

# The status of the European mudminnow, *Umbra krameri* WALBAUM, 1792, in Croatia

(Pisces: Umbridae)

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## Abstract

Sources of the current knowledge on the distribution of *Umbra krameri* WALBAUM in Croatia are summarized. Additionally the paper lists reasons endangering the occurrence of the European mudminnow and presents ideas for an action plan to protect this species.

**Key words:** Umbridae, *Umbra krameri*, Croatia, distribution, protection.

## Zusammenfassung

Verschiedene Informationsquellen über die Verbreitung von *Umbra krameri* WALBAUM in Kroatien werden zusammengefaßt. Darüber hinaus werden mögliche Gefährdungsursachen dieser Art genannt und Überlegungen für geeignete Schutzmaßnahmen präsentiert.

## Introduction

The genus *Umbra* KRAMER is represented in Europe and North America by three species. The European mudminnow (*U. krameri* WALBAUM) has a related species pair *Umbra limi* (KIRTLAND) - *Umbra pygmea* (DEKAY) in eastern North America (see BANARESCU 1989). The eastern mudminnow (*U. pygmea*) has been successfully introduced for unknown reasons into the canal systems of North Western Europe, possibly into France in 1913 as the earliest record, and has spread to Belgium, the Netherlands, and Germany (WELCOMME 1988). According to LELEK (1987), the distribution of *U. krameri* is scattered along the Danube River from Vienna to the delta, in Neusiedler See and Lake Balaton, and the lower reaches of the Prut and Dniester Rivers. From the Danube basin it has been accidentally introduced to Poland (year unknown), where it is present in a few localities; in 1925 the species was introduced to the United Kingdom for unknown reasons (WELCOMME 1988), but disappeared about 1934 (WHEELER & MAITLAND 1973).

## The occurrence of *Umbra krameri* in Croatia

Data on the occurrence of *U. krameri* in Croatia are very scarce and most information can be only indirectly related to its distribution in Croatia. SEBIŠANOVIĆ (1890) gives the

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general distribution of the species in Europe with a suggestion for the development of an ichthyological map of Croatia. He also cited PANČIĆ (1860) on finding *U. krameri* in the Negotin area in Serbia.

A description of the European mudminnow, including some morphometric data, is given by KIŠPATIĆ (1893). MEDIĆ (1896) describes a new location for *U. krameri* (as "*U. canina*") in the Surčin area near Zemun (the Sava River drainage). One specimen from this location is stored at the Natural History Museum in Zagreb (inventory number: 3140). However, the first published information concerning the presence of *U. krameri* in Croatian waters is due to LANGHOFER (1904). Specimens were caught between August 10th and 17th of 1899 in a swamp along the Lonja River, at Lupoglav village near Božjakovina (Fig. 1). Later, LANGHOFER (1908) gives details of three specimens for the same location: Lupoglav, April 13. 1902, leg. J. Belec. These specimens are stored in the ichthyological collection at the Croatian Natural History Museum in Zagreb (inventory numbers: 3141, 3311, 3312).

*Umbra krameri* is mentioned again by TALER (1951a) in his list of Yugoslavian freshwater fishes (number 112), but without any data of distribution and/or localities. In a paper on the protection of rare and unusual fishes, TALER (1951b) indicated that land management and stream regulations to be the main dangers for the survival of the European mudminnow. The taxonomic and systematic history, a detailed description, and reasons for the genus *Umbra* to be considered as a glacial relict were discussed by PAVLETIĆ (1954). The distribution given by the same author is general, and relates presence of the species to the Dunav and Dnjestar catchment areas. In his dictionary, HIRTZ (1956) mentions *U. krameri* as a member of the family Esocidae with the local names "ruca crnka" or "rapa", and recorded in the Surčin area near Belgrade and in a swamp at Lupoglav. VUKOVIĆ & IVANOVIĆ (1971) give a dichotomous key for the determination, a morphological description, and the distribution of *U. krameri* in Europe. According to mimeographed notes by ĐULIĆ (1973), the European mudminnow belongs to the order Esociformes and is distributed in some Danube tributaries and the Dnjestar catchment area. Finally, an accidental catch of *U. krameri* specimens in two small ponds along the Mura River in the Medimurje area (MRAKOVČIĆ & KEROVEC 1990) confirmed the permanent presence of this species in suitable habitats of this area (but it is not the first finding of *U. krameri* in Croatia - as indicated in the paper mentioned). The first locality is on the right bank of the Mura, 1.0 km north of Paklenica village (XM14), and the second by the left bank, 1.5 km northeast of Podturen village (XM14) (Fig. 1). The two localities are 7 km apart from each other. The presence of *U. krameri* in two side channels of the Mura River in Slovenia (POVŽ 1984) indicates a continuous distribution and leads to the assumption that the major area of distribution in this part of Europe is the Mura River drainage.

### Potential danger for survival of *Umbra krameri* in Croatia

According to MAITLAND (1994), among the 227 species of freshwater fish found in Europe, 200 are regarded as native and 27 as introduced. 122 native species are now included in the Bern Convention: 118 as protected fauna species, and 4 as strictly protected fauna species (*Acipenser naccarii* BONAPARTE, *U. krameri*, *Valencia hispanica*

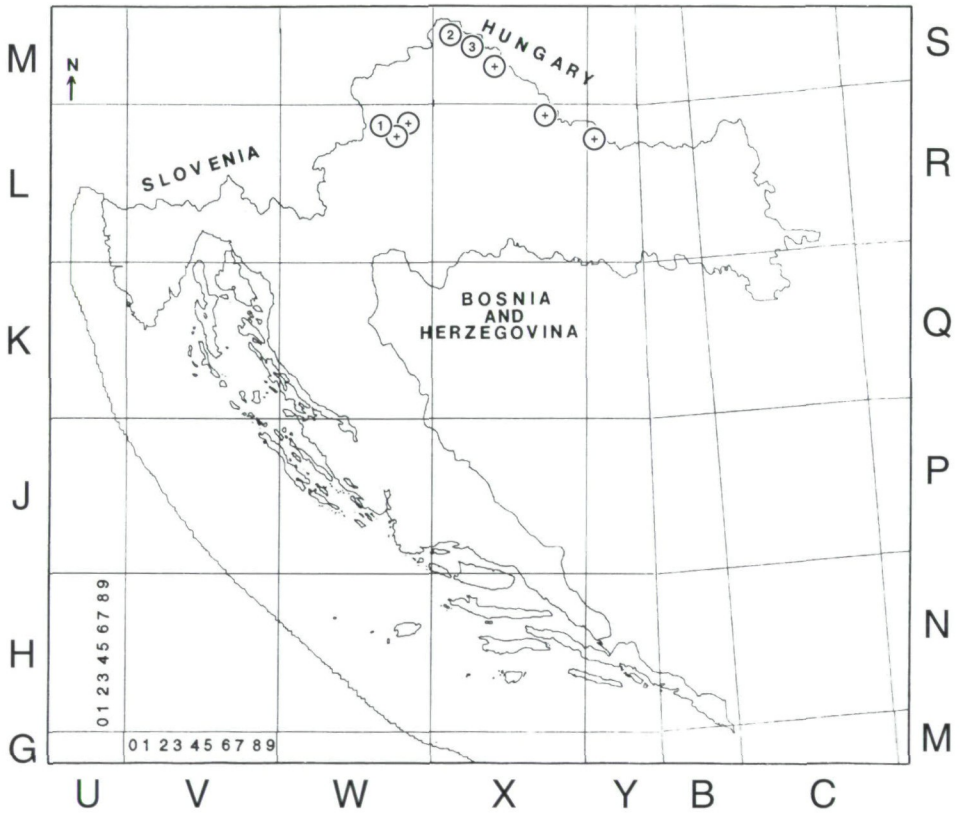


Fig. 1: UTM Coordinate map of Croatia: (1), (2), and (3) are actual localities with registered specimens of *U. krameri*. The sign (+) represents the most likely localities of habitats with existing populations: XM = the Mura River, XL and YL = the Drava River, WL = the Lonja and Zelina rivers.

(CUVIER & VALENCIENNES), and *Zingel asper* (L.)). Although the European mudminnow is listed in the category of the most endangered fish species in Europe, I can only assume that the lack of information about its distribution, natural history, and population dynamics in Croatia is due to the fact that this species has never so far been a target for research. In addition, *U. krameri* is not attractive and has no commercial, angling or nutritional values for local inhabitants. Probably people would not even recognize the species or they might confuse it with a juvenile stage of cohabitant fish species. Thus, this species is not directly endangered in this area, but indirectly there are several threats that might lead to the disappearance of European mud-minnow in Croatia:

1. Destruction of natural habitats by land-reclamation measures and stream regulation.
2. Use of ponds, oxbow lakes, back waters, swamps, and other "closed" water bodies as waste disposal sites.
3. Uncontrolled or intensive use of biocides and other chemicals for different agricultural purposes, especially on private lands.

4. Timber harvest and progressive soil erosion, sedimentation, and eutrophication.
5. Possible realization of plans for a series of hydroelectric power plants to be constructed on the Mura River.

### Action plan for the protection of *Umbra krameri*

The most urgent goal is to obtain full information on the distribution of *U. krameri*, with precise locations of surviving populations. The habitat requirements (ecological, physical, chemical) from a landscape perspective in connection with hydrology and the extent of human impact should serve as a base for predictive model(s) development. The second goal is the conservation of habitats and permanent monitoring of sites and adjacent areas and, if necessary, habitat restoration with clear management plans for target sites. At that point, translocation from the closest existing population should be considered. At least three sites should be organized and strictly guarded as "special *U. krameri* sites" to ensure genetic identity and possible choice for translocation. Genetic analysis should be carried out as soon as possible to become familiar with the genetic variability of populations in Croatia, and those in other European countries. This information is essential to ensure the correct choice if translocation is required.

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