



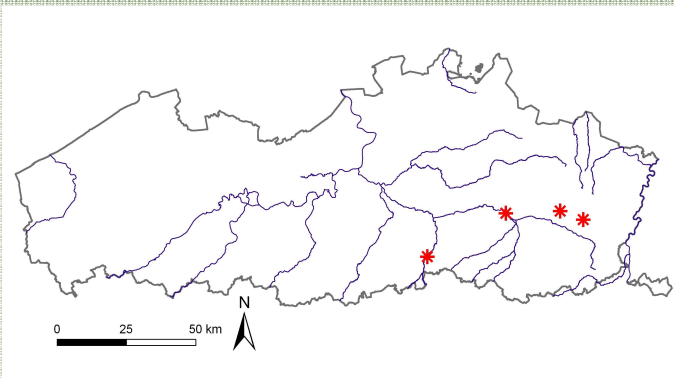
Distribution of the Chinese pond mussel, *Sinanodonta woodiana* (Lea, 1834) in Flanders (Belgium): ready for the invasion?

Jo Packet, Tom Van den Neucker (INBO) & Rose Sablon (RBINSc)

History

S. woodiana originates from East Asia (southeastern Russia to Malaysia). In Europe, the species was collected for the first time in Romania (1979). Its first record in western Europe followed within a few years (France, 1982). Currently the Chinese pond mussel is known from 16 European countries, including Belgium.

Distribution in Flanders



So far, records are restricted to the south-eastern part of Flanders (valleys of Demer and Dijle). The first Belgian specimens were found in Diest (1999). Additional specimens were collected from ponds in Zonhoven (2001), Oud-Heverlee (2001) and, most recently, Genk (2009).

Habitats and populations

The species prefers eutrophic lakes and ponds, slow-flowing rivers and muddy riverbeds. It survives well in nutrient-enriched waters with high concentrations of suspended matter and low oxygen rates.

Three of the populations in Flanders were found in **former fish farms** (carp) and one in a **recreational pond**.

Two of them seem to **persist**, as several age classes were present. All ponds are **connected to rivers** belonging to the Schelde catchment, where further colonization may be expected.

location	year	pond type	persistent	connection to river
Diest	1999	recreational	yes	yes
Zonhoven	2001	former fish farm	?	yes
Oud-Heverlee	2001	former fish farm	?	yes
Genk	2009	former fish farm	yes	yes

Conclusion

S. woodiana has established persistent populations in Flanders. Introduction was due to fish stocking. All colonized ponds are connected to rivers belonging to the Schelde Basin and further advance is likely to occur here first. Adverse effects on indigenous unionids and the European bitterling may be expected.

Pathways of introduction and vectors

The **larvae** (glochidia) are **parasites on fish gills** and the species is therefore easily introduced together with stocked fish. *S. woodiana* is a host generalist. Reported hosts that are widely distributed in Belgium include all **carp species** (*Cyprinus*), **bitterling** (*Rhodeus*) and **stone moroko** (*Pseudorasbora*).

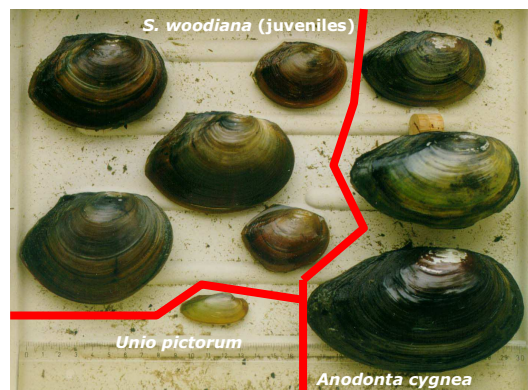
1) Introduction of infected fish for pisciculture, angling or to control aquatic vegetation is probably the main cause of its dispersal throughout Europe and enables colonization of isolated water bodies. The connection of many ponds to water courses facilitates further spread.

2) The species is sold in garden centres as a "biofilter" for garden ponds.

Impact?

In view of its rapid range expansion, *S. woodiana* can be regarded as an invasive species.

The presence of the species could have **adverse effects** on **indigenous unionids** occurring in the same habitats. *Sinanodonta* competes for food and space, is more tolerant to adverse conditions resulting from severe nutrient enrichment and increasing water temperature and its recruitment is higher.



At some sites in Europe, *S. woodiana* has already become more abundant than native unionid species!

2) Reproductive success of the European bitterling – a Habitats directive species – may be reduced when it uses *S. woodiana* as a host to deposit its spawn.

Management?

- prevent stocking with infected fish
- prevent escape of fish from infected ponds
- trading should be banned

Call

We kindly invite you to report new records of *S. woodiana* to jo.packet@inbo.be, tom.vandenneucker@inbo.be or rose.sablon@naturalsciences.be