJF 2299 St. 13., – FFR 02493 St. 16., – Not preserved St. 72., – FFR 15004 St. 75.

Distribution in the area. Orontes River drainages, a tributary of Ceyhan River and spring Çöçelli (Ceyhan River).

Family Aphaniidae Nardo, 1827

Paraphanius alexandri (Akşiray, 1948)

Common names. İskenderun dişlisazancığı / İskenderun pompano.

Conservation. Not Evaluated (NE).

Material examined. FFR 08660 St. 75., – FSJF 2605 St. 75.

Distribution in the area. It is widespread in the Ceyhan River drainage, from the coastal streams in the Arsuz (İskenderun) to the mainsprings of the Ceyhan River in Elbistan.

Paraphanius boulengeri (Aksiray, 1948)

Common names. Gölbaşı dişlisazancığı / Gölbaşı killifish.

Conservation. Not Evaluated (NE).

Material examined. FFR 08662 St. 62., – FSJF 2506 St. 62., – FSJF 3737 St. 62.

Distribution in the area. The species is known from the Lake Gölbaşı. Endemic to only the Ceyhan River.

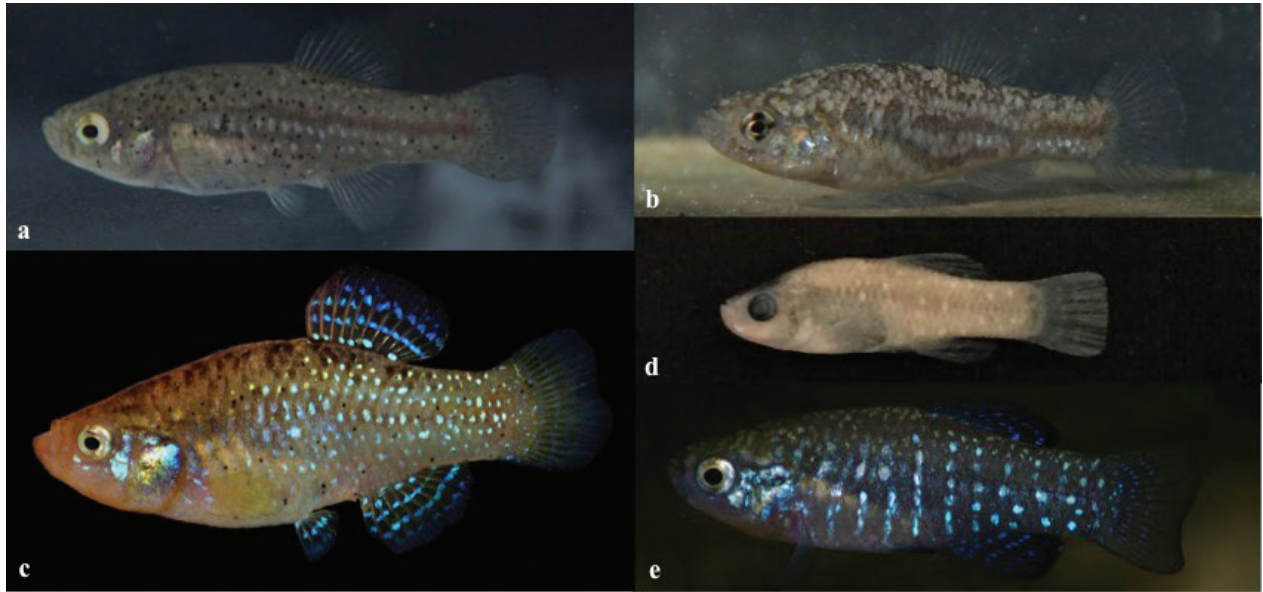


Figure 8. Aphaniidae species of the northeastern Mediterranean Sea Basin of Turkey and Syria. **a.** *Paraphanius alexandri*, spring Çöçelli; **b.** *P. boulengeri*, Lake Gölbaşı; **c.** *P. mento*, spring of Barada photo: JF; **d.** *P. orontis*, Orontes River-I; **e.** *P. similis*, Seyhan River, below water regulation doors photo: JF.

***Paraphanius mento* (Heckel, 1843)**

Common names. Mavi benekli dişlisazancık / Pearl-spotted killifish.

Conservation. Least Concern (LC).

Material examined. FSJF 2758 St. 19., – FSJF 2657 St. 20., – FSJF 2683 St. 22., – FSJF 2659 St. 31.

Distribution in the area. The upper part of the Orontes River drainages and the Lake Qattinah basin in Syria.

***Paraphanius orontis* (Aksiray, 1948)**

Common names. Asi dişlisazancığı* / Orontes killifish*.

Conservation. Not Evaluated (NE).

Material examined. FFR 08642 St. 3., – FSJF 2431 St. 3., – FSJF 2753 St. 30.

Distribution in the area. Orontes River and stream Nahr al Barid in Turkey and Syria.

***Paraphanius similis* (Aksiray, 1948)**

Common names. Seyhan noktalı dişlisazancığı* / Seyhan spotted killifish*.

Conservation. Not Evaluated (NE).

Material examined. FSJF 2434 St. 53.

Distribution in the area. The species is widespread in the Seyhan River drainage, whereas some landlocked populations exist in central Anatolia.

Family Percidae Rafinesque, 1815

***Sander lucioperca* (Linnaeus, 1758)**

Common names. Sudak / Pike-perch.

Conservation. Least Concern (LC).

Material examined. Not preserved St. 52.

Distribution in the area. Seyhan Dam Lake in Turkey.

Family Mugilidae Jarocki, 1822

***Chelon* sp.**

Material examined. FSJF 2425 St. 17.

Distribution in the area. The species is known from the stream Yıldırım (Orontes River).

Taxonomic note. The species has not been identified because there is insufficient material. Advanced genetic and morphological studies are needed to reveal the taxonomic status of the species.

***Planiliza abu* (Heckel, 1843)**

Common names. Mezopotamya kefali* / Abu mullet.

Conservation. Least Concern (LC).

Material examined. FFR 027583 St. 1., – FFR 2587 St. 4., – FFR 02588 St. 6. – FSJF 2396 St. 11., – FSJF 2668 S St. 29., – FFR 2586 St. 57.

Distribution in the area. Orontes River drainages and Balık and Qattinah Lake basins in Turkey and Syria.

Family Cichlidae Bonaparte, 1835

Coptodon zillii (Gervais, 1848)

Common names. Tilapia / Redbelly tilapia.

Conservation. Least Concern (LC).

Material examined. FFR 06800 St. 1., – FSJF 2413 St. 17.

Distribution in the area. It was found in the Lake Balık and stream Yıldırım, Orontes River in Turkey. According to the literature, it was reported from the coastal streams and the Orontes River in Syria (Borkenhagen and Freyhof 2009).

Sarotherodon galilaeus (Linnaeus, 1758)

Common names. Mango tilapia* / Mango Tilapia.

Conservation. Not Evaluated (NE).

Material examined. FSJF 2664 St. 31.

Distribution in the area. It is found in a spring, south of Qala'at al Jarras in Syria.

Tristramella simonis (Günther, 1864)

Common names. Kısa çeneli tilapia* / Short jaw tilapia.

Conservation. Vulnerable (VU).

Material examined. FSJF 2665 St. 31.

Distribution in the area. It is found in a spring south of Qala'at al Jarras. It is also known from Levantine and lakes Tiberias and Muzarib (Borkenhagen and Freyhof 2009).

Family Blenniidae Rafinesque, 1810

Salaria fluviatilis (Asso, 1801)

Common names. Horozbina / Freshwater blenny.

Conservation. Least Concern (LC).

Material examined. FFR 04251 St. 33., – Not preserved St. 38., – FFR 04256 St. 39., – FSJF 2453 St. 40., – FFR 04254 St. 58., – FFR 04250 St. 59., – FFR 04253 St. 69.

Distribution in the area. It is known from the Seyhan and Ceyhan River drainages.

Taxonomic notes. The genus of *Salaria* is represented with a single species *Salaria fluviatilis* in Turkey. This genus should be compared with different populations, which should be reviewed, both morphologically and molecularly, to clarify the taxonomy.

Discussion

As a result of this study, the current fish fauna conditions of the Orontes, Seyhan and Ceyhan rivers were evaluat-

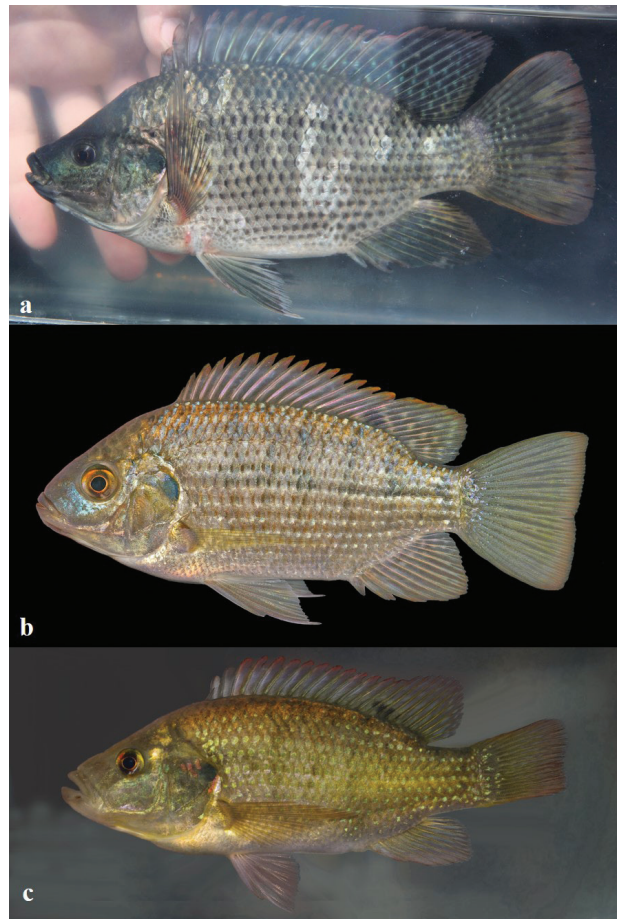


Figure 9. Cichlidae species of the northeastern Mediterranean Sea Basin of Turkey and Syria. **a.** *Coptodon zillii*, Lake Balık; **b.** *Sarotherodon galilaeus*, Al Ghab photo: JF; **c.** *Tristramella simonis*, spring south of Qala'at photo: JF.

ed. Sixty-seven species belonging to 17 families of inland water fishes were reported from the Seyhan (28 species), Ceyhan (27 species) and Orontes (33 species) river drainages in Turkey and Syria. Almost all the fish species were recorded in the previous studies for the region, except *Tinca tinca* (see Table, 2). This species was reported from the Seyhan River (Erk'akan and Özdemir 2011; Ergüden Alagöz and Göksu 2012). The species' absence may be explained by the hunting method, habitat selection or season.

Acanthobrama centisquama was originally described from Orontes (Asi) drainage by Heckel (1843) but not recorded again for a long time (Freyhof and Özüluğ 2014). Then also this study period, this species could not be observed in this research area. It might be extinct or has a very localised distribution in the Orontes River.

Four species of *Alburnus* are known from the Seyhan, Ceyhan and Orontes rivers. Three of them have been obtained in the study period while *A. adanensis* has not been caught. Bostancı (2006) and Erk'akan and Özdemir (2011) identified an *Alburnus* species from the Seyhan River as *A. adanensis*. Birecikligil et al. (2016) reported that *A. adanensis* was a synonym of *A. sellal*. Freyhof et al. (2018b) accepted *A. adanensis* as a valid species and

Table 2. Former and current fish records from the Orontes, Seyhan and Ceyhan River drainages.

Orontes River			
Bostancı 2006	Özcan 2013	This Study	
<i>Anguilla anguilla</i>	<i>Anguilla anguilla</i>	<i>Anguilla anguilla</i>	
<i>Capoeta barroisi</i>	<i>Capoeta barroisi</i>	<i>Capoeta barroisi</i>	
<i>Capoeta damascina</i> , <i>C. angorae</i>	<i>Capoeta damascina</i>	<i>Capoeta damascina</i>	
<i>Carasobarbus luteus</i>	<i>Carasobarbus luteus</i>	<i>Carasobarbus chantrei</i>	
–	<i>Carassius auratus auratus</i>	<i>Carassius gibelio</i>	
–	–	<i>Cyprinus carpio</i>	
–	–	<i>Garra caudomaculata</i>	
<i>Garra rufa</i>	<i>Garra rufa</i>	<i>Garra</i> sp.	
–	–	<i>Garra variabilis</i>	
<i>Barbus pectoralis</i>	<i>Luciobarbus pectoralis</i>	<i>Luciobarbus pectoralis</i>	
<i>Aspius vorax</i>	<i>Acanthobrama marmid</i>	<i>Acanthobrama thisbeae</i>	
<i>Alburnoides bipunctatus</i>	–	<i>Alburnus magnificus</i>	
<i>Alburnus orontis</i>	–	<i>Alburnus orontis</i>	
<i>Chondrostoma kinzelbachi</i>	<i>Chondrostoma kinzelbachi</i>	<i>Chondrostoma kinzelbachi</i>	
<i>Squalius lepidus</i>	–	<i>Squalius kottelati</i>	
–	–	<i>Pseudophoxinus turani</i>	
–	–	<i>Pseudophoxinus libani</i>	
–	–	<i>Pseudophoxinus zeregi</i>	
–	–	<i>Leuciscus vorax</i>	
<i>Cobitis levantina</i>	<i>Cobitis levantina</i>	<i>Cobitis anabelae</i>	
–	–	<i>Cobitis levantina</i>	
–	<i>Oxynoemacheilus argyrogramma</i>	<i>Oxynoemacheilus hamwii</i>	
<i>Barbatula panthera</i>	–	<i>Oxynoemacheilus namiri</i>	
<i>Mystus halepensis</i>	–	<i>Mystus pelusius</i>	
<i>Clarias gariepinus</i>	<i>Clarias gariepinus</i>	<i>Clarias gariepinus</i>	
–	<i>Gambusia affinis</i>	<i>Gambusia holbrooki</i>	
–	–	<i>Paraphanius mento</i>	
<i>Aphanius mento</i>	<i>Aphanius mento</i>	<i>Paraphanius orontis</i>	
<i>Liza abu</i>	<i>Liza abu</i>	<i>Planiliza abu</i>	
–	–	<i>Chelon</i> sp.	
<i>Tilapia zillii</i> , <i>Oreochromis niloticus</i>	<i>Tilapia zillii</i>	<i>Coptodon zillii</i>	
–	–	<i>Sarotherodon galilaeus</i>	
–	–	<i>Tristramella simonis</i>	
Seyhan River			
Bostancı 2006	Erk'akan and Özdemir 2011	Ergüden Alagöz and Gökso 2012	This Study
<i>Capoeta angorae</i>	<i>Capoeta damascina</i>	<i>Capoeta angorae</i>	<i>Capoeta damascina</i>
–	<i>Capoeta barroisi</i>	<i>Capoeta erhani</i>	<i>Capoeta erhani</i>
–	–	<i>Carassius carassius</i>	–
–	<i>Carassius gibelio</i>	<i>Carassius gibelio</i>	–
–	<i>Cyprinus carpio</i>	<i>Cyprinus carpio</i>	<i>Cyprinus carpio</i>
–	<i>Hemigrammacapoeta caudamaculata</i>	–	<i>Garra culiciphaga</i>
<i>Garra rufa</i>	<i>Garra rufa</i>	<i>Garra rufa</i>	<i>Garra turcica</i>
<i>Barbus pectoralis</i>	<i>Barbus pectoralis</i> , <i>Barbus rajanorum</i>	<i>Luciobarbus pectoralis</i>	<i>Luciobarbus pectoralis</i>
–	<i>Tinca tinca</i>	<i>Tinca tinca</i>	–
–	<i>Acanthobrama marmid</i>	<i>Acanthobrama</i> sp., <i>Rutilus rutilus</i>	<i>Acanthobrama orontis</i>
<i>Alburnus orontis</i>	<i>Alburnus orontis</i>	<i>Alburnus</i> sp.	<i>Alburnus kotschyi</i>
<i>Alburnus adanensis</i>	<i>Alburnus adanensis</i>	–	–
<i>Chondrostoma regium</i>	<i>Chondrostoma regium</i>	<i>Chondrostoma regium</i>	<i>Chondrostoma ceihanensis</i>
–	–	–	<i>Squalius adanensis</i>
<i>Leuciscus lepidus</i>	<i>Squalius lepidus</i>	<i>Squalius kottelati</i>	<i>Squalius kottelati</i>
<i>Leuciscus cephalus</i>	<i>Leuciscus cephalus</i>	<i>Squalius cephalus</i>	<i>Squalius seyhanensis</i>
–	<i>Pseudophoxinus zekayi</i>	–	<i>Pseudophoxinus cilicicus</i>
–	–	–	<i>Pseudophoxinus firati</i>
–	–	<i>Cobitis evreni</i>	<i>Cobitis aliyeae</i>
<i>Oxynoemacheilus samanticus</i>	<i>Oxynoemacheilus samanticus</i> , <i>Schistura evreni</i>	–	<i>Oxynoemacheilus samanticus</i>
–	<i>Paracobitis tigris</i>	–	<i>Oxynoemacheilus cilicicus</i>
<i>Paracobitis seyhanensis</i>	<i>Paracobitis seyhanensis</i>	–	<i>Oxynoemacheilus seyhanensis</i>
–	<i>Schistura seyhanicola</i>	–	<i>Oxynoemacheilus seyhanicola</i>
–	<i>Silurus glanis</i>	<i>Silurus glanis</i>	<i>Silurus glanis</i>
–	<i>Clarias gariepinus</i>	<i>Clarias gariepinus</i>	–
–	–	–	<i>Esox lucius</i>
<i>Salmo trutta macrostigma</i>	<i>Salmo trutta macrostigma</i>	–	<i>Salmo labecula</i>
<i>Salmo platycephalus</i>	<i>Salmo platycephalus</i>	–	<i>Salmo platycephalus</i>
–	<i>Oncorhynchus mykiss</i>	<i>Oncorhynchus mykiss</i>	<i>Oncorhynchus mykiss</i>
–	–	–	<i>Atherina boyeri</i>
–	<i>Gambusia holbrooki</i>	<i>Gambusia affinis</i>	–
–	<i>Aphanius mento</i> , <i>Aphanius danfordii</i>	<i>Aphanius mento</i> , <i>Aphanius fasciatus</i>	<i>Paraphanius similis</i>
<i>Sander lucioperca</i>	<i>Sander lucioperca</i>	<i>Sander lucioperca</i>	<i>Sander lucioperca</i>
<i>Blennius fluviatilis</i>	<i>Salaria fluviatilis</i>	<i>Salaria fluviatilis</i>	<i>Salaria fluviatilis</i>

Ceyhan River			
Bostancı 2006	Kara et al. 2010	Erk'akan and Özdemir 2011	This Study
–	<i>Anguilla anguilla</i>	<i>Anguilla anguilla</i>	–
<i>Capoeta angorae</i>	<i>Capoeta angorae</i>	<i>Capoeta damascina</i>	<i>Capoeta damascina</i>
<i>Capoeta barroisi</i>	<i>Capoeta erhani</i>	<i>Capoeta barroisi</i>	<i>Capoeta barroisi</i>
–	<i>Cyprinus carpio</i>	–	–
<i>Hemigrammacapoeta culiciphaga</i>	–	<i>Hemigrammacapoeta caudamaculata</i>	<i>Garra culiciphaga</i>
<i>Garra rufa</i>	<i>Garra rufa</i>	<i>Garra rufa</i>	<i>Garra turcica</i>
<i>Barbus pectoralis</i> , <i>Barbus barbulus</i>	<i>Luciobarbus pectoralis</i>	<i>Luciobarbus pectoralis</i> , <i>Barbus rajanorum</i>	<i>Luciobarbus pectoralis</i>
–	<i>Acanthobrama</i> sp.	–	<i>Acanthobrama orontis</i>
–	–	–	<i>Acanthobrama thisbeae</i>
–	–	–	<i>Alburnus sellal</i>
<i>Alburnus sellal</i> , <i>Alburnoides oblongus</i>	<i>Alburnus orontis</i>	<i>Alburnus baliki</i> , <i>Alburnus orontis</i> , <i>Alburnus adanensis</i> ,	<i>Alburnus kotschy</i>
<i>Chondrostoma regium</i>	<i>Chondrostoma regium</i>	<i>Chondrostoma regium</i>	<i>Chondrostoma ceyhanensis</i>
<i>Leuciscus lepidus</i>	<i>Squalius kottelati</i> , <i>Leuciscus cephalus</i>	<i>Squalius lepidus</i> , <i>Leuciscus cephalus</i>	<i>Squalius kottelati</i>
–	–	–	<i>Pseudophoxinus cilicus</i>
–	–	–	<i>Pseudophoxinus firati</i>
<i>Phoxinellus fahirae</i>	<i>Pseudophoxinus zekayi</i>	<i>Pseudophoxinus zekayi</i>	<i>Pseudophoxinus zekayi</i>
–	<i>Cobitis evreni</i>	–	<i>Cobitis evreni</i>
–	–	<i>Cobitis levantina</i>	<i>Cobitis aliyeeae</i>
–	–	–	<i>Cobitis erkakanae</i>
<i>Oxynoemacheilus argyrogramma</i>	<i>Oxyne-macheilus</i> sp. <i>Schistura ceyhanensis</i>	<i>Schistura evreni</i> <i>Schistura seyhanicola</i>	<i>Oxyne-macheilus evreni</i>
<i>Paracobitis tigris</i>	–	<i>Paracobitis tigris</i> <i>Schistura ceyhanensis</i>	<i>Oxyne-macheilus ceyhanensis</i>
–	<i>Silurus glanis</i>	–	<i>Silurus glanis</i>
<i>Clarias gariepinus</i>	<i>Clarias gariepinus</i>	<i>Clarias gariepinus</i>	<i>Clarias gariepinus</i>
–	–	<i>Aphanius danfordii</i>	–
–	<i>Aphanius mento</i>	<i>Aphanius mento</i>	<i>Paraphanius alexandri</i>
<i>Salmo trutta macrostigma</i>	<i>Salmo trutta macrostigma</i>	<i>Salmo trutta macrostigma</i>	<i>Salmo opimus</i>
–	–	–	<i>Salmo chilo</i>
–	<i>Gambusia affinis</i>	<i>Gambusia holbrooki</i>	<i>Gambusia holbrooki</i>
–	–	–	<i>Planiliza abu</i>
<i>Blennius fluviatilis</i>	<i>Salaria fluviatilis</i>	<i>Salaria fluviatilis</i>	<i>Salaria fluviatilis</i>

suggested that it might be extinct. Finally, Bektaş et al. (2020) have studied molecular characters of the genus *Alburnus*, and they recently treat as a synonym of *A. kotschy*.

Although the genus of the *Cobitis* has had high biodiversity in Anatolia for many years, it was thought to be represented by only a few species. A comprehensive study has recently been conducted by Freyhof et al. (2018c), who revised the genus *Cobitis* in the Middle East and recognised a total of thirty species, eight of them as new to Turkish inland waters. *Cobitis levantina*, reported by previous studies to be in the Orontes and Seyhan rivers, was identified as *C. anabelae* by Freyhof et al. (2018c). The distribution area of the *C. levantina* is restricted to the lower part of the Orontes in Syria and in the Litani River drainage in Lebanon (Krupp and Moubayed 1992).

Planiliza abu is distributed in the Euphrates and Tigris River basins. *P. abu* is recorded for the first time in the Ceyhan River. Also, *Esox lucius* is widespread in rivers of the Anatolia. It is first recorded from the Seyhan River.

The Lake Gölbaşı is located in a national park in Adıyaman province (eastern Anatolia). It is connected to two lakes, named Azaplı and İnekli. These lakes are connected to the Ceyhan River. They have been separated in the past and their connections might be relatively new (Freyhof et al. 2018c; Saç et al. 2019). Today, the water transfer to the Ceyhan Basin is provided by the Çataltepe-Kartalkaya Line (GAP – Gaziantep Emergen-

cy Drinking Water Supply) from the Göksu River in the Euphrates drainage. The water obtained from the Göksu River is transmitted to the Lake Gölbaşı through the siphon, tunnel and canal system. Therefore, it is expected that some species in the Euphrates will be in the Lake Gölbaşı in the near future. *Alburnus sellal* is widespread in the Euphrates basin. This study cited a new record of *A. sellal* in the Lake Gölbaşı.

This study was designed to provide an inventory of freshwater fish in the Seyhan, Ceyhan and Orontes basins, and to eliminate certain taxonomic uncertainties. Also, it should highlight the need to create a protection area for endangered species and endemic fishes. For future research, fieldwork especially focusing on estuaries and dam lakes is suggested for a better understanding of the fish fauna of these river systems.

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Figure 10. Views from the Seyhan, Ceyhan and Orontes River drainages, representative of habitat. **a.** Stream Eğlence (Seyhan); **b.** Stream Üçürge (Seyhan); **c.** Stream Aksu-III (Ceyhan); **d.** Spring Çöçelli (Ceyhan); **e.** Stream Karasu-I (Orontes); **f.** Lake Balık (Orontes).

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