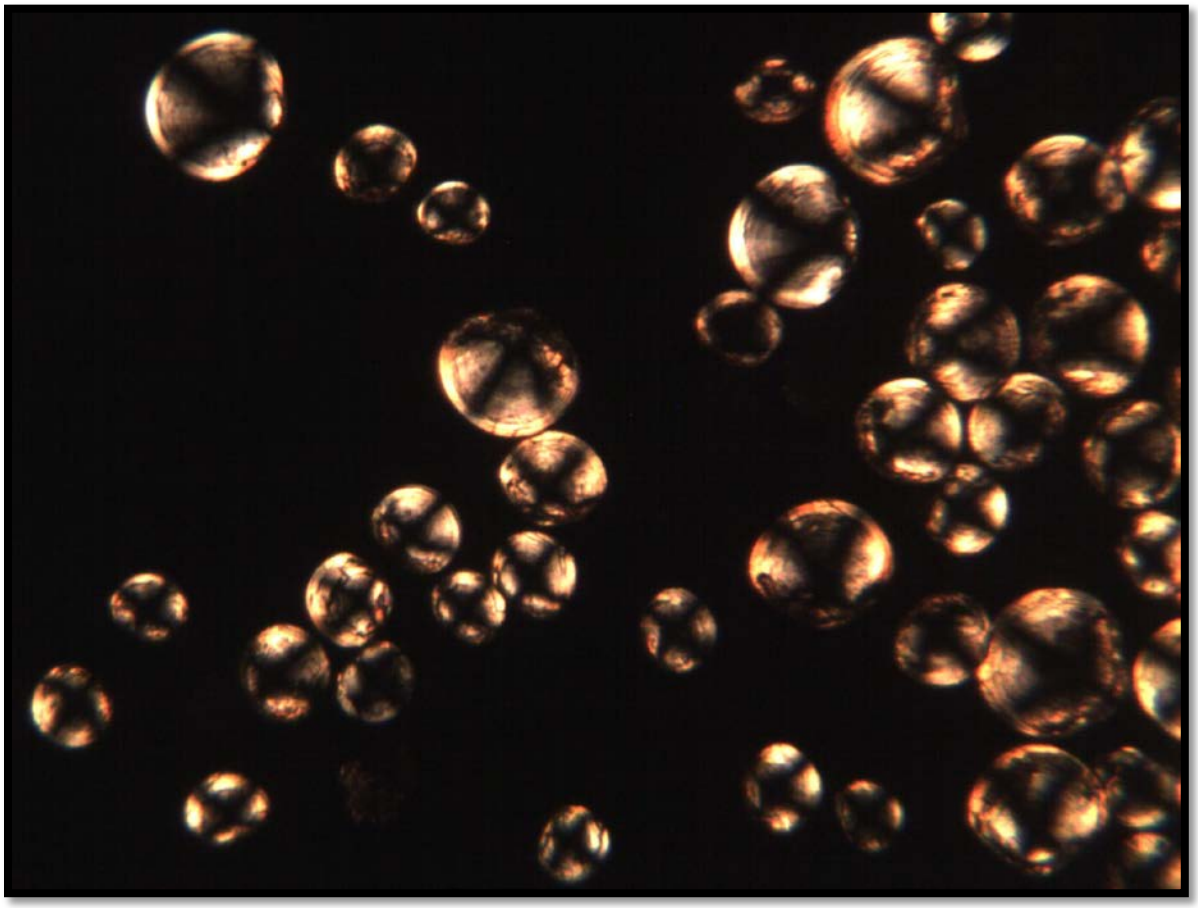
RECLAMATION

Managing Water in the West

Invasive Mussel Literature Review and Synthesis

Research and Development Office
Science and Technology Program
Final Report ST-2018-1609-01



U.S. Department of the Interior
Bureau of Reclamation
Research and Development Office

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Mission Statements

The U.S. Department of the Interior protects America’s natural resources and heritage, honors our cultures and tribal communities, and supplies the energy to power our future.

The Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

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14. ABSTRACT *(Maximum 200 words)* Literature on invasive dreissenid mussels was collected for a wide variety of sources. Collected literature included peer-reviewed publications, reports, theses, conference papers, presentations, and other documents. These items were organized in a searchable literature database, including attachment of source documents whenever available. This collection allows for rapid identification of relevant works, citation in reports and documents, and generation of bibliographies.		
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Invasive Mussel Literature Review and Synthesis

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Executive Summary

A substantial literature has been generated regarding invasive dreissenid (quagga and zebra) mussels since they were first detected in the Great Lakes over 30 years ago. Much of this work is relevant to U.S. Bureau of Reclamation projects, given the impact of invasive mussels in the Lower Colorado River, and the continuing threat of their introduction and spread in other regions. Because literature on invasive mussels is dispersed, much of it in reports, theses, presentations, and other documents outside the peer-reviewed literature, relevant information may escape the attention of Reclamation researchers and managers. The goal of this project was to aggregate a wide variety of invasive mussel literature into a central repository where it could be organized and made accessible.

Contents

Main Report

Methods

Literature on dreissenid mussel control was drawn from a wide variety of sources, including search engines, literature databases, and professional social networking tools, including Google Scholar (scholar.google.com), CiteSeerX (citeseer.ist.psu.edu), and ResearchGate (www.researchgate.net). Reports and theses were also obtained from institutional and academic websites and databases. Because a substantial portion of the research on mussel control has not been published in peer-reviewed journals or books, this study also incorporated technical reports, theses, conference proceedings, and presentations, to provide the broadest possible survey of relevant work.

This study focused on literature for which full-text PDFs and other source documents could be obtained, so that methods and results could be directly evaluated. Two previously published bibliographies have referenced dreissenid literature published through 2011 (Schloesser et al. 1994; Schloesser and Schmukal 2012). Therefore, the present study focused on inclusion of references for which the primary document was available and could be included in the generated library. References for which the primary document was not accessible, but which were included in the two previously published bibliographies, were genererally not included in the present library. All literature was organized using Zotero literature software (www.zotero.org), with citation items tagged with keywords and PDFs or other source documents attached.

For Bureau of Reclamation operations, the quagga mussel (*Dreissena rostriformis bugensis*) is the primary species of concern. However, the majority of literature to date has focused on the zebra mussel (*Dreissena polymorpha*), due to its earlier appearance in North America and its broader geographic spread in the United States. Therefore, for the purpose of this study literature on both species was collected.

Results, Conclusions and Future Prospects

In total 390 pieces of literature have been included in a Zotero library developed in this project. Topics covered by literature in this collection include the introduction and spread of zebra and quagga mussels, physiological ecology, habitat suitability, economic and ecological impacts,

detection and monitoring methods, response strategies following initial detection of mussels, and control techniques.

The Zotero library generated for this project is searchable, allowing identification of literature relevant to topics of interest. PDFs and other source documents are attached to nearly all references included in the library. The generated library and associated document files have been exported into a variety of library file formats, including BibTex, EndNote XML, RIS, Zotero RDF. These exported libraries allow importation into reference management software programs including Mendeley (www.mendeley.com), Zotero (www.zotero.org), ReadCube (www.readcube.com), and EndNote (endnote.com), among others. All of these programs support direct citation of references and generation of bibliographies within Microsoft Word, greatly simplifying the inclusion of references within reports, manuscripts, and other documents.

Looking forward, it is expected that the reference library generated in this project will be a valuable resource for Bureau of Reclamation researchers and managers interested in variety of topics regarding invasive dreissenid mussels. Maintaining and updating this resource will be important to ensuring its ongoing utility for researcher and managers.

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Data Sets that Support the Final Report

A copy of the bibliographic references and source documents has been deposited in a US Bureau of Reclamation Technical Services Center shared drive to be archived and made accessible to Reclamation staff. File and access information is as follows:

- Share Drive folder name and path where data are stored:
  - Z:\DO\TSC\Jobs\DO_NonFeature\Science and Technology

- Point of Contact name, email, and phone:
  - Yale Passamaneck, ypassamaneck@usbr.gov, 303-445-2480

- Short description of the data:
  - Bibliographic library of literature identified in the project
  - Data is in the RIS file format
  - Data can be imported into Mendeley, Zotero, EndNote, ReadCube, and other reference management programs
  - Data may be provided in other file formats upon request.

- Keywords:
  - mussel control, quagga mussel, zebra mussel, dreissenid

- Approximate total size of all files:
  - 1.0 GB