



Conserving The Nature of America

New Publications Advance Understanding of Freshwater Mussel Sensitivity to Pollutants

The October 2007 issue of the journal *Environmental Toxicology and Chemistry* has a special section on the pollutant sensitivity of freshwater mussels. Scientists with U.S. Geological Survey and U.S. Fish and Wildlife Service are guest editors and contributors to 7 of the 10 papers.

The papers contain data that will help scientists and managers working toward mussel recovery address water quality problems. The new series includes papers on test methods and application of these methods to test common pollutants. There are also examples of how the data can be used to assess mussel habitat and evaluate the protection afforded by water quality standards.



Barnhart MC. 2006. *Unio* Gallery: <http://unionid.missouristate.edu>

Freshwater mussels are important but imperiled animals. These bivalve mollusks are a renewable resource supporting a shell industry in the U.S. valued at about \$50 million annually. Mussels are a food source for other animals, and they help stabilize stream sediments and filter bacteria and particulates from water. Unfortunately, 70 of the nearly 300 species native to the U.S. are federally-listed as threatened or endangered and 35 species are extinct. Because water pollution is one of main causes of declining mussel populations, our work to provide sound scientific data on how pollutants affect mussels is important. The papers include:

- Results of over 170 tests with 16 species of mussels and 21 chemicals or mixtures.
- Findings that mussels are sensitive to some pollutants, particularly copper, ammonia, chlorothalonil (a fungicide), and some components of currently used pesticide mixtures.
- Observations that mussels are more sensitive than the other animals used to develop water quality criteria and standards for some pollutants, like ammonia.
- Recommendations on water quality guidelines to protect mussels.
- Contributions from the USFWS Environmental Contaminants programs in North Carolina, Missouri and Virginia, the USGS Columbia Environmental Research Center, USGS Virginia Cooperative Research Unit, USGS Upper Midwest Science Center, North Carolina State University, Missouri State University, Oklahoma Biological Survey, Oklahoma State University, and the Wisconsin State Laboratory of Hygiene

The papers are listed on the back of this sheet and can be retrieved from the *Environmental Toxicology and Chemistry* website (<http://www.setacjournals.org/>). Reprints can also be obtained from the USFWS. For more information, contact Tom Augspurger, U.S. Fish and Wildlife Service, Raleigh, NC (919/856-4520 x.21 or tom_augspurger@fws.gov)

Series title: Contaminant Sensitivity of Freshwater Mussels

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Advances and Opportunities in Assessing the Contaminant Sensitivity of Freshwater Mussel Early Life Stages - Editorial. Augspurger T, Dwyer FJ, Ingersoll CG, Kane CM.

Intra- and Interlaboratory Variability in Acute Toxicity Tests with Glochidia and Juveniles of Freshwater Mussels (Unionidae). Wang N, Augspurger T, Barnhart MC, Bidwell JR, Cope WG, Dwyer FJ, Geis S, Greer IE, Ingersoll CG, Kane CM, May TW, Neves RJ, Newton TJ, Roberts AD, Whites DW.

Acute Toxicity of Copper, Ammonia, and Chlorine to Glochidia and Juveniles of Freshwater Mussels (Unionidae). Wang N, Ingersoll CG, Hardesty DK, Ivey CD, Kunz JL, May TW, Dwyer FJ, Roberts AD, Augspurger T, Kane CM, Neves RJ, Barnhart MC.

Chronic Toxicity of Copper and Ammonia to Juvenile Freshwater Mussels (Unionidae). Wang N, Ingersoll CG, Greer IE, Hardesty DK, Ivey CD, Kunz JL, Brumbaugh WG, Dwyer FJ, Roberts AD, Augspurger T, Kane CM, Neves RJ, Barnhart MC.

Lethal and Sublethal Effects of Ammonia to Juvenile *Lampsilis* Mussels (Unionidae) in Sediment and Water-Only Exposures. Newton TJ, Bartsch MR.

An Evaluation of Freshwater Mussel Toxicity Data in the Derivation of Water Quality Guidance and Standards for Copper. March FA, Dwyer FJ, Augspurger T, Ingersoll CG, Wang N, Mebane CA.

Risk Assessment of Water Quality in Three North Carolina Streams Supporting Federally-Endangered Freshwater Mussels (Unionidae). Ward S, Augspurger T, Dwyer FJ, Kane C, Ingersoll CG.

Acute and Chronic Toxicity of Technical Grade Pesticides to Glochidia and Juveniles of Freshwater Mussels (Unionidae). Bringolf RB, Cope WG, Eads CB, Lazaro PR, Barnhart MC, Shea D.

Acute and Chronic Toxicity of Glyphosate Compounds to Glochidia and Juvenile *Lampsilis siliquoidea* (Unionidae). Bringolf RB, Cope WG, Mosher S, Barnhart MC, Shea D.

Acute and Chronic Toxicity of Pesticide Formulations (Atrazine, Chlorpyrifos and Permethrin) to Glochidia and Juveniles of *Lampsilis siliquoidea* (Unionidae). Bringolf RB, Cope WG, Barnhart, Mosher S, Lazaro PR, Shea D.