

DISTRIBUTION of FRESHWATER CRAB (*Potamon* sp.) in TURKISH THRACE

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Abstract: *Potamon fluviatile* (Herbst, 1785) is one of four freshwater crab species (all *Potamon* species) found in the Balkan Peninsula. Another species, *P. ibericum*, was found in both Marica River in Bulgaria and in Meriç River in Turkey.

During intensive research between the years 1999-2008, eighteen streams and four lakes were checked for the presence of freshwater crab in the Turkish Thrace. Freshwater crabs were present at almost half of sites investigated.

This paper shows the current distributions of *Potamon* species in Turkish Thrace. We present three new sites for *Potamon fluviatile* (Herbst, 1785) in four streams (the Yenice brook, Velika brook, Demirköy brook, Bulanık brook) and two lakes (Hamam lake, Üskiüp Dam lake).

This research also confirmed that *Potamon ibericum* (Bieberstein, 1809) was still present in Meriç River and Gala Lake.

Keywords: Fresh water crab, *Potamon* sp., Distribution, Thrace, Turkey

INTRODUCTION

The only freshwater crab species currently occurring in Europe belongs to the Eurasian genus *Potamon* sp. Three valid species are presently recognised (Fauna Europaea, 2004): *Potamon ibericum* (BIEBERSTEIN, 1809), the most widespread, occurring in Romania, Bulgaria, Ukraine, Greece, some Aegean islands, and Turkey, and introduced into France; *Potamon fluviatile* (Herbst, 1785) occurring in Italy, Sardinia, Croatia, Albania, Greece and Malta (and in North Africa); and *Potamon potamios* (Olivier, 1804) which is found in Cyprus, Crete, some Aegean islands, and the southwestern and southern parts of Turkey (and in Syria, Israel and Palestine) (Pretzmann, 1983; Fauna Europaea, 2004). However, other species of uncertain validity have been instituted [for example, *Potamon rhodium* (Parisi, 1913), supposedly endemic to a few Greek islands (Pretzmann, 1983; Brandis et al., 2000)], as well as a large number of subspecific and infrasubspecific taxa for the three accepted species (see for example Pretzmann, 1983), most of which are not considered valid.

The first record about Turkish freshwater crabs was that of Geldiay and Kocatas (1977) which concerned the *Astacus* populations of Turkish freshwaters. According to Geldiay and Kocatas (1977) *Potamon ibericum tauricum* (Czerniavsky, 1884) is present in the western part of Turkey. *Potamon potamios potamios* (Olivier, 1804) is present in southwestern and southern parts of Turkey. *Potamon potamios setiger* (Bott, 1970) is found in Amik Lake. *Potamon potamios persicum* (Pretzmann, 1962) is found in the eastern part of Turkey. *Potamon fluviatilis* was found in central Anatolia (YILDIZ and ATAR, 2002).

According to Özbek and Ustaoglu (2006), *Potamon* genus is represented with 9 species in Turkish Inland Waters; *P. bileki* Pretzmann, 1971, *P. hueceste* Pretzmann, 1962, *P. ibericum* (Bieberstein, 1808), *P. magnum* Pretzmann, 1962, *P. persicum* Pretzmann, 1962, *P. potamios* (Olivier, 1804), *P. rhodium* Parisi, 1913 and *P. setiger* Rathbun, 1904.

Potamon fluviatile (Herbst, 1785) is one of the four freshwater crabs (all *Potamon* species) found in the Balkan Peninsula (BRANDIS et al., 2000). *P. ibericum* was reported to be found in Marica River in Bulgaria and in Meriç River in Turkey (GEORGIEV 2006; MAURAKIS et al. 2004). *Potamon potamios* (Olivier, 1804) was found in the western part of Turkey (ÖZBEK and USTAOĞLU 2006; BALIK et al. 2004; GÜLLE et al., 2007). Maurakis et al. (2004) have recently reviewed its status in Greece, where they found this species to be widely distributed in mainland Greece and to the south and west of the Axios River in Macedonian. In addition to Greece, the global distribution of *P. fluviatile* includes Italy, Sicily, Malta and the Dalmatian and Albanian regions of the Balkan Peninsula (CHARMANTIER, 1992). Maurakis et al. (2004) have attributed Bulgarian records of this species (BECHEV, 2000) to *Potamon ibericum*, which replaces *P. fluviatile* in north-eastern Greece. *P. ibericum* also occurs in Meriç River at the Greek-Turkish border (see fig 1).



Figure 1. Distribution of *P. ibericum* and *P. fluviatile* in Bulgaria, Greece and western part of Turkey (From Fauna Europe)

Present research also confirmed that *P. ibericum* was still present in Meriç River and Gala Lake. Our objectives in this present study are to present data on current distributions of *Potamon* species in Turkish Thrace and to give some water parameters.

MATERIALS AND METHODS

Turkish Thrace is a region with a moderate altitude. The area except some hill series is essentially like high plateau that average altitude is between 500 and 600 m. There are mainly two mountain series: Istaranca Mountain Series in the north and Ganos Mountain Series in the south of the region. The climate of the region is humid and semi-humid Mediterranean type (AKMAN 1982). The annual rainfall is about 550-1500 mm. Hills above 1.035 m (i.e. Mahya Mountain) take up to 1400 mm rain. There are a number of streams, lakes and saturated soils throughout region.

Four field studies for specimen collections on different dates (6.7.1999, 16.10.2001, 19.08.2005 and 17.7.2008) were made in 18 rivers and 4 lakes in Turkish Thrace. Specimens of *Potamon* species were collected by hand from riparian habitats and by traps. Fresh water crabs were captured by net or by hand during sampling the streams and also traps were used for animals in lakes. Each time, a section of about 50 meters of a stream was analyzed for the presence of crab. Use of baited (chicken meat) traps was mostly not successful because of low discharge of stream. Fresh water crabs were then preserved in 70% ethyl alcohol for morphological laboratory studies and later deposited in Trakya University. Direct on-site measurements were made for conductivity, pH, temperature, and dissolved oxygen (DO) using a Lovibond CG 837 pHmeter and Lovibond CM 35 oxygen meter (fig 2).



Figure 2. *Potamon fluviatile* (Herbst, 1785) (A female, B male, original).

RESULTS AND DISCUSSION

During an intensive research period between the years 1999-2008, eighteen streams and four lakes were checked for the presence of freshwater crabs of the genus *Potamon* in Turkish Thrace region. Freshwater crabs were present at almost half of the sites investigated. Ten males and thirteen females of *Potamon* sp. were caught from the Değirmen brook, Yenice brook Üsküp dam Lake, Hamam Lake in Kırklareli and from Meriç and Tunca Rivers and Gala Lake in Edirne (table 1). No specimens could be obtained from Sazlı, up and down site of Köylü, Hasköy, Akar, 1st and 2nd branches of Ürünlü, Saksagan, İnce, Şeytan, Poyralı brooks (see table 1).

Table 1. Examined freshwaters and the distribution of freshwater crabs (Date 19.08.2005).

| Coordinates | Locate | P. ibericum | P. fluviatile | Temperature °C | Oxygen mg/L | Hardness µhos | Ph |
|---------------------|--------------------------|-------------|---------------|----------------|-------------|---------------|------|
| 41° 38' N 26° 54' E | Akar Brook | - | - | 23,4 | 11,54 | 419 | 7,86 |
| 41° 49' N 27° 57' E | <i>Bulanık River</i> | - | 1♀, 1♂ | 19,3 | 12,3 | 202,7 | 7,89 |
| 41° 40' N 26° 59' E | <i>Değirmen Brook</i> | - | 2♀, 3♂ | 19,6 | 18,26 | 207 | 7,93 |
| 41° 40' N 27° 59' E | Down side of Köylü Brook | - | - | 21,3 | 6,84 | 301 | 7,52 |
| 40° 46' N 26° 10' E | Gala Lake | 2♂ | - | 27,5 | 10,2 | 324 | 8,3 |
| 41° 49' N 27° 58' E | Hamam | - | 1♀ | 20,0 | 17,23 | 150 | 6,41 |
| 41° 38' N 26° 52' E | Hasköy Brook | - | - | 21,0 | 12,43 | 575 | 7,60 |
| 41° 41' N 27° 04' E | İnce Brook | - | - | 23,0 | 10,10 | 548 | 7,23 |

| | | | | | | | |
|----------------------------|---------------------------|-----------|---------------|-------------|--------------|--------------|-------------|
| 1° 13' N 26° 13' E | Kavaklı Dam Lake | - | 2♀, 1♂ | 19,5 | 11,6 | 422,5 | 8,40 |
| 41° 52' N 27° 57' E | Madara Brook | - | - | 21,6 | 13,46 | 257 | 7,17 |
| 41° 40' N 26° 33' E | Meriç River | 2♂ | - | 20,1 | 7,45 | 206,3 | 7,95 |
| 41° 49' N 27° 56' E | Pedina | - | - | 21,0 | 10,5 | 148,5 | 7,51 |
| 41° 43' N 27° 38' E | Poyralı Brook | - | - | 23,5 | 16,29 | 629 | 7,73 |
| 41° 40' N 26° 59' E | Saksağan Brook | - | - | 20,0 | 10,36 | 244 | 8,00 |
| 41° 38' N 26° 42' E | Sazlı Brook | - | - | 22,0 | 3,72 | 672 | 8,34 |
| 41° 43' N 27° 15' E | Şeytan Brook | - | - | 20,0 | 9,09 | 269 | 8,46 |
| 41° 40' N 26° 32' E | Tunca River | 2♀ | - | 20,3 | 8,23 | 198,3 | 8,10 |
| 41° 40' N 26° 59' E | Upper side of Köylü Brook | - | - | 22,7 | 11,26 | 607 | 7,80 |
| 41° 40' N 28° 59' E | Ürünlü Brook 1. Brach | - | - | 20,1 | 8,74 | 266 | 7,77 |
| 41° 39' N 28° 57' E | Ürünlü Brook 2. Brach | - | - | 20,0 | 12,54 | 392 | 7,54 |
| 41° 45' N 27° 24' E | Üsküp Dam Lake | - | 2♀ | 19,7 | 9,02 | 248,3 | 7,67 |
| 41° 49' N 27° 40' E | Velika Brook | - | 2♀ | 16,4 | 17,15 | 138 | 7,60 |
| 41° 43' N 26° 37' E | Yenice Brook | - | 1♀, 1♂ | 25,2 | 9,45 | 466 | 7,60 |

In general, freshwater crabs inhabit smaller and clean brooks and rivers in higher regions. All sites where crabs are present are characterized by having both banks of the river shaded by trees. The substrate usually consists of rocks, stones and gravel.

We believe that *Potamon ibericum* is distributed in the northern part of Turkish Thrace and also in the northern of Marmara river basin (Istranca part). *Potamon fluviatile* is present throughout the places to the south of Marmara river basin [Tunca and Meriç Rivers, Gala Lake (Greek-Turkish border)]. Both species were only found in clean freshwaters (see fig 3).

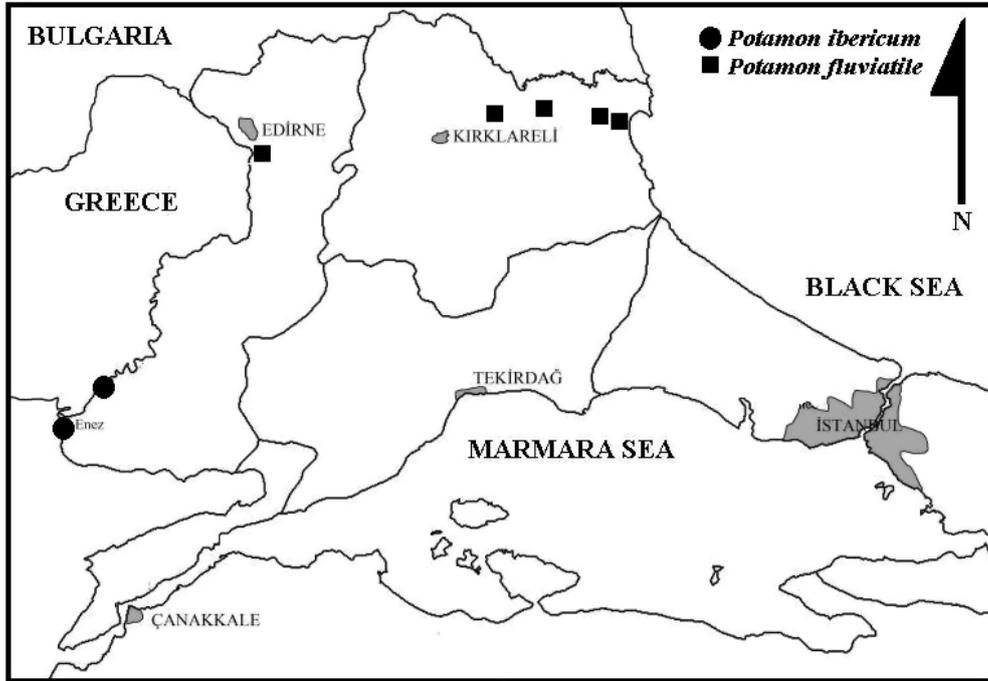


Figure 3. Distribution of *Potamon* sp. in Turkish Thrace.

Distributional data of aquatic organisms, particularly indicator and keystone species, collected by scientists and the general public can be applied to assess water quality and environmental impacts. In Turkish Thrace, population declines and extinction of aquatic organisms and their habitats have been related to dam construction and operation, stream channelization, canalization, industrial and pollution, and stream desiccation, a result of water abstraction for crop irrigation and diversion of river.

The findings of this study have also an importance on the occurrence of *Potamon* sp. in new sites at Turkish Thrace. However, there are still a number of unexamined localities in the region. Therefore, more research should be carried out to reveal clearly the distribution of freshwater crabs especially in European part of Turkey.

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