

Invasive Plant Atlas of New England Field Survey Methodology and Instructions.

Introduction

The Invasive Plant Atlas of New England is a web accessible atlas of invasive plant species for the New England region. The atlas will support early detection of invasive plant species and rapid response, as well as ecological studies of invasive plant species and their spread across the landscape. Included in the Atlas are images of and descriptive data about invasive plants and a collection database documenting the existence and spread of those species in the New England area. The Atlas is intended to provide public access to an online, interactive resource of regionally invasive vascular plants, including both historic and current data. The Atlas will provide an extremely effective tool for students and researchers, land managers, conservationists, scientists, government agencies, the nursery industry, and the interested public.

This project is a cooperative effort between the University of Connecticut, the Silvio O. Conte National Fish and Wildlife Refuge, and the New England Wild Flower Society. Each cooperator plays a distinct, critical role in the project. The University of Connecticut will be receiving all data collected by the public and trained volunteers, analyzing that data, and posting it on the IPANE web site. Additionally, UCONN will be undertaking ecological modeling of many invasive species in an attempt to predict likely and unlikely locations for future invasive species infestations. The Silvio O. Conte National Fish and Wildlife Refuge will be hosting a variety of educational and outreach programs and events. The Refuge is offering reference services on particular topics related to the invasive species problem, including identification, alternatives, and control. Reference materials and images are also available on loan or for sale. The Conte Refuge is also administering the New England Invasive Plant Group, a network of organizations, agencies and individuals concerned about invasive plant issue in the region. All three partners are involved in the establishment of an early detection and rapid response network. This network will attempt to stop new incursions of invasive species into the region or individual states through rapid evaluation and control efforts.

However, no part of this project can proceed without the widespread and thorough collection of data. Similar to breeding bird surveys and herpetological surveys, a project of this size depends on citizen volunteers to gather and submit data. The New England Wild Flower Society's role in the project is to recruit and train 450 volunteers to conduct invasive surveys throughout our region. There is a paucity of data on the abundance, distribution and spread of invasive plant species in the region. Little information on the spread and impact of these species has been collected in a scientific manner. The lack of scientific data has become apparent to groups attempting to create lists of invasive species on the state, regional, and national level. Scientific, repeatable data collection is desperately needed to evaluate species for their invasiveness. In response to this, the New England Wild Flower Society has developed a methodology to survey the entire region over the next four to five years for invasive and potentially invasive plants species. This is a tall order, but only through the

collection of data from the entire region can we locate the front line of species invasions, and thereby plan effective control efforts.

Training

The New England Wild Flower Society is recruiting, training, and coordinating volunteers to conduct invasive plant species surveys. By 2004 a corps of 450 volunteers will be conducting surveys in their local areas. Training programs are offered in each state every year. At these programs, a volunteer or small group of volunteers will choose a topographic quad to work on in that year. Volunteers should choose quads in their local area, as they are more likely to be able to complete the survey if the work is close to home.

Assigned Surveys

Within each quad, the staff of the New England Wild Flower Society will identify five or six public access lands for assigned surveys. The assigned areas may be owned by the town, a local land trust, the state, etc. They will also vary greatly in size and natural community composition. Within each of these assigned areas, volunteers will conduct multiple samples using a field form (see below), being sure to sample from each habitat type found on the property. A thorough walk-through of each assigned survey area will be necessary to ensure all invasive species present are accurately represented in the sampling.

Opportunistic Surveys

In addition to the assigned surveys we are challenging volunteers to find other locations within their assigned quad that harbor invasive plant species. Local volunteers will be most familiar with landscapes within their quads. Although plots are the basis of this survey, volunteers should not focus so intently on their plots that they miss unusual species elsewhere. If they spot an unusual invasive, they should set up a plot, record the data on a field form, and send it in. Opportunistic surveys are very valuable in locating many of the more unusual species. Opportunistic surveys may be conducted in many different locations: roadsides, ponds lakes, and streams outside an assigned area, and on private property.

If seeking to conduct an invasive plant survey on private property, landowner permission must be acquired. The local volunteer is required to contact the landowner and obtain permission.

Data collection

A field form has been developed specifically for use during this project. This form will guide the volunteer through the data collection process and should be used in conjunction with this written methodology until the volunteer is experienced in collecting the data. One field form should be used for each plot from which data is collected (see plots below)

Pre-screening Assigned Sites

When beginning the survey of an assigned natural area, it is important for each volunteer or group of volunteers to become familiar with the lay of the land, the different habitat types that

occur, and where the known invasive species occur. The entire property should be pre-screened prior to any forms being filled out. Once volunteers have a feel for the landscape, locations to establish plots can be decided upon. Of course, each individual may approach this pre-screening process differently. Pre-screening of the assigned site may be easy if the site is small and easily traversed, however, a large site in the hundreds or even thousands of acres may be more difficult to pre-screen. It is acceptable for volunteers to conduct surveys as they walk the property initially, but be sure to survey all habitat types present and be on the lookout for small populations of unusual or less common species.

Plots

After a property has been pre-screened volunteers need to select invasive species infestations in which to establish a data-gathering plot. A data-gathering plot should be established at each location they find species infestations in their assigned survey property. The number of plots they establish and collect data from will depend on the species composition, degree of infestation and size of their assigned survey site. One of the most difficult tasks facing the volunteer will be determining, in some cases, where a plot should be established. They may, and in most cases, must fill out multiple forms within their assigned site: one assignment area does not dictate one form. One assignment area may require twenty different forms. Multiple plots should be done in each assigned natural area. Be sure to represent all habitats within the area. For example, if the natural area contains a pond, a wetland, a maple forest, and an oak forest, at least one plot should be done in each.

Each location where invasive species are encountered should be surveyed initially. Remember, it is important to sample infestations from all the different habitat types present (if invasives occur in those habitat types), and to survey from locations of all species encountered. Multiple samples from disjunct species infestations are preferred, but there is a limit. If a volunteer has already collected data on Japanese knotweed infestation from three similar but disjunct locations at the assigned site, there is no reason to fill out more forms for this species alone. If it co-occurs with a new or previously undocumented species at that site, they must collect the data.

In order to standardize the survey technique and sampling size, each trained volunteer receives a tent stake with a ten-meter length of rope attached to it. By placing the tent stake in the middle of the infestation, unwinding and extending the rope to its full distance, and walking around the tent stake at the ten meter distance, they have created a 20 meter diameter plot. The area within this plot is the section of the information they will gather data from on the field form. One field form should be used for each plot. Please comment on the field form about the condition of the landscape immediately outside the plot. Is it similar to the landscape within the plot? Less invaded? More invaded?

One of the most difficult aspects of using this survey methodology is the collection of negative data. For modeling and predictive studies we are seeking the collection of data from plots that do not have any invasive species present within them (negative data). The easiest way to approach the collection of negative data is to establish one plot within each habitat where invasive species are found. This plot should be established in an area where no invasive species are present. In some instances this may not be possible because the entire habitat may be infested. Establish

negative data plots in an area of uniform, non-infested habitat, and complete all applicable sections of the field form. In large blocks of similar habitat, where you have set up multiple positive data plots use a 5:1 ratio of infested versus non-infested plots.

Documentation

For each species encountered, a different level of documentation will be required. In some instances, no documentation will be needed; in other cases a specific photograph or a full herbarium specimen is required. Please refer to the species documentation table contained in their handbook to determine the level of documentation required.

Maps containing the locations of all positive and negative data plots within an assigned site are required. Each assignment volunteers receive from NEWFS will contain a section of a USGS topographic map for the area of the assigned site. Maps will accompany each site assignment. If volunteers are using GPS units to locate each plot, and have accurate readings for each plot there is no need to return the marked up map.

Step by Step Instructions to Complete Invasive Plant Survey Forms

What follows is line-by-line instructions for the proper completion of the data collection form for invasive species. Please follow these instructions closely, and fill in the form as completely as possible.

1. **Assignment Area Site Code:** This is a code assigned by NEWFS that identifies the quad and assigned site you are working on. It consists of the USGS quad code and a sequence of numbers and letters established by NEWFS. You can find the appropriate code on your assignment cover sheet. Please transfer this to your field form, map, and any photographs or specimens you submit. This number allows us to track the assigned sites not only this year but in the future.
2. **Electronic Submission Number:** If you submit your data collection electronically to the University of Connecticut (which we encourage), before you can close out of the web site you will be given an electronic submission number. You should record this number on the field form, which you keep for you files, and place it on any maps or herbarium snippets or specimens, you will forward to UCONN as documentation for this form. It is extremely important you place this number on any correspondence you submit in regard to the field form you have submitted electronically. Keep this number for your files.
3. **Site Information:** Please list the state, county, and town where the infestation is located. This information will be provided to you on the assignment cover sheet. You just need to transcribe it onto the form.
4. **Date observed:** Date or dates of your survey.
5. **Locality:** Please give specific directions to the locality of the plants or plot you are describing on the field form. When measuring distances, be consistent; use feet, yards, miles, or tenths of miles, but do not switch back and forth in one description. Also, please use cardinal directions (N, S, E, W), not left or right. The locality information you provide on your field forms is critically important. It will be used for GIS mapping, future field checks, and repeat visits.

In some instances this will be easy – simply listing the closest named entity will be enough. For trailheads, visitor centers, campgrounds, and other named places, the locality description will be easy – just list the name of the site and a specific location descriptor (i.e. Dolly Copp Campground, 150 feet north of campsite 12). In other situations, if you do not have a GPS unit you will need to give directions from the nearest named entity. For roadsides, and other un-named locations, a locality may be tricky to describe. In this situation, a distance and directional measurement from a known and fixed point would be best (i.e. 150 yards west of mile post 7 on the Kancamagus Highway on the eastbound road shoulder).

If you have a GPS unit, always provide GPS coordinates for each plot you are collecting data from. Please attach a copy of a topographic map (provided to you in your assignment

packet) indicating locations of each plot. Please provide a key and use different symbols or colors to distinguish which plots have positive data and which are negative. There is no need to submit a map if you provide GPS coordinates (see below).

- Coordinates:** If you have your own personal GPS unit, please record the latitude and longitude from the center of the infestation. Most GPS units, even small handheld models such as the Garmin 12, are fairly accurate since the satellite signals have been unscrambled. However, there is still a degree of error in all units due to the curvature of the earth and other factors. Most systems can correct for this degree of error, if prompted to do so. Check your instruction manuals. **Please indicate whether you have corrected the coordinates for error.** Please also indicate on your field form the make and model of your GPS and what datum it is using to collect the data. Typical datums are 1923, 1927, and 1983. The datum refers to which series year topographic maps the GPS unit is referencing. Some GPS units allow you to select the datum, in other systems it is fixed.

If you do not own a GPS unit, NEWFS has a number of systems we would be happy to loan to volunteers for part of the season. We do not have enough for everyone, first choice will be given to any individuals working in remote areas or areas where giving locality descriptions would be difficult. Contact Chris Mattrick at NEWFS if you would like to borrow a GPS Unit.

Please determine the altitude of the infestation you are collecting data from by referring to the USGS topographic map segment you received in your assignment packet. Record this on our form. **Do not use any GPS unit to determine altitude they are extremely unreliable.**

- Are species invading into natural or minimally managed habitats?**
Are species invading disturbed or extensively managed habitats?
Please refer to the habitat type descriptions in the following section to determine what habitats fall into each of these categories. Essentially, **natural or minimally managed habitats** are those areas not disturbed on a regular basis (more than one time per year) by human action. A river/streambank habitat may be disturbed more than once a year by flooding and scouring, but this is a natural process and is thereby considered a natural habitat. **Disturbed or extensively managed habitats** are disturbed regularly (more than two times per year), and include such areas as mowed roadsides, campsites, visitors centers, ski slopes, maintained overlooks, parking lot margins, yards/gardens, and agricultural fields. This category may also include recent or on-going timber cuts, some trailheads, and maintained cultural sites. Answering these questions requires a degree of observation, intuition, and judgment on your part. There is not a right or wrong answer.
- Is there evidence of intentional introduction or historic land use? And if so what?** If there are any signs of previous land management or intentional introduction of the species at the site, please note them here. Signs of past land use or introduction may include: logging roads, stonewalls, cellar holes, old apple orchards, cut stumps, etc.

9. **Habitat type table:** Using the Habitat Type Key below enter the numerical indicator of the habitat type where the invasive species are growing in the table on page 2 in the habitat type column. The habitat types were designed to be intentionally broad, encompassing many “micro” habitats within them. Please try to use the habitat types provided, but if the site you are surveying does not seem to fit, use the “other” category. If you use the “other” category, please describe the habitat in the space provided at the bottom of the habitat type table.

Usually you will have to enter one habitat type per form, because the plot you have established will be in a uniform habitat type. If your plot does span two distinct habitat types, enter the correct habitat identifying number next to the appropriate species.

However, most often, but not always if you need to add a second habitat type to the form you should consider relocating your plots so they are in a uniform habitat type.

Habitat Type Key

Edge: *Edge* habitats are a zone where one habitat area gradates into another. Typically it is where an open area interfaces with a forested (wooded) area. The three most typical edge habitats are wetland edge, forest edge, and field edge. Pond edge, road edge, and disturbed edge are three more examples. Some obvious examples of edge habitat include where forest meets field, and where forest meets roadside or parking lot. These zones are known as “induced edges” if they are caused by humans (mowed field, controlled burn, clear-cut edge) or if caused by a short-term natural phenomenon that reversed succession (such as wildfire or flood).

In contrast, an “inherent edge” is a natural edge, such as those caused by changes in environmental conditions (soil/substrate, soil moisture, altitude, etc.). An example would be the interface of a forested habitat and a shrub wetland habitat, or where the forest reaches tree line in an alpine area. Both inherent and induced edges could fall into the “edge” habitat types on this field form. For practical purposes, the most likely edge habitat you are going to encounter will be near roadsides, fields, and parking lots. Use your best judgment!

Edge habitats as used on this field form do NOT refer to a change in forest or wetland *TYPE* (i.e. from a northern hardwood forest to a spruce-fir forest or a shrub marsh to herbaceous). Please indicate on the field form in the habitat section what type of edge you are describing.

1) **Upland/wetland-** a border between mesic and wet soils, it may be indicated by the canopy type. For example, you may move from a beech, birch, maple forest to a shrub wetland, or herbaceous wetland.

2) **Field/forest edge-** see definition of field and forest below. This is the border between a forest and a field, fairly self-explanatory.

3) **Lake shore**- terrestrial pond or lake shore at its border with an upland or wetland habitat.

4) **Roadside**: This habitat type is found along the edges of major and minor roadways, highways, and parking lots. This can be the sand along the road edge, an embankment, or the mowed area along the road edge or in the median. Include areas contained within highway cloverleaves, rotaries, rest areas, and scenic vista pullouts. Generally, the effect of this habitat extends for a distance of 15 feet beyond the road edge, or 15 feet beyond the maintained road buffer (i.e. the mowed areas along highways).

Forests: If a plot is placed in a forest, please indicate the dominant canopy tree species. You should refer to a common field guide to trees such as “Golden Guide” or “Peterson’s” if you are unfamiliar with trees. You may circle more than one species if there is a co-dominance of forest types. We are looking for the **dominant canopy species**, not all species present in the canopy and are not concerned with the understory species.

Some clues about the different forest types:

5) **Aspen/birch**- early succession mostly likely to occur after clearing

6) **White Pine**- frequently the first tree to come into old pastures

7) **Oak/Pine**-dry acid soils, mid-late successional

8) **Cottonwood/Silver Maple**-flood plain forest, most often on the banks of large rivers and on deltas.

9) **Beech/birch/maple**-climax forest on mesic, mid-elevation – more frequent in northern New England

10) **Oak/hickory**-climax forest of mesic-dry soil – more frequent in southern New England

11) **Pitch Pine**- extremely dry sites, often with scrub oaks

12) **Hemlock**- often on steep, north slopes such as ravines, but occurring in many habitats, often producing deep shade

13) **Spruce/fir**-high elevation and bogs more frequent in northern New England

Wetlands

A note about wetlands:

A wetland is an area that is either permanently saturated or saturated seasonally for a long enough period for hydric soils to develop (demonstrating characteristics such as high organic matter, dark or gray color, mucky consistency, etc.) and to support the presence of hydrophytic vegetation (adapted to tolerate saturated conditions).

14) Herbaceous Wetland:

The herbaceous wetland habitat is predominantly vegetated by non-woody species, particularly grasses, sedges, and rushes. Examples of this habitat type include wet meadows and freshwater marshes. Some species you would be likely to encounter in an herbaceous wetland could be fresh water cordgrass (*Spartina*

pectinata), sallow sedge (*Carex lurida*), cottongrass (*Eriophorum* spp.), white beak rush (*Rhynchospora alba*), deer's hair (*Trichophorum cespitosum*), and Canada bluejoint (*Calamagrostis canadensis*). Hummock and hollow topography is typical in many herbaceous wetlands, with pools of water found in many of the hollows.

15) Bog: The predominant feature of bogs is sphagnum moss. They are unique peat lands, which are highly acid and nutrient poor, with organic soil held in a mat that is often floating above water. Common bog species are Pitcher Plant, sundew, and cranberries. Bogs often have a well-developed shrub layer around the fringes of an open mat of sphagnum.

16) Fen: a fen is another peat land, which also has a mat of organic matter but is more nutrient rich and tends to be less acidic than bogs. The major difference is that fens are dominated by sedges and forbs rather than sphagnum moss. Groundwater influence is the cause of this difference. Fens can be distinguished from herbaceous wetland by the mat formation of organic material. Fens tend to be more even with little open water in pools and ditches.

17) Shrub Wetland: The shrub wetland is usually characterized by predominant dense shrub growth with a few scattered and stunted trees. One example might be a bog peatland, with an abundance of leather-leaf (*Rhododendron groenlandicum*), sheep-laurel (*Kalmia angustifolia*), and high-bush blueberry (*Vaccinium corymbosum*) in the shrub layer and with the scattered black spruce (*Picea mariana*) and tamarack (*Larix laricina*) trees throughout.

18) Cedar Swamp- Whether dominated by northern white cedar (*Thuja occidentalis*), a northern New England species, or Atlantic white cedar (*Chamaecyparis thyoides*), a more coastal species; most cedar swamps have a sparse shrub and herbaceous layer, due to the dense shade produced by the cedars. The composition of these layers is similar to that found in a red maple swamp (see below).

19) Red maple swamp: This habitat type will have more canopy cover than the shrub wetland and is dominated by red maple (*Acer rubrum*) as an over story. Again you may want to consult a tree guide to be sure of your species. Many forested wetlands also have a substantial shrub component in the understory, which may include species such as speckled alder (*Alnus incana*), wild raisin (*Viburnum nudum* var. *cassinoides*), winterberry (*Ilex verticillata*), and mountain holly (*Nemopanthus mucronatus*). Common herbaceous species in a forested wetland include skunk cabbage (*Symplocarpus foetidus*), cinnamon fern (*Osmunda cinnamomea*), and interrupted fern (*Osmunda claytoniana*).

20) Salt Marsh: The salt marsh is a specific type of herbaceous wetland that is regularly flooded by ocean tides. Found along the seacoast, the salt marshes are

vegetated by plant species adapted to saline conditions. Common species of the salt marsh include saltmeadow cordgrass (*Spartina patens*), smooth cordgrass (*Spartina alterniflora*), black-grass (*Juncus gerardii*), glasswort (*Salicornia depressa*), seaside plantain (*Plantago maritima*), and seaside goldenrod (*Solidago sempervirens*).

Aquatic: The aquatic habitat type refers to those areas that have standing water for most of the year, such as a pond or stream. Vegetation of aquatic areas are typically referred to as “floating,” as in the white water-lily (*Nymphaea odorata*) or yellow water-lily (*Nuphar variegata*), “submersed” as in many of the pondweeds (*Potamogeton* spp.) or coontail (*Ceratophyllum demersum*), or “emergent” as in cattail (*Typha* spp.) or pickerel-weed (*Pontederia cordata*). Please use the aquatic version of the Invasive Plant Survey Form for any of the following categories. These forms are contained in the volunteer handbook or can be downloaded from the New England Wild Flower Society web site www.newfs.org or the Invasive Plant Atlas of New England web site www.eeb.uconn.edu/invasives/ipane/.

21) Lake- a still body of water, including ponds for our purposes.

22) Stream- a small rapid moving body of water, including creeks and brooks for our purposes.

23) River- a larger, generally slower moving body of water.

24) Dune: The dune habitat type refers to the sandy beach dunes common along Cape Cod and in portions of Rhode Island. Plant species associated with dune communities include beach grass (*Ammophila breviligulata*), dune grass (*Leymus mollis*), dusty miller (*Artemisia stellariana*) (introduced), and sometimes rugosa rose (*Rosa rugosa*) (introduced).

25) Open areas: This habitat category refers to upland fields, open barrens, grasslands, balds, and rocky outcrops. These are areas without an abundance of tall woody species casting shade, and could have a very wide variety of vegetation. Don’t confuse this category with the wetland categories of shrub wetland or herbaceous wetland—the areas that fall into “open areas” are upland (as opposed to wetland) in nature. They are typically dry and maintained by natural processes, not mowing or plowing.

26) Old Field: Old fields are lands that have in the past been used for agricultural or forestry purposes and are now in the process of reverting to a natural state. They are typified by an abundance of shrub and immature tree species. In fact, you may want to call them shrublands. These areas are not to be confused with shrub wetlands; old-field sites are universally upland sites with mesic or dry soils. In the past they have been maintained in an open state through human influences. Typical old field shrub colonizers are birch (*Betula* sp.) cherry (*Prunus* sp.)

eastern white pine (*Pinus strobus*), and many invasive species such as autumn olive, multiflora rose, and common buckthorn.

27) Stream bank: This habitat covers the immediate banks of a perennial river or stream and its primary channel. The primary channel may or may not have water flowing through it at all times of the year. Depending on the river size or stream, the area contained in this habitat varies. Small vernal or seasonal streams do not qualify under this habitat. Do not confuse this with a floodplain forest, which falls in the forested wetland habitat type.

28) Yard/Garden: This category includes the maintained lands around a home or commercial establishment. This would include the landscaped area around a visitor's center, campground offices, shopping plaza, town green, etc., but the key word is landscaped. This category also includes private vegetable or flower gardens, even if they are community gardens.

29) Agricultural Field: This category includes crop fields, pasture land, managed fallow fields, hay fields, and nursery lands. This habitat includes the edge zone around the agricultural lands as well. There is no size specification. This does not include a private home vegetable garden. See Yard/Garden.

30) Right-of-Way: This habitat, although artificial, is extremely important to a surprising number of rare or uncommon plant and animal species. Included here are power line, railroad, gas line, and communications rights of way. These areas are typically mowed or sprayed on a bi- or semi-annual basis to keep vegetation low. They are also hotspots for invasive species infestations. Include only the area directly affected by these rights-of-way. Road and property rights-of-way do not fall into this category.

31) Other: Any other habitat you may encounter that does not fit neatly into one of the categories described above. Please name and describe the habitat.

12. Table 2 Site Conditions

What are the environmental site conditions at the site where invasives are found?

The following questions are not exclusive of one another. You may circle more than one in each category. The questions relate to the conditions within the plot established, not the overall assigned public access land.

Canopy Closure

0-25% full sun or very little shade;

26-50% partial sun, some shading but still mostly open;

51-75% moderate shade, mostly closed canopy but with a significant amount of light still reaching the ground;

76-100% deep shade with a closed canopy with very little light penetration to the ground.

In addition to sunlight penetration to figure out the canopy cover, you may also want to look up at the canopy and use the percent cover sheet we have provided in the handbook to estimate the amount of canopy closure. If surveying in the early spring, late autumn, or winter use your best judgment of what the site is like through most of the day/growing season.

Aspect: if on a slope, in which compass direction is the slope facing.

Soil moisture

xeric - very dry,

dry mesic - moderately dry soil (like garden soil that you do not water),

moist mesic - moderately moist soil (like garden soil that you do water),

saturated - soil that is very wet or muddy: the water would be bubbling out from under your shoes

inundated - soil with standing water soil: your feet are underwater.

Use your best judgment of what the site experiences for the majority of the growing season.

Slope estimation of the steepness of the site.

0-5% flat-slight slope,

5-10% moderate slope,

11-40% moderate to steep slope,

40-60% very steep,

>60% extremely steep.

You may also figure the actual slope of your site by calculating the rise of the slope over the run of the slope.

Topographic position the location of the plot on the landscape. If the site is flat, please circle bottom.

13 Comments

This space is provided for volunteers to comment on any factor concerning the plot or the overall site they feel is pertinent to the survey, but there is not data collection field to convey this information. Particularly comment on the overall condition of the landscape around the assigned public access area or opportunistic survey location.

14. Reporter

If you are a trained IPANE volunteer please enter your name and the identification number assigned at the training program. If you are a non-trained volunteer please enter your name and in the ID# field on the form enter your complete address and telephone number.

15. Table 3 Species Data Collections

Species: Multiple lines are given down the left side of the table to allow data gathering on multiple species in one plot. Invasive species sometimes grow in multiple species groups, by providing you with the ability to record information on a suite of species we are saving you time and several trees by only having to fill out one form per plot.

Habitat Type Insert the numerical code from table one that identifies the habitat(s) that occur in the plot being surveyed.

Abundance: This is fairly straightforward and simple. How many plants are there of each species within the plot? Do not get bogged down in trying to figure out if those two stems are one plant or two plants. If you know some of the ecology of certain species you can easily figure out if a plant arises from a single stem or multiple stems. If it looks like one plant - it is. If it looks like two plants, then it is two plants. This is why we have provided ranges of plant numbers, instead of requiring you always to do exact counts.

Percent Cover: Estimate the percent each species covers in your plot. Please use the percent cover sheet we have provided (in your handbook) or attached to determine the estimate.

Reproduction

Vegetative: Are the species spreading from root sucker, stolons, or branch rooting? In some cases you will need to understand the ecology and biology of the species to determine this. Examples of vegetative spreaders are common reed, Japanese knotweed, multiflora rose, and oriental bittersweet

Sexual:

flowers - Is there evidence of the species flowering this year?

pollinators - If the species is in flower is there evidence pollination e.g. insects, hummingbirds, butterflies etc. visiting the flowers?

fruit - Are the species developing mature fruit and/or seed at this location?

Both: Is there evidence of both vegetative and sexual spreading of these species?

Seedlings present - please record if there are seedlings present of any of the invasive species.

Documentation: Photograph or specimen taken, yes or no? Please refer to the species documentation table to determine if a photograph, plant snippit, or full

herbarium specimen is required. Certain species require different levels of documentation.

Data submission

Ultimately volunteers will be able to submit field forms electronically directly to the database at the University of Connecticut. As of April 30, 2002 the web site is not set up to handle this. All forms and accompanying documentation should be sent by mail to Bryan Connolly, New England Wild Flower Society, 180 Hemenway Road, Framingham, MA 01701.

Thank you for your participation in the Invasive Species Survey of New England Initiative, a joint effort between the New England Wild Flower Society, Silvio Conte National Wildlife Refuge and the University of Connecticut funded by the United States Department of Agriculture.