Zebra Mussel, *Dreissena polymorpha*

**Overview**

Short description of *Dreissena polymorpha*, Zebra Mussel

The Zebra mussel is a sessile bivalve mollusc of typically 20 mm (max. 40 mm) length and brownish-yellowish colour with a characteristic dark and light coloured (“zebra”) zigzag banding.

Description of *Dreissena polymorpha*, Zebra Mussel status in GB

Particularly common in England, but also established in Wales. There have been records from Scotland but no evidence of establishment.

Habitat summary: *Dreissena polymorpha*, Zebra Mussel

It forms dense colonies attached to various hard substrates via byssal threads in both fresh and slightly brackish waters. Prefers moderately productive (mesotrophic) water bodies, and can be found in both flowing and standing water bodies.

**Overview table**

<table>
<thead>
<tr>
<th>Environment</th>
<th>Freshwater</th>
</tr>
</thead>
<tbody>
<tr>
<td>Species status</td>
<td>Non-Native</td>
</tr>
<tr>
<td>Native range</td>
<td>Caucasus, Western Asia, Russia South, Krym, Ukraine</td>
</tr>
<tr>
<td>Functional type</td>
<td>Filter-feeder</td>
</tr>
<tr>
<td>Status in England</td>
<td>Non-Native</td>
</tr>
<tr>
<td>Status in Scotland</td>
<td>Non-Native</td>
</tr>
<tr>
<td>Location of first record</td>
<td>Wisbech (29)</td>
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<tr>
<td>Date of first record</td>
<td>1825</td>
</tr>
</tbody>
</table>

**Invasion history: *Dreissena polymorpha*, Zebra Mussel**

**Origin**

Native to the drainage basins of the Black, Caspian and Aral Seas.

**First Record**

First recorded in GB in Wisbech in 1824 or 1825; probably independent introduction into Scotland (first recorded near Edinburgh in 1833 but with no evidence of establishment).

**Pathway and Method**

It is assumed to have been introduced into GB on timber imported on ships from the Baltic Sea.

**Species Status**

There are historic first records from Southeast England (early 1820s), the Glasgow and Edinburgh canal systems (early 1830s). Although the species failed to establish in Scotland, by the 1850s it had spread throughout the canal basin of England and Wales. In the 1920s it appeared in Sweden, in the 1960s it was found in lakes around the Alps and reached Italy in 1977, Ireland by 1994 and Spain by 2001. In 1988 it first
appeared in Lake St. Clair (USA) and rapidly spread throughout the Great Lakes of North America. Further range expansions are expected in temperate latitudes of the Northern Hemisphere. British population numbers were seen to decline during the 1980s, but since 1999 there has been a dramatic increase in the abundance of this species throughout much of southern and eastern England, including the lower River Thames and the rivers of the Norfolk Broads.

Ecology & Habitat: *Dreissena polymorpha*, Zebra Mussel

**Dispersal Mechanisms**
Zebra mussel larvae are able to drift downstream for 3–4 weeks and up to 300 km before they attach and found new populations, but humans are responsible for most introductions of into new areas. Adults can attach to boats and are thus quickly transported to new sites. Larvae can be transported in fish and bait wells as well as in cooling ports of motors. The most likely introduction vector is shipping (e.g. in ballast water, on timber or river gravel).

**Reproduction**
It is a prolific breeder, with a fully mature mussel being capable of producing up to one million eggs per season, thus enabling a single mussel to establish a new population. Synchronised spawning occurs once >8 mm, begins at 12-15°C and may take place over a period of 3-5 months.

**Known Predators/Herbivores**
These small molluscs are preyed upon by different fish species (e.g. roach, carp, and eel) and also diving ducks, crayfish and muskrats.

**Resistant Stages**
It is able to tolerate low oxygen content in water for several days and to survive out of water under cool damp conditions for up to three weeks.

**Habitat Occupied in GB**
Slow rivers, canals, docks, reservoirs, power station cooling systems, water treatment facilities, water pipelines. The mussel attaches to solid surfaces such as stones, native (unionid) mussels and canal walls using byssus threads. It can colonise soft sediments once dead zebra mussel shells have accumulated to create a suitable substrate.

**Distribution: Dreissena polymorpha, Zebra Mussel**
Established, common and widespread across England and Wales, and recorded (but not established) from some parts of Scotland. Also established in almost all central and western Europe, north-west Russia, and parts of North America.

**Impacts: Dreissena polymorpha, Zebra Mussel**

**Environmental Impact**
Being an active filter feeder with each adult mussel of filtering one or more litres of water each day, large populations of zebra mussels threaten the survival of native faunas by reducing the available amount of nutrients and oxygen, and cause severe habitat alterations. The species' high consumption of phytoplankton results in increased water clarity. It competes for space and food with native mussels and other filter-feeding organisms, and attachment on mussel shells can cause severe reductions and extirpation of native mussel populations.

**Health and Social Impact**
The sharp shells may cause injuries in recreational areas. It is also a nuisance when it grows on recreational boats.

**Economic Impact**
Zebra mussels can clog water pipes, filters and turbines, and have become a major pest in water treatment works and power station intakes. Further economic areas affected include fisheries (interference with fishing gear, alteration of fish communities), aquaculture (fouling of cages) and aquatic transport (fouling of ship hulls and navigational constructions). In North America, Zebra mussel invasions are causing annual multimillion losses to the economy.

**References & Links: Dreissena polymorpha, Zebra Mussel**

**Identification**
Biology, ecology, spread, vectors


Son, M. (2007) Native range of zebra mussel and quagga mussel and new data on their invasions within the pontocaspian region. *Aquatic Invasions, 3*.

Management and impact


General

