Revision of the Fish Fauna of the Seyhan and Ceyhan River Basins in Turkey

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Abstract: This study conducted between April 2008 to March 2009, aimed revision of ichthyofauna of the Seyhan and Ceyhan river Basins, determined that 35 species and one sub-species belonging to Anguillidae, Salmonidae, Cyprinidae, Nemacheilidae, Cobitidae, Clariidae, Siluridae, Cyprinodontidae, Poeciliidae, Blemniidae and Percidae. In this study, Alburnus baliki and Cobitis levantina was recorded for the 1st time in the Ceyhan river and Nemacheilus namiri in the Seyhan river Basins. Samples of Capoeta turani described in the Seyhan river Basin and Capoeta erhani described in the Ceyhan river Basin have been caught in large quantities and examined in different locations in these Basins and these species have been accepted as a synonym of Capoeta barroisi.

Key words: Ichthyofauna, Alburnus baliki, Cobitis levantina, Nemacheilus namiri, Capoeta barroisi, Seyhan-Ceyhan river Basins

INTRODUCTION

Turkey is geologically active from the Miocene to the present and many fish genera speciated in this area. In recent years, taxonomic and systematic studies on Turkish freshwater fishes have been investigated by many researchers and some descriptions have been revised (Erk'akan, 1983a, b; Erk'akan and Kuru, 1983; Erk'akan, 1984; Knupp, 1985; Balik, 1985; Erk'akan and Kuru, 1986a, b; Coad and Sarieyysapoglu, 1988; Knupp and Schneider, 1991; Bogustkaya, 1992, 1997; Ahnelt, 1995; Ahnelt et al., 1995; Ahnelt and Holcik, 1996; Elvira, 1997; Wildekamp et al., 1997, 1999; Erk'akan et al., 1998, 2007, 2008a, b; Bogustkaya et al., 2000, 2006; Freyhof and Ozulug, 2006; Turan et al., 2006, 2008, 2009; Kucuk et al., 2007; Ozulug and Freyhof, 2007, 2008).

Seyhan and Ceyhan river Basins have interesting fish fauna because these basins are junction for some fish species which are also living in the geographically close basins such as Fırat from the East, Ası from the South and Manavgat and Tarsus from the West.

Balik (1985) in his study entitled; a taxonomic revision of freshwater fish in South Anatolia, investigated the distribution of some fish species in the Seyhan and Ceyhan rivers.

Kara et al. (2010) were established Anguilla anguilla, Salmo trutta macrostigma, Cyprinus carpio, Achanthobrama sp., Alburnus orontis, Pseudophoxinus zekayi, Squalius kottelati, Garra rufa, Chondrostoma regium, Luciobarbus pectoralis, Capoeta angorae, Capoeta erhani, Cobitis evreni, Schistura ceyhanensis, Oxyemacheilus sp., Silurus glanis, Claritas gariepinus, Aphanius mento, Gambusia affinis, Salaria fluviatilis (Blennius fluviatilis ASSO, 1891) in the Seyhan and Ceyhan river Basins.

According to Alagoz, Acanthoblemnus microlepis, Capoeta capoeta capoeta, Capoeta capoeta umbra, Barbos escuionis, Rutilus rutilus, Rutilus rubilio, Rutilus frisii, Aphanius chanteri, Abramis brama and Cobitis bilest were found in the Seyhan dam reservoir.

Bostanci in his study entitled; a systematic investigation on the fish fauna of the Seyhan, Ceyhan and Ası rivers determined 37 species and one sub-species belonging to fourteen genus. C. erhani by Turan et al. (2008) and C. turani by Ozulug and Freyhof (2008) were recently described from in the Ceyhan and Seyhan Basins, respectively. However, the small number of samples and without examination of serial material studied by some researchers has prevented observation of the variations of some species and this situation has caused confusion in the freshwater fish fauna in Turkey.

The aim of this study is to eliminate any confusion in the literature by determining species in the Seyhan and Ceyhan Basins involving a number of researchers and revealing deficiencies and mistakes in species descriptions.

MATERIALS AND METHODS

Employing electroshocker, fish samples were collected between April 2008 to March 2009 from the determined stations on the water body of the Seyhan and

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Ceyhan Basin which reflected varied ecological characteristics. Requisite measurements for the taxonomic studies of fish were made with a millimetric ruler and digital calipers with 0.01 mm precision based on the method of Bararescu (1991). Comparison of similarities and differences in the metric and meristic characteristics between fish belonging to the same species caught in the study and fish samples belonging to the same species caught in others parts of Turkey was made by Prof. Dr. Fusun Erg’a’kan. Coordinates and elevation of the sampling stations were given for the Seyhan river Basin in Table 1 and for the Ceyhan river Basin in Table 2.

RESULTS

This study aimed to revise the ichthyofauna of the Seyhan and Ceyhan river Basins. About 29 species and one sub-species belonging to nine families were determined in the Seyhan river Basin. Of these, 8 species are endemic and 5 species are exotic (Table 3). Total 28 species and 1 sub-species belonging to ten families were determined in the Ceyhan Basin. Of these, 6 species are endemic and 2 species are exotic (Table 4).

<table>
<thead>
<tr>
<th>Location</th>
<th>Coordinates</th>
<th>Elevation (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seyhan dam reservoir</td>
<td>37°02.031’N; 35°20.029’E0</td>
<td>67</td>
</tr>
<tr>
<td>Çakı stream I; Pozanti-Adana</td>
<td>37°30.898’N; 34°44.675’E0</td>
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<tr>
<td>Çakı stream II-Emniliç-Ciftehan</td>
<td>37°30.090’N; 34°49.069’E0</td>
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<tr>
<td>Tumur stream; Kamsili</td>
<td>37°33.140’N; 34°57.282’E0</td>
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<tr>
<td>Pozanti</td>
<td>37°27.228’N; 34°52.228’E0</td>
<td>955</td>
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<tr>
<td>Delicay-Adana</td>
<td>37°02.355’N; 34°30.340’E0</td>
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<tr>
<td>Egizhenc stream-Adana</td>
<td>37°17.499’N; 35°13.412’E0</td>
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<tr>
<td>Cerkes-Karnbegaz-Zamanti stream</td>
<td>38°46.526’N; 36°27.248’E0</td>
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<tr>
<td>Gunasuyu stream-Finarbasi-Kalhvanammarae road</td>
<td>38°43.242’N; 36°24.840’E0</td>
<td>1453</td>
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<tr>
<td>Barryakqualsar-Sariz road</td>
<td>38°41.070’N; 36°27.402’E0</td>
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<tr>
<td>20 km to Sariz village</td>
<td>38°34.942’N; 36°25.831’E0</td>
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<tr>
<td>Golosun-Ebilistan road</td>
<td>38°27.507’N; 36°28.307’E0</td>
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<tr>
<td>Sariz stream</td>
<td>38°26.924’N; 36°28.532’E0</td>
<td>1770</td>
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<td>Yamantlik village-Tufanbeyli road</td>
<td>38°12.967’N; 36°14.016’E0</td>
<td>1620</td>
</tr>
<tr>
<td>Tufanbeyli-Adana road</td>
<td>38°12.802’N; 36°14.174’E0</td>
<td>1632</td>
</tr>
<tr>
<td>Catalobik stream-Bakirdag</td>
<td>38°12.154’N; 35°50.878’E0</td>
<td>1740</td>
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<tr>
<td>Korkum stream-Karaali-Ardana</td>
<td>37°13.057’N; 35°09.100’E0</td>
<td>145</td>
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<tr>
<td>Feke-Saimbeyli road</td>
<td>37°51.041’N; 36°03.502’E0</td>
<td>560</td>
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<td>Degirmendere, Feke-Mansurlu road</td>
<td>37°50.573’N; 35°45.403’E0</td>
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<tr>
<td>Feke</td>
<td>37°51.537’N; 35°51.490’E0</td>
<td>970</td>
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<tr>
<td>Feke Exit-Kozaan road</td>
<td>37°56.952’N; 35°54.343’E0</td>
<td>515</td>
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<table>
<thead>
<tr>
<th>Location</th>
<th>Coordinates</th>
<th>Elevation (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Çamiçuzgali (Avciilç bridge) Kadirli road</td>
<td>37°14.918’N; 35°50.313’E0</td>
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<tr>
<td>Haclar-Ceyhan Kadirli road</td>
<td>37°18.900’N; 35°55.334’E0</td>
<td>35.8</td>
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<tr>
<td>Davutlar village</td>
<td>37°21.318’N; 35°56.396’E0</td>
<td>32.7</td>
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<tr>
<td>Kadirli village</td>
<td>37°21.052’N; 36°06.355’E0</td>
<td>86.4</td>
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<tr>
<td>Andirin, Cielik stream</td>
<td>37°30.730’N; 36°21.507’E0</td>
<td>1047.0</td>
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<td>Heneke Creek Tecfili-Osmanly</td>
<td>37°11.154’N; 36°05.138’E0</td>
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<td>Sabun stream-Osmanly-Duzicli</td>
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<tr>
<td>Trubuzl-I stream, Golcan</td>
<td>38°04.155’N; 36°27.402’E0</td>
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<tr>
<td>Trubuzl-II stream, Goksan</td>
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<tr>
<td>Kornar stream-Golcan exit</td>
<td>38°00.524’N; 36°30.704’E0</td>
<td>1319.0</td>
</tr>
<tr>
<td>Kizilbik stream-Kutule village-Afishin road</td>
<td>38°11.701’N; 35°50.620’E0</td>
<td>1320.0</td>
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<td>Segutha Creek-Ebilistan</td>
<td>38°13.411’N; 37°13.386’E0</td>
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<td>Yali stream-Sevildili village-Ebilistan</td>
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<tr>
<td>Konslu stream-Andirin road</td>
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<td>Gecik stream-Andirin road</td>
<td>37°38.390’N; 36°39.980’E0</td>
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<tr>
<td>Fınzık stream-Tekir road</td>
<td>37°45.552’N; 36°41.823’E0</td>
<td>960.0</td>
</tr>
<tr>
<td>Tekir Creek-Dorgel cave</td>
<td>37°51.590’N; 36°38.508’E0</td>
<td>1248.0</td>
</tr>
</tbody>
</table>

List of fish species found in the Seyhan and Ceyhan river Basins:

Kingdom: Animalia
Phylum: Chordata
Subphylum: Vertebrata (Craniata)
Infraphylum: Gnathostomata
Class: Actinopterygii
Subclass: Neopterygii
Infraclass: Teleostei
Superorder: Elopomorpha
Order: Anguilliformes
Suborder: Anguilliformi
Family: Anguillidae
Genus: Anguillla (Linnæus, 1758)
Species: Anguilla anguilla (Linnæus, 1758)
Superorder: Protacanthopterygii
### Table 3: The fish fauna of the Seyhan river Basin

<table>
<thead>
<tr>
<th>Family</th>
<th>Species</th>
<th>Localities</th>
<th>Endemism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salmonidae</td>
<td><em>Salmo trutta macrostigma</em> (Dumeril, 1858)</td>
<td>Pinabasi stream</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Salmo phylacophalus</em></td>
<td>Sogutlu; Pinabasi-Zamanti, Karagoz;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Deyikgunes; Sarız;</td>
<td></td>
</tr>
<tr>
<td>Percidae</td>
<td><em>Oncorhyncus mykiss</em> (Walbaum, 1792)</td>
<td>Seyhan dam reservoir;</td>
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<tr>
<td></td>
<td><em>Sander lucioperca</em> (Linnaeus, 1758)</td>
<td>Seyhan dam reservoir;</td>
<td></td>
</tr>
<tr>
<td>Blennidae</td>
<td><em>Salaria fluviatilis</em> (Assó, 1801)</td>
<td>Egleence stream; Korkun stream;</td>
<td></td>
</tr>
<tr>
<td>Cyprinidae</td>
<td><em>Acantohabra marmodi</em> (Heckel, 1843)</td>
<td>Seyhan dam reservoir;</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Alburnous orestis</em> (Sauvage, 1882)</td>
<td>Seyhan dam reservoir;</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Alburnus adamanis</em> (Battalgazi, 1944)</td>
<td>Seyhan dam reservoir;</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Barbus pectoralis</em> (Heckel, 1843)</td>
<td>Seyhan dam reservoir;</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Barbus rajaiorum</em> (Heckel, 1843)</td>
<td>Seyhan dam reservoir;</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Cepapoja damascina</em> (Valenciennes, 1842)</td>
<td>Calik stream-Pozanti; Egleence stream;</td>
<td></td>
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<tr>
<td></td>
<td><em>Cepapoja barrioti</em> (Lorett, 1894)</td>
<td>Korkun stream; Korkun stream;</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Chondrostoma sabin</em> (Heckel, 1843)</td>
<td>Korkun Cay; Seyhan dam reservoir;</td>
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<tr>
<td></td>
<td><em>Cynthus argio</em> (Linnaeus, 1758)</td>
<td>Seyhan dam reservoir;</td>
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<tr>
<td></td>
<td><em>Carassius carassius</em> (Linnaeus, 1758)</td>
<td>Seyhan dam reservoir;</td>
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<td></td>
<td><em>Garra rufa</em> (Heckel, 1843)</td>
<td>Seyhan dam reservoir;</td>
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<tr>
<td></td>
<td></td>
<td>Egleence stream; Delickey;</td>
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<td></td>
<td><em>Hemitragemacantha caudomaculata</em> (Battalgazi, 1942)</td>
<td>Korkun stream;</td>
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<tr>
<td></td>
<td><em>Pseudophoxinus zekesi</em> (Boguchtya et al., 2006)</td>
<td>Korkun stream;</td>
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<tr>
<td></td>
<td><em>Squalius cephalus</em> (Linnaeus, 1758)</td>
<td>Seyhan dam reservoir;</td>
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<tr>
<td></td>
<td><em>Squalius lepits</em> (Heckel, 1843)</td>
<td>Seyhan dam reservoir;</td>
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<tr>
<td>Sillidae</td>
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<td>Claridae</td>
<td><em>Claria gariepin</em> (Burchell, 1822)</td>
<td>Seyhan dam reservoir;</td>
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<tr>
<td>Cyprinodontidae</td>
<td><em>Aphanius manto</em> (Heckel, 1843)</td>
<td>Seyhan dam reservoir;</td>
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<tr>
<td></td>
<td><em>Aphanius danfordi</em> (Boulenger, 1890)</td>
<td>Seyhan dam reservoir;</td>
<td></td>
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<tr>
<td>Poceliidae</td>
<td><em>Gambusia holbrooki</em> (Girard, 1859)</td>
<td>Seyhan dam reservoir;</td>
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</tr>
<tr>
<td>Nemacheilidae</td>
<td><em>Oxyanomachilus semeanicus</em></td>
<td>Seyhan dam reservoir;</td>
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<tr>
<td></td>
<td><em>Parachilus seymourensis</em></td>
<td>Pinabasi; Korkun-Zamanti;</td>
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<tr>
<td></td>
<td><em>Parachilus tigris</em> (Heckel, 1843)</td>
<td>Pinabasi; Korkun-Zamanti;</td>
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<td></td>
<td><em>Sicythra seymouristica</em> (Ebraklan et al., 2007)</td>
<td>Egleence stream; Korkun stream;</td>
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<tr>
<td></td>
<td><em>Sicythra everi</em> (Ebraklan et al., 2007)</td>
<td>Egleence stream; Korkun stream;</td>
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</tbody>
</table>

### Table 4: The fish fauna of the Ceyhan river Basin

<table>
<thead>
<tr>
<th>Family</th>
<th>Species</th>
<th>Localities</th>
<th>Endemism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anguillidae</td>
<td><em>Anguilla anguilla</em> (Linnaeus, 1758)</td>
<td>Tecirli village</td>
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<tr>
<td>Salmonidae</td>
<td><em>Salmo trutta macrostigma</em> (Dumeril, 1858)</td>
<td>Göksun stream; Sogutlu; human stream; Terbuzlu I-II;</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Salmo phylacephalus</em></td>
<td>Davulur village; Sabun stream; Tecirli;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gect stream; Akso stream</td>
<td></td>
</tr>
<tr>
<td>Blennidae</td>
<td><em>Alburnus baltei</em> (Boguchtya et al., 2000)</td>
<td>Davulur village;</td>
<td></td>
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<tr>
<td></td>
<td><em>Alburnus orontis</em> (Sauvage, 1882)</td>
<td>Davulur village; Sabun stream; Tecirli; Goksun stream;</td>
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<tr>
<td></td>
<td><em>Alburnus adamanis</em> (Battalgazi, 1944)</td>
<td>Goksun stream; Akso stream</td>
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<tr>
<td></td>
<td><em>Barbus pectoralis</em> (Heckel, 1843)</td>
<td>Gect Stream; Tecirli</td>
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<tr>
<td></td>
<td><em>Barbus rajaiorum</em> (Heckel, 1843)</td>
<td>Davulur village;</td>
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<tr>
<td></td>
<td><em>Cepapoja damascina</em> (Valenciennes, 1842)</td>
<td>Gect stream; Akso stream</td>
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</tr>
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<td></td>
<td><em>Cepapoja barrioti</em> (Lorett, 1894)</td>
<td>Davulur village;</td>
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<td><em>Daphastoma sabin</em> (Heckel, 1843)</td>
<td>Davulur village;</td>
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<td><em>Garra rufa</em> (Heckel, 1843)</td>
<td>Davulur village;</td>
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<td><em>Hemitragemacantha caudomaculata</em> (Battalgazi, 1942)</td>
<td>Davulur village; Tecirli stream;</td>
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<tr>
<td></td>
<td><em>Pseudophoxinus zekesi</em> (Boguchtya et al., 2006)</td>
<td>Davulur village; Tecirli stream;</td>
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</table>
Table 4: Continued

<table>
<thead>
<tr>
<th>Family</th>
<th>Species</th>
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<th>Endemism</th>
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</thead>
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<tr>
<td>Chirida</td>
<td><em>Squalus cephalus</em> (Linnaeus, 1758)</td>
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<td><em>Squalus lepis</em> (Heckel, 1843)</td>
<td>Alsu stream</td>
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<tr>
<td>Cyprinodontidae</td>
<td><em>Aphanus danfordi</em> (Boulenger, 1890)</td>
<td>Camizagzi stream; Davutlar; Kadiri</td>
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<td></td>
<td><em>Aphanus mento</em> (Heckel, 1843)</td>
<td>Camizagzi stream; Davutlar; Kadiri</td>
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<td>Poccididae</td>
<td><em>Gambusia holbrooki</em> (Girard, 1859)</td>
<td>Camizagzi stream; Davutlar; Kadiri</td>
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<td>Nemacheilidae</td>
<td><em>Paracottus tigris</em> (Heckel, 1843)</td>
<td>Alsu stream; Celik stream</td>
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<td></td>
<td><em>Schistura exrare</em> (Erkakan et al., 2007)</td>
<td>Gecit stream; Alsu stream; Celik stream; Firiz stream; Andirin; Tekir Creek</td>
<td>Endemic</td>
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<td></td>
<td><em>Schistura ceyhanensis</em> (Erkakan et al., 2007)</td>
<td>Sevilli village; Elbitan; Konur stream</td>
<td>Endemic</td>
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<td></td>
<td><em>Schistura seyhanica</em> (Erkakan et al., 2007)</td>
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<td>Cobitidae</td>
<td><em>Cobitis levantina</em> (Krupp and Moubayed, 1992)</td>
<td>Hemite Creek; Davutlar</td>
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</table>

Order: Salmoniformes
Family: Salmonidae
Genus: Salmo (Linnaeus, 1758)
Species:
- *Salmoplivecephalus* (Bekene, 1969)
- *Salmo trutta† magrostigma* (Dumeril, 1858)
- *Oncorhynchus mykiss* (Walbaum, 1792)
Superorder: Euteleostei
Superclass: Ostariophysi

Order: Cypriniformes
Family: Cyprinidae
Genus: *Acanthobrama* (Heckel, 1843)
Species: *Acanthobrama marmota* (Heckel, 1843)
Genus: *Alburnus* (Heckel, 1843)
Species: *Alburnus adamanis* (Battaili, 1944)
*Alburnus baliki* (Bogoskayaya et al., 2000)
*Alburnus orontis* (Sauvage, 1882)
Genus: *Barbus* (Cuvier, 1817)
Species: *Luciobarbus pectoralis* (Heckel, 1843)
*Barbus reganorum* (Heckel, 1843)
Genus: *Capoeta* (Cuvier-Valenciennes, 1842)
Species: *Capoeta barbata* (Lortet, 1894)
*Capoeta danica* (Valenciennes, 1842)
Genus: *Chondrostoma* (Agassiz, 1835)
Species: *Chondrostoma regium* (Heckel, 1843)
Genus: *Cyprinus* (Linnaeus, 1758)
Species: *Cyprinus carpio* (Linnaeus, 1758)
Genus: *Cyprinodon* (Heckel, 1843)
Species: *Cyprinodon natalis* (Heckel, 1843)
Genus: *Ichthyoscephalus* (Pellegrin, 1927)
Species: *Ichthyoscephalus obtusirostris* (Pellegrin, 1927)
Genus: *Pseudophoxinus* (Heckel, 1843)
Species: *Pseudophoxinus zeki* (Bogoskayaya et al., 2000)
Genus: *Squalus* (Cuvier, 1817)
Species:
- *Squalus cephalus* (Linnaeus, 1758)
- *Squalus lepis* (Heckel, 1843)
Genus: *Tinca* (Cuvier, 1817)
Species: *Tinca tinca* (Linnaeus, 1758)
Family: Nemacheilidae
Genus: Osmerasleucus (Lienk, 1790)
Species: *Osmerasleucus salticus* (Bleeker, 1893)
Species:
- *Paracottus seyhanensis* (Erkakan et al., 2007)
- *Schistura ceyhanensis* (Erkakan et al., 2007)
- *Schistura exrare* (Erkakan et al., 2007)
- *Schistura seyhanica* (Erkakan et al., 2007)
- *Schistura nemarum* (Krupp and Schneider, 1991)
Family: Cobitidae
Genus: *Cobitis* (Linnaeus, 1758)
Species:
- *Cobitis levantina* (Krupp and Moubayed, 1992)
- *Cobitis exrare* (Erkakan et al., 2007)
Class: Siluriformes
Family: Clariidae
Genus: *Clarias* (Gervinus, 1781)
Species: *Clarias gariepinus* (Burchell, 1822)
Family: Siluridae
Genus: *Silurus* (Linnaeus, 1758)
Species: *Silurus glanis* (Linnaeus, 1758)
Superclass: Protacanthopterygi
Order: Cyprinodontiformes
Sub-order: Cyprinodontidae
Family: Cyprinodontidae
Genus: *Aphanus* (Nardo, 1827)
Species:
- *Aphanus mento* (Heckel, 1843)
- *Aphanus danfordi* (Boulenger, 1890)
Family: Poccididae
Genus: *Gambusia* (Poe, 1854)
Species: *Gambusia holbrooki* (Girard, 1859)
Class: Perciformes
Sub-class: Blennioidei
Family: Blennidae
Genus: *Salaria* (Bennius) (Linnaeus, 1758)
Species: *Salaria fluviatilis* (Asso, 1801)
Family: Percidae
Genus: *Mugil* (Linnaeus, 1758)
Species: *Mugil cephalus* (Linnaeus, 1758)
Genus: *Sander* (Stizostedion) (Linnaeus, 1758)
Species: *Sander lucioperca* (Linnaeus, 1758)

**DISCUSSION**

In this study, *A. baliki* is recorded for the first time from the Camizagzi Creek which belongs to Ceyhan river Basin. This species described by Bogoskayaya et al. (2000) from the Manavgat Basin, Gümüşpinar. According to their description, number of scales in lateral line series (unpored and pored) varying considerably, 50-65 due to irregular character of scales. Researchers examined nine specimens and treat morphological characters that distinguished *A. baliki* from other *Alburnus* species are the same with this study. *Cobitis levantina* described by Krupp and Moubayed (1992) caught from the Ceyhan river basin (Hemite Creek and Davutlar village) for the 1st
time in this study. Total 25 specimens agree with in the
Nemacheilus namiri individuals caught from Eglence
stream-Seyhan Basin has the same morphometric
characteristics and colour pattern given in Krupp and
Schneider (1989).

The lateral line scales ranged from 66-76 in the
Capoeta barroisi samples we examined in the Seyhan and
Ceyhan river Basins. Some of the meristic characteristics
of C. barroisi demonstrated similarities to findings made
by Dagli and Erdemli (2008). Samples determined as
C. barroisi by Sahan and Cengizler (2002) were described
as C. turani by Ozulug and Freyhof (2008) in the
Seyhan river Basin and were described as C. erhani by
Turun et al. (2008) in the Ceyhan river Basin. The lateral
line scales in both species, the density of spots on the
body, the ossification and length of the last simple dorsal
fin ray and the head length being shorter when
compared to each other all indicated a distinction. The
number of lateral line scales was given between 64-70 in
C. turani from the Seyhan river Basin by Ozulug and
Freyhof (2008), 69-78 in C. erhani from the Ceyhan Basin
by Turun et al. (2008).

However in the study, 25 individuals collected from
the Seyhan river Basin had 66-75 lateral line scales and
from the Ceyhan river Basin was found to be 64-79 for
40 individuals. Sungur noted that the number of lateral
line scales of this species were between 67-89 for the
Asi river Basin (type locality of C. barroisi) in a study
carried out for freshwater fish fauna in the province of
Gaziantep. At the same time in this study conducted for
the ichthyofauna of the Seyhan and Ceyhan Basin, the
number of spots on the body was observed to be more
extensive or less dense in individuals seen in both the
Seyhan and Ceyhan basins. Moreover in young
individuals in both basins, the length of the last rigid ray
of the dorsal fin and the length of the head were shorter
than in adult individuals which were found to be longer.
In evaluating these findings in terms of zoogeographics,
researchers treat C. erhani and C. turani as a
synonym of C. barroisi.

Capoeta capoeta angorae described from the
Pozanti-Seyhan river Basin by Hanko (1924) based on a
single individual has the same variation divergence of the
C. capoeta damascina. Problems with the level of species
and sub-species obtained in systematic studies collected
with few individuals are uncovered when evaluated in
later studies encompassing larger numbers of individuals.
No matter how controversial further argument is in the
validity of similar species there is benefit to be drawn from
re-evaluation in the literature. Watanabe (1998) stated that
variations between geography and population in such
meristic characteristics in freshwater fish as the number of
fin rays, lateral line scales and gill rakers on the 1st arch
are usually the result of the isolation of populations.
Banarscu (1991) also stated that in his researches on the
validity of sub-species of freshwater fish, it is necessary
to adopt the notion that the circumstances of divergence
or overlapping of some meristic characteristics such as
the lateral line scale number are not caused by an
individuals’ subspecies or species but rather by
geographical differences arising from clinal variations.
The high ecological tolerance of species in the genus
Capoeta can cause wide variation divergence and
populations can display very close or overlapping
variation between the metric and meristic characters of
each other.

In approximately 2000 years, the Ceyhan river has
incorporated with and separated from the Seyhan river six
times. Therefore, a species found in the Seyhan river can
also be found in the Ceyhan river with local variations.
However depending on the speed of evolution of species,
it is possible to see some speciation or sub-speciation in
populations of species. For instance, species of
Cobitidae and Nemacheilidae living in Anatolia have
shown a rapid local speciation.

Bohlen et al. (2006) and Erk'akan et al. (2008a, b).
Differences seen in the Seyhan and Ceyhan river Basins
in species belonging to the the Cobitidae and
Nemacheilidae families may be due to the high rate of
evolution. In addition, validity of these species by
mt-DNA studies has been approved.

In a study conducted by Kara et al. (2010) to
establish the ichthyofauna of the middle and upper Ceyhan
Basin, samples of Oxynoemacheilus sp from the
Nemacheilidae family were determined as Shistura evreni
by us after upon examination of the morphological and
diagnostic features of this species.

In the assessment of fish fauna in the Seyhan Dam
lake, Alagöz determined some species such as
Acanthobryus microlepis and Capoeta capoeta
capoeta distributed in the Kura-Aras river Basins,
Capoeta capoeta umbra and Barbus esocinus distributed
in the Tigris Basin, Rutulus rutulus, Rutulus rubio and
Rutulus frisii distributed in the Eastern black sea and
Marmara Basins, Aphanius chanteri distributed in the
Kizilirmak river and Central black sea Basins,
Abramus braura distributed in the Black sea Basin, the
Marmara and Thrace regions and locally endemic species
Cobitis biliscii in the Besshahır lake Basin. However from
the perspective of zoogeographical aspects, these species are not found in the fish fauna of the Seyhan river Basin. According to this and other study, it can be concluded that species which had been previously established wrongly have been the cause of significant scientific errors. Bostanci determined 37 species and one sub-species belonging to fourteen families in the Seyhan, Ceyhan and Asi river Basins. From these species, Barbus barbula, Alburnoides oblongus and Hemigrammocapoeta culciphaga were new recordings in the fish fauna of Turkey and Alburnoides bipunctatus was a new recording for the Mediterranean Basin. Krupp and Schneider (1989) stated that one of the distinguishing features of H. culciphaga is the barbels around the mouth.

However, Bostanci did not recognize barbels around the mouth of Hemigrammocapoeta culciphaga while Krupp and Schneider (1989) and researchers recorded a double set of very short barbells. In addition, Bostanci reported that the lateral line complete and scales were between 30-33 but in other studies (Krupp and Schneider, 1989), it has been recorded that the lateral line is incomplete.

In this study, the lateral line of H. culciphaga living in the Seyhan and Ceyhan Basins was interrupted and the number of scales was found to vary between 5-20. Moreover, researchers did not catch any Alburnoides oblongus and Barbus barbula samples from the Ceyhan river Basin. Researchers doubt that these species occurred in this basin may determined wrongly.

Living in clean, slow-flowing, deep structured stony, gravelly and sandy areas, Shiitura ceyhanensis is living in the Ceyhan river Basin (Er'akan et al., 2007). In this study, it was also found in the Seyhan river Basin. In a study by Bostanci, some Nemacheilid specimens determined as Barbatula panthera. Based on the meristic, morphometric characteristics and color pattern of these samples, it was established that they are in fact S. ceyhanensis.

The type locality of B. panthera is the Barada river, in the Damascus Basin and it is endemic for this basin and does not exist in Turkey (Krupp and Schneider, 1989). S. evreni, generally prefers clean, cold, oxygen-enriched mountain water. Bostanci determined some Nemacheilid specimens as N. argyrogramma but according to morphometric and meristic properties there was identified this species as S. evreni.

The type locality of Noemacheilus tschayssuensis described by Banarescu and Nalbant is Caysu-Gaziantep-Ceyhan river Basin. However, the coordinates given in the study are all encompassed within the Euphrates Basin and the Ceyhan river does not have any tributary within the province of Gaziantep. The description of this new species is a synonym of N. argyrogramma distributed in the Euphrates Basin. In an oral interview with Teodor Nalbant, this species was verified to be a synonym of N. argyrogramma. The metric and meristic characteristics of the P. seyhanensis caught by us in the Seyhan river Basin were similar in general to those given by Banarescu. According to Bostanci from the meristic properties of P. seyhanensis, the unbranched dorsal fin rays count was II. In the findings, this count was III. In addition, the ratio of standard length for the caudal peduncle length was 14.1% in the findings, Banarescu gave an average of 14.5% and Bostanci gave an average of 18%, respectively. All the other species identified in the study are agree with the literature data.

ACKNOWLEDGEMENT

Researchers have the thanks to Hacettepe University Research Fund that supported this study.

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