

SOP 1.11: Decontamination of Field Gear and Sampling Equipment.

This document provides guidelines for the decontamination of equipment to limit the potential spread of nonindigenous aquatic species (NAS) through field monitoring activities. The most effective methods for preventing the spread of NAS are to prevent and/or minimize exposure of field equipment with NAS. The MIDN uses techniques to achieve this by dedicating, cleaning, and decontaminating equipment which comes in contact with water at field sites. The most effective method is to dedicate equipment which is only used within a smaller defined area where any spread of NAS would likely occur independent of field activities (e.g., within a MIDN park). When this is not possible equipment is cleaned and decontaminated to mitigate the potential spread of NAS. More information on NAS can be found through USGS web services (<http://nas.er.usgs.gov/about/default.aspx>).

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I. Equipment and Supplies

- Safety Equipment
 - Latex/Nitrile gloves
 - Safety glasses (w/splash protection)
- 5-gal buckets with sealing lids
- Large poly tub
- Brushes
 - Field brush
 - Decontamination brush
 - Field toothbrush
 - Decontamination toothbrush
- Towels
- Decontamination Supplies*
 - Household bleach (NaHCl)
 - Salt (NaCl)
 - Ethanol (70%)
 - Dishwashing liquid (e.g., Dawn)
- Tap water
- Distilled water

* There are multiple acceptable methods for the decontamination of equipment. Staff should consider the merits of each and the conditions in which they will be used to choose which method to employ (e.g., is there sufficient time between sampling events for gear to be completely dry for >48 hours [etc.]).

II. Dedicate, Clean, Decontaminate

This section provides the procedures the MIDN follows to limit potential spread of NAS. Methods and exposure times were derived from Kilroy et al. (2006).

A. Dedicate Equipment

- (1) Where practical, dedicate equipment to a single park
 - i. All non-MIDN sampling is collected with equipment dedicated to a particular park

1. Unless NAS invasion is suspected or discovered no special decontamination measures are taken within a park
2. If NAS invasion is suspected:
 - a. Adjust sampling routes to sample suspected NAS after all other sites
 - b. Follow full cleaning and decontamination procedures following contact with suspected NAS sites
- ii. MIDN sampling staff dedicate equipment to the greatest extent practical:
 1. Waders, boots (all boots should be non-felt), brushes (etc.) should be dedicated to a single park
 2. Where cost prevents dedicating equipment (sondes, field meters, etc.) cleaning and decontamination procedures must be followed between conducting site visits to different parks

B. Cleaning Equipment

Cleaning procedures are employed both at individual field sites and between sampling events. Cleaning equipment at field sites reduces the load of foreign material which can be transferred between sampling locations. Cleaning equipment between sampling events is a more thorough process which removes all foreign material from equipment prior to deployment to the next location.

(1) At each field site:

- i. For any equipment/gear which makes contact with water prior to leaving each field site:
 1. Inspect equipment for foreign materials (sediments, algae, etc.)
 - a. Use field brush to remove foreign materials
 - b. Rinse equipment clean with stream water
 2. Inspect equipment again to ensure all material has been rinsed off equipment

(2) In between sampling events:

- i. For both dedicated equipment and equipment used at multiple MIDN parks:
 1. Inspect equipment for foreign materials
 - a. Rinse equipment with clean tap water
 - b. If foreign material is found:
 - i. Wash equipment using dishwashing liquid and warm water
 - ii. Rinse with clean tap water

C. Decontaminating Equipment

Decontamination of equipment should occur for all equipment which will be used at more than one MIDN park. There are several methods for decontamination and staff should consider the merits of each and decide which is best suited for the current circumstance.

- (1) Choose decontamination method (Table 1):

Table 1. Methods for the decontamination of equipment (adapted from Kilroy et al. 2006).

Method*	Level or Concentration	Exposure Time
Drying	<83% Moisture	> 48 hours
Bleach (NaHCl)	2%	1 min.*
Dishwashing Liquid	5%	1 min.*
Salt (NaCl)	10% (w/v NaCl)	1 min.*
Ethanol	70%	10 min.*

* Always consult MSDS sheets for appropriate safety measures when working with any chemical method.

- i. Preference should be given to the least harsh method to increase the longevity of equipment
 1. Drying of equipment is the preferable method if sufficient time is available
 - a. Equipment must be completely dry for 48 hours prior to re-deployment
 - b. Do not dry sonde sensors as they will damage them requiring replacement. Only use dishwashing liquid cleaning method
 2. Dishwashing liquid and bleach methods are the secondary methods if the drying method is not practicable
- (2) All equipment must be decontaminated prior to deployment to a new park

References:

Kilroy, C., A. Lagerstedt, A. Davey, and K. Robinson. 2006. Studies on the survivability of the invasive diatom *Didymosphenia geminata* under a range of environmental and chemical conditions. NIWA. Biosecurity New Zealand, New Zealand.