The Weed Action Coalition of Hickory Nut Gorge (WACHNG) Monitoring Protocol

Our primary purpose for monitoring properties is to ensure that we are meeting our overall goals. Our mission – *to manage the spread and establishment of non-native invasive plants and provide information and resources to landowners* – implies that we practice, and provide, the most efficient and effective methods and techniques when managing non-native invasive vegetation. To ensure that we are meeting these standards, our monitoring program has the following goals:

1. To determine the effectiveness of our current control practices and recommendations.
2. To identify new infestations before they are a substantial problem in the gorge.
3. To determine the necessity of restoration at each site and if implemented, the effectiveness of our restoration practices and recommendations.

Monitoring Techniques Overview

WACHNG has four monitoring tiers:

1. Tier 1 – Documenting the presence or absence of NIS on a piece of land
2. Tier 2 – Documenting the presence, percent cover, and distribution of NIS on a property
3. Tier 2 – Documenting more detailed information from a fixed point
4. Tier 3 – Creating a plot and recording more detailed information from within the plot

Tier 1 monitoring is best utilized to detect new infestations of non-native invasive plants on a given property. It should be conducted yearly to identify new threats before they become out of control and costly to remove. This type of monitoring simply involves walking the property (vectors and corridors, and known infested areas are first priority) and documenting the presence of new undocumented NIS with a GPS unit. This type of monitoring will vary from property to property but, in general, areas that are likely to host new infestations such as disturbed areas and vectors should be monitored first, while areas that are unlikely to host new infestations such as intact forest can be monitored on a rotating schedule (every two years for example).

Tier 2 monitoring can best be described as a non-native invasive plant inventory. It involves documenting not just the presence or absence of invasives on a property, but their percent cover, and distribution as well. Tier two monitoring should be used as a baseline for all properties associated with WACHNG. It should be conducted at 5 year intervals to determine the overall changes of NIS composition on a property over time.

Tier 3 monitoring involves more detailed documentation at a chosen point within an existing infestation. With this approach, the monitor will select a point and document

a. Latitude and Longitude
b. Bearing
c. photo point
d. NIS species present
e. Percent cover
f. Distribution
g. General affected area
h. Notes and general conditions

This information will be collected on the General Monitoring Form (Appendix 1). Tear 3 monitoring is best used for documenting control work on private property and on lands where volunteers are used to control non-native invasives. It can also be used to document the effectiveness of goat herbivory and restorative planting at a site.

Tier 4 monitoring is more detailed and complex. It requires the monitor to set up a physical plot and to record more detailed information from within. This monitoring tier is best used on NGO properties and areas where more detailed data is preferred.

Monitoring point/plot location (Tier 3 and 4) –

Prior to choosing a monitoring plot location, WACHNG should have a treatment or restoration area defined and a non-native plant inventory (Tier 2) complete. With this information, the plot should be set up with the following specifications:

1. Plot/point should be within the predetermined treatment area
2. Plot/point should contain/be near as many target species as possible to get an adequate representation of the species treatment success. (If one or two target species are missing from the plot/point area, a second plot /point will need to be established to best determine the control rate of these species)
3. Plot/point should be as accessible as reasonably possible.

Monitoring should occur prior to initial non-native control practices and prior to each additional control practice or every year; whichever is most frequent. For example, spring and fall treatments in the same year should be monitored twice (once prior to each treatment) while follow up treatments every two years should be monitored once annually.

Monitoring plot setup and design (Tier 4) –

Once the plot location has been determined, the plot should be set up according to the following specifications:

1. plot should be a square no less than 10m by 10m
2. plot should be clearly marked with flagging or ground stakes
3. plot centroid should be recorded with a GPS and documented on the plot monitoring form (appendix 2) along with other plot details

Data to collect within monitoring plots (Tier 4) –

Data collected will be determined by the type of project, site, and target species. Please refer to the plot monitoring form (appendix 2).

For NIS Monitoring Plots:

a. Plot Number, Property, date, and recorder name should be documented for each monitoring plot/ visit.
b. Percent Cover Invasive – this should be used for all invasive ground covers, shrubs and vines. Each species should be documented for percent cover within the monitoring plot.
c. Percent Cover Native – this should be one number that represents the percent of native vegetation within the monitoring plot
d. Percent Cover Ground- This should be one number that represents the percent of bare ground within the monitoring plot
e. Number of stems – this should be recorded for each mature over story invasive species or for any species that a stem count is desired.

f. Photo – each plot should have a minimum of one photo location. The photo number, location, bearing and description should be recorded each time.

For Restoration Monitoring Plots:

a. Plot Number, Property, date, and recorder name should be documented for each monitoring plot/ visit.
b. Percent Cover Invasive – document the percent of invasives that are coming back
c. Percent Cover Native – document the percent of natives that are coming back and distinguish it from the percent of natives that we have planted or established
d. Percent Cover Ground- document the percent that remains bare ground
e. Photo – each plot should have a minimum of one photo location. The photo number, location, bearing and description should be recorded each time.

Monitoring Frequency Overview

Tier 1 – Annually

Tier 2 – Initially and then every 5 years

Tier 3 – Prior to each management activity and annually for 3 years following last management activity

Tier 4 – Prior to each management activity and annually for 3 years following last management activity

Example Monitoring Schedule – Property X

Year	Activity
1	Tier 2 Monitoring (initial inventory)
2	Tier 3 monitoring point (tier 1 on remaining property)
2	NIS control (first treatment)
2	Tier 3 monitoring point
2	NIS control (second treatment)
3	Tier 3 monitoring point (tier 1 on remaining property)
3	NIS control (third treatment)
4	Tier 3 monitoring point (tier 1 on remaining property)
5	Tier 3 monitoring point
5	Tier 2 monitoring
6	Tier 3 monitoring point (tier 1 on remaining property)
7	Tier 3 monitoring point (tier 1 on remaining property)
8	Tier 3 monitoring point (tier 1 on remaining property)
9	Tier 3 monitoring point (tier 1 on remaining property)
10	Tier 2 monitoring