

## A NEW RECORD OF RECENTLY DISCOVERED CRAYFISH, *AUSTROPOTAMOBIOUS TORRENTIUM* (SHRANK, 1803), IN TURKEY

MUZAFFER MUSTAFA HARLIOĞLU (1) \* AND UTKU GÜNER (2)

(1) Fisheries Faculty, Firat University, 23119, Elaziğ, TURKEY

E-mail: mharlioglu@firat.edu.tr

(2) Trakya University, Faculty of Arts & Sciences, Department of Biology, Edirne, TURKEY

E-mail: uguner@trakya.edu.tr

\* To whom correspondence should be made.

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### ABSTRACT

After the occurrence of *Austropotamobius torrentium* in the Velika River in European Turkey, investigations to observe the distribution of crayfish species close to the Velika River have been carried out. The present observations showed that the distribution of *A. torrentium* expanded in European part of Turkey. In the summer of 2006, *A. torrentium* was found in the Madara Brook, but the abundance of *A. torrentium* in this brook was very low in comparison to the Velika River. Under the light of present observations, it could be concluded that besides the limited exploitation interest of *A. torrentium* in Turkey, this crayfish species increases its distribution in European Turkey, and more research should be carried out on its distribution and its either native or introduced presence in Turkey.

**Key words:** *Austropotamobius torrentium*, crayfish, distribution, Madara Brook, Turkey.

## UN NOUVELLE OBSERVATION DE L'ECREVISSE *AUSTROPOTAMOBIOUS TORRENTIUM* (SHRANK, 1803), RÉCEMMENT DÉCOUVERTE EN TURQUIE

### RESUME

Après l'observation d'*Austropotamobius torrentium* dans la rivière Velika en Turquie européenne, des investigations ont été menées afin d'étudier la distribution des espèces d'écrevisses près de cette rivière. Les observations ont montré que la distribution d'*A. torrentium* s'est développée dans la partie européenne de la Turquie. Pendant l'été 2006, *A. torrentium* a été observée dans le ruisseau Brook, mais l'abondance d'*A. torrentium* dans ce ruisseau est très faible comparée à la rivière Vélিকা. A la lumière des observations présentes, il pourrait être conclu en dehors de l'intérêt limité de l'exploitation d'*A. torrentium* en Turquie, que l'aire de distribution de cette espèce s'étend en Turquie européenne, et des travaux supplémentaires de recherche pourraient être menés sur sa distribution et sur sa qualité d'espèce native ou introduite en Turquie.

**Mots-clés:** *Austropotamobius torrentium*, écrevisse, distribution, ruisseau Madara, Turquie.

## INTRODUCTION

The stone crayfish, *Austropotamobius torrentium*, is native to Europe and was mainly confined to central and south-eastern countries (HOLDICH, 2002; MACHINO and HOLDICH, 2006). On the other hand, at present it is found in at least 20 countries including two neighbors of Turkey, Bulgaria and Greece (ZAIKOV, 2001; MACHINO and FÜREDER, 2005; SOUTY-GROSSET *et al.*, 2006; ZAIKOV and HUBENOVA, 2007).

The presence of *A. torrentium* had not been previously reported from Turkey (ERENÇİN and KÖKSAL, 1977; GELDIAY and KOÇATAŞ, 1970; KÖKSAL, 1988, HOLDICH, 2002; SKURDAL and TAUGBOL, 2002; HARLIOĞLU, 2004; HARLIOĞLU and HARLIOĞLU, 2004). However, although Mr. Yoichi Machino first discovered *A. torrentium* in the Velika River (a tributary of the Rezovska River) in 1999 (personal communication), its occurrence has recently been noted in 2005 in the Velika River in European Turkey by TRONTELJ *et al.* (2005). Later, morphological analysis and meat yield of *A. torrentium* caught from the Velika River were studied by HARLIOĞLU and GÜNER (2006). It was also stated that a study of 13 rivers and brooks close to the Velika River (in the Istranca (Yıldız) Mountains) has not revealed any other populations (HARLIOĞLU and GÜNER, 2006). Similarly, no *A. torrentium* populations have yet been reported for the Asian part of Turkey.

In the present study, researches have mainly been continued near the Velika River in order to observe the distribution of crayfish species, and to see if there is another presence of *A. torrentium* in the area.

## OBSERVATIONS

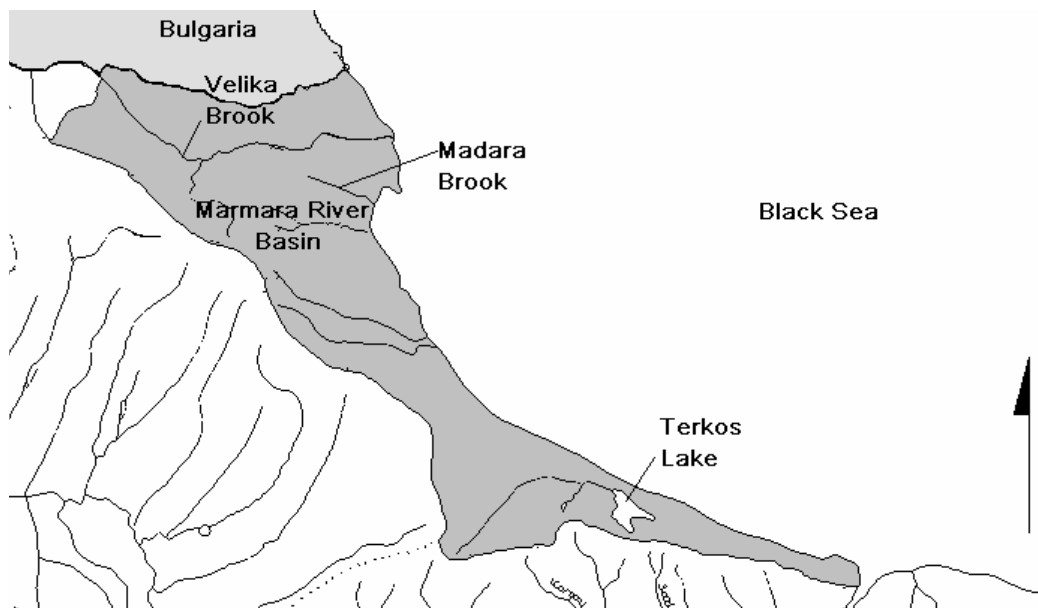


Figure 1

New sites of occurrence of *A. torrentium* at Velika River and Madara Brook.

FIGURE 1

Nouveaux sites d'observation d'*A. torrentium* sur la rivière Velika et le ruisseau Brook.

**Table I****Examined freshwaters, and the distribution of crayfish species in the area.****Tableau I****Cours d'eau explorés et distribution des écrevisses dans la région.**

| Coordinates       | Watercourse                | <i>A. torrentium</i> | <i>A. leptodactylus</i> | No crayfish |
|-------------------|----------------------------|----------------------|-------------------------|-------------|
| 41° 47'N 27° 42'E | Velika River               | X                    |                         |             |
| 41° 52'N 27° 57'E | Madara Brook               | X                    |                         |             |
| 38° 14'N 29°55'E  | Işıklı Lake                |                      | X                       |             |
| 41° 20'N 28° 34'E | Terkos Lake                |                      | X                       |             |
| 40° 46'N 26° 10'E | Gala Lake                  |                      | X                       |             |
| 41° 45'N 27° 24'E | Üsküp Dam<br>Lake          |                      | X                       |             |
| 41° 40'N 26° 33'E | Meriç River                |                      | X                       |             |
| 41° 40'N 26° 32'E | Tunca River                |                      | X                       |             |
| 41° 38'N 26° 42'E | Sazlı Brook                |                      | X                       |             |
| 41° 43'N 27° 38'E | Poyralı Brook              |                      |                         | X           |
| 41° 43'N 26° 37'E | Yenice Brook               |                      |                         | X           |
| 41° 38'N 26° 48'E | Söğütlü Brook              |                      |                         | X           |
| 41° 38'N 26° 52'E | Hasköy Brook               |                      |                         | X           |
| 41° 38'N 26° 54'E | Akar Brook                 |                      |                         | X           |
| 41° 40'N 26° 59'E | Upper side of<br>Köy Brook |                      |                         | X           |
| 41° 40'N 27 59'E  | Down side of<br>Köy Brook  |                      |                         | X           |
| 41° 40'N 26° 59'E | Saksağan<br>Brook          |                      |                         | X           |
| 41° 41'N 27° 04'E | İnece Brook                |                      |                         | X           |
| 41° 43'N 27° 15'E | Şeytan Brook               |                      |                         | X           |
| 41° 40'N 26° 59'E | Değirmen<br>Brook          |                      |                         | X           |
| 41° 40'N 28° 59'E | Ürünlü Brook               |                      |                         | X           |

Crayfish specimens were captured by net or by hand during the samplings in the streams and brooks. In each sampling, a section of 50 meters of stream or brook was searched for the presence of crayfish. During the investigations in summer 2006, in addition to the Velika River, *A. torrentium* was also found in the Madara Brook (Figure 1). Both habitats seemed to be optimal for the occurrence of this species. For example, they have stones, rocks and gravel at the bottom, water is transparent and pieces of wood serve as shelters for crayfish. It is also important to make a point that the water temperature of Madara and Velika is relatively lower than the close rivers and brooks. However, the abundance of *A. torrentium* was very low at the Madara Brook with only about four or five individuals per 50 m of the brook length. In comparison to the Madara

Brook, approximately 100 individuals per 50 m section of the Velika River were caught. Interestingly, *A. torrentium* was not found in the Değirmen Brook which is located between Velika and Madara.

In the present study, *Astacus leptodactylus* was caught from Işıklı, Terkos, Gala, Üsküp, Terkos, Meriç and Tunca Rivers, and Sazlı Brook. On the other hand, the following freshwaters did not have any crayfish species: Poyralı, Yenice, Söğütlü, Hasköy, Akar, Köy, Saksavaşan, İnce, Şeytan, Değirmen and Ürünlü Brooks. The presence of *A. leptodactylus* in Meriç and Tunca Rivers was already reported in 1970 (GELDIAY and KOCATAŞ, 1970). Present research also confirmed that *A. leptodactylus* was still present in these rivers.

This study also revealed that *A. leptodactylus* is present throughout the places located to the south of Marmara River basin (i.e., Tunca, Meriç Rivers, Terkos Lake). Therefore, it seems that Istranca Mountain is a border line which affects the distribution of the two crayfish species (Table I).

## DISCUSSION AND CONCLUSION

Our study demonstrates that the distribution of *A. torrentium* is enlarging its distribution area into the European part of Turkey, but due to its relatively small size, low abdominal meat yield, and limited population number in European Turkey (HARLIOĞLU and GÜNER, 2006; HARLIOĞLU and HARLIOĞLU, 2006; HARLIOĞLU, 2007), it is clear that *A. torrentium* is still of limited exploitation interest.

However, the findings of present study have an importance on the distribution point of *A. torrentium* which is considered to be a threatened species (TAYLOR, 2002). It has therefore been listed under an “endangered” category in the Austrian Red List of endangered species and the Annex IV of European Community Directives for the Conservation of Natural habitats and wild Flora and Fauna (97/62/EU) as a species requiring special conservation measures (STREISSL and HÖDL, 2002). Thus, it is necessary to concentrate on the habitat protection of *A. torrentium* by authorities.

The findings of this study have also an importance on the occurrence of *A. torrentium* in Turkey is whether a natural extension of its range, or it has been introduced locally. This subject is still vague. However, there are still a number of unexamined resources in the region. Therefore, more research should be carried out on the distribution of crayfish in especially European part of Turkey.

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