Site Weed Management Plan Template
TNC's Wildland Invasive Species Program
Revised: Mandy Tu & Barry Meyers-Rice/WISP

SITE WEED MANAGEMENT PLAN

FOR

(***NAME of PRESERVE or CONSERVATION AREA)***
(***TOWN, STATE***)

(PERIOD; e.g. 2001-2005)

PREPARED BY (*Authors, Contributors*)(*Program*)
THE NATURE CONSERVANCY

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1. INTRODUCTION

A. Description and purpose of the site (preserve or managed area)

*Briefly describe distinctive biological communities, habitat types, land-use histories, valued species, conservation targets and goals, and any major threats to achieving those targets and goals. Describe special features of any management sub-units on the site. When describing the management goals, focus on what you are managing **for**; clearly state what you **want** on the site. For example, you may be managing for the following:*

1. *a biological community and the processes (e.g., fire, flooding) that maintain it;*
2. *a species or suite of species that are rare or otherwise valued;*
3. *a corridor or a migratory stopover.*

B. Description of how certain plant species ("weeds") interfere with management goals

Use this section to justify the use of labor and resources to eliminate or control certain plant species in terms of your conservation targets and goals. Briefly describe how these species degrade the site or could do so if allowed to proliferate. See Section 2.B.II. for a list of impacts weeds can have on natural areas. Revisit this section and, if necessary, revise it after completing Section 3 (Specific Control Plans for High Priority Species).

If you determine the impacts of certain species are not as damaging as had been thought and need not be controlled, you can use this section to explain that too.

Most species considered "weeds" in natural areas are invasive, i.e. able to move into and dominate or disrupt natural communities or restoration projects. Both non-native and native species may be "weeds". We define "non-native species" as those species that arrived in and colonized an area only with direct or indirect human assistance, even if they are native elsewhere on the continent or in the state. They may also be called "non-indigenous", "alien", "exotic", "adventive" or "naturalized" species. Situations where "native" species may be regarded as "weeds" include: a) when Phragmites *has invaded a site that previously provided important open-water habitat for waterfowl; and b) when native woody species have invaded a prairie site.*

C. Inventory of plant species that interfere with management goals

Inventory populations of weeds located on and near the site. Map these populations, estimate the area(s) they cover, and note whether they are increasing, stable or decreasing. If possible, make one map with locations of all weed species populations shown and separate overlay maps for each weed species. You can use these maps as you develop specific control strategies for high-priority species (Section 3). This information should be updated annually.

2. OVERVIEW OF WEED MANAGEMENT PLAN

A. General Management Philosophy

Weed control is part of the overall site management and restoration program. We focus on the species and communities we want in place of the weed species, rather than on simply eliminating weeds. We will implement preventative programs to keep the site free of species that are not yet established there but which are known to be pests elsewhere in the region. We will set priorities for the control or elimination of weeds that have already established on the site, according to their actual and potential impacts on native species and communities, particularly on our conservation targets. We will take action only when careful consideration indicates leaving the weed unchecked will result in more damage than controlling it with available methods.

We use an adaptive management strategy. First, we establish and record the goals for the site. Second, we identify species that block us from reaching these goals and assign them priorities based on the severity of their impacts. Third, we consider methods for controlling them or otherwise diminishing their impacts and, if necessary, re-order priorities based on likely impacts on target and non-target species. Fourth, we develop weed control plans based on this information. Fifth, the plan is implemented, and results of our management actions monitored. Sixth, we evaluate the effectiveness of our methods in light of the site goals and use this information to modify and improve control priorities, methods and plans. Finally, start the cycle again by establishing new/modified goals.

We set priorities in the hope of minimizing the total, long-term workload. Therefore, we act to prevent new infestations and assign highest priority to existing infestations that are the fastest growing, most disruptive, and affect the most highly valued area(s) of the site. We also consider the difficulty of control, giving higher priority to infestations we think we are most likely to control with available technology and resources.

Add more detailed information on how you set priorities. Use Table 1 in the weed template excel worksheet to list your priorities. What follows is a stepwise approach for prioritizing species and specific infestations for control. Another, more detailed, priority-setting system is presented in the Handbook for Ranking Exotic Plants for Management and Control (Hiebert and Stubbendieck 1993). A similar version of this system is available on the web at (http://www.npwrc.usgs.gov/resource/2000/aprs/aprs.htm /).

Setting Priorities

The priority-setting process can be difficult, partly because you need to consider so many factors. We find that it helps to group these factors into four categories that you can think of as filters designed to screen out the worst weeds:

I. current extent of the species on or near the site;
II. current and potential impacts of the species;
III. value of the habitats/areas that the species infests or may infest; and
IV. difficulty of control.

*The categories can be used in any order; however, we emphasize the importance of the **current extent of the species** category, and suggest it be used first. In the long run, it is usually most efficient to devote*

resources to preventing new problems and immediately addressing incipient infestations. Ignore categories that are unimportant on your site.

Below we suggest how species should be ranked within the four categories. If a species is described by more than one of the criteria in a given category, assign it the highest priority it qualifies for. You may assign priority in a ranking system (1, 2, 3..., n) or by class (e.g., A = worst weeds, B = bad weeds, C = minor pests).

I. Current extent of the species: *Under this category, priorities are assigned to species in order to first, prevent the establishment of new weed species, second, eliminate small, rapidly-growing infestations, third, prevent large infestations from expanding, and fourth, reduce or eliminate large infestations. To do this, assign priorities in the following sequence:*

1. *Species not yet on the site but which are present nearby. Pay special attention to species known to be pests elsewhere in the region.*
2. *Species present as new populations or outliers of larger infestations, especially if they are expanding rapidly.*
3. *Species present in large infestations that continue to expand.*
4. *Species present in large infestations that are not expanding.*

You may have to "live with" weeds/infestations you cannot control with available technology and resources. However, keep looking for innovations that might allow you to control them in the future.

II. Current and potential impacts of the species: *Order priorities under this category based on the management goals for your site. We suggest the following sequence:*

1. *Species that alter ecosystem processes such as fire frequency, sedimentation, nutrient cycling, or other ecosystem processes. These are species that "change the rules of the game", often altering conditions so radically that few native plants and animals can persist.*
2. *Species that outcompete natives and dominate otherwise undisturbed native communities.*
3. *Species that do not outcompete dominant natives but:*
   a. *prevents or depress recruitment or regeneration of native species (for example, the forest understory weed garlic mustard may depress recruitment by canopy dominants); OR*
   b. *reduces or eliminate resources (e.g., food, cover, nesting sites) used by native animals, OR*
   c. *promotes populations of invasive non-native animals by providing them with resources otherwise unavailable in the area.*
4. *Species that overtake and exclude natives following natural disturbances such as fires, floods, or hurricanes, thereby altering succession, or that hinder restoration of natural communities. Note that species of this type should be assigned higher priority in areas subject to repeated disturbances.*

III. Value of the habitats/areas the species infests or could infest: *Assign priorities in the following order:*

1. *Infestations that occur in the most highly valued habitats or areas of the site - especially areas that contain rare or highly valued species or communities and areas that provide vital resources.*

2. *Infestations that occur in less highly valued portions of the site. Areas already badly infested with other weeds may be given low priority unless the species in question will make the situation significantly worse.*

IV. Difficulty of control and establishing replacement species: *Assign priorities in the following order:*

1. *Species likely to be controlled or eliminated with available technology and resources and which desirable native species will replace with little further input.*
2. *Species likely be controlled but will not be replaced by desirable natives without an active restoration program requiring substantial resources.*
3. *Species difficult to control with available technology and resources and/or whose control will likely result in substantial damage to other, desirable species.*
4. *Species unlikely to be controlled with available technology and resources.*

Finally, weed species whose populations are decreasing and/or those that colonize only disturbed areas and don't move into undisturbed habitats nor impact recovery from the disturbance can be assigned the lowest priorities.

B. Summary of Specific Actions Planned

Briefly (1-3 paragraphs) describe or outline your weed control plan. Note which species you plan to control, where and over what period you plan to do so, the methods you plan to use, which species you plan to monitor and, how you plan to do so. You may also briefly explain why you do not plan to control certain species.

C. Tables

Open the Excel spreadsheet "WeedTabl.xls" and enter data into its tables. You may make hard copies of the tables, but you will not benefit from the automatic calculations in the computer version.

Table 1. Prioritized List of Weed Species
Set ranks or categories using Section 2B for guidelines.

Table 2. Weed Management Plan Implementation Schedule
Schedule the planning, surveying, and treatment for each target weed for at least the next year.

Table 3. Projected Resource Costs to Implement Weed Management Plan
Revise this table annually after comparing estimated to actual costs (obtained from Table 5).

Table 4. Itemized Actual Annual Cost and Labor Worksheet(s) for Each Target Weed
Enter data for each project or target weed to account for yearly costs and labor.

Table 5. Projected and Actual Resource Uses
After each year, examine the difference between actual and estimated resource costs. Use these results to estimate new resource costs for the upcoming year(s).

(copy this and next page for additional species)

3. SPECIFIC CONTROL PLANS FOR HIGH PRIORITY WEED SPECIES

Scientific name: **_____** ***Common name*****:_____**

Updated _____

A. PRIORITY _____

B. DESCRIPTION

(In 2-3 lines list habit, life history, native range, and other outstanding characteristics)

C. CURRENT DISTRIBUTION ON THE SITE

(Refer to maps, Section 1C)

D. DAMAGE & THREATS

(Outline damage caused, and threats posed by the species. Refer to Section 1B)

E. GOALS

(Outline long-term goals for this species. For example, you may want to reduce numbers of this species so that it no longer threatens populations of a rare species or so that it does not affect fire frequencies on the site).

F. OBJECTIVES (Measurable)

*(Establish **measurable** objectives for the planned control activities. Include:*

***1**. the **impact** on numbers, density, cover, etc. that you want to achieve;*

***2.** the **size** of the area in which you hope to achieve this;*

***3**. the **period** in which you hope to achieve it.*

For example, you may state your objectives in terms of reducing percent cover of the species by 50% over an area of 5 acres within 3 years. Another possible objective would be eliminating the species from the site within 2 years.)

G. MANAGEMENT OPTIONS

Viable control options are:

(1) *No treatment;*

(2) *(Treatment alternative 1);*

(3) *(Treatment alternative n); etc.*

(Briefly discuss the alternatives, indicate which are preferred and the conditions (size of area treated, location, phenology, total anticipated cost, etc.) under which they may be used. Build in restricted flexibility to allow those carrying out the plan options; conditions in the field may differ from those you anticipated. State who the field-staff should contact when none of the listed alternatives can be carried out.)

H. ACTIONS PLANNED (Treatments and monitoring)

(Briefly describe the locations to be treated, materials and methods to be used, and an approximate schedule for control and monitoring activities. If several methods are to be tested, outline the design of the planned experiment or demonstration.)

Scientific name: **_____** ***Common name:*****_____**

Updated _____

I. HOW ACTIONS WILL BE EVALUATED (Criteria for success)
(Outline the methods that will be used to monitor control activities and the criteria that will be used to evaluate success or failure of the program. The criteria for success should be based on the program's objectives and goals. If you develop forms to be used when collecting monitoring data, include copies as Appendix 6)

J. RESOURCE NEEDS
(Estimate the amount of time [for staff, interns and volunteers] and money that will be required to carry out the planned control, monitoring and evaluation for this species.)

K. RESULTS OF EVALUATION
(This section is to be filled in later, preferably within 1 year, when monitoring data has been taken and evaluated, at least preliminarily. The evaluation should be used to determine whether any of the sections B-K above should be modified.)

4. REFERENCES

List references cited or used.

5. APPENDICES

Appendix 1. EMERGENCY INFORMATION: DIRECTIONS AND MAP TO NEARBY HOSPITALS OR CLINICS

Be sure that phone numbers and directions are current.

Appendix 2. BLANK MAPS/SAMPLE MAPS

Attach copies of the blank map(s) of the preserve/site, and of (overlaid) maps depicting the extent of the target weed(s) on the site here.

Appendix 3. FORMS USED IN COLLECTING MONITORING DATA

Attach copies of data collection sheets here.

Use the following 3 appendices if herbicides are to be used.

Appendix 4. HERBICIDE USE PROTOCOLS

After noting which herbicide(s) will be used and roughly how much will be used, outline any state and local requirements for applicator licensing and/or posting of treated areas. Then, BRIEFLY describe how the herbicide(s) will be stored, mixed and transported. Describe how excess herbicide and any equipment or clothing that has become contaminated will be disposed of. Describe emergency first aid procedures and plans for responding to spills or contamination. List who may apply the herbicide(s), and what protective gear will be available for them.

You may use the "Policy, Procedures and Guidelines for Use of Herbicides on Land Managed by The Nature Conservancy" to complete this appendix. Copies are available from TNC's Weed Management & Research Program.

Appendix 5. HERBICIDE USE RECORD FORMS

When using herbicides, it is critical (and, in many cases, required by law) to keep detailed records of all relevant information. Ideally, records would include data on the condition of the site prior to herbicide application, the type of species present, and percent cover of invasive and native species prior to application. This information will be valuable in evaluating the effectiveness of the herbicide. At the time of application, take detailed notes of the type and concentration of the herbicide, the amount, location, and method of application, weather conditions, and any other observations made during the course of application. This information is important in evaluating the project's success, improving methodology, and identifying mistakes. In addition, it documents the procedure for future site managers and biologists. As in Appendix 2, you may use "TNC's Policy, Procedures and Guidelines for Use of Herbicides…"

Appendix 6. HERBICIDE LABELS

Attach copies of the herbicide label(s) here.