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Short research note

A report of *Eriocheir sinensis* (H. Milne Edwards, 1854) [Crustacea: Brachyura: Grapsidae] from the Serbian part of the Danube River

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Abstract

Two specimens of the Chinese mitten crab, *Eriocheir sinensis*, were found in the Serbian part of the Danube River (1995, 1084 km of the watercourse and 2001, 1174 km). Description, biology, origin and distribution of this species, as well as potential impact to the aquatic ecosystems are discussed. These are first records of this invasive crab in Serbian part of the Danube River.

Introduction

The Chinese mitten crab *Eriocheir sinensis* (H. Milne Edwards, 1854) is a catadromous species which originates from temperate Eastern Asia. During the last century it was introduced in to Northern Europe (Clark et al., 1998), North America and Hawaii (Nepszy & Leach, 1973; Gollash, 1997). Mass occurrence of this crab, as well as considerable consequences caused by its high population density were reported from several recipient areas (Veldhuizen & Stanish, 1999). The presence of the Chinese mitten crab can reduce local fisheries quotas and quantitatively and qualitatively alter benthic community (Clark et al., 1998; Hopkins, 2001; Normant et al., 2002) while its borrowing activity could result in bank erosion (Gollash, 1997).

Material and discussion

Eriocheir sinensis (H. Milne Edwards, 1854) (Fig. 1)

Vernacular names: English – Chinese mitten crab, mitten crab; German – Chinesische Wollhandkrabbe, Wollhandkrabbe; French – crabe Chinois.

Two male Chinese mitten crabs from the Serbian part of the Danube River were examined. One specimen (carapace width – CW 60; carapace length – CL 56.9 mm) was collected in June 1995 near Stara Palanka village, upstream the mouth of the Nera River (1084-km of the watercourse; 44° 49′ 20″ N, 21° 19′ 40″ E). The other individual of *E. sinensis* (CW 61.2; CL 56.6 mm) was found near Belgrade, in November 2001, upstream the mouth of the Sava River (1174 km of the watercourse, 44° 51′ 30″ N, 20° 25′ 10″ E). In both cases crabs were caught by deep nets. Observed specimens were stored in the biological material collection of the Institute for Biological Research "Sinisa Stankovic", Belgrade, Serbia and Montenegro.

The substrate of sampling locations mainly contained silt-clay and very fine sand (grains not perceptible by eye; <0.125 mm). Areas with fine sand (grains perceptible by eye; 0.125–0.5 mm), coarse sand (0.5–2 mm) and gravel (2–16 mm) were also observed.

The species is catadromous and spends most of its life in fresh and brackish waters. In Europe,

Figure 1. Individual of *Eriocheir sinensis* caught in the Danube River near Belgrade (1174 km) – dorsal view.

downstream migrations of Chinese mitten crab occurs in period from August to November (Veldhuizen & Stanish, 1999). Its planktonic larvae is developing in marine waters for 1–2 months and undergo five zoel stages and the stage of megalopa larvae. Using the tide current, megalopa larvae migrates to the brackish waters. After some time, juvenile crabs (CW from 25 to 40 mm) starts their migration upstream (in Europe during period from March to July – Veldhuizen & Stanish, 1999) to grow into an adult stage. Time of maturity depends on environmental conditions and it can happen after 1–5 years (Veldhuizen & Stanish, 1999). In Europe, spawning season is probably limited to period from October to January (Veldhuizen & Stanish, 1999).

During its migration Chinese mitten crab can cross long distances and overcome barriers such as large dams due its ability to move across the land. It was reported that in their native habitat, living crabs regularly migrate 750 km up the Jangtsekiang River and they have been found 1400 km upstream from the estuary (see Gollash, 1997).

Mitten crabs are opportunistic omnivores (Veldhuizen & Stanish, 1999). Juveniles eat mostly vegetation (filamentous algae, *Potamogeton*, *Elodea*, *Lemna*) while latter, as they grow, they include small animals, mostly invertebrates (tubificids, molluscs, amphipods, chironomids, Polychaeta, Coleoptera and *Daphnia*) in their diet.

It is generally agreed that shipping (ballast water and hull fouling of vessels) was the main factor of Chinese mitten crab introduction (Ingle & Andrews, 1976; Hopkins, 2001). Further dispersal of this species in Europe probably happened by active migration via rivers and canals (Gollash, 1997).

Serious consideration should be given to the potential consequences caused by more abundant presence of the Chinese mitten crab in the Danube Basin. The risk of fast dispersal of *E. sinensis* is illustrated by the fact that it is listed in IUCN register of ''100 of the World's worst invasive alien species'' (IUCN, 2000). The mass occurrence of the crab could result in bank erosion, damage to the hydro-technical objects (dams, channels, levees, and retaining walls) (Gollash, 1997), damage to the local fisheries, and quantitative and qualitative reduction of benthic community (Clark et al., 1998; Hopkins, 2001; Normant et al., 2002). Having all the negative influences of mitten crab introduction in mind, this species could seriously influence the structure and function of aquatic ecosystems in recipient area. However, the ecological impact of highly abundant mitten crab population is a question that still does not have adequate answer (Veldhuizen & Stanish, 1999).

Two findings in Serbian part of the Danube River indicate that there is potential risk for significant occurrence of *E. sinensis* in national waters in the future. Argument for this concern could be found in the data regarding *E. sinensis* dispersal (Ingle & Andrews, 1976; Gollash, 1997; Clark et al., 1998; Veldhuizen & Stanish, 1999; Normant et al., 2002; Rabitch & Schiemer, 2003). According to them, evidence for successful introduction of this species is its sporadic presence at first, which is often followed by its mass occurrence after several years.

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