

First record of the invasive North American gastropod *Ferrissia fragilis* (Tryon, 1863) from the Pripyat River basin, Belarus

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Received 25 October 2007; accepted in revised form 4 February 2008; published online 23 March 2008

Abstract

The invasive North American gastropod *Ferrissia fragilis* (Tryon, 1863) has been recorded for the first time in August 2007 at three sites on the Pripyat River basin (the Belarusian part of the inland European "central invasion corridor"). This species occurs in the onshore shallow zone (depth 0.2-0.3 m) with dense aquatic vegetation and temperature from 21.8 to 23.7°C. Maximal abundances of this species have been observed in Mykashevichy port bay. Most likely, this invasive gastropod entered the River Pripyat basin from the Ukrainian territory where it was found early in cooling reservoir of Chernobyl Nuclear Power Station; however invasion pathways through the western (Poland) and ornamental trade are also likely.

Key words: alien species, Gastropoda, *Ferrissia fragilis*, first record, distribution

In August 2007 invasive North American gastropod *Ferrissia fragilis* (Tryon, 1863) was found in hand net samples taken during a survey of the Pripyat River basin (Figures 1-2, Annex). A typical biotope where *F. fragilis* was found is onshore shallow zone (depth 0.2-0.3 m) with dense aquatic vegetation (*Ceratophyllum* spp. and *Potamogeton* spp.) and temperature from 21.8 to 23.7°C. Oxygen content and pH in the biotopes were between 4.8-6.9 and 7.73-7.77 mg l⁻¹, respectively. Maximal abundance of *F. fragilis* pointed out in Mikashevichy port bay. In this site *F. fragilis* inhabit simultaneously with the other alien invasive species - *Lithoglyphus naticoides* (Pfeiffer, 1828). On cooling reservoir Pinsk Power Station *F. fragilis* recorded under temperature 23.7°C. In July 2003 during a survey of the cooling reservoir of Chernobyl Nuclear

Power Station this species was recorded in onshore zone under temperature 26°C (Laenko, unpublished data).

In Central and Northern Europe *F. fragilis* inhabit mostly artificial warm-water habitats (reservoirs-coolers, ponds), but in Southern Europe and in the Pripyat River it lives under natural temperature conditions. In Southern Ukraine (Dniestr Delta) *F. fragilis* survived outside its native range during the winter when the air temperature reached minus 10°C (Son 2007). Therefore *F. fragilis* can be characterised as the eurythermal species.

Until 2006 this species has been identified variously from different European and Asian countries under several names: *Pettancylus petterdi* (Johnston, 1879), *P. australicus* (Tate, 1880), *Ferrissia wautieri* (Mirolli, 1960), *F.*

cllessiniana (Jickelli, 1882) (Son 2007). But a recent investigation using molecular taxonomical methods has revealed that these species are in fact single North American species, *Ferrissia fragilis* (Tryon, 1863) which has a near-cosmopolitan distribution in temperate and tropical freshwater pond ecosystems (Walther et al. 2006).



Figure 1. Map of Belarus with records of *Ferrissia fragilis* (see also Annex 1)



Figure 2. Overlook view of *Ferrissia fragilis* (body size from 2 to 4 mm), recorded on 11 August 2007 in the Mykashевичy port bay (Photograph by Laenko)

The invasive North American gastropods *F. fragilis* are distributed in Black Sea Region (Son 2007), Central (Manas 1970; Strzelec 2005), Northern (Falkner and Proschwitz 1995),

Western and Southern Europe (Lill 1990; Van Der Velde 1991; Cianfanelli et al. 2007) and East Asia (Walther et al. 2006). No data about distribution *F. fragilis* in the Dnieper reservoirs on Ukrainian territory (Alexandrov et al. 2007) but this species was recorded in the continental waters of Northern Black Sea Region (Dnieper and Dniestr Deltas and Lake Beloje) (Son 2007). The problem of the genus *Ferrissia* (Walker, 1903) origin in Europe can be approached from several viewpoints however, an idea has been suggested that this gastropod appears a cryptic invader of European ecosystems (Beran and Horsak 2007; Son 2007).

There are two possible ways of invasion *F. fragilis* to the Prypyat River: from the Dnieper River and Poland territory where it was found in some lakes and ponds in central and northern part (Strzelec 2005). The first way is more probable since this species most numerous in the Mykashевичy port bay and distributed in cooling reservoir of Chernobyl Nuclear Power Station which connected with the Pripyat River by canal, but the western way (Poland) also can be probable such as this species was found in western part of the Pripyat River basin: near Pinsk town. The ornamental introduction *F. fragilis* to the cooling reservoir of Pinsk Power Station is also possible.

Acknowledgements

We acknowledge anonymous reviewers for valuable comments. We are grateful to Dr. Razlutsky for his help sampling during research survey and Dr. Nagorskaya for samples from cooling reservoir of Chernobyl Nuclear Power Station. The study has been supported by the European Commission 6th Framework Programme Integrated Project ALARM (contract GOCE-CT-2003-506675).

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Annex 1

Records of the North American gastropod *Ferrissia fragilis* in the Pripjat River basin, Belarus and cooling reservoir of Chernobyl Nuclear Power Station (Ukraine)

Site no (Map Ref.)	Location	Record coordinates		Date of record	Species abundance, individuals	Collector
		Latitude, °N	Longitude, °E			
1	Pina River, Pinsk port bay	52°03.10'	26°09.86'	9 August 2007	1	Semenchenko, Razlutsky
2	Pripjat River, cooling reservoir Pinsk Power Station	52°06.30'	26°04.69'	9 August 2007	2	Semenchenko, Razlutsky
3	Pripjat River, Mykashevichy port bay	52°09.48'	27°20.32'	11 August 2007	27	Semenchenko, Razlutsky
4	Cooling Reservoir Chernobyl Nuclear Power Station	51°03.01'	30°04.20'	July 2003	3	Nagorskaya