

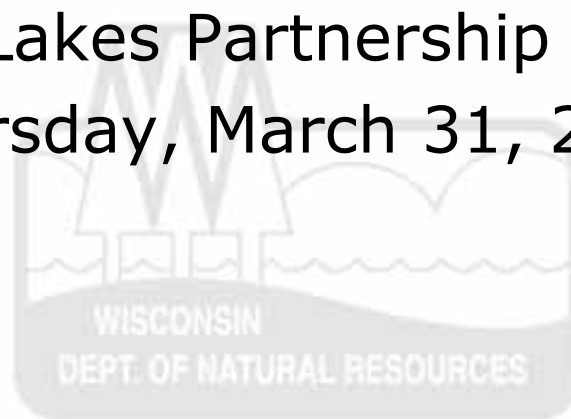


# Wisconsin DNR's Decontamination and Disinfection Manual Code

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Wisconsin Lakes Partnership Convention  
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# Prevention

**PREVENT THE SPREAD OF  
INVASIVE SPECIES  
IT'S THE LAW**

**PENALTIES MAY EXCEED \$2000**

Before *launching* and before *leaving* **YOU MUST:**

- ✓ **INSPECT** boats, trailers, and equipment.
- ✓ **REMOVE** all attached aquatic plants and animals.
- ✓ **DRAIN** all water from boats, vehicles, and equipment.
- ✓ **NEVER MOVE** plants or live fish away from a waterbody.\*

 **STOP AQUATIC HITCHHIKERS!**  
Prevent the spread of invasive species, it's the law

 \*Limited exceptions apply. Visit [WWW.DNR.WI.GOV](http://WWW.DNR.WI.GOV) and search for "BAIT LAWS."



**STOP AQUATIC  
HITCHHIKERS!™**

Prevent the transport of nuisance species.  
Clean all recreational equipment.

[www.ProtectYourWaters.net](http://www.ProtectYourWaters.net)



# Prevention

- Volunteers - keep up the great work!



# Prevention







# Manual Code 9183.1

- Prepared in 2007 & first signed in 2010
- Steps:
  - Inspect, remove, drain, dispose
  - DISINFECT by either:
    - Dry 5 days,
    - Steam,
    - Chlorine, or
    - Virkon

# Manual Code 9183.1





# Manual Code 9183.1

- Revision needed
  - New species
  - Research gaps





# Manual Code 9183.1

- Revision process:
  - Team formed
  - Staff survey
  - Literature review
  - Revised manual code
  - 21-day public review





# Cross-Program Team

## **CAES**

- Marsha Present

## **Community Financial Assistance**

- Diane Conklin

## **Fisheries Management**

- David Rowe

## **Land Division**

- John Olson

## **Law Enforcement**

- Todd Schaller, Steve Sisbach

## **Legal Services**

- Quinn Williams, Mike Kowalkowski

## **Parks and Recreation**

- Craig Anderson, Janet Hutchens

## **Sustainability and Business Support**

- Michael Halsted, Matt Mitro, Kelly Wagner, Dreux Watermolen

## **Water Quality**

- Tim Campbell, Maureen Ferry, Sue Graham, Michael Miller, Amanda Perdsock, Julia Riley, Michael Sorge, Bob Wakeman

## **Watershed Management (Dams and Floodplains)**

- Cheryl Laatsch

## **Watershed Management (Runoff Management)**

- Jim Bertolacini

## **Watershed Management (Waterways)**

- Martye Griffin

## **Wildlife**

- Daniel Hirschert



# Barrier Survey

- Methods staff currently use?
- Training and resource needs?
- How often along streams?
- Why not disinfect?



# Survey Results

- Always inspect & remove
- Chlorine and Virkon widely used
- Some concern over safety
- Some training/equipment needed
- Clean crossing barrier upstream
- Staff understand AIS problem



# Literature Review

- **80 scientific publications!!**

Jeremy Bates, Maureen Ferry, Michelle Nault, Amanda Perdsock, Tim Plude, Erin Vennie-Vollrath, and Carol Warden

<p><b>Virucidal Activity of Two Iodophors to Salmonid Viruses</b></p> <p>DONALD F. AMEND AND JOHN P. PIETSCH U.S. Bureau of Sport Fisheries and Wildlife Western Fish Disease Laboratory, Seattle, Wash. 98115, U.S.A.</p> <p>AMEND, D. F., AND J. P. PIETSCH. 1972. Virucidal activity of two iodophors. <i>J. Fish. Res. Bd. Canada</i> 29: 61-65.</p>	<p><b>Viability of Aquatic Plant Fragments following Desiccation</b></p> <p>Matthew A. Barnes, Christopher L. Jerde, Doug Keller, W. Lindsay Chadderton, Jennifer G. H.</p>	<p><i>North American Journal of Aquaculture</i> 64:220-223, 2002 © Copyright by the American Fisheries Society 2002</p> <p><b>Field Testing of Protocols to Prevent the Spread of Zebra Mussels <i>Dreissena polymorpha</i> during Fish Hatchery and Aquaculture Activities</b></p> <p>WILLIAM J. EDWARDS,* LISA BABCOCK-JACKSON,<sup>1</sup> AND DAVID A. CULVER</p>	
<p><b>Tolerance of the Asiatic Clam <i>Corbicula</i> spp. to Lethal Levels of Toxic Stressors—A Review</b></p> <p>Francis G. Doherty</p>	<p><b>Application of Household Disinfectants to Control New Zealand Mudsnails</b></p> <p>GEORGE J. SCHISLER AND NICOLE K. M. VIEIRA*</p>	<p><i>Aquatic Botany</i>, 35 (1989) 167-180 Elsevier Science Publishers B.V., Amsterdam — Printed in The Netherlands</p> <p><b>SEED DISPERSAL OF THREE NYMPHAEID MACROPHYTES</b></p>	<p><b>Survival of the exotic Chinese mystery snail (<i>Cipangopaludina chinensis malleata</i>) during overland dispersal and implications for overland dispersal</b></p>
<p>American Fisheries Society Symposium 29:217-225, 2002 © 2002 by the American Fisheries Society</p> <p><b>Whirling Disease Prevention, Control, and Management: A Review</b></p> <p>ERIC J. WAGNER Fisheries Experiment Station, 1465 West 200 North, Logan, Utah 84321, USA www.ers.fs.fed.us</p>	<p><i>Hydrobiologia</i> (2011) 675:167-174 DOI 10.1007/s10750-011-0814-1</p> <p><b>PRIMARY RESEARCH PAPER</b></p> <p><b>Effects of desiccation on two life stages of an invasive snail and its native cohabitant</b></p> <p>Allison M. Wood · Cody R. Hara · Roger J. Hara · Gregory J. Sandland</p>	<p><i>Limnol. Oceanogr.</i> 56B, 2011, 2175-2184 © 2011 by the Estuarine Research Federation for the American Society of Limnology and Oceanography, Inc. doi:10.1002/lno.2175</p> <p><b>Effects of chemical and physical conditions on hatching success of <i>Bythotrephes longimanus</i> resting eggs</b></p> <p>Donn K. Braatenstrator,* Lyle J. Shannon, Meghan E. Brown,<sup>a</sup> and Martie T. Kitson<sup>b</sup> Department of Biology, University of Minnesota Duluth, Duluth, Minnesota</p>	



# Literature Review

Table 2 Efficacy of treatment methods for invertebrates.

AIS	Steam Cleaning (212°F)	Hot Water (140°F, ≤10 min)	Drying (5 days)	Chlorine (500 ppm, ≤10 min)	Virkon (2:100 solution, ≤20 min)	Freezing (26°F, ≤24hrs)
Faucet Snail	✓	✓ <sup>18*</sup>	⊗ <sup>18,35</sup>	⊗ <sup>18</sup>	Ⓡ <sup>18</sup>	✓
New Zealand mud snail	✓	✓ <sup>4,65*</sup>	✓ <sup>6*,66*</sup>	⊗ <sup>21, 78*</sup>	✓ <sup>10*, 76, 77</sup>	✓ <sup>4,6*</sup>
Quagga Mussel (Adults)	✓ <sup>†</sup>	✓ <sup>7*,16*</sup>	✓ <sup>14*,67</sup>	✓	✓ <sup>9</sup>	✓
Quagga Mussel (Veligers)	✓ <sup>†</sup>	✓ <sup>4,17</sup>	✓ <sup>69*, 79*</sup>	✓	✓ <sup>9</sup>	✓
Zebra Mussel (Adult)	✓ <sup>†</sup>	✓ <sup>7*,8*,54,67</sup>	✓ <sup>14*,25*,67</sup>	✓ <sup>11,19,22</sup>	Ⓡ	✓ <sup>25,27,67,68</sup>
Zebra Mussel (Veligers)	✓ <sup>†</sup>	✓ <sup>4</sup>	Ⓡ	✓	Ⓡ	✓
Asian Clam	✓	✓ <sup>4,37,41,42,43</sup>	⊗ <sup>4,44*,45</sup>	⊗ <sup>36*,37*,38*,39*,40</sup>	✓ <sup>23</sup>	✓ <sup>46*</sup>
Spiny Water Flea (Adult)	✓	✓ <sup>7*,47*</sup>	✓ <sup>4</sup>	✓ <sup>78</sup>	✓ <sup>78</sup>	✓ <sup>78</sup>
Spiny Water Flea (Resting Eggs)	✓	✓ <sup>2*</sup>	✓ <sup>2*</sup>	⊗ <sup>2, 78*</sup>	✓ <sup>78</sup>	✓ <sup>2*</sup>
Bloody Red Shrimp	Ⓡ	Ⓡ	Ⓡ	Ⓡ	Ⓡ	Ⓡ
Rusty Crayfish	?	?	?	?	?	?

\*Additional details:

<sup>2</sup>Frozen in water, not just in air; Hot water: 50°C (122°F) for >5 min (or 1 min at >50°C); Drying: ≥ 6 hr @ 17°C (63°F)

<sup>6</sup>Drying: Must ensure hot and dry environment (>84°F for 24hrs; ≥ 104°F (40°C) for >2 hours); Freezing: ≤ 27°F (-



# Revisions

- Definitions
- Upstream crossing barrier
- Hot water ( $\geq 140^{\circ}$  F) an option
- Virkon 1% to 2%
- Chlorine 200 to 500 ppm
- Rinse water from clean source
- Updated safety
- Condition for DNR agents, contracts & some permits



# Revisions

- Guidance for 21 day public review
  - Web site: <http://dnr.wi.gov/topic/invasives/disinfection.html>
    - Memo
    - Draft MC
    - BMPs (includes lit review)
    - FAQs
    - Implementation chart
    - General public
    - Where to find AIS



# Preparing to sample

## 1. Check for known AIS

<https://dnrx.wisconsin.gov/swims/downloadDocument.do?id=126471317>

## 2. Select appropriate disinfection method

<https://dnrx.wisconsin.gov/swims/downloadDocument.do?id=126472445>

## 3. Decontaminate and disinfect

<http://prodoasint.dnr.wi.gov/swims/downloadDocument.do?id=126471765>



# Inspect, Remove, Drain





# Disinfect

- Pick one of 4 options:
  - Dry five days,
  - $\geq 140$  ° F or steam
  - 500 ppm chlorine, or
  - 2% Virkon Aquatic

# Drying

- Remove organic, then use soap and water or pressure wash, then store for 5 days
- Safety:
  - No PPE required by code



# Hot Water or Steam

- Remove organic
- $\geq 140$  ° F or steam
- Safety:
  - Heat resistant gloves and clothing





# Hot Water or Steam



# Hot Water or Steam





# Chlorine Solution

- Consider shelf life
- 500 ppm solution ~ 2.5 tbsp/gal
- 10 min
- Sodium thiosulfate
- Rinse with tap water
- Safety:
  - Emergency eyewash station, eye protection, and nitrile gloves
  - Stay upwind of spray

# Virkon Aquatic

- Consider shelf life
- 2% solution ~5.4 tbsp/gal
- 20 min
- Safety:
  - Emergency eyewash station, eye protection, and nitrile gloves
  - Splash goggles and/or face shield
  - Respirators available
  - Stay upwind of spray





# Virkon Aquatic







# Report New AIS

- Enter SWIMS data or report new occurrences to the DNR

<http://dnr.wi.gov/topic/Invasives/report.html>



## Manual Code 9183.1

- Affects DNR employees, agents, contractors and some permittees.
- Comment period until April 18<sup>th</sup>

<http://dnr.wi.gov/news/input/Guidance.html>

- dnr.wi.gov
- Search “disinfection guidance”

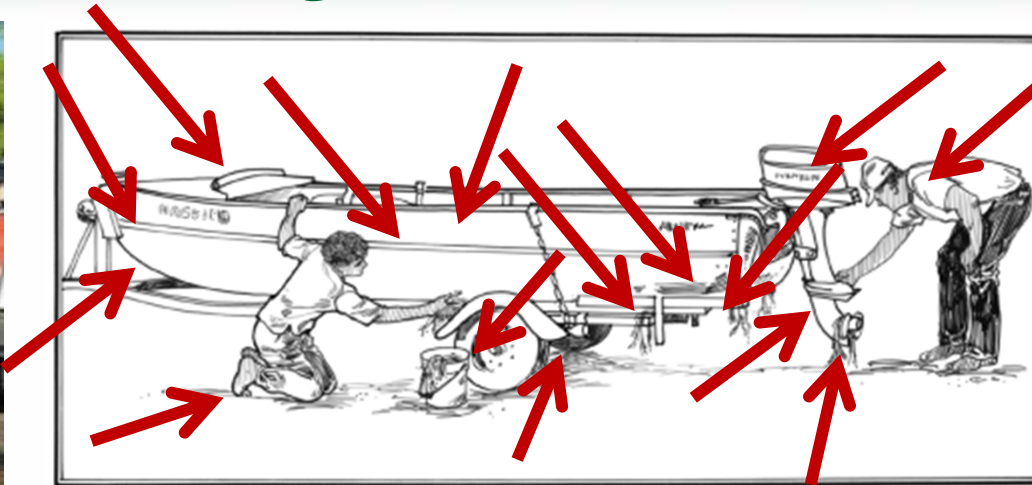


# Prevention

- General public is NOT required to follow the DNR manual code.
- General public IS required to follow the law.
- Thanks CBCW volunteers!



# Questions?



Clean  
Everything

