

APPENDIX 1

Strategy Resources

Chapter 4 listed seven broad conservation strategies that can help protect and restore freshwater mussels and their habitat. Specific actions were listed under each strategy. These lists were not intended to be exhaustive, rather, they were intended to demonstrate a range of actions that can benefit mussels, and a range of people that could become involved. Many state and federal agencies and nongovernment organizations are working on these issues, and in many cases, have been doing so for decades. It is important to be aware of who is doing what, who can offer guidance on specific issues, and what potential funding sources are available for specific projects. It is also important for people to understand the local, statewide, or watershed-wide context of their specific interests. This appendix lists key agencies, organizations, and publications relevant to each of the seven conservation strategies. The lists are intended to help narrow the universe of information available on the World Wide Web. It is difficult to compile brief and precise lists that are still comprehensive enough to be useful. No agency, organization, or author should feel slighted if they are not listed here.

Strategy 1: Identify and address point source pollution

FEDERAL

U.S. Environmental Protection Agency
National NPDES: <http://cfpub.epa.gov/npdes>
New England EPA
NPDES: www.epa.gov/region01/npdes

STATE

Connecticut Department of Environmental Protection
Water: www.ct.gov/dep/cwp
Massachusetts Department of Environmental Protection
Waste, Wastewater, and Wetlands: www.mass.gov/dep/water
Water Quality Standards: www.mass.gov/dep/service/regulations/314cmr04.pdf
New Hampshire Department of Environmental Services
Wastewater Engineering Bureau: www.des.state.nh.us/wwe
Storm Water Program: www.des.state.nh.us/StormWater
Water Quality/Quantity Rules: www.des.state.nh.us/rules/desadmin_list.htm#waterq
Vermont Agency of Natural Resources
Wastewater Management Division: www.anr.state.vt.us/dec/ww/wwmd.cfm
Water Quality Division: www.anr.state.vt.us/dec/waterq
Water Quality Standards: www.nrb.state.vt.us/wrp/publications/wqs.pdf

OTHER

Connecticut River Cleanup: www.themdc.com/ctrivercleanup.htm
Connecticut River Watershed Council: www.ctriver.org
New England Interstate Water Pollution Control Commission: www.neiwpcc.org
Pioneer Valley Planning Commission CSOs: www.pvpc.org/web-content/docs/landuse/CSO_Fact_Sheets.pdf

Strategy 2: Minimize threats from nonpoint source pollution and invasive species

FEDERAL

U.S. Environmental Protection Agency

Polluted Runoff: www.epa.gov/owow/nps

Best Nonpoint Source Documents: www.epa.gov/owow/nps/bestnpsdocs.html

Invasive Species: www.epa.gov/owow/invasive_species

U.S. Department of Agriculture Natural Resources Conservation Service (USDA-NRCS)

National Site: www.nrcs.usda.gov

NRCS in Connecticut: www.ct.nrcs.usda.gov

NRCS in Massachusetts: www.ma.nrcs.usda.gov

NRCS in New Hampshire: www.nh.nrcs.usda.gov

NRCS in Vermont: www.vt.nrcs.usda.gov

U.S. Department of Agriculture

National Invasive Species Information Center: www.invasivespeciesinfo.gov

STATE

Connecticut Department of Environmental Protection

Water: www.ct.gov/dep/cwp

Follow links for: Nonpoint Source Pollution Management, Stormwater Management, Invasive Species

Massachusetts Department of Environmental Protection

Nonpoint Source Pollution: www.mass.gov/dep/water/resources/nonpoint.htm

Stormwater: www.mass.gov/dep/water/wastewater/stormwat.htm

Massachusetts Natural Heritage and Endangered Species Program

Invasive Species: www.mass.gov/dfwele/dfw/nhesp/conservation/invasives/invasive_species.htm

New Hampshire Department of Environmental Services

Watershed Assistance Section: www.des.state.nh.us/wmb/was

Shoreland Protection: www.des.state.nh.us/cspa

Storm Water Program: www.des.state.nh.us/StormWater

Water Quality/Quantity Rules: www.des.state.nh.us/rules/desadmin_list.htm#waterq

Exotic Species Program: www.des.state.nh.us/wmb/ExoticSpecies

Excellent publication: *Best Management Practices to Control Nonpoint Source Pollution: A Guide for Citizens and Town Officials*. (2004) Produced by the New Hampshire Department of Environmental Services.

Vermont Agency of Natural Resources

Water Quality Division: www.anr.state.vt.us/dec/waterq

River Management Section: www.vtwaterquality.org/rivers.htm

OTHER

New Hampshire Aquatic Nuisance Species Task Force: www.protectyourwaters.net/states/nh.php

Northeast Aquatic Nuisance Species Panel: www.northeastans.org/

Connecticut River Joint Commissions

Riparian Buffer Fact Sheets: www.crjc.org/riparianbuffers.htm

Erosion: www.crjc.org/erosion.htm

Invasive Species: www.crjc.org/invasives.htm

Strategy 3: Protect land

FEDERAL

S.O. Conte National Fish and Wildlife Refuge: www.fws.gov/r5soc

US Fish and Wildlife Service: www.fws.gov

U.S. Department of Agriculture Natural Resources Conservation Service (USDA-NRCS)

National Site: www.nrcs.usda.gov

NRCS in Connecticut: www.ct.nrcs.usda.gov
 NRCS in Massachusetts: www.ma.nrcs.usda.gov
 NRCS in New Hampshire: www.nh.nrcs.usda.gov
 NRCS in Vermont: www.vt.nrcs.usda.gov

STATE

Connecticut Department of Environmental Protection

General web site: www.ct.gov/dep

Open Space: www.ct.gov/dep/openspace

The Green Plan: www.ct.gov/dep/lib/dep/open_space/green_plan.pdf

Comprehensive Wildlife Conservation Strategy: www.ct.gov/dep/cwp (access through)

Several other plans related to land protection can be accessed through the Open Space web site or are described in "The Green Plan"

Connecticut Department of Agriculture

Farmland Preservation Program: www.ct.gov/doag (access through)

Massachusetts Division of Fisheries and Wildlife

Natural Heritage and Endangered Species Program: www.mass.gov/dfwele/dfw/nhosp/nhosp.htm

Land Protection and Planning: www.mass.gov/dfwele/dfw/nhosp/land_protection/land_protection_home.htm

Biomap (access through "Land Protection and Planning")

Living Waters (access through "Land Protection and Planning")

State Wildlife Conservation Strategy: www.mass.gov/dfwele/dfw/habitat/cwcs/cwcs_home.htm

New Hampshire Fish and Game Department

Nongame and Endangered Wildlife Program: www.wildlife.state.nh.us/Wildlife/nongame_and_endangered_wildlife.htm

Wildlife Action Plan: www.wildlife.state.nh.us/Wildlife/wildlife_plan.htm

New Hampshire Land & Community Heritage Investment Program: www.lchip.org

New Hampshire Department of Resources & Economic Development: www.dred.state.nh.us

Vermont Agency of Natural Resources

Vermont Fish and Wildlife Department: www.vtfishandwildlife.com

Several important programs can be accessed through the Vermont Fish and Wildlife Department homepage.

Vermont Wildlife Action Plan: www.vtfishandwildlife.com/SWG_HOME.cfm

Publication: *Conserving Vermont's Natural Heritage: A Guide to Community-Based Planning for the Conservation of Vermont's Fish, Wildlife, and Biological Diversity*. Available by request from the Vermont Fish and Wildlife Department, and can be downloaded from the Fish and Wildlife Library (www.vtfishandwildlife.com/library.cfm)

OTHER

Many non-government organizations are involved in land protection in the Connecticut River watershed. Several can be found through the state government links listed above. A few are listed here and the documents below provide overviews and/or directories.

Connecticut River Joint Commissions: www.crjc.org

The Audubon Society: www.audubon.org (each state has a chapter)

The Nature Conservancy: www.nature.org (each state has a chapter)

The Society for the Protection of New Hampshire's Forests: www.spnhf.org

The Trust for Public Land: www.tpl.org

Upper Valley Land Trust: www.uvlt.org

Vermont Land Trust: www.vlt.org

Vermont River Conservancy: <http://vermontriverconservancy.org>

Clay, C. et al. 2006. *The Connecticut River Watershed: Conserving the Heart of New England*. The Trust for Public Land. viii+56 pages. Online at: www.tpl.org/ctriver

Conserving Vermont's Natural Heritage: A Guide to Community-Based Planning for the Conservation of Vermont's Fish, Wildlife, and Biological Diversity. Available by request from the Vermont Fish and Wildlife Department, and can be downloaded from the Fish and Wildlife Library (www.vtfishandwildlife.com/library.cfm)

Ewald, R.J., and A.D. Mulligan. *Proud to Live Here in the Connecticut River Valley of Vermont and New Hampshire*. Connecticut River Joint Commissions, Charlestown, New Hampshire.

Strategy 4: Protect or restore ecosystem processes and connectivity

FEDERAL

U.S Fish and Wildlife Service

Connecticut River Migratory Fish Restoration: www.fws.gov/r5crc/about_us.htm

Fisheries and Habitat Restoration: www.fws.gov/fisheries/

NOAA Fisheries Restoration Center: www.nmfs.noaa.gov/habitat/restoration

National River Restoration Science Synthesis: <http://nrrss.nbii.gov>

STATE

Connecticut Department of Environmental Protection

Fisheries Management Programs: (the link is too long to include here); see "Habitat Conservation and Enhancement" and "Atlantic Salmon Restoration" programs.

Massachusetts Division of Fisheries and Wildlife

Fisheries Conservation: www.mass.gov/dfwele/dfw/fisheries/fisheries_conservation.htm

Massachusetts Division of Marine Fisheries

Anadromous Fisheries: www.mass.gov/dfwele/dmf/programsandprojects/anadrom.htm#anadromous

Massachusetts Riverways Program: www.mass.gov/dfwele/river

River Continuity: www.mass.gov/dfwele/river/programs/rivercontinuity

River Restoration: www.mass.gov/dfwele/river/programs/riverrestore/riverrestore

Dam Removal Permitting: www.mass.gov/dfwele/river/pdf/factsheet_permitting_final.pdf

Funding Sources for Dam Removal: www.mass.gov/dfwele/river/pdf/factsheet_funding_final.pdf

Conservation Commissions & Dam Removal: www.mass.gov/dfwele/river/pdf/concoms.pdf

New Hampshire Department of Environmental Services

Rivers Management and Protection Program: www.des.state.nh.us/rivers

Dam Removal and River Restoration Program: www.des.state.nh.us/dam/damremoval

Links to Resources: www.des.state.nh.us/dam/damremoval/resources

New Hampshire Fish and Game

Anadromous Fish Restoration Program: www.wildlife.state.nh.us/Fishing/Anadromous_Fish_Program.htm

Vermont Agency of Natural Resources

River Management Section: www.vtwaterquality.org/rivers

Dam Removal: www.anr.state.vt.us/dec/fed/damsafety/damremoval.htm

OTHER

American Rivers: www.americanrivers.org

The Nature Conservancy: www.nature.org

Each state chapter has experts, and the Connecticut River Program is actively involved in researching and restoring ecosystem processes and connectivity in the Connecticut River watershed.

Sustainable Waters: www.nature.org/initiatives/freshwater/

Sustainable Rivers Project: www.nature.org/initiatives/freshwater/partnership/

Trout Unlimited: www.tu.org

University of Massachusetts River and Stream Continuity Project: www.streamcontinuity.org

Stream Barrier Removal Monitoring Guide: www.gulfofmaine.org/streambarrierremoval/

Strategy 5: Minimize direct mortality and intervene with endangered populations

See Appendix 2 for agencies and people to contact regarding endangered species issues. These are the only agencies with the authority to review projects and make decisions regarding endangered freshwater mussels.

Strategy 6: Raise awareness and support for mussel conservation

Publications

- Fichtel, C., and D.G. Smith. 1995. *The Freshwater Mussels of Vermont*. Vermont Fish and Wildlife Department Technical Report 18. Leahy Press, Montpelier, VT. 54 p.
- National Native Mussel Conservation Committee (NNMCC). 1998. National strategy for the conservation of native freshwater mussels. *Journal of Shellfish Research* 17: 1419-1428.
- Nedeau, E.J., and J. Victoria. 2003. *A Field Guide to the Freshwater Mussels of Connecticut*. Connecticut Department of Environmental Protection, Hartford, CT.
- Nedeau, E.J., M.A. McCollough, and B.I. Swartz. 2000. *The Freshwater Mussels of Maine*. Maine Department of Inland Fisheries and Wildlife, Augusta, Maine.

Miscellaneous Websites of Interest

- Freshwater Mollusk Conservation Society: <http://ellipse.inhs.uiuc.edu/FMCS/>
- Fun With Freshwater Mussels: www.uvm.edu/~pass/tignor/mussels/index.htm
- Illinois Natural History Survey Mollusk Collection: www.inhs.uiuc.edu/cbd/collections/mollusk/molluskintro.html
- Ohio State University Division of Molluscs, Bivalves: www.biosci.ohio-state.edu/~molluscs/OSUM2/bivalves.htm
- The American Malacological Society: www.malacological.org
- Unio Gallery: <http://unionid.missouristate.edu/>

Strategy 7: Conduct research and monitoring

No specific resources are listed under this strategy. This book cites primary literature, books, and other publications. Readers are encouraged to explore the cited literature—abstracts of scholarly research journals can be found online and entire journal articles can either be purchased online or photocopied from a university library. Journal articles have a reference section that reveals a world of information that is virtually unknown to the general public. These published works provide the foundation of knowledge that conservation and management depends on, and can help guide further inquiry. Any field research and monitoring, especially for endangered species, will need to be coordinated by state or federal agencies (Appendix 2).

APPENDIX 2

Submitting Freshwater Mussel Data

People have the opportunity to help state natural resource agencies protect freshwater mussels by submitting observations of mussels they encounter or by reporting actual or potential threats to these animals or their habitat. When submitting data, people should include specific information about a location and what they found. Each state has a rare species observation form that lists all the pertinent information to submit.

DO NOT KILL ANY ANIMALS!

State or federal endangered species laws protect some species, and purposefully killing these animals or possessing their shells is a punishable crime. People should never kill an animal to identify it, or to prove that they found it. Simply submit an observation form, preferably with digital photographs of the location and species, and trust that the natural resource agencies will follow through with additional work, if necessary.

CONNECTICUT

Julie Victoria, Wildlife Biologist
Connecticut Department of Environmental
Protection
Franklin Swamp WMA
391 Route 32
N. Franklin, CT 06254
Telephone: (860) 642-7239

MASSACHUSETTS

Massachusetts Natural Heritage and
Endangered Species Program
Route 135
Westborough, MA 01581
Telephone: (508) 389-6360

NEW HAMPSHIRE

Michael Marchand, Wildlife Biologist
New Hampshire Fish and Game Department
Nongame & Endangered Species Program
11 Hazen Drive
Concord, NH 03301
Telephone: (603) 271-3016

VERMONT

Mark Ferguson, Zoologist
Vermont Department of Fish and Wildlife
Nongame & Natural Heritage Program
103 South Main Street
Waterbury, VT 05671-0501
Telephone: (802) 241-3667

FEDERAL

Susi von Oettingen
U.S. Fish and Wildlife Service
New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301
Telephone: (603) 223-2541

PRIVATE

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Amherst, MA 01002
Web site: www.biodrawversity.com

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