

Zebra mussel (*Dreissena polymorpha*)



A: A dense colony on a wooden pole. B: A zebra mussel with the characteristic zigzag pattern. C: Filtering zebra mussels.

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Common name(s) in English	Zebra mussel. Wandering mussel.
... and in other languages	Danish: Vandremusling. Estonian: Tavaline (muutlik) rändkarp. Finnish: Vaeltajasimpukka. German: Wandermuschel. Dreiecksmuschel. Dreikantmuschel. Zebramuschel. Schafklaumuschel. Latvian: Svitraina gliemene. Polish: Racicznica zmienna. Swedish: Vandringsmussla. Vandrarmussla. Zebrarmussla.
Scientific name	<i>Dreissena polymorpha</i>
Organism group	Molluscs. Bivalves
Size and appearance	Zebra mussels are usually around 3 cm long, but can reach up to 5 cm. The shell is a pointed, triangular shape, with V-shaped valves and the ventral side flattened. The colour pattern of the shell can vary, from almost pure black to unpigmented, with a wide variety of striped forms. Juveniles have a distinct zigzag pattern (darker stripes against a light background), but this becomes less marked in adults, which are often more of a dark brown colour. The striped shell gives the species its name of "zebra mussel", while the description "polymorpha" refers to the many variations in colour, pattern and shape which it exhibits.
May be confused with	Adult specimens may be confused with the blue or common mussel (<i>Mytilus edulis</i>).
Geographical origin	Ponto-Caspian region, in and around the Black and Caspian Seas.
First observed in Swedish waters	In Lake Mälaren in 1924.
Occurrence in Swedish seas and coastal areas	The zebra mussel has probably not yet reached Swedish sea areas, but is present in Swedish lakes (Mälaren, Hjälmaren, and other lakes in Uppland connected to them).

<p>Occurrence in other sea areas</p>	<p>In the Baltic Sea, the zebra mussel is found in the Curonian Lagoon, the Gulf of Riga, the Oder/Odra and Vistula Lagoons, and eastern parts of the Gulf of Finland (the Neva estuary), where it was discovered in 1990 after being present in Lake Ladoga for 150 years. The species occurs in several western European countries, including Britain and Ireland, the Netherlands (since 1826), Germany (to which it probably spread when canal links to the east began to be opened up in the early 19th century), and Poland, as well as countries on the east coast of the Baltic (Estonia, Latvia and Lithuania). The species is also advancing in western Asia and south into Turkey. The zebra mussel has become widespread across the United States and Canada (Great Lakes and all major estuaries east of the Rocky Mountains).</p>
<p>Probable means of introduction</p>	<p>With shipping, as a fouling organism or in ballast water. The species also spreads effectively via inland waterways (canals and rivers). As well as on vessels (including recreational craft), the zebra mussel can be transported on floating vegetation and debris.</p> <p>The species probably found its way into the Baltic from the Black Sea via the river Dnieper and the Oginsky Canal, the river Neman, and on into the Curonian Lagoon, but it may also have spread via canals from the Caspian region, using the river Volga and its tributaries.</p> <p>In the United States, the zebra mussel has spread widely as a result of drifting of the larval stage with currents. There are also reports of possible local dispersal of larvae in the wet feathers of waterfowl. In addition, larvae may spread as a result of stocking of fish to an area. They may also end up on scuba divers' wet suits or in scientific sampling equipment, and thus be transferred from one area to another.</p>
<p>Habitat(s) in which species occurs</p>	<p>The zebra mussel thrives in lakes, reservoirs, rivers, and lagoon areas with brackish water. It tolerates salinities of up to around 6 psu and water temperatures up to about 29°C. It prefers relatively still waters (with currents of no more than 2 m/s). By means of byssal threads, the species attaches to hard substrata such as stones, rocks and other bivalves. These threads are formed from a special secretion, in much the same way as when spiders produce threads to spin webs.</p>
<p>Ecological effects</p>	<p>The zebra mussel has a high filtration capacity and is therefore able to outcompete native plankton-feeding species, including fish. It also reproduces very rapidly – a female can produce 1.5 million eggs per year. In the Great Lakes of the United States and Canada, the introduced zebra mussel, first seen there in the 1980s, has caused major disruption of the natural ecosystem of the lakes, and also had significant economic consequences.</p> <p>At the same time, owing to its efficient filtering of the water, the species mitigates the effects of eutrophication and increases water transparency, ultimately improving conditions for benthic vegetation. Established populations are often kept at a controlled level by predation by waterfowl, but when the zebra mussel is introduced to and begins to establish itself in new areas, it usually causes substantial disruption.</p>
<p>Other effects</p>	<p>As yet there are no reports of this mussel causing economic problems in Sweden or other parts of the Baltic on the scale seen in the United States and Canada. There, the species is widely feared, as dense colonies clog the water intakes and cooling systems of power stations and industrial plants, as well as locks and irrigation systems. Mass occurrences of zebra mussels have had impacts on factories, power plants, fisheries and outdoor recreation. At the beginning of the 21st</p>

	<p>century, the total cost of damage and countermeasures in the United States was estimated at several billion dollars. The special legislation introduced in that country to control the introduction of non-indigenous species is to a very large extent an attempt to rein in the continued spread of the zebra mussel.</p> <p>Owing to the risk of further dispersal of the species between lake systems, regulations have been introduced in some areas requiring recreational craft to undergo a special cleaning programme before they can be moved from one system to another. There are also restrictions on transferring bait between different waters.</p>
<p>Additional information</p>	<p>A close relative of the zebra mussel, the quagga mussel (<i>Dreissena rostriformis</i> or <i>D. bugensis</i>), is also present in the Baltic. This species prefers deeper and colder waters than the zebra mussel and could therefore spread north into the Gulf of Bothnia.</p> <p><i>Dreissena polymorpha</i> is regarded as one of the world's 100 worst invasive species (Global Invasive Species Database).</p>

FIND OUT MORE

- North European and Baltic Network on Invasive Alien Species: *Dreissena polymorpha*
<http://www.nobanis.org/speciesInfo.asp?taxaID=246>
-  220 kB: North European and Baltic Network on Invasive Alien Species: *Dreissena polymorpha* Fact Sheet
http://www.nobanis.org/files/factsheets/Dreissena_polymorpha.pdf
- Baltic Sea Alien Species Database: *Dreissena polymorpha*
http://www.ku.lt/nemo/directory_details.php?sp_name=Dreissena+polymorpha
- Regional Biological Invasions Centre: *Dreissena polymorpha*
<http://www.zin.ru/projects/invasions/gaas/drepol.htm>
- Alien species in Poland: *Dreissena polymorpha*
<http://www.iop.krakow.pl/ias/species.asp?217>
- University of Gdansk, Hel Marine Station: Racicznica zmienna
<http://hel.hel.univ.gda.pl/jurek/org/mie/rac/rac.htm>
- Keskkonnaministeerium: Invasiivsed võõrliigid Eestis: Tavaline ehk muutlik rändkarp (p. 42)
<http://www.envir.ee/89801>
- Eesti Mereinstituut: *Dreissena polymorpha*
http://www.sea.ee/Sektorid/merebioloogia/MASE/Benthic_invertebrates.htm
- Global Invasive Species Database: *Dreissena polymorpha*
<http://www.issg.org/database/species/ecology.asp?si=50&fr=1&sts=sss>
- European Nature Information System Database (EUNIS): *Dreissena polymorpha*
<http://eunis.eea.europa.eu/species-factsheet.jsp?idSpecies=101384&idSpeciesLink=101384>
- Aquatic Invasions (2006): Recent invasions of alien macroinvertebrates and loss of native species in the upper Rhine River, Germany
<http://www.aquaticinvasions.ru/2006/index2.html>
-  8,7 MB: Bundesanstalt für Gewässerkunde: Neozoa (Makrozoobenthos) an der deutschen Nordseeküste: Eine Übersicht
http://www.stefannehring.de/downloads/083_Nehring+Leuchs-1999_BfG-Bericht-1200_neozoa-nordsee.pdf
-  35 kB: Gollasch Consulting: Olenin, Orlova & Minchin: *Dreissena polymorpha*
http://www.gollaschconsulting.de/download/Dreissena_p1.pdf
- Das Bewuchs-Atlas-Projekt: *Dreissena polymorpha*
http://www.bewuchs-atlas.de/index.php?option=com_content&task=view&id=84&Itemid=59&orgtsn=81339
-  3,4 MB: Nationaal Natuurhistorisch Museum: Non-indigenous marine and estuarine species in The Netherlands: *Dreissena polymorpha*
<http://www.marbee.fmns.rug.nl/pdf/marbee/2005-Wolf-ZoolMed.pdf>
- Central Fisheries Board (Ireland): General information on Zebra Mussel
<http://www.cfb.ie/Notices/zebramussels.htm>
- US Geological Survey Zebra Mussel Page
<http://nas.er.usgs.gov/taxgroup/mollusks/zebramussel/default.asp>
<http://nas.er.usgs.gov/queries/FactSheet.asp?speciesID=5>

- SeaGrant: Nab the Aquatic Invader: Zeke, the "proowler" zebra mussel
http://www.sgnis.org/kids/suspect_zeke.html
- University of Southern Mississippi/Gulf Coast Research Laboratory: *Dreissena polymorpha*
http://nis.gsmfc.org/nis_factsheet.php?toc_id=131

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http://www.sgnis.org/publicat/slide/zm_s26.htm

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