

Informational Resources on Invasive Plants

with a focus on New England



**Compiled by
the Silvio O. Conte National Fish and Wildlife Refuge
for the New England Invasive Plant Group (NIPGro)**

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Regional and State Invasive Plant Initiatives

Invasive Plant Atlas of New England (IPANE)

The Invasive Plant Atlas of New England (IPANE), based at the University of Connecticut, is a web-based informational resource, including a regional atlas, of up to 100 species known or suspected to be invasive in New England. The atlas supports an early detection and alert system for new invaders. The IPANE website includes images and descriptive data, identification tips, management links and a database documenting the existence and spread of species in New England. Maps can be generated. Data will be used to detect new invaders; understand the habitat requirements of each species; ascertain patterns of spread, and model the likely “potential distribution” of various species. Current field data is collected and submitted by volunteers trained by the New England Wild Flower Society (see below) and trained professionals. The website includes a wide range of other information about invasive plants in New England.

www.ipane.org

New England Invasive Plant Group (NIPGro), spearheaded by and headquartered at the Silvio O. Conte National Fish and Wildlife Refuge, networks agencies, organizations and individuals concerned about invasive plant issues in the region. NIPGro promotes the sharing of information among network members, research into plant biology and management techniques, alternatives to invasive species still in use, and provides a clearinghouse and referral system for information. Abstracts from the September 2003 and 2005 New England Invasive Plant Summits, hosted by IPANE and NIPGro, are posted on the IPANE website: www.ipane.org

Electronic newsbriefs give updates about new invaders, projects being undertaken by members, upcoming events, new research, and more. Sign up for the network, request an introductory issue of the NIPGro newsletter or updated list of informational resources by contacting Coordinator Cynthia Boettner at 413-863-0209 ext. 6, or cynthia_boettner@fws.gov. NIPGro and its sister organization, IPANE, are funded through a grant from the USDA.

New England Wildflower Society (NEWFS) (www.newfs.org) the oldest plant conservation organization in the United States, promotes conservation of temperate North American plants through programs in conservation, education, research and horticulture. NEWFS has been very active in controlling invasive species and educating people about the issue. NEWFS staff leads the volunteer component of IPANE (above), providing training sessions on the identification of invasive plants and how to submit data to IPANE. New volunteers are being recruited for 2006 (<http://www.newfs.org/conserve/IPANE.htm>).

A black and white identification field guide for 26 species is available on the website. An informative special edition of their magazine is devoted to the subject of invasive plants in New England. Hardcopies of this “Invaders” issue are no longer available, but it can be viewed at: www.newfs.org/conserve/docs/wfn98.pdf. NEWFS staff also leads volunteer events to control new populations of invasive plants and those threatening rare species. For IPANE training sessions or learning more about volunteer control events contact Ailene Kane at 508/877-7630, ext. 3204 or akane@newfs.org.

Silvio O. Conte National Fish and Wildlife Refuge's mission is to help conserve the diversity of plant and animal life in the Connecticut River watershed and thus the refuge is very active in invasive plant issues. Refuge staff coordinates the activities of the New England Invasive Plant Group and leads efforts to control the invasive water chestnut in the Connecticut River watershed. Contact: cynthia_boettner@fws.gov, 413-863-0209 x6.

The USDA Forest Service – Northeast Area website contains a variety of resources about non-native invasive species:

The "Invasive Plants Field and Reference Guide: An Ecological Perspective of Plant Invaders of Forests and Woodlands" is also available for downloading. This 88-page guide offers descriptive narratives accompanied by color photos of important identifying features for 15 invasive terrestrial plants. <http://www.fs.fed.us/r9/wildlife/nnis/invasive-species-field-guide.pdf>

"Analysis of top invasive plant species for 20 Northeastern states based on 2005 Questionnaire data", a "Weed of the Week" fact sheet project, a *Playbook* that provides information and key contacts for invasive and exotic species programs in 20 Northeastern Area states, and the *Eastern Native Resource Directory* that helps users locate native plant materials.
<http://www.na.fs.fed.us/fhp/invasive_plants/index.shtm>

The Non-Native Invasive Species (NNIS) Communication Tools web page provides instructions on how to use templates (provided) to create brochures, signs and field guides. Users are encouraged to modify materials for their own needs.
<http://www.fs.fed.us/r9/wildlife/nnis/r9-nnis-commtools-templates.shtml#pamphlet>

Invasive Plant Lists/ Points of Contact for New England States

Each state in New England has statewide group that works on invasive plant issues and some states have rules, quarantines or legislation. The listed contacts can inform you of the current classification of plants suspected to be invasive in each state and how these determinations were made. As of Feb., 2004, these were the contacts:

Connecticut:

Connecticut Invasive Plant Working Group: <http://www.hort.uconn.edu/cipwg>, Donna Ellis (donna.ellis@uconn.edu, 860-486-6448). Website includes list of invasive plants of CT and their control, as well as announcements of conferences and other events.

Connecticut Invasive Plants Council: State legislation and official list:
http://invasives.eeb.uconn.edu/ipane/ctcouncil/CT_invasive.htm.

Massachusetts:

Massachusetts Invasive Plant Advisory Group: Cynthia Boettner (Cynthia_Boettner@fws.gov, 413-863-0209 x6), Rena Sumner (mnlaooffice@aol.com, 413-369-4731). "The Evaluation of Non-Native plant Species for Invasiveness in Massachusetts (with annotated list)" provides a list of invasive plants and how it was derived and can be found at www.mnla.com and www.newfs.org. See press release about group and its work at:

<http://nature.org/wherewework/northamerica/states/massachusetts/press/press1917.html>

Massachusetts Department of Agricultural Resources: Brad Mitchell (brad.mitchell@state.ma.us)
List of 140 banned invasive and noxious plant species:
<http://www.mass.gov/agr/farmproducts/Prohibited_Plant_Index2.htm>

Rhode Island Invasive Species Council: Contact: Lisa Gould (rinhs@etal.uri.edu, 401-874-5822)
For unofficial list, the criteria used to develop the list and other council information, see:
<http://www.uri.edu/ce/rinhs/invasives/index.htm>

New Hampshire: Regulated plants: <http://agriculture.nh.gov/topics/plants_insects.htm>
Aquatics: <http://www.des.state.nh.us/wmb/exoticspecies/committee_plantlists.htm>

New Hampshire Invasive Species Committee: Doug Cygan (dcygan@agr.state.nh.us, 603-271-3488); Aquatics: Amy Smagula (asmagula@des.state.nh.us, 603-271-2248)

Maine (no statewide group): for terrestrials, Don Cameron (don.s.cameron@maine.gov, 207-287-8041), Ann Gibbs (ann.gibbs@maine.gov, 207-287-3891); for aquatics, John McPhedran (john.mcphedran@maine.gov, 207-287-6110), <http://www.state.me.us/dep/blwq/topic/invasives/index.htm>

Vermont: Plants quarantined by the VT Dept. of Agriculture: www.state.vt.us/agric/invasive.htm (see "rule" for entire list)

Vermont Invasive Exotic Plant Committee: Ann Bove (ann.bove@state.vt.us, 802-241-3782) and Kathy Decker (Kathy.decker@state.vt.us, 802-241-1449)

Northeast Aquatic Nuisance Species (NEANS) Panel

The Northeast Aquatic Nuisance Species (NEANS) Panel established in 2001, is the fourth regional panel created under the auspices of the Federal Aquatic Nuisance Species Task Force (ANSTF), joining the Great Lakes, Western Regional, and Gulf of Mexico panels. The mission of the panel is to "protect the marine and freshwater resources of the Northeast from invasive aquatic nuisance species through commitment and cohesive coordinated action".

The NEANS Panel addresses issues and concerns about the freshwater and marine resources of ME, NH, VT, MA, RI, CT, NY, and the Canadian provinces of Quebec, New Brunswick, and Nova Scotia. The panel's members represent state, federal, and provincial governments, academia, commercial and recreational fishing interests, recreational boaters, commercial shipping, power and water utilities, environmental organizations, aquaculture, nursery and aquarium trades, tribal concerns, lake associations, and the bait industry, among others. The panel, headed by freshwater and marine co-chairs, has three working committees: policy and legislation, science and technology, and communications, education, and outreach:

<http://www.northeastans.org/missiongoalsobjectives.htm>

Visit their website to look up new and archived (NEANS) Panel Resource Digests.

Cooperative Weed Management Areas (CMWA's)

A Cooperative Weed Management Area is a defined area where a partnership has officially formed of federal, state, and local government agencies; tribes, individuals and various interest groups that manage invasive plants or noxious weeds. The Center for Invasive Plant Management's website describes CWMA's and give examples from the Western U.S. where the concept originated.

http://www.weedcenter.org/weed_mgmt_areas/wma_overview.html

A "Cookbook" for forming a CWMA can be found at

<http://www.idahoag.us/Categories/PlantsInsects/NoxiousWeeds/Documents/cwma/cookbook.pdf>

For a description of CWMA's and how NY is implementing them, see the website of the Invasive Plant Council of New York. http://www.ipcnys.org/sections/resources/weed_management.htm

National Invasive Species Council's website provides links to agencies and organizations involved with invasive species concerns in the U.S. as well as links to resources on select invasive species. www.invasivespecies.gov

Identification, Biology and Management

*Identification Aids: For specific identification tools, see descriptions in the "Regional and State Invasive Plant Initiatives" under **Invasive Plant Atlas of New England (IPANE)**, **New England Wild Flower Society**, and the **USDA Forest Service – Northeast Region***

The Nature Conservancy's Online Resources:

Species Management Summaries or **Element Stewardship Abstracts (ESA's)**, summarize the existing literature on a given plant providing detailed information on life history, control methods and research needs. <http://tncweeds.ucdavis.edu/esadocs.html>

The **Weed Control Methods Handbook**, TNC's Wildland Invasive Species Program online publication, contains "what every natural areas manager should know about weed control methods." Consisting of seven chapters and six appendices, it reviews manual, grazing, fire, biocontrol, and herbicide techniques. There are in-depth discussions of eleven different herbicides, plus a great deal of supporting information on herbicide use. 200 pages. Available free online: <http://tncweeds.ucdavis.edu>

Other TNC online resources: The website also gives instructions on developing management plans, reviews tools available for invasive plant removal, and more. TNC also has an email listserve with regular notices about invasive plant issues nation-wide. Write Barry Meyers-Rice at bazza@ucdavis.edu

Invasive Exotic Plant (IEP) Management Tutorial for Natural Lands Managers: A Comprehensive Tool for Addressing Your IEP Needs is designed as a "one-stop-shop" for users and includes information available on the world-wide web and other forms of media. The tutorial was developed with support from the Mid-Atlantic Exotic Pest Plant Council and the DCNR-Wild Resource Conservation Fund and can be found on-line at the website of the Pennsylvania Department of Conservation and Natural Resources:

<http://www.dcnr.state.pa.us/forestry/invasivetutorial/index.htm> or www.ma-eppc.org

Invasive Plants of the Eastern United States: Identification and Control includes pdf files and internet links to publications by the USDA Forest Service, National Park Service, U.S. Fish and Wildlife Service, USDA APHIS PPQ and the Southeast Exotic Pest Plant Council. This website and CD-ROM covers identification characteristics, distribution, and control options for 97 tree, shrub, vine, grass, fern, forb, and aquatic plant species that are invading the eastern United States, many of which are problematic in New England. For each species, a menu of control options is presented, including mechanical treatments, specific herbicide prescriptions, and, for selected species, recent advances in biological control. Requests for free CD-ROM should be sent to Lisa Cress (lcress@fs.fed.us). All of this information is also available on the website: <http://www.invasive.org/eastern/>

Native Plant Conservation Initiative's Alien Plant Working Group provides a centralized source of fact sheets on the website. www.nps.gov/plants/alien/

"Noxious and Nuisance Plant Management Information System-PMIS" (Update: Version 5.3) on CD-ROM from the U.S. Army Corps of Engineers . This computer-based information/expert system provides access to information on over 100 terrestrial, aquatic, and wetland plant species (not all of which are found in New England). Information includes plant biology, ecology, introduction history, distribution, identification, basic management concepts, and specific management strategies. These systems are linked to specific web pages, allowing for quick updates as information content evolves and changes. The updated PMIS is now in its 6th printing.

Request copies from Michael Grodowitz (rodowm@wes.army.mil)

Request free copy online: <http://www.wes.army.mil/el/pmis/pmishelp.htm>

Center for Invasive Plant Management has a multitude of resources, many with a focus on western states, but very often applicable to our region. <http://www.weedcenter.org/>

The Center's online "Invasive Plant Resource Guide" is a reference for materials (fact sheets, handbooks, booklets, etc.) that support invasive plant management and education. The materials cover a wide array of topics ranging from weed management strategies to natural resources to "working with people" skills. For each item, a description is provided as well as a link to the source. Most items are available for download or in hard copy at no cost. Find the Resource Guide at http://www.weedcenter.org/resource_guide/rg_cover.html.

Guide to Aquatic Plants in Massachusetts by Wanda Kelly, published by the New England Aquarium and Massachusetts Department of Environmental Management Lake and Ponds Program. This booklet serves as an easy-to-use key to identifying local native and exotic aquatic plants. 33pp. \$2.95 plus shipping and handling. Phone 617-973-5266 or check website: <http://www.neaq.org/visit/gift.html>

Connecticut Invasive Plant Working Group maintains a website on invasive plants and their control, as well as announcements of conferences and other events. <http://www.hort.uconn.edu/cipwg>.

Invasive Plant Council of New York has a website with information on invasive plant species, their control, and their alternatives, as well as a database of resource people experienced with managing them. <http://www.ipcnys.org>

Wisconsin Manual of Control Recommendations for Ecologically Invasive Plants, edited by Hoffman and Kearns, published by the Wisconsin Department of Natural Resources. Copies are available by sending \$3 to the Endangered Resources Fund, Wisconsin Department of Natural Resources, P.O. Box 7921, Madison, Wisconsin 53707-7921. Available online: www.dnr.state.wi.us/org/land/er/invasive/manual_toc.html

Fact Sheet: Measures to Prevent the Spread of Noxious and Invasive Weeds During Construction Activities. University of Nevada Cooperative Extension. http://www.weedcenter.org/prevention/nv_prev_fact_sheet1.pdf

Pesticide Programs by State

Connecticut Department of Environmental Protection, Pesticide Management Program
<http://www.dep.state.ct.us/wst/pesticides/index.htm>

Maine Board of Pesticides Control
<http://www.maine.gov/agriculture/pesticides/>

Massachusetts Department of Agricultural Resources, Massachusetts Pesticide Board
<http://www.mass.gov/agr/pesticides/index.htm>

New Hampshire Department of Agriculture, Division of Pesticides Control
http://agriculture.nh.gov/about/pesticide_control.htm

New York State Department of Environmental Conservation, Pesticide Program
<http://www.dec.state.ny.us/website/dshh/pesticide/pesticide.htm>

Rhode Island cooperative Extension Service, Pesticide applicators information
<http://www.uri.edu/ce/pestapp/>

Vermont Agency of Agriculture Food and Markets, Pesticide Control
<http://www.vermontagriculture.com/Pesticidecontrol.htm>

Planning and Assessment Tools

Creating an Integrated Weed Management Plan: A Handbook for Owners and Managers of Lands with Natural Values. 2000. Colorado Natural Areas Program, Colorado State Parks, Colorado Department of Natural Resources; and Division of Plant Industry, Colorado Department of Agriculture. Denver, C O. 349 pp.

This handbook provides the tools and information necessary for public and private landowners to manage noxious weeds successfully in natural areas, wildlands, and rangelands. The handbook presents a series of steps for the preparation of an integrated weed management plan: property description and inventory, formulation of management goals and objectives, setting weed management priorities, selection of management actions, development of an integrated plan, and monitoring plan development and implementation. Download and find directions for ordering a hard copy at: <http://parks.state.co.us/cnap/IWM_handbook/IWM_index.htm>

The Nature Conservancy's template and protocol for adaptive management plans:

Staff of The Nature Conservancy use this template for creating management plans. Examples are available. <http://tncweeds.ucdavis.edu/products.html> (see especially the Weed Control Template).

Handbook for Ranking Exotic Plants for Management and Control published by the National Park Service and developed by Ronald D. Heibert and James Stubbendieck. This system helps landowners prioritize invasive plant control activities by ranking species based on each plant's biological potential to be disruptive to native habitats and the likelihood that they can be controlled. <http://www2.nature.nps.gov/pubs/ranking/index.htm>.

The Alien Plant Ranking System (APRS) is a computer-implemented system based on the above ranking system. It has been developed and tested primarily in grassland and prairie parks in the central U.S. Using the system in other ecoregions may require modification. Comments or suggestions regarding any aspect of this ranking system can be directed to Dr. Ron Hiebert (ron.hiebert@nau.edu) Version 5.1: <http://www.npwrc.usgs.gov/resource/literatr/aprs/aprs.htm>
Version 7.0: <http://www.usgs.nau.edu/SWEPIC/aprs/ranking.asp>

An Invasive Species Assessment Protocol: Evaluating Non-Native Plants for Their Impact on

Biodiversity (Morse, et. al., NatureServe, 2004) The Nature Conservancy and the National Park Service developed a scientific methodology for evaluating the impacts of non-native plants on native species and conservation areas. The protocol, Invasive Species Impact Ranks (I-Ranks), is designed to make the process of assessing and listing invasive plants objective, systematic, and transparent and will help set priorities focusing scarce management resources on the very worst invaders. NatureServe has implemented the protocol at a national level in the U.S. and has assessed over 350 of the more than 3,500 non-native plants that have escaped cultivation in the U.S. The protocol, subranks for those species already assessed, and supporting documentation are available on the NatureServe website at: www.natureserve.org/getData/plantData.jsp

A New Zealand assessment system

"Scary species, superlative sites: assessing weed risk in New Zealand's protected natural areas."
Susan Timmin, and Susan-Jane Owen. 2001. In *Weed Risk Assessment*, R.H. Grove, F.D. Panetta, and J.G. Virtue, Eds. CSIRO: Collingwood, Australia. Pp. 217-227. Helps land managers prioritize invasive species and control on multiple sites.

Inventorying and Monitoring Invasive Plants

Invasive Plant Atlas of New England (IPANE) – see description in the Regional and State Invasive Plant Initiatives section. www.ipane.org

Weed Information Management System (WIMS), developed by The Nature Conservancy, is a Microsoft Access-based relational database application to assist natural resource managers in their efforts to keep track of weed data (location and management actions) by recording occurrence of weeds across landscapes regardless of ownership or conservation status. WIMS can be used to compile and share weed data between multiple users and can also be used with a GPS unit to facilitate weed mapping and data capture in the field. Originally developed for use by TNC field staff, WIMS is now available to all interested users. <http://tncweeds.ucdavis.edu/wims.html>

Alternatives to Invasive Plants

Alternatives for Invasive Ornamental Plant Species (in Connecticut) Sept. 2004. Edited by Timothy Abbey of the Connecticut Agricultural Experiment Station for the Connecticut Invasive Plant Working Group. Highlights alternatives to four species considered widespread and invasive in Connecticut (autumn olive, Japanese barberry, purple loosestrife, burning bush) and one potentially invasive species in Connecticut (Norway maple). 14pp. Available on websites: www.hort.uconn.edu/cipwg/ and www.caes.state.ct.us. Order single or multiple copies from timothy.abbey@po.state.ct.us, 860-687-4763 and Cynthia_Boettner@fws.gov, 413-863-0209 x6.

Alternatives to Invasive Species, New England Wild Flower Society list of native plant alternatives to invasive or potentially invasive non-native plants in the landscape. <http://www.newfs.org/consERVE/docs/invalt2.pdf>

Journals

Society for Ecological Restoration. The Society is an international membership organization “committed to ecologically sensitive repair and management of ecosystems. Techniques for invasive control are discussed in their publications *Ecological Management and Restoration* and *Ecological Restoration* (available at a discount to members) and at their annual conference. Contacts: David Robertson, NE Chapter contact (215) 657-0830, djrpennypack@cs.com. www.ser.org

The ***Natural Areas Journal*** includes extensive invasive species management information. It is published Published in the journal through the years are compiled in the “Compendium on Exotic Species” and can be purchased on CD-Rom. Contact: Natural Areas Association, P.O. Box 1504, Bend, OR

97709, 541-317-0199. www.naturalarea.org

The ***Journal of Aquatic Plant Management*** is a publication of the Aquatic Plant Management Society, an international organization of scientists, educators, commercial pesticide applicators, administrators and concerned citizens interested in the management and study of aquatic plants. It contains peer reviewed, scientific publications on aquatic plant ecology, physiology and management. Contact: Dr. David L. Sutton, JAPM, University of Florida – IFAS, Research and Education Center, Fort Lauderdale, FL, 33314, 954-577-6317, dlsutton@ufl.edu; www.apms.org

The ***Society for Conservation Biology*** offers the journals *Conservation Biology* and *Conservation Biology in Practice*. *Conservation Biology* (SCB's journal), provides a global voice on biological diversity, including scientific papers on topics such as population ecology and genetics, ecosystem management, freshwater and marine conservation, landscape ecology, and the many human dimensions of conservation and is the most frequently cited conservation journal in the world. (<http://www.conbio.org/Publications/ConsBio/>). Designed to complement *Conservation Biology*, *Conservation Biology in Practice* makes current conservation biology tools, techniques, and case studies more accessible to practitioners, policy makers, and others who do not have the time for, access to, or interest in reading the original literature. <http://www.conbio.org/Publications/> and <http://www.blackwellpublishing.com/journal.asp?ref=1539-6827>

Cover Illustration: Asiatic bittersweet by Annie Chappell