GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: ***Dreissena polymorpha***

Dreissena polymorpha 简体中文 正體中文

System: Marine

Kingdom	Phylum	Class	Order	Family
Animalia	Mollusca	Bivalvia	Veneroida	Dreissenidae

Common name

Zebra-Muschel (German), moule zebra (French), racicznica zmienna (English, Poland), zebra mussel (English), dreisena (Lithuanian, Lithuania), svitraina gliemene (Latvian, Latvia), vaeltajasimpukka (Finnish, Finland), Zebramuschel (German, Germany), wandering mussel (English), tavaline ehk muutlik r&#65533;ndkarp (Estonian, Estonia), Dreikantmuschel (German, Germany), vandremusling (Danish, Denmark), Dreiecksmuschel (German, Germany), Schafklaumuschel (German, Germany), zebra mussel (Swedish, Sweden), vandringsmussla (Swedish, Sweden), Eurasian zebra mussel (English), Wandermuschel (German, Germany, Austria)

Synonym

Mytilus polymorpha , Pallas 1771
Mytilus polymorphus , (Pallas)
Mytilus hagenii
Tichogonia chemnitzii , (Rossm.)

Similar species

Summary

view this species on IUCN Red List

Species Description

The shell of *D. polymorpha* is triangular (height makes 40-60 % of length) or triagonal with a sharply pointed shell hinge end (umbo). The maximum size of *D. polymorpha* can be 5 centimetres, though individuals rarely exceed 4 cm (Mackie *et al*. 1989). The prominent dark and light banding pattern on the shell is the most obvious characteristic of *D. polymorpha*. The outer covering of the shell (the periostracum) is generally well polished, a light tan in colour with a distinct series of broad, dark, transverse colour bands which may be either smooth or zigzag in shape.
\r\nThe mussel attaches itself to hard surfaces by byssal threads which are secreted from a byssal gland just posterior to the foot. The byssal threads emerge from the between the valves through a byssal notch along the posterior margin. This byssal hold-fast distinguishes the zebra mussel from all other similar-sized or larger North American freshwater bivalves (McMahon 1990; GSMFC 2005).

Notes

The rapid expansion of the zebra mussel has been linked to its possession of planktonic veliger larvae, byssal threads (for attachment to hard surfaces) and high rates of growth and recruitment (Stanczykowska 1977; Carlton 1993, in Ricciardi Serrouya & Whoriskey 1995b).
The specific name *polymorpha* derives from the many variations in shell colour, pattern and shape (Birnbaum 2006).

Lifecycle Stages
Fertilised eggs hatch into trocophores (40-60 microns, 1 to 2 days), which develop within a day into a free-swimming planktonic *veliger*. Veligers develop from a d-shaped to umbonal morphology, and remain planktonic for up to 4 weeks. Optimal temperature for larval development is 20 to 22oC (Benson & Raikow 2008). Larvae normally disperse by being passively carried downstream with water flow (Benson & Raikow 2008). The larvae develop into their juvenile stage once they have reached about 350 microns in size by settling to the bottom where they crawl about by means of a foot, searching for suitable substratum (Benson & Raikow 2008). They then attach themselves to substrates by means of a byssus, a cluster of threads produced by an external organ near their foot (Benson & Raikow 2008). They may mature within the first year of life under optimal conditions; maturity in the second year is more usual. Once attached, the life span of *D. polymorpha* is variable, but can range from 3 to 9 years (Benson & Raikow 2008). Adult mussels can voluntarily detach and move around the substrate to seek alternate locations.

Uses
Bioindicator: Due to its sensitivity to anthropogenic influences *Dreissena* is important as a bioindicator and biomonitoring organism (Franz 1992, in Birnbaum 2006), and quantitative assessments have been conducted regularly since the 1960s in the context of water quality surveys (e.g. in the Rhine) (Schiller 1990, in Birnbaum 2006).
Products: Crushed shells of the zebra mussel can be used as fertiliser and poultry feed (Birnbaum 2006). Zebra mussels have been used as fishing bait and for fish meal production (DAISIE 2006).

Habitat Description
Zebra mussel larvae are planktonic for 2-4 weeks, prior to beginning their juvenile phase by attaching themselves to substrates by means of byssal threads. Although the juveniles prefer a hard or rocky substrate, they have been known to attach to vegetation (Benson & Raikow 2008). In areas where hard substrates are lacking, such as a mud or sand, zebra mussels cluster on any hard surface available (Benson & Raikow 2008). Given a choice of hard substrates, zebra mussels do not show a preference. Zebra mussels attach to any stable substrate in the water column or benthos including rock, macrophytes, artificial surfaces (cement, steel, rope, etc.), crayfish, unionid clams and each other, forming dense colonies called *druses* (Benson & Raikow 2008). As adults, they have a difficult time staying attached when water velocities exceed two meters per second (Benson & Raikow 2008). Long-term stability of substrate affects population density and age distributions on those substrates. Within Polish lakes, perennial plants maintained larger populations than did annuals (Stanczykowska & Lewandowski 1993, in Benson & Raikow 2008). Populations on plants also were dominated by mussels less than a year old, as compared with benthic populations; as the mussel colonies grow they sink the macrophytes to which they are attached.
\r\nIn their native region zebra mussels will colonise surface standing waters, surface running waters, the littoral zone of inland surface waterbodies, estuaries, brackish coastal lagoons, large estuaries and inland waters, and hard and soft bottom habitats (DAISIE 2006). In their occupied invaded range they will colonise similar habitats with the most typical habitats colonised being lakes, rivers, and estuaries, particularly places where there are firm surfaces suitable for attachment (DAISIE 2006). Zebra mussels tolerate temperatures from -20°C to 40°C; the best growth is observed at 18-20°C (DAISIE 2006). They tolerate brackish waters with salinity up to 7 ppt (DAISIE 2006). They are, however, extremely sensitive to rapid fluctuations in salinity; in the northern Gulf of Mexico, where tidal fluctuations are not great, zebra mussels are found to invade areas with salinities up to 12 ppt, however, they appear unable to tolerate salinities above 12 ppt for any extended period (GSMFC 2005). Zebra mussels prefer moderately productive (mesotrophic) temperate water bodies and occur from the lower shore to depths of 12 m in brackish parts of seas and to 60 m in lakes (DAISIE 2006). They are 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 (DAISIE 2006). Zebra mussel are most abundant in hard waters (30-50 mg Ca L-1) but occur in water with Ca concentrations as low as 12 mg Ca L-1 (Cohen and Weinstein 2001).

Reproduction
Zebra mussels have separate sexes, usually with a 1:1 ratio; fertilisation takes place externally (DAISIE 2006). Synchronised spawning occurs once mussels are greater than 8 mm (or females in their second year) and is influenced by water temperatures (DAISIE 2006). A mature female may produce one million eggs per year (DAISIE 2006). Spawning begins at 12 to 15ºC and is optimal at 14 to 16ºC or 18 to 20ºC (depending on sources) and may take place over a period of three to five months (DAISIE 2006; Benson & Raikow 2008). In natural ecosystems oogenesis occurs in autumn, with eggs developing until release and fertilization in spring; in areas of warm water or where the thermal regime has been altered, reproduction can occur continually throughout the year (Benson & Raikow 2008). Eggs are expelled by the females and fertilized outside the body by the males; over 40 000 eggs can be spawned in a reproductive cycle and up to one million in a spawning season (Benson & Raikow 2008).

Nutrition
Zebra mussels filter a wide range of size particles, but select only algae and zooplankton between 15 and 400 microns. Larval stages of the mussel feed on bacteria.

General Impacts
For a detailed account of the environmental impacts of *Dreissena polymorpha* please read: *Dreissena polymorpha* Impacts Information. The information in this document is summarised below.
To date (2002) *D. polymorpha* has been the most aggressive freshwater invader worldwide (Karayayev *et al*. 2002). Once introduced, populations of zebra mussel can grow rapidly and the total biomass of a population can exceed 10 times that of all other native benthic invertebrates (Sokolova *et al*. 1980a; Karatayev *et al*. 1994a; Sinitsyna & Protasov 1994, in Karayayev *et al*. 2002)
Ecosystem Change: Most of the impacts of zebra mussels in freshwater systems are a direct result of their functioning as ecosystem engineers (Karayayev, *et al*. 2002). An individual zebra mussel can filter one to two liters of water each day; as a result high densities of zebra may cause major shifts in the plankton communities of lakes and rivers. Reductions in phytoplankton numbers and biomass also limit food to fish larvae and other consumers further up the food chain (Birnbaum 2006).
Modification of Natural Benthic Communities: The introduction of *Dreissena* is generally associated with increased benthic macroinvertebrate density and taxonomic richness (Ward & Ricciardi 2007). Biodeposition of organic wastes and dense colonization of the benthos by zebra mussels has also substantially altered benthic communities; many invertebrates benefit from the increased food resources and complex habitat, while benthic spawning and foraging fishes may be negatively impacted. Overall gastropod densities increased in the presence of *Dreissena*, but large-bodied snail taxa tended to decline (Ward & Ricciardi 2007).
Habitat Alteration: The high consumption of phytoplankton by zebra mussels results in increased water clarity, changing habitat characteristics and ecosystem functions (DAISIE 2006). The dense colonization of soft substrates can impede fish foraging (Beekey *et al*. 2004), and colonization of hard substrates affects spawning fishes (Marsden & Chotkowski 2001).
Predation: Zebra mussel populations significantly deplete plankton densities as a result of filter feeding.
Competition: Suspension-feeding species may experience increased competition for resources in the presence of high zebra mussel densities, as was reflected in the declines of sphaeriid clams in the Hudson River (Strayer, *et al*. 1998).
Modification of Nutrient Regime: Zebra mussels may influence ecosystem processes such as nitrogen (N) cycling by increasing denitrification rates (Bruesewitz *et al*. 2006).
Threat to Endangered Species: Freshwater mussels (Order Unionoida) are the most imperiled faunal group in North America with 60% of the species considered endangered or threatened (Ricciardi *et al*. 1998). The zebra mussel represents a new stress to populations of these native mussels as it is a biofouling organism that smothers the shells of other molluscs and competes with suspension feeders for food (Ricciardi, *et al*. 1998).
Biofouling: Other mussels serve as substrate for settlement by *Dreissena*, and are energetically stressed and eventually starve as filter feeding is disrupted (Böhmer *et al*. 2001, in Birnbaum 2006)
Economic Impact: Negative economic impacts caused by *D. polymorpha* include those caused by fouling of intake pipes, ship hulls, navigational constructions and aquaculture cages; the zebra mussel may also reduce angling catches (Gollasch & Leppäkoski 1999; Minchin *et al*. 2002, in Birnbaum 2006)
Bioaccumulation: Zebra mussels may bioaccumulate pollutants which may poison animals further up the food chain (DAISIE 2006).

Management Info
The following control methods for zebra mussel are potentially useful in certain circumstances (Benson and Raikow 2008):
• Chemical Molluscicides: Oxidizing (chlorine, chlorine dioxide) and non-oxidizing
• Manual removal (pigging, high pressure wash)
• Dewatering/desiccation (freezing, heated air)
• Thermal (steam injection, hot water 32oC)
• Acoustical vibration
• Electrical current
• Filters/screens
• Coatings: toxic (copper, zinc) and non-toxic (silicone-based)
• Toxic constructed piping (copper, brass, galvanized metals)
• CO2 injection
• Ultraviolet light
• Anoxia/hypoxia
• Flushing
• Biological (predators, parasites, diseases)
Preventative measures: Preventing overseas transfer can only be achieved by mid-ocean exchange or by suitable disinfection of ballast water (DAISIE 2006). Certain guidelines and regulatory instruments may be applied in areas where the species does not yet occur (Gollasch 2006). For further details see the Ballast Water Management Convention of the International Maritime Organization (www.imo.org) and the Code of Practice for the Introduction and Transfer of Marine organisms of the International Council for the Exploration of the Sea (www.ices.dk).
Appropriate control measures (inspection, removal of attached mussels, drying, etc.) should be taken to minimise risk of inoculation by transfer of boats, fishing gears, etc (DAISIE 2006). Applying copper based anti-foulant coatings in new facilities may offer protection from *Dreissena polymorpha*. The use of retrofitted screens can be effective but such screens are difficult to apply to existing pipelines (Aldridge *et al*. 2006).
Physical: Physical removal using high-pressure water jets is feasible on easily accessed industrial facilities (Aldridge *et al*. 2006). Larvae suffer total mortality after exposure to ultrasonic vibration (22 to 800 kHz) for 3 minutes (Schalekamp 1971, in Birnbaum 2006), but the technical effort involved is prohibitive.
Chemical: Many chemicals will kill zebra mussels but the suitability of a particular chemical is determined by considerations of effect on water quality, residual concentrations, byproducts, cost and practicality. Chemicals which have proven moderately successful include molluscicides (such as Bayer 73; Birnbaum 2006), chloramines, chlorine dioxide, ozone, hydrogen peroxide, potassium permanganate, pH adjustment, and inorganic salts. Chlorination remains the only widespread method used. It must be dosed continuously for up to 3 weeks to achieve complete elimination, though dosing for 2-3 days is sufficient to remove the majority of attached mussels.
Microencapsulation of toxins in particles that are edible to zebra mussels has the potential to overcome the rejection and valve-closing response generally seen when zebra mussels are exposed to toxic substances. The active ingredient used is potassium chloride, which is not lethal to most organisms, including fish, at low doses but which is particularly toxic to freshwater bivalves (Aldridge *et al*. 2006). Another emerging control for *D. polymorpha* is the use of endocannabinoids, anandamide and other compounds which have been tested to inhibit zebra mussel byssal attachment. These naturally occurring and synthetic cannabinoids can serve as non-toxic efficacious zebra mussel anti-foulants (Angarano *et al*. 2009).
Biological control: Large-bodied molluscivores such as common carp, freshwater drum, and channel catfish can limit zebra mussel numbers in coastal wetlands. Densities of other molluscs were not affected, suggesting that fish can have a greater impact on numbers of attached zebra mussels than other benthic molluscs (Bowers & DeSzalay, 2007). Known predators also include roach, eel, sturgeon, diving ducks, crayfish and muskrats (Molloy *et al*., 1997).

Pathway
The zebra mussel is possibly introduced into the wild by aquarium dumping.The main pathways of the expansion in the range of *D. polymorpha* are through oceanic shipping, in ballast water, and inland navigation, through solid ballast and other cargoes. Inland navigation transport increased since the opening of new waterwaZebra mussel adults routinely attach to boat hulls and floating objects and are thus anthropogenically transported to new locations (Benson & Raikow 2008). Humans may spread zebra mussels considerable distances upstream on the hulls of commercial barges (Keevin *et al*. 1992, in Ricciardi Serrouya & Whoriskey 1995b) and to isolated lakes and rivers through fishing and boating activity (Carlton 1993, McNabb 1993, in Ricciardi Serrouya & Whoriskey 1995b).*D. polymorpha* could be transported with timber or river gravel and overland transport (DAISIE 2006).

Principal source: Birnbaum, C. 2006. NOBANIS – Invasive Alien Species Fact Sheet – *Dreissena polymorpha* Delivering Alien Invasive Species Inventories for Europe (DAISIE), 2006. *Dreissena polymorpha*

Compiler: IUCN/SSC Invasive Species Specialist Group (ISSG)

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ALIEN RANGE

[1] AUSTRIA
[1] BELGIUM
[1] CROATIA
[1] DENMARK
[1] EUPHRATES RIVER
[1] FAROE ISLANDS
[1] FRANCE
[1] GREENLAND
[1] IRELAND
[1] LAKE CHAMPLAIN
[1] LAKE ERIE
[1] LAKE ONTARIO
[1] LAKE SUPERIOR
[1] LITHUANIA
[1] NORWAY
[1] RIVER RHINE
[1] SLOVENIA
[1] ST. LAWRENCE RIVER
[1] SWITZERLAND
[29] UNITED STATES
[1] BELARUS
[2] CANADA
[1] CZECH REPUBLIC
[1] ESTONIA
[1] EUROPE
[1] FINLAND
[1] GERMANY
[1] ICELAND
[1] ITALY
[1] LAKE CONSTANCE
[1] LAKE MICHIGAN
[1] LAKE ST. CLAIR
[1] LATVIA
[1] NETHERLANDS
[1] POLAND
[1] RUSSIAN FEDERATION
[1] SPAIN
[1] SWEDEN
[4] UNITED KINGDOM

Red List assessed species 1: CR = 1;

Anodonta pallaryi **CR**

BIBLIOGRAPHY
271 references found for **Dreissena polymorpha**

Managment information
Aldridge, David C. and Elliot, Paul 2004. A microencapsulated BioBullet for the control of biofouling zebra mussels. In Abstracts: 13th International Conference on Aquatic Invasive Species, September 20-24, 2004. Lynch West County Hotel, Ennis, County Clare, Ireland.
Summary: Report on the development of a new control method for zebra mussels using biobullets.

Aldridge, David C., Elliott, Paul, Moggridge, Geoff D., 2006. Microencapsulated BioBullets for the control of biofouling zebra mussels. Environmental Science & Technology. 40(3). FEB 1 2006. 975-979.
Angarano, Maj-Britt, McMahon, Robert F., Schetz, John A., 2009. Cannabinoids inhibit zebra mussel (*Dreissena polymorpha*) byssal attachment: a potentially green antifouling technology. Biofouling. 25(2). 2009. 127-138.
Angarano, M., McMahon, R.F. & Schetz, J.A. 2009. Cannabinoids inhibit zebra mussel (*Dreissena polymorpha*) byssal attachment: a potentially green antifouling technology. *Biofouling 25*:127-138.
Aquatic Invaders of Belarus., 2007. Alien Species Database *Dreissena polymorpha*
Summary: This database is of alien aquatic animals inhabiting waterbodies of the Republic of Belarus. It allows to search the species by scientific taxonomy and to get information on their origin, distribution and potential ecological impacts. The database was composed in result of the analysis of literature published during the last century and authors unpublished data. One can find some general information on Belarusian waterbodies, history of construction and functioning of the interbasin shipping canals, links to related sites, etc. The site is under testing and only an English version is available, a Russian version is expected shortly.
The database is available from: http://www.aliensinbelarus.com/content/view/12/28/.
This page is available from: http://www.aliensinbelarus.com/index.php?option=com_database&Itemid=27&id=35&task=one_dat [Accessed 28 May 2007]
Benson, A. J. and D. Raikow. 2009. *Dreissena polymorpha*. USGS Nonindigenous Aquatic Species Database, Gainesville, FL. Revision Date: 10/31/2008
Brady, J., J. E. V. Benschoten, and J. N. Jensen. 1996. *Technical note: Chlorination effectiveness for zebra and quagga mussels*. American Water Works Association. Journal; Jan 1996; 88, 1; ABI/INFORM Trade & Industry pg. 107.
Centre for Environment, Fisheries & Aquaculture Science (CEFAS)., 2008. Decision support tools-Identifying potentially invasive non-native marine and freshwater species: fish, invertebrates, amphibians.
Summary: The electronic tool kits made available on the Cefas page for free download are Crown Copyright (2007-2008). As such, these are freeware and may be freely distributed provided this notice is retained. No warranty, expressed or implied, is made and users should satisfy themselves as to the applicability of the results in any given circumstance. Toolkits available include 1) FISK- Freshwater Fish Invasiveness Scoring Kit (English and Spanish language version); 2) MFISK- Marine Fish Invasiveness Scoring Kit; 3) MI-ISK- Marine invertebrate Invasiveness Scoring Kit; 4) FI-ISK- Freshwater Invertebrate Invasiveness Scoring Kit and AmphISK- Amphibian Invasiveness Scoring Kit. These tool kits were developed by Cefas, with new VisualBasic and computational programming by Lorenzo Vilizzi, David Cooper, Andy South and Gordon H. Copp, based on VisualBasic code in the original Weed Risk Assessment (WRA) tool kit of P.C. Pheloung, P.A. Williams & S.R. Halloy (1999).
The decision support tools are available from:
http://cefas.defra.gov.uk/our-science/ecosystems-and-biodiversity/non-native-species/decision-support-tools.aspx [Accessed 13 October 2011]
The guidance document is available from http://www.cefas.co.uk/media/118009/fisk_guide_v2.pdf [Accessed 13 January 2009].
Cohen, A.N. & Weinstein, A. 2001. Zebra mussel s calcium threshold and implications for its potential distribution in North America. San Francisco Estuary Institute, Richmond, CA .
Drake, J.M. and J.M. Bossenbroek. 2004. The potential distribution of zebra mussels in the United States. BioScience 54:931-941. zebra mussels in the United States. BioScience 54:931-941.
Summary: A paper on forecasting the potential distribution of zebra mussels in the United States using desktop GARP (Genetic Algorithm for Rule-Set Production).
Edwards, William J., Babcock-Jackson, Lisa, Culver, David A. 2000. Prevention of the spread of zebra mussels during fish hatchery and aquaculture activities. North American Journal of Aquaculture. 62(3). July, 2000. 229-236.
Fears, C., and G. L. Mackie. 1995. *Efficacy of Low Level Electric Current (A-C) for Controlling Quagga Mussels in the Welland Canal.*Proceedings of The Fifth International Zebra Mussel and Other Aquatic Nuisance Organisms Conference, Toronto, Canada, February 1995.
Frischer, Marc E., McGrath, Brian R., Hansen, Andrew S., Vescio, Paul A., Wyllie, Jane A., Wimbush, John, Nierzwicki-Bauer, Sandra A., 2005. Introduction pathways, differential survival of adult and larval zebra mussels (*Dreissena polymorpha*), and possible management strategies, in an adirondack lake, Lake George, NY. Lake & Reservoir Management. 21(4). DEC 2005. 391-402.
Garcia, Oscar Nieto. 2004. Biofouling control strategies in ANAV nuclear power plants. In Abstracts: 13th International Conference on Aquatic Invasive Species, September 20-24, 2004. Lynch West County Hotel, Ennis, County Clare, Ireland.
Summary: Effect of zebra mussels on refridgeration structures and the methods used to control their numbers.
Hallac, D.E. & Marsden, J.E. 2000. Tolerance to and recovery from zebra mussel (*Dreissena polymorpha*) fouling in *Elliptio complanata* and *Lampsilis radiate*. *Canadian Journal of Zoology* 78:161-166.
Hewitt, C.L, Campbell, M.L. and Gollasch, S. 2006. Alien Species in Aquaculture. Considerations for responsible use. IUCN, Gland, Switzerland and Cambridge, UK. viii + 32 pp.
Summary: This publication aims to first provide decision makers and managers with information on the existing international and regional regulations that address the use of alien species in aquaculture, either directly or indirectly; and three examples of national responses to this issue (New Zealand, Australia and Chile).
Available from: http://data.iucn.org/dbtw-wpd/edocs/2006-036.pdf [Accessed 22 September 2008]
Horvath, T. 2008. Economically viable strategy for prevention of invasive species introduction: Case study of Otsego Lake, New York. Aquatic Invasions (2008) Volume 3, Issue 1: 3-9.
Kraft, Clifford E. and Johnson, Ladd E. 2000. Regional differences in rates and patterns of North American inland lake invasions by zebra mussels (*Dreissena polymorpha*). Canadian Journal of Fisheries & Aquatic Sciences. 57(5). May, 2000. 993-1001.
Marshall, D. 1999. Pulse generator for biofouling prevention. In Abstracts: First National Conference on Marine Bioinvasions, January 24 -27, 1999. Massachusetts Institute of Technology, Cambridge, MA
Summary: Report into the success of using a pulse power method for controlling zebra mussel numbers.

Messer, C.M. and Veldhuizen, T.C. 2003. Westward Ho : Zebra mussels on the move. In Abstracts: Third International Conference on Marine Bioinvasions, March 16-19, 2003. Scripps Institution of Oceanography La Jolla, California
Summary: Report into a monitoring program and also the possible development of a response plan.
Miller, F. 1982. Evaluation of glyphosate for use against *Merremia* spp. in the Solomon Islands. Tropical Pest Management 28: 347-354.
Minchin, Dan; Lucy, Frances and Sullivan, Monica. 2002. In: E. Leppakoski, S. Gollasch & S. Olenin (eds), Invasive Aquatic Species of Europe: Distribution, Impacts and Management. 135-146.
Summary: Overview of zebra mussel spread in Europe and North America. Finally concentrating on impacts and responses in Ireland.
Molloy, Daniel P.; Gaylo, Michael, J.; Mayer, Denise A. and Presti, Kathleen T. 2004. Progress in the biological control of zebra mussels: Results of laboratory and power plant tests. In Abstracts: 13th International Conference on Aquatic Invasive Species, September 20-24, 2004. Lynch West County Hotel, Ennis, County Clare, Ireland.
Summary: The effectiveness of using *Pseudomonas fluorescens* as a control agent for zebra mussles.
Molloy, D.P., Karatayev, A.Y., Burlakova, L.E., Kurandina, D.P. & Laruelle, F. 1997. Natural enemies of zebra mussels: Predators, parasites, and ecological competitors. *Reviews in Fisheries Science 5*: 27-97.
Park, Kirsty. 2004. Assessment and management of invasive alien predators. Ecology & Society. 9(2). DEC 2004. Article No.: 12.
Ricciardi, A., R. Serrouya, and F. G. Whoriskey. 1995b. Aerial exposure tolerance of zebra and quagga mussels (Bivalvia: Dreissenidae): implications for overland dispersal. Can. J. Fish. Aquat. Sci. 52: 470-477 (1995).
Richerson, M. 2002. *Dreissena* species FAQs, A closer look. FISC - Center for Aquatic Resource Studies: U.S. Department of the Interior & U.S. Geological Survey.
Summary: Available from: http://cars.er.usgs.gov/Nonindigenous_Species/Zebra_mussel_FAQs/Dreissena_FAQs/dreissena_faqs.html [Accessed 02 December 2005]
Rothbard, S. and Rubinshtein, I. 1999. The black carp, a potential biocontrol of mollusks. Israeli Journal of Aquaculture Bamidgeh. 51(2). June, 1999. 74-83.
Schaefer, R. 2004. Development of an efficient low-cost sparker technology for controlling zebra mussels. In Abstracts: 13th International Conference on Aquatic Invasive Species, September 20-24, 2004. Lynch West County Hotel, Ennis, County Clare, Ireland.
Summary: Research into the optimum pressure pulse needed to most effectively control zebra mussels.
Simpson, G. 2001. Ballast Water Disinfection with CLO2. In Abstracts: Second International Conference on Marine Bioinvasions, March 9-11, 2001. New Orleans, LA
Summary: Report into using chlorine dioxide as a treatment for ballast water to prevent the spread of marine invasive species. Available from: http://massbay.mit.edu/resources/pdf/MarinePDF/2001/MBI2001abs10.pdf [Accessed 5 December 2005]
Smythe, A. Garry and Lange, Cameron L., 2004. Efficacy of a starch-based reagent as a proactive control for mussels (*Dreissena* spp.) and other molluscs. In Abstracts: 13th International Conference on Aquatic Invasive Species, September 20-24, 2004. Lynch West County Hotel, Ennis, County Clare, Ireland.
Summary: Study into the effectivness of using a starch based reagent to control zebra mussel numbers.
Tamburri, M.N., Wasson, K. and Matsuda, M. 2001. Ballast water deoxygenation can prevent species introductions while reducing ship corrosion. In Abstracts: Second International Conference on Marine Bioinvasions, March 9-11, 2001. New Orleans, LA
Summary: Deoxygenation of water could be used to kill larvae and adults of zebra mussels in ballast water.
Ussery, T. A., and McMahon, R. F. 1995. Comparative study of the desiccation resistance of zebra mussels (*Dreissena pdyzmvpha*) and quagga mussels (*Dreissena bugensis*), Technical Report EL-95-6, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.
Vander Zanden, M. Jake, Olden, Julian D., 2008. A management framework for preventing the secondary spread of aquatic invasive species. Canadian Journal of Fisheries & Aquatic Sciences. 65(7). JUL 2008. 1512-1522.
Vasarhelyi, C., Thomas, V. G., Niimi, A. J. 2004. Analysis of legislation pertaining to the control and management of exotic aquatic species in Canadian anal adjacent United States waters. Canadian Technical Report of Fisheries & Aquatic Sciences. 2561 2004. 1-39, V.

General information

Alan, J., Nicholas, E. and Mandrak., 2006. Impacts of alien invasive species on freshwater fauna at risk in Canada. Biological Invasions (2006) 8: 13-24
Andraso, Gregory M., 2005. Summer food habits of pumpkinseeds (*Lepomis gibbosus*) and bluegills (*Lepomis macrochirus*) in Presque Isle Bay, Lake Erie. Journal of Great Lakes Research. 31(4). 2005. 397-404.
Anonymous. 2006. Changes in abundance of deep water amphipod *Diporeia* (Pontoporeiidae) in eastern North American lakes with or without *Dreissena* mussels. Canadian Technical Report of Fisheries & Aquatic Sciences. 2636 2006. V,1-88.
Antsulevich, Alexander E., Valipakka, Pentti, Vaittinen, Juhani. 2003. How are the zebra mussels doing in the Gulf of Finland?. Proceedings of the Estonian Academy of Sciences Biology Ecology. 52(3). September 2003. 268-283.
Astanei, Iulian, Gosling, Elizabeth, Wilson, Jim, Powell, Eithne. 2005. Genetic variability and phylogeography of the invasive zebra mussel, *Dreissena polymorpha* (Pallas). Molecular Ecology. 14(6). MAY 05. 1655-1666.
Austen, M., Ciborowski, J., Corkum, L., Johnson, T., MacIsaac, H., Metcalfe-Smith, J., Schloesser, D., George, S. Unknown.Impacts of Aquatic Nonindigenous Invasive Species on the Lake Erie Ecosystem. web2.uwindsor.ca
Bachmann, V., Beisel, J. N., Usseglio-Polatera, P., Moreteau, J. C. 2001. Decline of *Dreissena polymorpha* in the River Moselle: Biotic and abiotic key factors involved in dynamics of invasive species. Archiv fuer Hydrobiologie. 151(2). May, 2001. 263-281.
Bailey, Robert C., Grapentine, Lee, Stewart, Thomas J., Schaner, Ted, Chase, Margo E., Mitchell, Jeremy S., Coulas, Robert A. 1999. Dreissenidae in Lake Ontario: Impact assessment at the whole lake and Bay of Quinte spatial scales. Journal of Great Lakes Research. 25(3). 1999. 482-491.
Baker, Shirley M. and Levinton, Jeffrey S. 2003. Selective feeding by three native North American freshwater mussels implies food competition with zebra mussels. Hydrobiologia. 505 15 September, 2003. 97-105.
Baker, S. M. and Hornbach, D. J. 1997. Acute physiological effects of zebra mussel (*Dreissena polymorpha*) infestation on two unionid mussels, Actiononaias ligamentina and Amblema plicata. Canadian Journal of Fisheries & Aquatic Sciences. 54(3). 1997. 512-519.
Barbiero, Richard P. and Tuchman, Marc L. 2004. Long-term dreissenid impacts on water clarity in Lake Erie. Journal of Great Lakes Research. 30(4). 2004. 557-565.

Barton, David R. 2004. Differences in wave-zone benthic invertebrate communities in Lake Huron and Georgian Bay, 1974-2003. Journal of Great Lakes Research. 30(4). 2004. 508-518.
Barton, David R., Johnson, Reagan A., Campbell, Linda, Petruniak, Jennifer, Patterson, Matthew. 2005. Effects of round gobies (*Neogobius melanostomus*) on dreissenid mussels and other invertebrates in eastern Lake Erie, 2002-2004. Journal of Great Lakes Research. 31(Suppl. 2). 2005. 252-261.
Bartsch, L. A., Richardson, W. B., Sandheinrich, M. B. 2003. Zebra mussels (*Dreissena polymorpha*) limit food for larval fish (*Pimephales promelas*) in turbulent systems: A bioenergetics analysis. Hydrobiologia. 495 15 March, 2003. 59-72.
Bartsch, Michelle R., Bartsch, Lynn A., Gutreuter, Steve. 2005. Strong effects of predation by fishes on an invasive macroinvertebrate in a large floodplain river. Journal of the North American Benthological Society. 24(1). March 2005. 168-177.
Beekey, M.A., McCabe, D.J. & Marsden, J.E. 2004a. Zebra mussels affect benthic predator foraging success and habitat choice on soft sediments. *Oecologia 141*:164-170.
Beekey, M.A., McCabe, D.J. & Marsden, J.E. 2004b. Soft sediment colonization by zebra mussels facilitates invertebrate communities. *Freshwater Biology 49*:1-11.
Berkman, P.A., Haltuch, M.A., Tichich, E., Garton, G.W., Gannon, J., Mackey, S., Fuller, J., Liebenthal, D. 1998. Zebra mussels invade Lake Erie muds. Nature 393, 27-28 (7 May 1998).
Berny, P. J., Veniat, A., Mazallon, M. 2003. Bioaccumulation of lead, cadmium, and lindane in zebra mussels (*Dreissena polymorpha*) and associated risk for bioconcentration in tufted duck (*Aythia fuligula*). Bulletin of Environmental Contamination & Toxicology. 71(1). July 2003. 90-97.
Bially, Andrew and MacIsaac, Hugh J. 2000. Fouling mussels (*Dreissena* spp.) colonize soft sediments in Lake Erie and facilitate benthic invertebrates. Freshwater Biology. 43(1). Jan., 2000. 85-97.
Bierman, Victor J. Jr., Kaur, Jagjit, DePinto, Joseph V., Feist, Timothy J., Dilks, David W. 2005. Modeling the role of zebra mussels in the proliferation of blue-green algae in Saginaw Bay, Lake Huron. Journal of Great Lakes Research. 31(1). 05. 32-55.
Birnbaum, C. 2006. NOBANIS – Invasive Alien Species Fact Sheet – *Dreissena polymorpha*
Summary: Available from: http://www.nobanis.org/files/factsheets/Dreissena_polymorpha.pdf [Accessed 10 August 2009]
Bobat, Alaeddin, Hengirmen, Mehmet Oguz, Zapletal, Walter. 2004. Zebra mussel and fouling problems in the Euphrates Basin. Turkish Journal of Zoology. 28(2). 2004. 161-177.
Bobeldyk, Angela M., Bossenbroek, Jonathan M., Evans-White, Michelle A., Lodge, David M., Lamberti, Gary A. 2005. Secondary spread of zebra mussels (*Dreissena polymorpha*) in coupled lake-stream systems. Ecoscience. 12(3). 2005. 339-346.
Bogan, A. E. 1998. Freshwater molluscan conservation in North America: Problems and practices. Journal of Conchology. SPECIAL PUBL.(2). June, 1998. 223-230.
Bowers, Richard and De Szalay, Ferenc A. 2005. Effects of water level fluctuations on zebra mussel distribution in a Lake Erie coastal wetland. Journal of Freshwater Ecology. 20(1). March 2005. 85-92.
Bowers, Richard and De Szalay, Ferenc A. 2007. Fish predation of Zebra mussels attached to *Quadrula quadrula* (Bivalvia: Unionidae) and benthic molluscs in a Great lake coastal wetland. WETLANDS, Vol. 27, No. 1, March 2007, pp. 203–208
Brazner, John C. and Jensen, Douglas A. 2000. Zebra mussel (*Dreissena polymorpha* (Pallas)) colonization of rusty crayfish (*Orconectes rusticus* (Girard)) in Green Bay, Lake Michigan. American Midland Naturalist. 143(1). Jan., 2000. 250-256.
Bruesewitz, Denise A., Tank, Jennifer L., Bernot, Melody J., Richardson, William B., Strauss, Eric A., 2006. Seasonal effects of the zebra mussel (*Dreissena polymorpha*) on sediment denitrification rates in Pool 8 of the Upper Mississippi River. Canadian Journal of Fisheries & Aquatic Sciences. 63(5). MAY 2006. 957-969.
Bunnell, David B., Madenjian, Charles P., Holuszko, Jeffrey D., Adams, Jean V., French, John R. P. III., 2009. Expansion of *Dreissena* into offshore waters of Lake Michigan and potential impacts on fish populations. Journal of Great Lakes Research. 35(1). MAR 2009. 74-80.
Burlakova, Lyubov E., Karatayev, Alexander Y., Padilla, Dianna K., 2006. Changes in the distribution and abundance of *Dreissena polymorpha* within lakes through time. Hydrobiologia. 571 NOV 2006. 133-146.
Burlakova, Lyubov E., Padilla, Dianna K., Karatayev, Alexander Y., Minchin, Dan., 2006. Endosymbionts of *Dreissena polymorpha* in Ireland: Evidence for the introduction of adult mussels. Journal of Molluscan Studies. 72(Part 2). MAY 2006. 207-210.
Butkas, K. J., Ostrofsky, M. L., 2006. The status of unionid and dreissenid mussels in northwestern Pennsylvania inland lakes. Nautilus. 120(3). SEP 22 2006. 106-111.
Caraco, Nina F., Jonathan J. Cole, Peter A. Raymond, David L. Strayer, Michael L. Pace, Stuart E. G. Findlay, and David T. Fischer., 1997. Zebra Mussel Invasion in a Large, Turbid River: Phytoplankton Response to Increased Grazing. Ecology, 78(2), 1997, pp. 588–602
Carlton, James T., 2008. The Zebra Mussel *Dreissena polymorpha* Found in North America in 1986 and 1987. Journal of Great Lakes Research. 34(4). DEC 2008. 770-773.
Cecala, Rebecca K., Mayer, Christine M., Schulz, Kimberly L., Mills, Edward L., 2008. Increased Benthic Algal Primary Production in Response to the Invasive Zebra Mussel (*Dreissena polymorpha*) in a Productive Ecosystem, Oneida Lake, New York. Journal of Integrative Plant Biology. 50(11). NOV 2008. 1452-1466.
CH2M HILL. 2007. Colonization of cargo residue in the Great Lakes by Zebra mussel (*Dreissena polymorpha*) and Quagga mussel (*Dreissena bugensis*). USCG Great Lakes Mussel Report.
Cloe, W.W., Garman, G.C., Stranko, S.A. 1995. The potential of the Bull chub (*Nocomis raneyi*) as a predator of the Zebra Mussel (*Dreissena polymorpha*) in Mid-Atlantic coastal rivers. American Midland Naturalist, Vol. 133, No. 1 (Jan., 1995), pp. 170-176

CONABIO. 2008. Sistema de informaci&#65533;n sobre especies invasoras en M&#65533;xico. Especies invasoras - Moluscos. Comisi&#65533;n Nacional para el Conocimiento y Uso de la Biodiversidad. Fecha de acceso.
Summary: English:
The species list sheet for the Mexican information system on invasive species currently provides information related to Scientific names, family, group and common names, as well as habitat, status of invasion in Mexico, pathways of introduction and links to other specialised websites. Some of the higher risk species already have a direct link to the alert page. It is important to notice that these lists are constantly being updated, please refer to the main page (http://www.conabio.gob.mx/invasoras/index.php/Portada), under the section Novedades for information on updates.
Invasive species - Molluscs is available from: http://www.conabio.gob.mx/invasoras/index.php/Especies_invasoras_-_Moluscos[Accessed 30 July 2008]
Spanish:
La lista de especies del Sistema de informaci&#65533;n sobre especies invasoras de m&#65533;xico cuenta actualmente con informaci&#65533;n aceca de nombre cient&#65533;fico, familia, grupo y nombre com&#65533;n, as&#65533; como h&#65533;bitat, estado de la invasi&#65533;n en M&#65533;xico, rutas de introducci&#65533;n y ligas a otros sitios especializados. Algunas de las especies de mayor riesgo ya tienen una liga directa a la p&#65533;gina de alertas. Es importante resaltar que estas listas se encuentran en constante proceso de actualizaci&#65533;n, por favor consulte la portada (http://www.conabio.gob.mx/invasoras/index.php/Portada), en la secci&#65533;n novedades, para conocer los cambios.
Especies invasoras - Moluscos is available from: http://www.conabio.gob.mx/invasoras/index.php/Especies_invasoras_-_Moluscos [Accessed 30 July 2008]
Conroy, Joseph D., William J. Edwards, Ruth A. Pontius, Douglas D. Kane, Hongyan Zhang, John F. Shea, Julie N. Richey and David A. Culver., Soluble nitrogen and phosphorus excretion of exotic freshwater mussels (*Dreissena* spp.): potential impacts for nutrient remineralisation in western Lake Erie. Freshwater Biology Volume 50 Issue 7, Pages 1146 - 1162
Cope, W. G., Bartsch, M. R., Hightower, J. E., 2006. Population dynamics of zebra mussels *Dreissena polymorpha* (Pallas, 1771) during the initial invasion of the Upper Mississippi River, USA. Journal of Molluscan Studies. 72(Part 2). MAY 2006. 179-188.
Delivering Alien Invasive Species Inventories for Europe (DAISIE), 2006. Factsheet *Dreissena polymorpha*
Summary: Available from: http://www.europe-aliens.org/pdf/Dreissena_polymorpha.pdf [Accessed 10 August 2009]
Delivering Alien Invasive Species Inventories for Europe (DAISIE), 2006. *Dreissena polymorpha*
Summary: Available from: http://www.europe-aliens.org/speciesFactsheet.do?speciesId=50169 [Accessed 10 August 2009]
Dermott, Ronald, Munawar, Mohiuddin, Bonnell, Robert, Carou, Silvina, Niblock, Heather, Nalepa, Thomas F., Messick, Gretchen. 2005. Preliminary investigations for causes of the disappearance of Diporeia spp. from Lake Ontario. Great Lakes Fishery Commission Technical Report.(66). MAR 05. 203-232.
Diggins, Thomas P., Weimer, Michael, Stewart, Kenton M., Baier, Robert E., Meyer, Anne E., Forsberg, Robert F., Goehle, Michael A. 2004. Epiphytic refugium: Are two species of invading freshwater bivalves partitioning spatial resources?. Biological Invasions. 6(1). 2004. 83-88.
Elderkin, Curt L., Stoeckel, James A., Klerks, Paul L., Berg, David J. 2004. Heritability of heat tolerance in zebra mussel veligers. Journal of Great Lakes Research. 30(3). 2004. 360-366.
Ellis, Sandra, MacIsaac, Hugh J., 2009. Salinity tolerance of Great Lakes invaders. Freshwater Biology. 54(1). JAN 2009. 77-89.
Fincke, Ola M., Santiago, Diana, Hickner, Stephen, Bienek, Rosalie., 2009. Susceptibility of larval dragonflies to zebra mussel colonization and its effect on larval movement and survivorship. Hydrobiologia. 624(1). MAY 2009. 71-79.
Findlay, S., Pace, M. L., Fischer, D. T. 1998. Response of heterotropic planktonic bacteria to the zebra mussel invasion of the tidal freshwater Hudson River. Microbial Ecology. 36(2). Sept.-Oct., 1998. 131-140.
Fitzsimons, John D.; Williston, Bill and Fodor, Georgina 2004. An assessment of the direct and indirect impacts of aquatic invasive species on lake trout restoration in the Great Lakes. In Abstracts: 13th International Conference on Aquatic Invasive Species, September 20-24, 2004. Lynch West County Hotel, Ennis, County Clare, Ireland.
Summary: Impacts of some invasive species on native species within the Great Lakes.
French, John R. P. III, Schaeffer, Jeffrey S., Roseman, Edward F., Kiley, Courtney S., Fouilleroux, Alexandria., 2009. Abundance and distribution of benthic macroinvertebrates in offshore soft sediments in Western Lake Huron, 2001-2007. Journal of Great Lakes Research. 35(1). MAR 2009. 120-127.
Garton, David W., Payne, Christopher D., Montoya, Joseph P. 2005. Flexible diet and trophic position of dreissenid mussels as inferred from stable isotopes of carbon and nitrogen. Canadian Journal of Fisheries & Aquatic Sciences. 62(5). MAY 05. 1119-1129.
Gergs, Rene, Rothhaupt, K. -O., 2008. Feeding rates, assimilation efficiencies and growth of two amphipod species on biodeposited material from zebra mussels. Freshwater Biology. 53(12). DEC 2008. 2494-2503.
Golubkov, Sergey M., Back, Saara, Nikulina, Vera N., Orlova, Marina I., Anokhina, Lydia E., Umnova, Ludmila P. 2003. Effects of eutrophication and invasion of *Dreissena polymorpha* in the coastal zone of the eastern Gulf of Finland. Proceedings of the Estonian Academy of Sciences Biology Ecology. 52(3). September 2003. 218-235.
Gonzalez, Maria J. and Downing, Amy. 1999. Mechanisms underlying amphipod responses to zebra mussel (*Dreissena polymorpha*) invasion and implications for fish-amphipod interactions. Canadian Journal of Fisheries & Aquatic Sciences. 56(4). April, 1999. 679-685.
Greenwood, Kim S., Thorp, James H., Summers, R. Brent, Guelda, Debra L. 2001. Effects of an exotic bivalve mollusc on benthic invertebrates and food quality in the Ohio River. Hydrobiologia. 462 15 October, 2001. 169-172.
Grigorovich, I. A., and L. V. Shevtsova. 1995.*Effect of Dreissena Mussels on the Distribution of Zooplankton as Exemplified by the Main Kakhovka Canal*. Proceedings of The Fifth International Zebra Mussel and Other Aquatic Nuisance Organisms Conference, Toronto, Canada, February 1995.
Grigorovich, Igor A., Angradi, Ted R., Stepien, Carol A. 2008. Occurrence of the quagga mussel (*Dreissena bugensis*) and the zebra mussel (*Dreissena polymorpha*) in the upper Mississippi River system. Journal of Freshwater Ecology. 23(3). SEP 2008. 429-435.
Grigorovich, Igor A., Kelly, John R., Darling, John A., West, Corlis W. 2008. The quagga mussel invades the Lake Superior basin. Journal of Great Lakes Research. 34(2). JUN 2008. 342-350.
Gurevitch, Jessica and Padilla, Dianna K. 2004. Response to Ricciardi. Assessing species invasions as a cause of extinction. Trends in Ecology & Evolution. 19(12). December 2004. 620.

Haynes, James M., Tisch, Nancy A., Mayer, Christine M., Rhyne, Randall S. 2005. Benthic macroinvertebrate communities in southwestern Lake Ontario following invasion of Dreissena and Echinogammarus: 1983 to 2000. Journal of the North American Benthological Society. 24(1). March 2005. 148-167.
Hebert, P. D. N., Muncaster, B. W. and Mackie, G. L. 1989. Ecological and genetic studies on *Dreissena polymorpha* (Pallas): a new mollusc in the Great Lakes. Can. J. Fish. Aquat. Sci. 46: 1587-1591.
Hebert, P. D. N., Wison, C. C., Murdoch, M. H. and Lazar, R. 1991. Demography and ecological impacts of the invading mollusc Dreissena polymorpha. Can. J. Zool. 69: 405-409.
Holland, Ruth E., 1993. Changes in Planktonic Diatoms and Water Transparency in Hatchery Bay, Bass Island Area, Western Lake Erie. . J. Great Lakes Res. 19(3):617-624 Since the Establishment of the Zebra Mussel
Horvath, Thomas G. and Lamberti, Gary A. 1997. Drifting macrophytes as a mechanism for zebra mussel (*Dreissena polymorpha*) invasion of lake-outlet streams. American Midland Naturalist. 138(1). 1997. 29-36.
Horvath, Thomas G., Martin, Kristine M., Lamberti, Gary A. 1999. Effect of zebra mussels, *Dreissena polymorpha*, on macroinvertebrates in a lake-outlet stream. American Midland Naturalist. 142(2). Oct., 1999. 340-347.
Hubenov, Zdravko., 2005. *Dreissena* (Bivalvia: Dreissenidae) - Systematics, autochthonous and anthropogenic areas. Acta Zoologica Bulgarica. 57(3). DEC 2005. 259-268.
Hubenov, Zdravko and Trichkova, Teodora. 2007. *Dreissena bugensis* (Mollusca : Bivalvia : Dreissenidae) new invasive species to the Bulgarian malacofauna. Acta Zoologica Bulgarica. 59(2). AUG 2007. 203-209.
Hunter, R. Douglas and Simons, Katherine A. 2004. Dreissenids in Lake St. Clair in 2001: Evidence for population regulation. Journal of Great Lakes Research. 30(4). 2004. 528-537.
ITIS (Integrated Taxonomic Information System), 2004. Online Database *Dreissena polymorpha*
Summary: An online database that provides taxonomic information, common names, synonyms and geographical jurisdiction of a species. In addition links are provided to retrieve biological records and collection information from the Global Biodiversity Information Facility (GBIF) Data Portal and bioscience articles from BioOne journals.
Available from:
http://www.cbif.gc.ca/pls/itisca/taxastep?king=every&p_action=containing&taxa=Dreissena+polymorpha&p_format=&p_ifx=plglt&p_lang= [Accessed December 31 2004]
ITIS (Integrated Taxonomic Information System). 2005. *Dreissena bugensis*. Integrated Taxonomic Information System [Online Database].
Summary: Available from: http://www.itis.usda.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=567514 [Accessed 2 December 2009]
Jack, Jeffrey D. and Thorp, James H. 2000. Effects of the benthic suspension feeder *Dreissena polymorpha* on zooplankton in a large river. Freshwater Biology. 44(4). August, 2000. 569-579.
Johnson, Ladd E. and Padilla, Dianna K. 1996. Geographic spread of exotic species: Ecological lessons and opportunities from the invasion of the zebra mussel *Dreissena polymorpha*. Biological Conservation. 78(1-2). 1996. 23-33.
Johnson, Ladd E., Bossenbroek, Jonathan M., Kraft, Clifford E., 2006. Patterns and pathways in the post-establishment spread of non-indigenous aquatic species: The slowing invasion of North American inland lakes by the zebra mussel. Biological Invasions. 8(3). APR 2006. 475-489.
Jones, Lisa A. and Anthony Ricciardi., 2005. Influence of physicochemical factors on the distribution and biomass of invasive mussels (*Dreissena polymorpha* and *Dreissena bugensis*) in the St. Lawrence River. Can. J. Fish. Aquat. Sci. 62: 1953–1962 (2005)
Karatayev, Alexander Y., Burlakova, Lyubov E., Padilla, Dianna K. 1997. The effects of *Dreissena polymorpha* (Pallas) invasion on aquatic communities in eastern Europe. Journal of Shellfish Research. 16(1). 1997. 187-203.
Karatayev, Alexander Y., Lyubov E. Burlakova, and Dianna K. Padilla., 2005. R.F. Dame and S. Olenin (eds.),Contrasting Distribution and Impacts of Two Freshwater Exotic Suspension Feeders *Dreissena polymorpha* and Corbicula fluminea., 2005. The Comparative Roles of Suspension-Feeders in Ecosystems, 239–262.
Karayayev, A., Burlakova, L.E. & Padilla, D.K. 2002. Impacts of Zebra Mussels on Aquatic Communities and Their Role as Ecosystem Engineers. In: E. Leppakoski, S. Gollasch & S. Olenin (eds), Invasive Aquatic Species of Europe: Distribution, Impacts and Management.
Kirk, James P. 2004. Ecosystem-level impacts of zebra mussels in Lake Winnebago, Wisconsin. In Abstracts: 13th International Conference on Aquatic Invasive Species, September 20-24, 2004. Lynch West County Hotel, Ennis, County Clare, Ireland.
Summary: Effect of zebra mussels on fish communities in Lake Winnebago in Wisconsin
Kobak, Jaroslaw. 2004. Recruitment and small-scale spatial distribution of *Dreissena polymorpha* (Bivalvia) on artificial materials. Archiv fuer Hydrobiologie. 160(1). May 2004. 25-44.
Kolar, Cynthia S., Fullerton, Aimee H., Martin, Kristine M., Lamberti, Gary A. 2002. Interactions among zebra mussel shells, invertebrate prey, and Eurasian ruffe or yellow perch. Journal of Great Lakes Research. 28(4). 2002. 664-673.
Kuhns, Linda A. and Berg, Martin B. 1999. Benthic invertebrate community responses to round goby (*Neogobius melanostomus*) and zebra mussel (*Dreissena polymorpha*) invasion in southern Lake Michigan. Journal of Great Lakes Research. 25(4). 1999. 910-917.
Lammens, Eddy H. R R., Van Nes, Egbert H., Meijer, Marie-Louise, Van den Berg, Marcel S. 2004. Effects of commercial fishery on the bream population and the expansion of Chara aspera in Lake Veluwe. Ecological Modelling. 177(3-4). October 1, 2004. 233-244.
Lancioni, T. and Gaino, E. 2006. The invasive zebra mussel *Dreissena polymorpha* in Lake Trasimeno (Central Italy): Distribution and reproduction. Italian Journal of Zoology, December 2006; 73(4): 335–346.
Lauer, Thomas E. and McComish, Thomas S. 2001. Impact of zebra mussels (*Dreissena polymorpha*) on fingernail clams (Sphaeriidae) in extreme southern Lake Michigan. Journal of Great Lakes Research. 27(2). 2001. 230-238.
Lauer, Thomas E. and Spacie, Anne. 2004. Space as a limiting resource in freshwater systems: competition between zebra mussels (*Dreissena polymorpha*) and freshwater sponges (Porifera). Hydrobiologia. 517(1-3). April 2004. 137-145.
Lavrentyev, Peter J., Gardner, Wayne S., Cavaletto, Joann F., Beaver, John R. 1995. Effects of the zebra mussel (*Dreissena polymorpha* Pallas) on protozoa and phytoplankton from Saginaw Bay, Lake Huron. Journal of Great Lakes Research. 21(4). 1995. 545-557.
Lederer, Amanda, Massart, Jamie, Janssen, John. 2006. Impact of round gobies (*Neogobius melanostomus*) on dreissenids (*Dreissena polymorpha* and *Dreissena bugensis*) and the associated macroinvertebrate community across an invasion front. Journal of Great Lakes Research. 32(1). 2006. 1-10.

Lederer, Amanda M., Janssen, John, Reed, Tara, Wolf, Amy. 2008. Impacts of the Introduced Round Goby (*Apollonia melanostoma*) on Dreissenids (*Dreissena polymorpha* and *Dreissena bugensis*) and on Macroinvertebrate Community between 2003 and 2006 in the Littoral Zone of Green Bay, Lake Michigan. Journal of Great Lakes Research. 34(4). DEC 2008. 690-697.
Leung, Brian, Drake, John M., Lodge, David M. 2004. Predicting invasions: Propagule pressure and the gravity of allee effects. Ecology (Washington D C). 85(6). June 2004. 1651-1660.
Lewandowski, Krzysztof, Ozimek, Teresa. 1997. Relationship of *Dreissena polymorpha* (Pall.) to various species of submerged macrophytes. Polskie Archiwum Hydrobiologii. 44(4). 1997. 457-466.
Lohner, Rachel N., Sigler, Von, Mayer, Christine M., Balogh, Csilla. 2007. A comparison of the benthic bacterial communities within and surrounding Dreissena clusters in lakes. Microbial Ecology. 54(3). OCT 2007. 469-477.
L vova, A. A. 2004. On invasion of *Dreissena bugensis* (Bivalvia, Dreissenidae) in the Ucha Reservoir (Moscow oblast) and the Moscow River. Zoologicheskii Zhurnal. 83(6). June 2004. 766-768.
MacIsaac, H. J. 1996. Potential abiotic and biotic impacts of zebra mussels on the inland waters of North America. Amer. Zool. 36: 287-299.
Macisaac, Hugh J. 1996. Potential abiotic and biotic impacts of zebra mussels on the inland waters of North America. American Zoologist. 36(3). 1996. 287-299.
Macisaac, Hugh J., Lonnee, Christopher J., Leach, J. H. 1995. Suppression of microzooplankton by zebra mussels: Importance of mussel size. Freshwater Biology. 34(2). 1995. 379-387.
Mackie, Gerald L. and Don W. Schloesser., 1996. Comparative Biology of Zebra Mussels in Europe and North America: An Overview. AMER. ZOOL., 36:244-258 (1996)
Mackie, G.L., 1991. Biology of the exotic zebra mussel, *Dreissena polymorpha*, in relation to native bivalves and its potential impact in Lake St . Clair. Hydrobiologia 219 : 251-268, 1991
Magoulick, Daniel D. and Lewis, Lindsey C. 2002. Predation on exotic zebra mussels by native fishes: Effects on predator and prey. Freshwater Biology. 47(10). October, 2002. 1908-1918.
Maguire, Caitriona M. 2004. The impact of the zebra mussel invasion on phytoplankton, zooplankton and benthic macroinvertebrate communites in a large Irish lake. In Abstracts: 13th International Conference on Aquatic Invasive Species, September 20-24, 2004. Lynch West County Hotel, Ennis, County Clare, Ireland.
Summary: Zebra mussels have affected the food webs existing in this habitat.
Maguire, M Catriona and Jonathan Grey., 2006. Determination of zooplankton dietary shift following a zebra mussel invasion, as indicated by stable isotope analysis. Freshwater Biology Volume 51 Page 1310 - July 2006
Marsden, J.E. & Chotkowski, M.A. 2001. Lake trout spawning on artificial reefs fouled by zebra mussels: fatal attraction? *Journal of Great Lakes Research 27*:33-43.
Marsden, J.E. & Hauser, M. 2009. Exotic species in Lake Champlain. *Journal of Great Lakes Research 35*:250-265.
Marsden, J. Ellen and Robillard, Steven R. 2004. Decline of yellow perch in southwestern Lake Michigan, 1987-1997. North American Journal of Fisheries Management. 24(3). August 2004. 952-966.
Martel, A. 1993. Dispersal and recruitment of zebra mussel (*Dreissena polymorpha*) in a nearshore area in west-central Lake Erie: the significance of postmetamorphic drifting. *Canadian Journal of Fisheries and Aquatic Sciences 50*:3-12
Mayer, C. M., Rudstam, L. G., Mills, E. L., Cardiff, S. G., Bloom, C. A. 2001. Zebra mussels (*Dreissena polymorpha*), habitat alteration, and yellow perch (*Perca flavescens*) foraging: System-wide effects and behavioural mechanisms. Canadian Journal of Fisheries & Aquatic Sciences. 58(12). Decembre, 2001. 2459-2467.
Mayer, C. M., VanDeValk, A. J., Forney, J. L., Rudstam, L. G., Mills, E. L. 2000. Response of yellow perch (*Perca flavescens*) in Oneida Lake, New York, to the establishment of zebra mussels (*Dreissena polymorpha*). Canadian Journal of Fisheries & Aquatic Sciences. 57(4). April, 2000. 742-754.
May, Gemma E., Gelembiuk, Gregory W., Panov, Vadim E., Orlova, Marina I., Lee, Carol Eunmi., 2006. Molecular ecology of zebra mussel invasions. Molecular Ecology. 15(4). APR 2006. 1021-1031.
McCabe, Declan J. 2004. Effects of zebra mussels on habitat use and foraging success of juvenile lake sturgeon (*Acipenser fluvescens*): Implications for reintroduction efforts. In Abstracts: 13th International Conference on Aquatic Invasive Species, September 20-24, 2004. Lynch West County Hotel, Ennis, County Clare, Ireland.
Summary: Effects of zebra mussel mats on the foraging success of juvenile lake sturgeon.
McGregor, Stuart W. and Garner, Jeffrey T. 2004. Changes in the freshwater mussel (Bivalvia: Unionidae) fauna of the Bear Creek system of Northwest Alabama and Northeast Mississippi. American Malacological Bulletin. 18(1-2). May 7, 2004. 61-70.
McMahon, Robert F. 1996. The physiological ecology of the zebra mussel, *Dreissena polymorpha*, in North America and Europe. American Zoologist. 36(3). 1996. 339-363.
McNickle, Gordon G., Rennie, Michael D., Sprules, W. Gary., 2006. Changes in benthic invertebrate communities of South Bay, Lake Huron following invasion by zebra mussels (*Dreissena polymorpha*), and potential effects on lake whitefish (*Coregonus clupeaformis*) diet and growth. Journal of Great Lakes Research. 32(1). 2006. 180-193.
Mercer, J. L., Fox, M. G., Metcalfe, C. D. 1999. Changes in benthos and three littoral zone fishes in a shallow, eutrophic Ontario lake following the invasion of the zebra mussel (*Dreissena polymorpha*). Lake & Reservoir Management. 15(4). Dec., 1999. 310-323.
Mills, Edward L., Rosenberg, Gary, Spidle, Adrian P., Ludyanskiy, Michael, Pligin, Yuri, May, Bernie. 1996. A review of the biology and ecology of the quagga mussel (*Dreissena bugensis*), a second species of freshwater dreissenid introduced to North America. American Zoologist. 36(3). 1996. 271-286.
Mills, E. L., J. R. Chrisman, B. Baldwin, R. W. Owens, R. O. Gorman, T. Howell, E. F. Roseman, and K. M. Raths. 1999. *Changes in the Dreissenid Community in the Lower Great Lakes with Emphasis on Southern Lake Ontario*. Journal Great Lakes Res. 25(1):187-197.
Minchin, D., Lucy, F., Sullivan, M. 2005. Ireland: a new frontier for the zebra mussel *Dreissena polymorpha* (Pallas). Oceanological and Hydrobiological Studies
Vol. XXXIV, (19-30).
Mitchell, Jeremy S., Bailey, Robert C., Knapton, Richard W. 2000. Effects of predation by fish and wintering ducks on dreissenid mussels at Nanticoke, Lake Erie. Ecoscience. 7(4). 2000. 398-409.

Mohr, Lloyd C. and Ebener, Mark P. 2005. Status of lake whitefish (Coregonus clupeaformis) in Lake Huron. Great Lakes Fishery Commission Technical Report.(66). MAR 05. 105-125.
Molloy, D.P., Vaate, A., Wilke, T., Giamberini, L. 2007. Discovery of *Dreissena rostriformis bugensis* (Andrusov 1897) in Western Europe. Biol Invasions (2007) 9:871&#65533;874.
Morpurgo, Massimo and Thaler, Bertha. 2002. Find of *Dreissena polymorpha* (Pallas) (Mollusca, Bivalvia) in the Lake of Monticolo (South Tyrol, Italy). Gredleriana. 2 2002. 219-222.
Morrison, Todd W., Lynch., William E., Jr., Dabrowski, Konrad. 1997. Predation on zebra mussels by freshwater drum and yellow perch in western Lake Erie. Journal of Great Lakes Research. 23(2). 1997. 177-189.
Moyle, P.B., 1991. Ballast water introductions. Fisheries, 16(1):4-6.
Muirhead, Jim R. and MacIsaac, Hugh J. 2004. Life-history varition and the spread of aquatic nonindigenous species across Ontario lakes. In Abstracts: 13th International Conference on Auatic Invasive Species, September 20-24, 2004. Lynch West County Hotel, Ennis, County Clare, Ireland.
Summary: Differences in life history may influence the spread of an invasive species. This assumption is tested by a comparison of two invasive species.
Munawar, M., Munawar, I. F., Mandrak, N. E., Fitzpatfick, M., Dermott, R., Leach, J. 2005. An overview of the impact of non-indigenous species on the food web integrity of North American Great Lakes: Lake Erie example. Aquatic Ecosystem Health & Management. 8(4). DEC 2005. 375-395.
Musko, Ilona B., Bako, Beata. 2005. The density and biomass of *Dreissena polymorpha* living on submerged macrophytes in Lake Balaton (Hungary). Archiv fuer Hydrobiologie. 162(2). FEB 05. 229-251.
Nalepa, Thomas F., Fanslow, David L., Lang, Gregory A., 2009a. Transformation of the offshore benthic community in Lake Michigan: recent shift from the native amphipod Diporeia spp. to the invasive mussel *Dreissena rostriformis bugensis*. Freshwater Biology. 54(3). MAR 2009. 466-479.
Nalepa, Thomas F., Harston, David J., Gostenik, Gerald W., Fanslow, David L., Lang, Gregory A. 1996. Changes in the freshwater mussel community of Lake St. Clair: From Unionidae to *Dreissena polymorpha* in eight years. Journal of Great Lakes Research. 22(2). 1996. 354-369.
Nalepa, Thomas F., Pothoven, Steven A., Fanslow, David L., 2009b. Recent changes in benthic macroinvertebrate populations in Lake Huron and impact on the diet of lake whitefish (*Coregonus clupeaformis*). Aquatic Ecosystem Health & Management. 12(1). 2009. 2-10.
Nalepa, Thomas F., Schloesser, Don W., Pothoven, Steve A., Hondorp, Darryl W., Fanslow, David L., Tuchman, Marc L., Fleischer, Guy W. 2001. First finding of the amphipod *Echinogammarus ischnus* and the mussel *Dreissena bugensis* in Lake Michigan. Journal of Great Lakes Research. 27(3). 2001. 384-391.
Neves, Richard J. 1999. Conservation of North America s freshwater mussel fauna (Unionoidea) from the threat posed by the exotic zebra mussel (*Dreissena polymorpha*). Malacological Review.(Supplement 8). 1999. 107-118.
Ng, Wing. 2004. Zebra mussel control at Darlington Nuclear generating station. In Abstracts: 13th International Conference on Aquatic Invasive Species, September 20-24, 2004. Lynch West County Hotel, Ennis, County Clare, Ireland.
Summary: Paper discussing the effects of zebra mussel abundance increase.
Nichols, S. Jerrine and Amberg, Jon. 1999. Co-existence of zebra mussels and freshwater unionids: Population dynamics of Leptodea fragilis in a coastal wetland infested with zebra mussels. Canadian Journal of Zoology. 77(3). March, 1999. 423-432.
Nichols, Susan Jerrine. 1996. Variations in the reproductive cycle of *Dreissena polymorpha* in Europe, Russia, and North America. American Zoologist. 36(3). 1996. 311-325.
Noonburg, Erik G., Shuter, Brian J., Abrams, Peter A. 2003. Indirect effects of zebra mussels (*Dreissena polymorpha*) on the planktonic food web. Canadian Journal of Fisheries & Aquatic Sciences. 60(11). November 2003. 1353-1368.
Olenin, Sergej. 2005. Invasive aquatic species in the Baltic states. Coastal Research and Planning Institute, Klaipeda University.
Orlova, Marina I. and Panov, Vadim E. 2004. Establishment of the zebra mussel, *Dreissena polymorpha* (Pallas), in the Neva Estuary (Gulf of Finland, Baltic Sea): distribution, population structure and possible impact on local unionid bivalves. Hydrobiologia. 514(1-3). February 15, 2004. 207-217.
Orlova, Marina I., Telesh, Irena V., Berezina, Nadezhda A., Antsulevich, Alexander E., Maximov, Alexey A., Litvinchuk, Larissa F., 2006. Effects of nonindigenous species on diversity and community functioning in the eastern Gulf of Finland (Baltic Sea). Helgoland Marine Research. 60(2). MAY 2006. 98-105.
Orlova, Marina I., Therriault, Thomas W., Antonov, Pavel I., Shcherbina, Gregory Kh., 2005. Invasion ecology of quagga mussels (*Dreissena rostriformis bugensis*): a review of evolutionary and phylogenetic impacts. Aquatic Ecology. 39(4). DEC 2005. 401-418.
Orlova, M. I. and Shcherbina, G. Kh. 2002. On distribution of *Dreissena bugensis* (Dreissenidae, Bivalvia) in reservoirs of the Upper Volga River basin. Zoologicheskii Zhurnal. 81(5). May, 2002. 515-520.
Orlova, M., S. Golubkov, L. Kalinina, N. Ignatieva., 2004. *Dreissena polymorpha* (Bivalvia: Dreissenidae) in the Neva Estuary (eastern Gulf of Finland, Baltic Sea): Is it a biofilter or source for pollution? Marine Pollution Bulletin 49 (2004) 196&#65533;205
Ovchinnikov I F, 1933. Contemporary spreading of *Dreissena polymorpha* Pallas (Mollusca) in the BSSR - Zoogeographical essay. Trudy Zoologicheskogo Instituta Akademii Nauk SSSR 1: 365-373 [in Russian]
Owens, Randall W. and Dittman, Dawn E. 2003. Shifts in the diets of slimy sculpin (*Cottus cognatus*) and lake whitefish (*Coregonus clupeaformis*) in Lake Ontario following the collapse of the burrowing amphipod Diporeia. Aquatic Ecosystem Health & Management. 6(3). September 2003. 311-323.
Pace, Michael L., Findlay, Stuart E. G., Fischer, David. 1998. Effects of an invasive bivalve on the zooplankton community of the Hudson River. Freshwater Biology. 39(1). Feb., 1998. 103-116.
Padilla, Dianna K., 2005. The potential of zebra mussels as a model for invasion ecology. American Malacological Bulletin. 20(1-2). APR 27 2005. 123-131.
Palau, Antoni. 2004. Zebra mussel distribution in Riba-roja Reservoir (NE Spain) and first results on population control possiblities. In Abstracts: 13th International Conference on Aquatic Invasive Species, September 20-24, 2004. Lynch West County Hotel, Ennis, County Clare, Ireland.
Summary: Report into research being conducted in Spain aimed at a control method for zebra mussels.

Palmer, M. E. and Ricciardi, Anthony. 2005. Community interactions affecting the relative abundances of native and invasive amphipods in the St. Lawrence River. Canadian Journal of Fisheries & Aquatic Sciences. 62(5). MAY 05. 1111-1118.
Parker, Bruce C., Patterson, Matthew A., Neves, Richard J. 1998. Feeding interactions between native freshwater mussels (Bivalvia: Unionidae) and zebra mussels (*Dreissena polymorpha*) in the Ohio River. American Malacological Bulletin. 14(2). 1998. 173-179.
Patterson, Matthew W. R., Ciborowski, Jan J. H., Barton, David R., 2002. The distribution and abundance of Dreissena species (Dreissenidae) in Lake Erie, 2002. Journal of Great Lakes Research. 31(Suppl. 2). 2005. 223-237.
Peribanez, Miguel A., Elrio, Maria L., Gracia, Maria J., de Luco, Daniel Fernandez, Castillo, Juan A., Lucientes, Javier, Cia, Imanol., 2006. *Phyllodistomum folium* (Trematoda : Gorgoderidae) infecting zebra mussels (*Dreissena polymorpha*) in the Ebro River, Spain. Parasitology International. 55(2). JUN 2006. 143-145.
Perry, William L., Lodge, David M., Lamberti, Gary A. 1997. Impact of crayfish predation on exotic zebra mussels and native invertebrates in a lake-outlet stream. Canadian Journal of Fisheries & Aquatic Sciences. 54(1). 1997. 120-125.
Petrie, Scott A. and Knapton, Richard W. 1999. Rapid increase and subsequent decline of zebra and quagga mussels in Long Point Bay, Lake Erie: Possible influence of waterfowl predation. Journal of Great Lakes Research. 25(4). 1999. 772-782.
Pigg, Jimmie, Gibbs, Robert, Cottam, Geron. 1997. An outbreak of zebra mussel, *Dreissena polymorpha* (Pallas), in Oklahoma waters. Proceedings of the Oklahoma Academy of Science. 77(0). 1997. 124.
Pillsbury, Robert W., Lowe, Rex L., Pan, Yang Dong, Greenwood, Jennifer L. 2002. Changes in the benthic algal community and nutrient limitation in Saginaw Bay, Lake Huron, during the invasion of the zebra mussel (*Dreissena polymorpha*). Journal of the North American Benthological Society. 21(2). June, 2002. 238-252.
Pires, L. M. Dionisio, Karlsson, K. M., Meriluoto, J. A. O., Kardinaal, E., Visser, P. M., Siewertsen, K., Van Donk, E., Ibelings, B. W. 2004. Assimilation and depuration of microcystin-LR by the zebra mussel, *Dreissena polymorpha*. Aquatic Toxicology (Amsterdam). 69(4). September 20, 2004. 385-396.
Piscart, Christophe, Moreteau, Jean-Claude, Beisel, Jean-Nicolas. 2006. Biodiversity and structure of macroinvertebrate communities along a small permanent salinity gradient (Meurthe River, France). Hydrobiologia. 551 NOV 15 2005. 227-236.
Raikow, David F. 2004. Food web interactions between larval bluegill (*Lepomis macrochirus*) and exotic zebra mussels (*Dreissena polymorpha*). Canadian Journal of Fisheries & Aquatic Sciences. 61(3). March 2004. 497-504.
Raikow, David F., Sarnelle, Orlando, Wilson, Alan E., Hamilton, Stephen K. 2004. Dominance of the noxious cyanobacterium Microcystis aeruginosa in low-nutrient lakes is associated with exotic zebra mussels. Limnology & Oceanography. 49(2). March 2004. 482-487.
Ram, Jeffrey L., Shukla, Vipul, King, Keyona N. 2004. Zebra mussels at the freshwater/sea interface: Ionic and osmotic challenges to oocyte integrity. Invertebrate Reproduction & Development. 45(1). March 2004. 83-89.
Ram, J. L. and MacMahon, R. F. 1996. The biology, ecology, and physiology of zebra mussels. Amer. Zool. 36: 239-243.
Ram, J. L., Fong, P. P. and Garton, D. W. 1996. Physiological aspects of zebra mussel reproduction: maturation, spawning and fertilization. Amer. Zool. 36: 326-338.
Ratti, Claudia and Barton, David R. 2003. Decline in the diversity of benthic invertebrates in the wave-zone of eastern Lake Erie, 1974-2001. Journal of Great Lakes Research. 29(4). 2003. 608-615.
Ray, William J. and Corkum, Lynda D. 1997. Predation of zebra mussels by round gobies, *Neogobius melanostomus*. Environmental Biology of Fishes. 50(3). 1997. 267-273.
Reed-Andersen, Tara, Carpenter, Stephen R., Padilla, Dianna K., Lathrop, Richard C. 2000. Predicted impact of zebra mussel (*Dreissena polymorpha*) invasion on water clarity in Lake Mendota. Canadian Journal of Fisheries & Aquatic Sciences. 57(8). August, 2000. 1617-1626.
Reed, Tara, Wielgus, Sarah J., Barnes, Alyssa K., Schiefelbein, Jeremiah J., Fettes, Amy L. 2004. Refugia and local controls: Benthic invertebrate dynamics in Lower Green Bay, Lake Michigan following zebra mussel invasion. Journal of Great Lakes Research. 30(3). 2004. 390-396.
Rennie, Michael D., Sprules, W. Gary, Johnson, Timothy B. 2009. Resource switching in fish following a major food web disruption. Oecologia (Berlin). 159(4). APR 2009. 789-802.
Reynolds, J. D. and Donohoe, R. 2001. Crayfish predation experiments on the introduced zebra mussel, *Dreissena polymorpha*, in Ireland, and their potential for biocontrol. Bulletin Francais de la Peche et de la Pisciculture.(361). 2001. 669-681.
Ricciardi, A. and J.B. Rasmussen. F.G. Whoriskey., 1995a. Predicting the intensity and impact of Dreissena infestation on native unionid bivalves from Dreissena field density. Can. J. Fish. Aquat. Sci. 52: 1449-1461 (1995).
Ricciardi, Anthony. 2003. Predicting the impacts of an introduced species from its invasion history: An empirical approach applied to zebra mussel invasions. Freshwater Biology. 48(6). June 2003. 972-981.
Ricciardi, Anthony and Rasmussen, Joseph B. 1998. Predicting the identity and impact of future biological invaders: A priority for aquatic resource management. Canadian Journal of Fisheries & Aquatic Sciences. 55(7). July, 1998. 1759-1765.
Ricciardi, Anthony and Whoriskey, Fred G. 2004. Exotic species replacement: shifting dominance of dreissenid mussels in the Soulanges Canal, upper St. Lawrence River, Canada. Journal of the North American Benthological Society. 23(3). September 2004. 507-514.
Ricciardi, Anthony, Neves, Richard J., Rasmussen, Joseph B. 1998. Impending extinctions of North American freshwater mussels (Unionoida) following the zebra mussel (*Dreissena polymorpha*) invasion. Journal of Animal Ecology. 67(4). July, 1998. 613-619.
Ricciardi, A., Whoriskey, F. G., Rasmussen, J. B. 1996. Impact of the Dreissena invasion on native unionid bivalves in the upper St. Lawrence River. Canadian Journal of Fisheries & Aquatic Sciences. 53(6). 1996. 1434-1444.
Ricciardi, A., Whoriskey, Fred G., Rasmussen, Joseph B. 1997. The role of the zebra mussel (*Dreissena polymorpha*) in structuring macroinvertebrate communities on hard substrata. Canadian Journal of Fisheries & Aquatic Sciences. 54(11). Nov., 1997. 2596-2608.
Richardson, William B. and Bartsch, Lynn A. 1997. Effects of zebra mussels on food webs: Interactions with juvenile bluegill and water residence time. Hydrobiologia. 354(0). Sept. 26, 1997. 141-150.
Richerson, M., and E. Maynard. 2004. *Dreissena bugensis* Andrusov 1897. NAS - Nonindigenous Aquatic Species.
Summary: Available from: http://nas.er.usgs.gov/queries/FactSheet.asp?SpeciesID=95 [Accessed 02 December 2005]
Rockwell, David C., Glenn J. Warren, Paul E. Bertram, Douglas K. Salisbury, and Noel M. Burns., 2005. The US EPA Lake Erie indicators monitoring program 1983 - 2002: trends in phosphorus, silica and chlorophyll a in the central basin.J. Great Lakes Res. 31(Suppl. 2):23-34 Internat. Assoc. Great Lakes Res., 2005

Rosell, R. S., Maguire, C. M., McCarthy, T. K. 1998. First reported settlement of Zebra mussels *Dreissena polymorpha* in the Erne system, Co. Fermanagh, Northern Ireland. Biology & Environment. 98B(3). Dec., 1998. 191-193.
Ross, R. Kenyon, Petrie, Scott A., Badzinski, Shannon S., Mullie, Adele. 2005. Autumn diet of greater scaup, lesser scaup, and long-tailed ducks on eastern Lake Ontario prior to zebra mussel invasion. Wildlife Society Bulletin. 33(1). SPR 05. 81-91.
Sarnelle, Orlando, Wilson, Alan E., Hamilton, Stephen K., Knoll, Lesley B., Raikow, David F. 2005. Complex interactions between the zebra mussel, *Dreissena polymorpha*, and the harmful phytoplankton, Microcystis aeruginosa. Limnology & Oceanography. 50(3). MAY 05. 896-904.
Schloesser, Don W. and Masteller, Edwin C. 1999. Mortality of unionid bivalves (Mollusca) associated with dreissenid mussels (*Dreissena polymorpha* and *D. bugensis*) in Presque Isle Bay, Lake Erie. Northeastern Naturalist. 6(4). Nov. 30, 1999. 341-352.
Schloesser, Don W., Metcalfe-Smith, Janice L., Kovalak, William P., Longton, Gary D., Smithee, Rick D., 2006. Extirpation of freshwater mussels (Bivalvia : Unionidae) following the invasion of dreissenid mussels in an interconnecting river of the Laurentian Great Lakes. American Midland Naturalist. 155(2). APR 2006. 307-320.
Schloesser, Don W., Nalepa, Thomas F., Mackie, Gerald L. 1996. Zebra mussel infestation of unionid bivalves (Unionidae) in North America. American Zoologist. 36(3). 1996. 300-310.
Schloesser, Don W., Stickel, Richard G., Bridgeman, Thomas B., 2005. Potential oxygen demand of sediments from Lake Erie. Journal of Great Lakes Research. 31(Suppl. 2). 2005. 272-283
Schloesser, D. W., Kovalak, W. P., Longton, G. D., Ohnesorg, K. L., Smithee, R. D. 1998. Impact of zebra and quagga mussels (*Dreissena* spp.) on freshwater unionids (Bivalvia: Unionidae) in the Detroit River of the Great Lakes. American Midland Naturalist. 140(2). Oct., 1998. 299-313.
Scholesser, D. W., and E. C. Masteller. 1999. *Mortality of unionid bivalves Mollusca associated with dreissenid mussels*. Northeastern Naturalist 6(4):341.
Schummer, Michael L., Petrie, Scott A., Bailey, Robert C. 2008. Dietary overlap of sympatric diving ducks during winter on northeastern Lake Ontario. Auk. 125(2). APR 2008. 425-433.
Sietman, Bernard E., Anderson, Edward A., Nyboer, Randy, Hutto, Franklin R. 2005. Native freshwater mussels (Bivalvia: Unionidae) and infestation by zebra mussels at the Lost Mound Unit of the Upper Mississippi River National Wildlife and Fish Refuge. Transactions of the Illinois State Academy of Science. 97(3-4). 05. 235-254.
Smith, Douglas G. 1999. Differences in siphonal anatomy between *Dreissena polymorpha* and D. bugensis (Mollusca: Dreissenidae) in Lake Ontario. American Midland Naturalist. 141(2). April, 1999. 402-405.
Smith, Thomas E., R Jan Stevenson, Nina F.Caraco and Jonathan J.Cole., 1998. Changes in phytoplankton community structure during the zebra mussel (*Dreissena polymorpha*) invasion of the Hudson River (New York). Journal of Plankton Research Vol.20 no.8 pp.1567-1579, 1998
Snyder, Fred L. 2004. Aquatic invasive species impacts upon the Lake Erie sport fishery. In Abstracts: 13th International Conference on Auatic Invasive Species, September 20-24, 2004. Lynch West County Hotel, Ennis, County Clare, Ireland.
Summary: Report into the effects of invasive species invasions in Lake Erie.
Son, Mikhail O., 2007. Native range of the zebra mussel and quagga mussel and new data on their invasions within the Ponto-Caspian Region. Aquatic Invasions (2007) Volume 2, Issue 3: 174-184
Son, M. O. 2007. Invasive mollusks (Mollusca, Bivalvia, Gastropoda) in the Danube delta. Vestnik Zoologii. 41(3). May-June 2007. 213-218.
Spidle, A. P, J. E. Marsden, and B. May. 1994. *Identification of the Great Lakes Quagga Mussel as Dreissena bugensis from the Dnieper River, Ukraine, on the Basis of Allozyme Variation*. Can. J. Fish. Aquat. Sci., Vol. 51, 1994.
Stanczykowska, A. 1977. Ecology of *Dreissena polymorpha* (Pall.) (Bivalvia) in lakes. Pol. Arch. Hydrobiol. 24: 461-530.
Stanczykowska, Anna. 1997. Review of studies on *Dreissena polymorpha* (Pall.). Polskie Archiwum Hydrobiologii. 44(4). 1997. 401-415.
Stewart, Timothy W., Miner, Jeffrey G., Lowe, Rex L. 1999. A field experiment to determine Dreissena and predator effects on zoobenthos in a nearshore, rocky habitat of western Lake Erie. Journal of the North American Benthological Society. 18(4). Dec., 1999. 488-498.
Stoeckmann, Ann. 2003. Physiological energetics of Lake Erie dreissenid mussels: a basis for the displacement of *Dreissena polymorpha* by *Dreissena bugensis*. Canadian Journal of Fisheries & Aquatic Sciences. 60(2). February 2003. 126-134.
Strayer, David L. 1999. Effects of alien species on freshwater mollusks in North America. Journal of the North American Benthological Society. 18(1). March, 1999. 74-98.
Strayer, David L. and Heather M. Malcom., 2007a. Effects of zebra mussels (*Dreissena polymorpha*) on native bivalves: the beginning of the end or the end of the beginning? J. N. Am. Benthol. Soc., 2007, 26(1):111&#65533;122
Strayer, David L. and Heather M. Malcom., 2007b. Shell decay rates of native and alien freshwater bivalves and implications for habitat engineering. Freshwater Biology (2007) 52, 1611&#65533;1617
Strayer, David L., Powell, Jon, Ambrose, Peter, Smith, Lane C., Pace, Michael L., Fischer, David T. 1996. Arrival, spread, and early dynamics of a zebra mussel (*Dreissena polymorpha*) population in the Hudson River estuary. Canadian Journal of Fisheries & Aquatic Sciences. 53(5). 1996. 1143-1149.
Strayer, David L., Smith, Lane C. 1996. Relationships between zebra mussels (*Dreissena polymorpha*) and unionid clams during the early stages of the zebra mussel invasion of the Hudson River. Freshwater Biology. 36(3). 1996. 771-779.
Strayer, David L., Smith, Lane C., Hunter, Dean C. 1998. Effects of the zebra mussel (*Dreissena polymorpha*) invasion on the macrobenthos of the freshwater tidal Hudson River. Canadian Journal of Zoology. 76(3). March, 1998. 419-425.
Sures, Bernd, Steiner, Werner, Rydlo, Manfred, Taraschewski, Horst. 1999. Concentrations of 17 elements in the zebra mussel (*Dreissena polymorpha*), in different tissues of perch (*Perca fluviatilis*), and in perch intestinal parasites (*Acanthocephalus lucii*) from the subalpine lake Mondsee, Austria. Environmental Toxicology & Chemistry. 18(11). Nov., 1999. 2574-2579.
Swierczynski, Marek. 1997. Occurrence of *Dreissena polymorpha* (Pall.) in lakes Miedwie and Insko. Polskie Archiwum Hydrobiologii. 44(4). 1997. 487-503.
Thayer, Sarah A., Haas, Robert C., Hunter, R. Douglas, Kushler, Robert H. 1997. Zebra mussel (*Dreissena polymorpha*) effects on sediment, other zoobenthos, and the diet and growth of adult yellow perch (*Perca flavescens*) in pond enclosures. Canadian Journal of Fisheries & Aquatic Sciences. 54(8). 1997. 1903-1915.

The North European and Baltic Network on Invasive Alien Species (NOBANIS), 2009. *Dreissena polymorpha*
Summary: Available from: http://www.nobanis.org/speciesInfo.asp?taxaID=246 [Accessed 10 August 2009]
Therriault, T. W., M. I Orlova, M. F Docker, H. J MacIsaac and D. D Heath., 2005. Invasion genetics of a freshwater mussel (*Dreissena rostriformis bugensis*) in eastern Europe: high gene flow and multiple introductions. Heredity (2005) 95, 16–23
Thorp, H. James; James E. Alexander Jr. and Gary A. Cobbs., 2002a. Coping with warmer, large rivers: a field experiment on potential range expansion of northern quagga mussels (*Dreissena bugensis*). Freshwater Biology (2002) 47, 1779–1790
Thorp, James H., Casper, Andrew F. 2002b. Potential effects on zooplankton from species shifts in planktivorous mussels: A field experiment in the St Lawrence River. Freshwater Biology. 47(1). January, 2002. 107-119.
Tucker, John K., Cronin, Frederick A., Soergel, Dirk W., Theiling, Charles H. 1996. Predation of zebra mussels (*Dreissena polymorpha*) by common carp (*Cyprinus carpio*). Journal of Freshwater Ecology. 11(3). 1996. 363-372.
Vanderploeg, H. A., T. F. Nalepa, D. J. Jude, E. L. Mills, K. T. Holeck, J. R. Liebig, I. A. Grigorovich, and H. Ojaveer. 2002. *Dispersal and emerging ecological impacts of Ponto-Caspian species in the Laurentian Great Lakes*. Canadian Journal of Fisheries and Aquatic Sciences 59(7):1209.
van der Velde., G. and Platvoet, D. 2007. Quagga mussels Dreissena rostriformis bugensis (Andrusov, 1897) in the Main River (Germany). Aquatic Invasions (2007) Volume 2, Issue 3: 261-264.
Vidal, Maeva, Hamilton, Paul B., Pick, Frances R. 2004. Zebra mussel (*Dreissena polymorpha*) veliger larvae: distribution and relationship to phytoplankton biomass and composition in the Rideau River, Ontario, Canada. Archiv fuer Hydrobiologie. 161(1). September 2004. 113-131
Wacker, Alexander and Von Elert, Eric. 2003. Settlement pattern of the zebra mussel, *Dreissena polymorpha*, as a function of depth in Lake Constance. Archiv fuer Hydrobiologie. 158(3). November 2003. 289-301.
Walton, William C. 1996. Occurrence of zebra mussel (*Dreissena polymorpha*) in the oligohaline Hudson River, New York. Estuaries. 19(3). 1996. 612-618.
Walz, N. 1973. Studies on the biology of *Dreissena polymorpha* in the Lake of Constance. Archiv. Hydrobiol. Suppl. 42: 452-482.
Ward, Jessica M. and Ricciardi, Anthony. 2007. Impacts of Dreissena invasions on benthic macroinvertebrate communities: a meta-analysis. Diversity & Distributions. 13(2). MAR 2007. 155-165.
Watkins, James M., Dermott, Ronald, Lozano, Stephen J., Mills, Edward L., Rudstam, Lars G., Scharold, Jill V. 2007. Evidence for remote effects of dreissenid mussels on the amphipod Diporeia: analysis of Lake Ontario Benthic Surveys, 1972-2003. Journal of Great Lakes Research. 33(3). SEP 2007. 642-657.
Watzin, M. C., Joppe-Mercure, K., Rowder, J., Lancaster, B., Bronson, L., 2008. Significant fish predation on zebra mussels *Dreissena polymorpha* in Lake Champlain, U.S.A. Journal of Fish Biology. 73(7). NOV 2008. 1585-1599.
Wawrzyniak-Wydrowska and Brygida, Gruszka, Piotr. 2005. Population dynamics of alien gammarid species in the River Odra estuary. Hydrobiologia. 539 MAY 1 2005. 13-25.
Wege, Gary J., 2005. Saving the Higgins eye pearlymussel (*Lampsilis higginsii*) from extinction: 2002 Status report on the accomplishments of the mussel coordination team. Journal of the Iowa Academy of Science. 112(3-4). JUL-DEC 2005. 52-61.
Werner, Stefan., Martin Mortl, Hans Gunther Bauer and Karl-Otto Rothhaupt., 2005. Strong impact of wintering waterbirds on zebra mussel (*Dreissena polymorpha*) populations at Lake Constance, Germany. Freshwater Biology (2005) 50, 1412-1426
Wilson, A. B., Nalsh, K.-A., Boulding, E. G. 1999. Multiple dispersal strategies of the invasive quagga mussel (*Dreissena bugensis*) as revealed by microsatellite analysis. Canadian Journal of Fisheries & Aquatic Sciences. 56(12). Dec., 1999. 2248-2261.
Wilson, Alan E. 2003. Effects of zebra mussels on phytoplankton and ciliates: A field mesocosm experiment. Journal of Plankton Research. 25(8). August 2003. 905-915.
Wilson, Karen A., Howell, E. Todd, Jackson, Donald A., 2006. Replacement of zebra mussels by quagga mussels in the Canadian nearshore of Lake Ontario: The importance of substrate, round goby abundance, and upwelling frequency. Journal of Great Lakes Research. 32(1). 2006. 11-28.
Winkler, Gesche, Sirois, Pascal, Johnson, Ladd E., Dodson, Julian J. 2005. Invasion of an estuarine transition zone by *Dreissena polymorpha* veligers had no detectable effect on zooplankton community structure. Canadian Journal of Fisheries & Aquatic Sciences. 62(3). MAR 05. 578-592.
Wong, Wai Hing, Levinton, Jeffery S., 2005. Consumption rates of two rotifer species by zebra mussels *Dreissena polymorpha*. Marine and freshwater behaviour and physiology. 38(3). SEP 2005. 149-157.
Wright, D. A., E. M. Setzler, J. A. Magee, V. S. Kennedy, and S. P. McInnch. 1996. *Effect of salinity and temperature on survival and development of young zebra (Dreissena polymorpha) and quagga (Dreissena bugensis) mussels.* Estuaries 19(3):619-628.
Yu, Neng and Culver, David A. 2000. Can zebra mussels change stratification patterns in a small reservoir?. Hydrobiologia. 431(2). 25 July, 2000. 175-184.
Zaiko, Anastasija, Daunys, Darius, Olenin, Sergej., 2009. Habitat engineering by the invasive zebra mussel *Dreissena polymorpha* (Pallas) in a boreal coastal lagoon: impact on biodiversity. Helgoland Marine Research. 63(1). MAR 2009. 85-94.
Zanatta, David T., Mackie, Gerald L., Metcalfe-Smith, Janice L., Woolnough, Daelyn A. 2002. A refuge for native freshwater mussels (Bivalvia: Unionidae) from impacts of the exotic zebra mussel (*Dreissena polymorpha*) in Lake St. Clair. Journal of Great Lakes Research. 28(3). 2002. 479-489.
Zhu, B., Fitzgerald, D. G., Mayer, C. M., Rudstam, L. G., Mills, E. L., 2006. Alteration of ecosystem function by zebra mussels in Oneida Lake: Impacts on submerged macrophytes. Ecosystems. 9(6). SEP 2006. 1017-1028.
Zhulidov, Alexander V., Zhulidov, Daniel A., Pavlov, Dmitriy F., Nalepa, Thomas F., Gurtovaya, Tatyana Yu., 2005. Expansion of the invasive bivalve mollusk *Dreissena bugensis* (quagga mussel) in the Don and Volga River Basins: Revisions based on archived specimens. Ecohydrology & Hydrobiology. 5(2). 2005. 127-133
Zhulidov, A. V., D. A. Zhulidov, D. F. Pavlov, T. F. Nalepa, and T. Y. Gurtovaya. 2005. *Expansion of the invasive bivalve mollusk Dreissena bugensis (quagga mussel) in the Don and Volga River Basins: Revisions based on archived specimens*. Ecogydrology Hydrobiology 5(2):127-133.
Zhulidov, A. V., Nalepa, T. F., Kozhara, A. V., Zhulidov, D. A., Gurtovaya, T. Yu., 2006. Recent trends in relative abundance of two dreissenid species, *Dreissena polymorpha* and *Dreissena bugensis* in the lower Don River system, Russia. Archiv fuer Hydrobiologie. 165(2). FEB 2006. 209-220.