



University of Belgrade, Technical Faculty in Bor
29th International Conference Ecological Truth
& Environmental Research



EcoTER'22

Proceedings



Editor

Prof. Dr. Snežana Šerbula

21-24 June 2022, Hotel Sunce, Sokobanja, Serbia



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PROCEEDINGS

29th INTERNATIONAL CONFERENCE

ECOLOGICAL TRUTH AND ENVIRONMENTAL RESEARCH – EcoTER'22

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Publisher: University of Belgrade, Technical Faculty in Bor

For the Publisher: Prof. Dr Nada Štrbac, Dean

Printed: GRAFIK CENTAR DOO Beograd, 120 copies

Year of publication: 2022

ISBN 978-86-6305-123-2

CIP - Каталогizacija u publikaciji
Narodna biblioteka Srbije, Beograd

502/504(082)(0.034.2)

574(082)(0.034.2)

INTERNATIONAL Conference Ecological Truth & Environmental Research (29 ; 2022 ; Sokobanja)

Proceedings [Elektronski izvor] / 29th International Conference Ecological Truth and Environmental Research - EcoTER'22, 21-24 June 2022, Sokobanja, Serbia ; [organized by University of Belgrade, Technical faculty in Bor (Serbia)] ; [co-organizers University of Banja Luka, Faculty of Technology – Banja Luka (B&H) ... [et al.]] ; editor Snežana Šerbula. - Bor : University of Belgrade, Technical faculty, 2022 (Beograd : Grafik centar). - 1 USB fleš memorija ; 5 x 5 x 1 cm

Sistemski zahtevi: Nisu navedeni. - Nasl. sa naslovne strane dokumenta. - Tiraž 120. - Bibliografija uz svaki rad. - Registar.

ISBN 978-86-6305-123-2

a) Животна средина – Зборници б) Екологија – Зборници

COBISS.SR-ID 69053705

**29th International Conference
Ecological Truth and Environmental Research 2022**

is organized by:

**UNIVERSITY OF BELGRADE, TECHNICAL FACULTY IN
BOR (SERBIA)**

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**The Conference is financially supported by
the Ministry of Education, Science and Technological
Development of the Republic of Serbia**

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STONE CRAYFISH *AUSTROPOTAMOBIOUS TORRENTIUM* (Schrank, 1803) IN SOUTH-EASTERN SERBIA: CHILDREN KNOWLEDGE SURVEY

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Abstract

Stone crayfish, an endangered and protected species in Republic of Serbia, inhabits mountain areas of the country. The knowledge and attitude of children from two primary schools (Piroć and Bosilegrad) towards this species was tested. Two surveys with the same questionnaire were conducted. The first one was held at the end of the 6th grade, and the second was conducted a year later. The second survey has shown moderate increase in children's knowledge. To better protect and conserve rare and endangered taxa it is necessary to raise awareness of the public, particularly in the areas where these species are present. Attitudes, values, behaviour, knowledge of citizen and especially young generations form a good basis for the protection and sustainable development planning in local community.

Keywords: endangered species, public awareness, questionnaire

INTRODUCTION

Stone crayfish *Austropotamobius torrentium* (Schrank, 1803) is one of three autochthonous decapod species recorded in Serbia. It inhabits unpolluted mountain streams of the basins of the Danube and Elbe River in Europe [1]. According to IUCN criteria, *A. torrentium* is categorized as "Data Deficient", with decreasing population trends [2]. Eastern and South-Eastern Serbia are areas with moderately abundant populations of this crayfish [3]. Main threats to *A. torrentium* in the region are negative human impacts on the habitats, such as damming/small hydropower plants, pollution, etc. [4]. The importance of public education for more effective conservation and protection measures of European native crayfish has been recognized [5].

Our aim was to examine the basic knowledge of primary school's children regarding stone crayfish, as a rare and endangered invertebrate taxon. Target group was local community in

the areas where the species occurs. We have tried to estimate their interest regarding protection and conservation of the nature, reflected through this native crayfish species.

MATERIALS AND METHODS

The study included 104 children, age 12 (the 6th grade of primary school) from two towns in South-eastern Serbia (Piroć and Bosilegrad). The sample comprised of 58.5% (61) girls and 41.5% (43) boys. To assess the knowledge and attitude of children towards crayfish and stone crayfish, specially prepared questionnaire was used (Table 1). The questions used can be divided into "informative" (related to children's awareness toward crayfish, i.e. those that hardly can be rated as right or wrong/correct/incorrect answers) and "proper test" questions (related to children's knowledge that can be rated as right or wrong i.e. correct/incorrect). Prior to distribution of the questionnaires, the children were given instructions and unfamiliar terms were explained to them. All children had good level of knowledge and understanding of Serbian language, which was important because children from Bosilegrad were of Bulgarian nationality). After the questionnaire finished, we organised the lecture dedicated to this topic (crayfish and stone crayfish).

Table 1 Test questions used in analysis

Q.1	In which animal group crayfish belong to?
Q.2	Are there any crayfish species in Serbia?
Q.3	Where do crayfish live?
Q.4	Did you hear for stone crayfish before?
Q.5	Where do stone crayfish live?
Q.6	Whether is this crayfish present in your area?
Q.7	Did you ever see stone crayfish in nature?
Q.8	What is main food of stone crayfish?
Q.9	Who preys on stone crayfish?
Q.10	What is the human impact on stone crayfish?
Q.11	Is stone crayfish protected in our country?

Two surveys were conducted, the first one being held at the end of the 6th grade (June, 2017). The same children (and the same questionnaire) were tested again approximately one year later (March/May, 2018).

The data obtained in this study were processed in Excel with main descriptive statistics, displayed through charts.

RESULTS AND DISCUSSION

One third of the respondents (32.7%) have never heard about stone crayfish, while in the second (control) survey this number was reduced to 2.9% (Figure 1a). A small percentage of children was familiar with the presence of this species in their area (14.4%), and 13.4% had

never seen the crayfish in nature. In the second (control) survey the number of children who were aware of presence of this rare species raised to 39.4%. The percentage of children who claimed that have seen it in the nature also increased to 20.2% (Figure 1b, 1c).

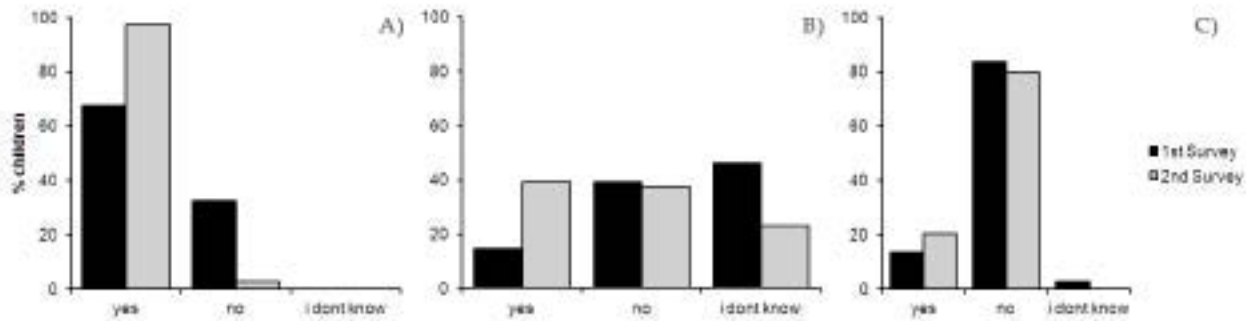


Figure 1 Distribution of answers to "informative" questions regarding crayfish and stone crayfish: a) Q.4; b) Q.6; c) Q.7

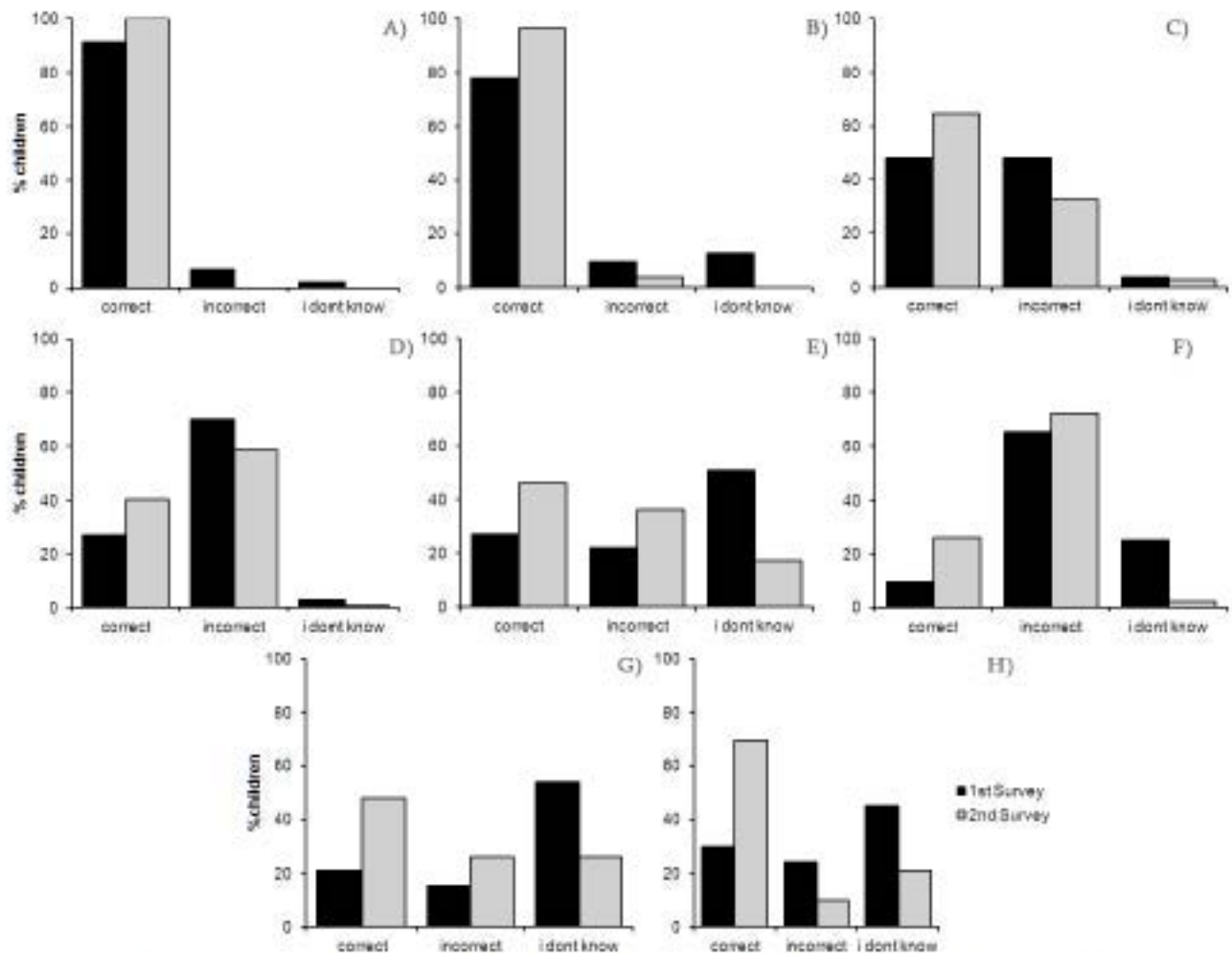


Figure 2 Distribution of answers to "test" questions regarding crayfish and stone crayfish: a) Q.1; b) Q.2; c) Q.3; d) Q.5; e) Q.8; f) Q.9; g) Q.10; h) Q.11

Regarding general questions about crayfish, very good to excellent level of knowledge was found with 91.3% of respondents answered correctly to the question in which animal group crayfish belongs to (in the control survey this number raised to 100%). 77.9% were aware of

crayfish presence in our country (in the control survey this number raised to 96.1%) (Figure 2a, 2b). Approximately a half of respondents (48.1%) had essential knowledge of crayfish main habitat in the first survey, while in the second survey this number/percentage raised to two thirds (64.4%) (Figure 2c).

In the first survey, 24.3% of children answered correctly to questions regarding stone crayfish ecology (habitat, diet, human impact, protection status), while only 9.6% of children had knowledge of the main predator of stone crayfish in the nature (Figure 2d, 2e, 2f, 2g). In the control survey these numbers raised to nearly a half of children (49.1%) who responded correctly. The particular increase was noticed in regards to knowledge of stone crayfish protection status (from 29.8% to 69.2%, Figure 2h).

Public awareness of crayfish depends on educational and school programmes and on economic and social importance of crayfish [5]. As it has been shown, apart from Scandinavian countries and UK, public knowledge levels about crayfish are fairly low [5]. Lack of adequate information and available documentation has been pointed out as the main cause of such situation in general. The lack of specific educational programmes is particularly noticeable for *Austropotamobius torrentium*, a native species for Danube and Elbe river basins. Particularly low level of knowledge was noted in our neighbouring country Croatia [5]. Recorded low level of public knowledge in Croatia was not linked with low availability of informations about crayfish (which was average). Despite in Serbia similar investigations weren't conducted, due to economical, cultural and political connections in the past and present, we could assume somewhat similar situation here as well. The results of our investigation has shown good level of knowledge regarding crayfish in general, yet fairly low knowledge of stone crayfish (around 20% of children with correct answers). Even in the second survey the knowledge about stone crayfish has only risen up to average level (around 40% of children with correct answers). Obtained results can be explained by school programmes, lack of information about *A. torrentium* and low levels of economic and social importance of crayfish in the region and in our country. It should be underlined that similar investigation regarding public awareness of crayfish and stone crayfish wasn't conducted before in Serbia. To obtain more reliable data, similar research should be conducted in wider region, including different age and social classes. We hope that our pioneering study can be one small step towards preservation of *A. torrentium* and other endangered invertebrates species in our country.

CONCLUSION

Initial children's knowledge regarding stone crayfish was at expected level, having in mind rigid school curriculum, and low level of education and practical activities in the local areas regarding endangered invertebrate species present in our country. Moderate knowledge increase was recorded after the second survey. To better protect and conserve rare and endangered taxa it is necessary to raise awareness of local citizen, especially young generations, particularly in the areas where these species can be found. A similar research, regarding stone crayfish has not been conducted before in Serbia. Hopefully this pioneering study will contribute to wider efforts in preservation of this and other endangered invertebrates species in our country.

ACKNOWLEDGEMENT

This paper was supported by the Rufford Foundation, project Stone crayfish *Austropotamobius torrentium* (Schrank, 1803) in Serbia: distribution, population density, genetic diversity and conservation. We are very grateful to school teachers and children from elementary schools "Georgi Dimitrov" in Bosilegrad and "Dušan Radović" in Pirot.

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EcoTER'22



ISBN 978-86-6305-123-2