

USGS Biological Threats and Invasive Species Program Product list 2011-2021

Mussels

2013. Quagga and zebra mussels: biology, impacts, and control. 2nd edition. CRC Press.

Amberg, J. J., and C. M. Merkes. 2016. Environmental DNA mapping of Zebra Mussel populations. Report.

Amberg, J. J., C. M. Merkes, W. Stott, C. B. Rees, and R. A. Erickson. 2019. Environmental DNA as a tool to help inform zebra mussel, *Dreissena polymorpha*, management in inland lakes. *Management of Biological Invasions* 10:96-110.

Anderson, K. R., D. C. Chapman, and C.-A. Hayer. 2016. Assessment of dreissenid biodeposits as a potential food resource for invasive Asian carp. *BioInvasions Records* 5:251-257.

Baldwin, A. K., A. Spanjer, M. R. Rosen, and T. Thom. 2020. Microplastics in Lake Mead National Recreation Area, USA: Occurrence and biological uptake. *PLoS ONE* 15.

Barbour, M. T., J. A. Luoma, T. J. Severson, J. K. Wise, and B. Bennie. 2021. Avoidance of cold-, cool-, and warm-water fishes to Zequanox® exposure. *Management of Biological Invasions* 12:96-107.

Barbour, M. T., J. R. Schueller, T. J. Severson, J. K. Wise, M. J. Meulemans, J. A. Luoma, and D. L. Waller. 2021. Concentration addition and independent action assessments of the binary mixtures of four toxicants on zebra mussel (*Dreissena polymorpha*) mortality. *Aquatic Toxicology* 238:105934.

Barbour, M. T., J. K. Wise, and J. A. Luoma. 2018. A bioassay assessment of a zebra mussel (*Dreissena polymorpha*) eradication treatment. Report 2018-1138, Reston, VA.

Benson, A. J. 2013. Chronological history of zebra and quagga mussels (*Dreissenidae*) in North America, 1988-2010. *Quagga and zebra mussels: biology, impacts, and control*:9-32.

Benson, A. J. 2017. Book review: *Biology and management of invasive quagga and zebra mussels in the western United States*. *The Quarterly Review of Biology* 92:209-210.

Benson, A. J., and J. D. Williams. 2021. Review of the invasive Asian clam *Corbicula* spp. (*Bivalvia*: *Cyrenidae*) distribution in North America, 1924–2019. Report 2021-5001, Reston, VA.

Boegehold, A. G., K. Alame, N. S. Johnson, and D. R. Kashian. 2019. Cyanobacteria reduce motility of quagga mussel (*Dreissena rostriformis bugensis*) sperm. *Environmental Toxicology and Chemistry* 38:368-374.

Boegehold, A. G., N. S. Johnson, and D. R. Kashian. 2019. Bloom forming cyanobacteria can adversely affect zebra and quagga mussel veligers. *Ecotoxicology and Environmental Safety* 182.

Boegehold, A. G., N. S. Johnson, J. L. Ran, and D. R. Kashian. 2018. Cyanobacteria reduce quagga mussel (*Dreissena rostriformis bugensis*) spawning and fertilization success. *Freshwater Science* 37:510-518.

Bollens, S. M., J. A. Harrison, M. G. Kramer, G. Rollwagen-Bollens, T. Counihan, S. B. Robb-Chavez, and S. T. Nolan. 2021. Calcium concentrations in the lower Columbia River, USA, are generally sufficient to support invasive bivalve spread. *River Research and Applications* 37:889-894.

- Burlakova, L. E., B. L. Tulumello, A. Y. Karatayev, R. A. Krebs, D. W. Schloesser, W. L. Paterson, T. A. Griffith, M. W. Scott, T. D. Crail, and D. T. Zanatta. 2014. Competitive replacement of invasive congeners may relax impact on native species: Interactions among zebra, quagga, and native unionid mussels. *PLoS ONE* 9:1-20.
- Caldwell, T. J., M. R. Rosen, S. Chandra, K. Acharya, A. M. Caires, C. J. Davis, M. Thaw, and D. M. Webster. 2015. Temporal and basin-specific population trends of quagga mussels on soft sediment of a multi-basin reservoir. *Biology and management of invasive Quagga and Zebra Mussels in the western United States*:33-52.
- Churchill, C. J. 2013. Spatio-temporal spawning and larval dynamics of a zebra mussel (*Dreissena polymorpha*) population in a North Texas Reservoir: implications for invasions in the southern United States. *Aquatic Invasions* 8:389-406.
- Churchill, C. J., and S. Baldys. 2012. USGS Zebra Mussel Monitoring Program for north Texas. Report 2012-3077, Reston, VA.
- Colvin, M. E., C. Pierce, and T. W. Stewart. 2015. A food web modeling analysis of a Midwestern, USA eutrophic lake dominated by non-native Common Carp and Zebra Mussels. *Ecological Modelling* 312:26-40.
- Counihan, T. D., and S. M. Bollens. 2017. Early detection monitoring for larval dreissenid mussels: How much plankton sampling is enough? *Environmental Monitoring and Assessment* 189:1-14.
- Daniels, J. S., and J. C. Haegele. 2017. Assessment of ecosystem response to a temporary water level drawdown and subsequent refilling at Topock Marsh, Arizona—July 2011–October 2014. Report 2016-1195, Reston, VA.
- DeBruyckere, L., T. Counihan, and S. Phillips. 2018. Columbia River Basin dreissenid mussel monitoring forum workshop.
- DeVanna, K. M., D. W. Schloesser, J. M. Bossenbroek, and C. M. Mayer. 2013. Interactions between an exotic ecosystem engineer (*Dreissena* spp.) and native burrowing mayflies (*Hexagenia* spp.) in soft sediments of western Lake Erie. *Quagga and zebra mussels: biology, impacts, and control*:611-622.
- Eikenberry, B. C. S., H. T. Olds, D. J. Burns, E. G. Dobrowolski, and K. L. Schmude. 2017. Comparison of benthos and plankton for Waukegan Harbor Area of Concern, Illinois, and Burns Harbor-Port of Indiana non-Area of Concern, Indiana, in 2015. Report 2017-5039, Reston, VA.
- Franco, J. N., F. R. Ceia, J. Patricio, J. K. Thompson, J. C. Marques, and J. M. Neto. 2012. Population dynamics of *Corbicula fluminea* (Müller, 1774) in mesohaline and oligohaline habitats: Invasion success in a Southern Europe estuary. *Estuarine, Coastal and Shelf Science* 112:31-39.
- French Iii, J. R. P., R. G. Stickel, B. A. Stockdale, and M. G. Black. 2010. A short-term look at potential changes in Lake Michigan slimy sculpin diets. *Journal of Great Lakes Research* 36:376-379.
- French, J. R. P., S. J. Nichols, J. M. Craig, J. D. Allen, and M. G. Black. 2006. In situ growth of juvenile zebra mussels in a regulated stream. *Journal of Freshwater Ecology* 21:25-30.

Gatlin, M. R., D. E. Shoup, and J. M. Long. 2013. Invasive zebra mussels (*Dreissena polymorpha*) and Asian clams (*Corbicula fluminea*) survive gut passage of migratory fish species: implications for dispersal. *Biological Invasions* 15:1195-1200.

Goodbred, S. L., M. R. Rosen, R. Patino, D. Alvarez, K. R. Echols, K. King, and J. Umek. 2021. Movement of synthetic organic compounds in the food web after the introduction of invasive quagga mussels (*Dreissena bugensis*) in Lake Mead, Nevada and Arizona, USA. *Science of the Total Environment* 752.

Gorman, O. 2019. Prey fish communities of the Laurentian Great Lakes: A cross-basin overview of status and trends based on bottom trawl surveys, 1978-2016. *Aquatic Ecosystem Health & Management*. 22:263-279.

Griffiths, R. W., D. W. Schloesser, and W. P. Kovalak. 2013. Early responses to zebra mussels in the Great Lakes: a journey from information vacuum to policy and regulation. *Quagga and zebra mussels: biology, impacts, and control*:135-176.

Hartman, R., L. R. Brown, J. K. Thompson, and F. Parchaso. 2017. Conceptual model for invasive bivalve control on wetland productivity. Report 91.

Hassett, W., S. M. Bollens, T. D. Counihan, G. Rollwagen-Bollens, J. Zimmerman, and J. E. Emerson. 2017. Veligers of the invasive Asian clam *Corbicula fluminea* in the Columbia River Basin: Broad-scale distribution, abundance, and ecological associations. *Lake and Reservoir Management* 33:234-248.

Hassett, W., J. Zimmerman, G. Rollwagen-Bollens, S. M. Bollens, and T. Counihan. 2021. An experimental evaluation of the efficacy of imaging flow cytometry (FlowCam) for detecting invasive Dreissenid and Corbiculid bivalve veligers. *Lake and Reservoir Management*.

Herbst, S. J., J. E. Marsden, and B. F. Lantry. 2013. Lake whitefish diet, condition, and energy density in Lake Champlain and the lower four Great Lakes following dreissenid invasions. *Transactions of the American Fisheries Society* 142:388-398.

Kao, Y.-C., M. W. Rogers, and D. B. Bunnell. 2018. Evaluating stocking efficacy in an ecosystem undergoing oligotrophication. *Ecosystems* 21:600-618.

Karatayev, A. Y., L. E. Burlakova, K. Mehler, S. A. Bocaniov, P. D. Collingsworth, G. Warren, R. T. Kraus, and E. K. Hinchey. 2018. Biomonitoring using invasive species in a large Lake: *Dreissena* distribution maps hypoxic zones. *Journal of Great Lakes Research* 44:639-649.

Keretz, K. R., R. Kraus, and J. Schmitt. 2021. Improved methods for understanding the role of predation on dreissenid population dynamics. *Environmental Biology of Fishes* 104:629-633.

Kirkendall, D. S., D. Bunnell, P. Armenio, L. A. Eaton, A. S. Trebitz, and N. M. Watson. 2021. Spatial and temporal distributions of *Dreissena* spp. veligers in Lake Huron: Does calcium limit settling success? *Journal of Great Lakes Research* 47:1040-1049.

Kocovsky, P. 2019. Diets of endangered silver chub (*Macrhybopsis storeriana*, Kirtland, 1844) in Lake Erie and implications for recovery. *Ecology of Freshwater Fish* 28:33-40.

Kocovsky, P., A. T. Stoneman, and R. T. Kraus. 2014. Ecology and population status of trout-perch (*Percopsis omiscomaycus*) in western Lake Erie. *Journal of Great Lakes Research* 40:208-214.

Kocovsky, P. M., and M. A. Stapanian. 2011. Influence of dreissenid mussels on catchability of benthic fishes in bottom trawls. *Transactions of the American Fisheries Society* 140:1565-1573.

Kornis, M., B. C. Weidel, and M. J. Vander Zanden. 2017. Divergent life histories of invasive round gobies (*Neogobius melanostomus*) in Lake Michigan and its tributaries. *Ecology of Freshwater Fish* 26:563-574.

Larson, J. H., M. Bartsch, S. Gutreuter, B. C. Knights, L. Bartsch, W. B. Richardson, J. M. Vallazza, and M. T. Arts. 2015. Differences between main-channel and off-channel food webs in the upper Mississippi River revealed by fatty acid profiles of consumers. *Inland Waters* 5:101-106.

Larson, J. H., M. A. Evans, W. B. Richardson, J. Schaeffer, and J. Nelson. 2016. Spatial variation in biofouling of a unionid mussel (*Lampsilis siliquoidea*) across the western basin of Lake Erie. *The American Midland Naturalist* 176:119-129.

Larson, J. H., W. B. Richardson, J. Vallazza, L. A. Bartsch, and M. R. Bartsch. 2017. Using a gradient in food quality to infer drivers of fatty acid content in two filter-feeding aquatic consumers. *Aquatic Sciences* 79:855-865.

Layhee, M. J., B. Farokhkish, J. A. Gross, M. Yoshioka, and A. J. Sepulveda. 2014. Toxicity of a traditional molluscicide to asian clam veligers. *Journal of Fish and Wildlife Management* 5:141-145.

Luoma, J. A., J. C. Dean, T. J. Severson, J. K. Wise, and M. T. Barbour. 2017. Use of alternating and pulsed direct current electrified fields for zebra mussel control. *Management of Biological Invasions* 8:311-324.

Luoma, J. A., and T. J. Severson. 2016. Efficacy of spray –Dried *Pseudomonas fluorescens*, strain CL145A (Zequanox®), for controlling Zebra Mussels (*Dreissena polymorpha*) within Lake Minnetonka, MN enclosures. Report.

Luoma, J. A., T. J. Severson, M. T. Barbour, and J. K. Wise. 2018. Effects of temperature and exposure duration on four potential rapid-response tools for zebra mussel (*Dreissena polymorpha*) eradication. *Management of Biological Invasions* 9:425-438.

Luoma, J. A., T. J. Severson, K. L. Weber, and D. A. Mayer. 2015. Efficacy of *Pseudomonas fluorescens* (Pf-CL145A) spray dried powder for controlling zebra mussels adhering to test substrates. Report 2015-1050, Reston, VA.

Luoma, J. A., D. L. Waller, T. J. Severson, M. T. Barbour, J. K. Wise, E. G. Lord, M. R. Bartsch, and L. A. Bartsch. 2019. Assessment of uncontained Zequanox applications for zebra mussel control in a Midwestern lake. Report 2019-1126, Reston, VA.

Luoma, J. A., K. L. Weber, T. J. Severson, and D. A. Mayer. 2015. Efficacy of *Pseudomonas fluorescens* strain CL145A spray dried powder for controlling zebra mussels adhering to native unionid mussels within field enclosures. Report 2015-1051, Reston, VA.

Luoma, J. A., K. L. Weber, T. J. Severson, T. M. Schreier, D. A. Mayer, D. B. Aloisi, and N. L. Eckert. 2015. Exposure-related effects of formulated *Pseudomonas fluorescens* strain CL145A to glochidia from seven unionid mussel species. Report 2015-1094, Reston, VA.

Madenjian, C. P., S. A. Pothoven, P. J. Schneeberger, M. P. Ebener, L. C. Mohr, T. F. Nalepa, and J. R. Bence. 2010. Dreissenid mussels are not a "dead end" in Great Lakes food webs. *Journal of Great Lakes Research* 36:73-77.

Madenjian, C. P., D. B. Bunnell, D. M. Warner, S. A. Pothoven, G. L. Fahnenstiel, T. F. Nalepa, H. A. Vanderploeg, I. Tsehaye, R. M. Claramunt, and R. D. Clark. 2015. Changes in the Lake Michigan food web following dreissenid mussel invasions: A synthesis. *Journal of Great Lakes Research* 41:217-231.

McKenna Jr, J. E., M. Chalupnicki, D. E. Dittman, and J. M. Watkins. 2017. Simulation of rapid ecological change in Lake Ontario. *Journal of Great Lakes Research* 43:871-889.

Mehler, K., L. E. Burlakova, A. Y. Karatayev, A. K. Elgin, T. F. Nalepa, C. P. Madenjian, and E. K. Hinchey. 2020. Long-term trends of Lake Michigan benthos with emphasis on the southern basin. *Journal of Great Lakes Research* 46:528-537.

Mezek, T., E. Sverko, M. D. Ruddy, D. Zaruk, A. Capretta, C. E. Hebert, A. T. Fisk, D. J. McGoldrick, T. J. Newton, T. M. Sutton, M. A. Koops, A. M. Muir, T. B. Johnson, M. P. Ebener, and M. T. Arts. 2011. Polymethylene-interrupted fatty acids: Biomarkers for native and exotic mussels in the Laurentian Great Lakes. *Journal of Great Lakes Research* 37:289-297.

Moffitt, C. M., A. Barenburg, K. A. Stockton, and B. J. Watten. 2015. Efficacy of two approaches for disinfecting surfaces and water infested with quagga mussel veligers. CRC Press.

Moffitt, C. M., K. A. Stockton-Fiti, and R. Claudi. 2016. Toxicity of potassium chloride to veliger and byssal stage dreissenid mussels related to water quality. *Management of Biological Invasions* 7:257-268.

O'Malley, B. P., and D. B. Bunnell. 2014. Diet of *Mysis diluviana* reveals seasonal patterns of omnivory and consumption of invasive species in offshore Lake Michigan. *Journal of Plankton Research* 36:989-1002.

Parchaso, F., E. L. Zierdt Smith, and J. K. Thompson. 2021. Effect of the emergency drought barrier on the distribution, biomass, and grazing rate of the bivalves *Corbicula fluminea* and *Potamocorbula amurensis*, False River, California. Report 2021-1088, Reston, VA.

Ram, J. L., P. Fong, R. P. Croll, S. J. Nichols, and D. Wall. 1992. The zebra mussel (*Dreissena polymorpha*), a new pest in North America: reproductive mechanisms as possible targets of control strategies. *Invertebrate Reproduction and Development* 22:77-86.

Rogers, M. W., D. B. Bunnell, C. P. Madenjian, and D. M. Warner. 2014. Lake Michigan offshore ecosystem structure and food web changes from 1987 to 2008. *Canadian Journal of Fisheries and Aquatic Sciences* 71:1072-1086.

Sauey, B. W., J. J. Amberg, S. T. Cooper, S. K. Grunwald, R. J. Haro, and M. P. Gaikowski. 2016. Digestive physiology comparisons of aquatic invertebrates in the Upper Mississippi River Basin. *Journal of Freshwater Ecology* 31:303-314.

Sauey, B. W., J. J. Amberg, S. T. Cooper, S. K. Grunwald, T. J. Newton, and R. J. Haro. 2015. Preliminary characterization of digestive enzymes in freshwater mussels. *Journal of Shellfish Research* 34:415-422.

Schloesser, D. W., and C. Schmuckal. 2012. Bibliography of *Dreissena polymorpha* (zebra mussels) and *Dreissena rostriformis Bugensis* (QUAGGA mussels): 1989 to 2011. *Journal of Shellfish Research* 31:1205-1263.

Sepulveda, A. J., J. J. Amberg, and E. Hanson. 2019. Using environmental DNA to extend the window of early detection for dreissenid mussels. *Management of Biological Invasions* 10:342-358.

Sepulveda, A. J., P. R. Hutchins, C. Jackson, C. Ostberg, M. Laramie, J. J. Amberg, T. Counihan, A. B. Hoegh, and D. Pilliod. 2020. A round-robin evaluation of the repeatability and reproducibility of environmental DNA assays for dreissenid mussels. *Environmental DNA* 2:446-459.

Sepulveda, A. J., C. Schmidt, J. J. Amberg, P. R. Hutchins, C. Stratton, C. A. Mebane, M. Laramie, and D. Pilliod. 2019. Adding invasive species bio-surveillance to the U.S. Geological Survey streamgauge network. *Ecosphere* 10.

Severson, T. J., and J. A. Luoma. 2016. Development of targeted delivery techniques for Zequanox®. Report.

Stapanian, M. A., and P. M. Kocovsky. 2013. Effects of dreissenids on monitoring and management of fisheries in western Lake Erie. *Quagga and zebra mussels: biology, impacts, and control*:681-692.

Stewart-Malone, A., M. Misamore, S. K. Wilmoth, A. Reyes, W. H. Wong, and J. Gross. 2015. The effect of UV-C exposure on larval survival of the dreissenid quagga mussel. *PLoS ONE* 10.

Strayer, D. L., B. V. Adamovich, A. Rita, D. C. Aldridge, B. Csilla, E. B. Lyubov, F.-P. Hannah, G. T. László, L. H. Amy, S. J. Thomas, Y. K. Alexander, B. M. Jacqueline, A. M. Oleg, J. E. Marsden, L. M. André, M. Dan, F. N. Thomas, N. Ruurd, J. R. Timothy, G. R. Lars, N. S. Astrid, D. R. Smith, D. S. Alan, and M. J. Jonathan. 2019. Long-term population dynamics of dreissenid mussels (*Dreissena polymorpha* and *D. rostriformis*): A cross-system analysis. *Ecosphere* 10.

Sykes, C. L., C. A. Caldwell, and W. R. Gould. 2011. Physiological effects of potassium chloride, formalin and handling stress on bonytail. *North American Journal of Fisheries Management* 31:291-298.

Sytsma, M., S. Phillips, and T. D. Counihan. 2015. Dreissenid mussel research priorities workshop.

Thompson, P. A., E. F. Roseman, K. M. Keeler, T. P. O'Brien, and D. Bowser. 2017. Continued feeding on *Diporeia* by deepwater sculpin in Lake Huron. *Environmental Biology of Fishes* 100:407-419.

Tucker, T., R. L. DeBruyne, E. F. Roseman, D. Larson, and A. S. McNaught. 2019. Assessment of larval fish assemblages and nursery habitat in the St. Clair River delta. *Journal of Great Lakes Research* 45:762-776.

Umek, J., S. Chandra, M. Rosen, M. Wittmann, J. Sullivan, and E. Orsak. 2010. Importance of benthic production to fish populations in Lake Mead prior to the establishment of quagga mussels. *Lake and Reservoir Management* 26:293-305.

Vanderploeg, H. A., S. A. Pothoven, G. L. Fahnenstiel, J. F. Cavaletto, J. R. Liebig, C. S. Stow, T. F. Nalepa, C. P. Madenjian, and D. B. Bunnell. 2012. Seasonal zooplankton dynamics in Lake Michigan: disentangling impacts of resource limitation, ecosystem engineering, and predation during a critical ecosystem transition. *Journal of Great Lakes Research* 38:336-352.

Waller, D. L., and M. R. Bartsch. 2018. Use of carbon dioxide in zebra mussel (*Dreissena polymorpha*) control and safety to a native freshwater mussel (Fatmucket, *Lampsilis siliquoidea*). *Management of Biological Invasions* 9:439-450.

Waller, D. L., M. R. Bartsch, E. G. Lord, and R. A. Erickson. 2020. Temperature-related responses of an invasive mussel and 2 unionid mussels to elevated carbon dioxide. *Environmental Toxicology and Chemistry* 39:1546-1557.

Warner, D. M., and B. M. Lesht. 2015. Relative importance of phosphorus, invasive mussels and climate for patterns in chlorophyll a and primary production in Lakes Michigan and Huron. *Freshwater Biology* 60:1029-1043.

Watkins, J. M., L. G. Rudstam, D. L. Crabtree, and M. Walsh. 2013. Is reduced benthic flux related to the *Diporeia* decline? Analysis of spring blooms and whiting events in Lake Ontario. *Journal of Great Lakes Research* 39:395-403.

Wittmann, M. E., S. Chandra, A. Caires, M. Denton, M. R. Rosen, W. H. Wong, T. Teitjen, K. Turner, P. Roefer, and G. C. Holdren. 2010. Early invasion population structure of quagga mussel and associated benthic invertebrate community composition on soft sediment in a large reservoir. *Lake and Reservoir Management* 26:316-327.

Zanatta, D. T., J. M. Bossenbroek, L. E. Burlakova, T. D. Crail, F. d. Szalay, T. A. Griffith, D. Kapusinski, A. Y. Karatayev, R. A. Krebs, E. S. Meyer, W. L. Paterson, T. J. Prescott, M. T. Rowe, D. W. Schloesser, and M. C. Walsh. 2015. Distribution of native mussel (unionidae) assemblages in coastal areas of Lake Erie, Lake St. Clair, and connecting channels, twenty-five years after a dreissenid invasion. *Northeastern Naturalist* 22:223-235.