

Preventing the Spread of Aquatic Nuisance Species

Stream Team Volunteer Water Quality Monitoring Program

Aquatic nuisance species (ANS) are defined as non-native species which threaten the diversity or abundance of native aquatic species, the ecological stability of infected waters, or the commercial, agricultural, aquacultural, or recreational activities dependent on such waters. In the United States, ANS have caused major economic and ecological damage, making it important to prevent them from reaching Missouri's waters and containing their spread when they arrive. Specifically, as part of the Stream Team Volunteer Water Quality Monitoring (VWQM) program, we need to take some simple precautions to make sure our activities do not facilitate the spread of any ANS.

Currently, there are seven ANS impacting Missouri's rivers and streams. Additionally, there are 12 more ANS that may establish populations in Missouri if precautions are not taken to limit accidental transportation of these species. These 19 species are listed below. In many cases international ANS are introduced to the Great Lakes region as a result of global shipping. These species then use the Illinois River as a transport corridor from the great lakes to the Mississippi and Missouri rivers. From the rivers these species either migrate to stream systems or are transported from one basin to the next when boats, canoes, and other equipment are not properly cleaned before being used in multiple aquatic systems. For a detailed description of the Missouri Department of Conservation's management plan for aquatic nuisance species visit:

mdc4.mdc.mo.gov/applications/MDCLibrary/Library.aspx?ArtID=16342

ANS Currently Impacting Missouri Rivers and Streams

Zebra mussel
Asian clam
Grass Carp
Common carp
Bighead carp
Silver carp
White perch

ANS with the Potential to Spread to Missouri

Water hyacinth
Hydrilla
New Zealand mudsnail
Rusty crayfish
Quagga mussel
Northern snakehead
Black carp
Ruffe
Round goby
Dydimio
Whirling disease
Viral Hemorrhagic Septicemia

As part of the VWQM program several pieces of your monitoring equipment have the potential to transport ANS (Table 1). Special attention should be given to your protective footwear.

There are two methods to treat this equipment in order to successfully prevent the transport of any ANS (Table 2). The first is a short term chemical bath using a straight vinegar or diluted chlorine (bleach) solution. Alternatively, these solutions can be applied to the nets or equipment with a spray bottle. This method should be used if you are planning on sampling more than one stream within the span of 1-3 days, and if possible, should be done at home in your bathtub or shower.

The long-term alternatives are to thoroughly dry, freeze, or bathe the equipment in a salt bath. Adequate drying time is the best option given the minor safety issues associated with the chemical treatment options. For most of your equipment, it should be sufficient to allow it to dry thoroughly for at least a week between uses.

Aquatic nuisance species are a threat to Missouri's unique aquatic resources and their spread will be both economically and ecologically expensive. Your monitoring efforts are important to protecting our aquatic resources but we must make sure that we do not do anything detrimental to the streams we are trying to protect. Taking these simple precautions takes a little extra time but will ensure that the chances of spreading ANS are minimized.

Table 1. Volunteer Water Quality Monitoring equipment that should be treated to avoid potential spread of Aquatic Nuisance Species.

<p><u>Biological Monitoring Equipment</u></p> <p>Nets (3' x 3' kick net or long-handled D-frame net)</p> <p>Sorting pan/ice cube trays</p> <p>Forceps</p> <p>Squirt bottle</p> <p>Protective footwear</p> <p><u>Stream Discharge Equipment</u></p> <p>Float – wiffle golf ball</p> <p>Tape measure</p> <p>Rope</p> <p><u>Chemical Monitoring Equipment</u></p> <p>All sample bottles and glassware used in chemical kits</p> <p>Thermometer</p> <p>Turbidity Tube</p> <p><u>Sediment Monitoring Equipment</u></p> <p>Cubitainer</p> <p>DSS Sampler</p> <p>Milk Jugs</p> <p>Funnel</p>

Table 2. Methods for treating Volunteer Water Quality Monitoring equipment to avoid potential spread of Aquatic Nuisance Species

Technique	Duration	Concentration	Solution (per gallon)	Comments
Short Term				
Vinegar	20 min	100%	1 gallon of vinegar, no water	Safety glasses and gloves should be worn. Vinegar and bleach are corrosive to metal and toxic to fish.
Chlorine	10 min	200 ppm	5 oz or 15 ml of bleach and 1 gallon of water	Before re-use rinse with water but don't let the solution runoff directly to the stream.
Long Term				
Air Drying	3 - 5 days	N/A	N/A	Equipment must dry completely.
Freezing < 32° F	24 hrs	N/A	N/A	Must be below freezing for duration of contact time.
Salt Bath	24 hrs	1%	1/8 cup and 1 gallon of water	Equipment must be completely submerged.