

Final Report Summary:
2006 Connecticut River (in VT & NH) Aquatic Invasive Plants Outreach & Survey Project

Laurie G. Callahan
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One of the main goals of the *2006 Connecticut River Aquatic Invasive Plants Outreach & Survey Project* was to raise regional awareness about the presence of invasive aquatic plants (IAP) and preventing the spread of those species in the Connecticut River (CT River). Another major goal was to perform screening surveys of several locations along the CT River where there is public boating access. Because of boating activity at these sites the opportunity for introduction of invasive aquatic species is likely. In order to accomplish these two main goals 3 public workshops were offered (in Littleton, NH, Norwich, VT and Brattleboro, VT in July) and 21 IAP screening surveys were performed along the CT River between July and September 2006. Most of the field surveys were open to public participation. A number of the field surveys were not originally scheduled and most were done at no cost to the project.

The project, sponsored by Sullivan County (NH) Conservation District (SCCD) and coordinated by Laurie Callahan (aquatic biologist), received major funding from Connecticut River Joint Commissions (CRJC) and Connecticut River Conservation District Coalition (CRCDC) along with other funding from Connecticut River Watershed Council (CRWC).

The target species for the project's workshops and for field survey sessions were the New Hampshire 14 prohibited aquatic plants, Vermont Department of Environmental Conservation's list of *Non-native Aquatic Plant Species in Aquatic and Wetland Habitats in Vermont (Categories 1, 2 and 3)* and Invasive Plant Atlas of New England's (IPANE's) listed aquatic invasive species. See pages 4-6 for lists of the target species. At each field site as much as possible of the littoral area in the vicinity of the boat access areas were surveyed in a period of approximately 3-4 hours. More time was spent at some sites and less in others. GPS (handheld Garmin *etrex* Legend) coordinates were recorded for significant observations of invasive or native aquatic plant species. Observations about the presence, absence or condition of invasive aquatic species signs were noted and appropriate organizations and agencies were notified if relevant. Herbarium samples of significant species were also prepared. Laurie Callahan will retain a set of these samples and will submit samples, if needed or requested, to appropriate institutions and organizations. The assistance of C. Barre Hellquist was utilized for the identification or verification of some of the more uncommon native species found. Rare, threatened or endangered aquatic plant species information and IAP information from the field surveys will be shared with VT Dept. of Environmental Conservation, NH Dept. of Environmental Services, Silvio O. Conte Refuge, Invasive Plant Atlas of New England (IPANE), The Nature Conservancy (TNC), the respective states' natural heritage programs, CRJC and others. Preliminary project information was displayed at the 2006 NH DES Watershed Conference in Concord on Nov. 18, 2006. Participation at the conference was not included in the original project plan. A number of conference attendees visited the display and discussed the project with Callahan.

See the chart on the following page (p. 2) for a list of the 2006 survey site locations and the IAP found at each site. The page after that (p. 3) shows a map of the survey sites and the IAP species found at each site.

A final report will be available in electronic form later this spring. The report will include significant details about native and invasive aquatic plant survey observations for each field site visited.

Funding has been awarded from NH DES for another phase of the project to be carried-out in 2007. In 2007 the focus area will be the Springfield, VT and Charlestown, NH area north to the Bradford, VT and Piermont, NH reach of the CT River and its tributaries. SCCD and Callahan (Biologist & Project Coordinator) are in the process of securing additional funds to cover remaining project costs for the 2007 season.

*For more information contact Laurie Callahan at (802) 258-1877 or therivermist@hotmail.com
or Janice Heighes at SCCD, 603-863-4297 or janice.heighes@email.nacdnet.org.*

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Project field site locations, access descriptions and invasive aquatic plants (IAP) found at each site.

CLP = curly leaf pondweed, ENJ = European Najad (Eur. water nymph), EWM = Eurasian watermilfoil,
 JKW = Japanese knotweed, PLS = purple loosestrife; PHR = common reed (*Phragmites australis*);
 TFG= true forget-me-not, YFI = yellow flag iris, IAP = invasive aquatic plants

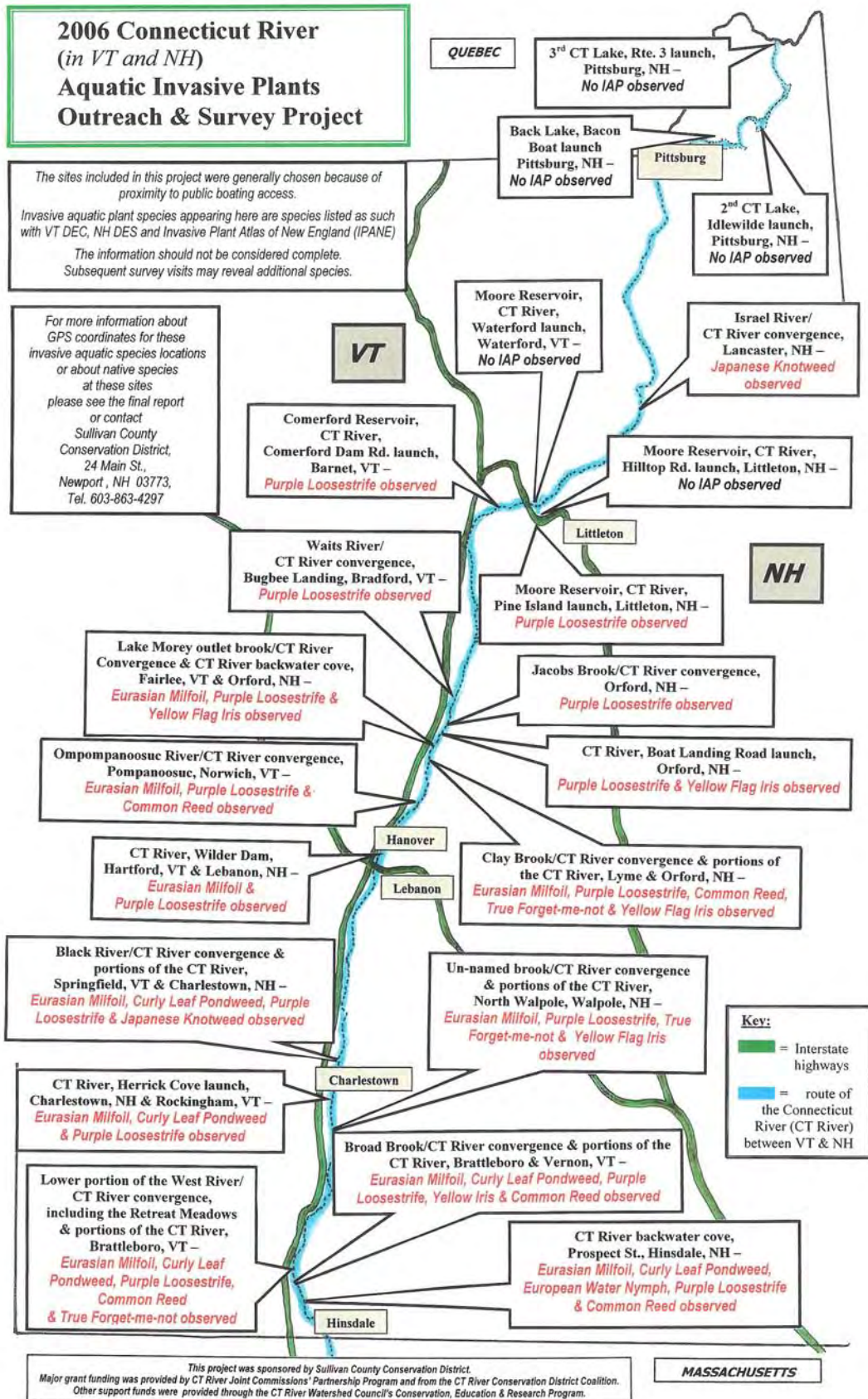
LOCATION	LAUNCH DESCRIPTION	INVASIVE AQUATIC PLANTS FOUND *
CT River backwater cove; Prospect St., Hinsdale, NH	Publicly used access, Prospect St., Hinsdale, NH	EWM, CLP, ENJ, PLS, PHR
Broad Brook/CT River convergence & portion of CT River, VT side; Vernon & Brattleboro, VT (Hinsdale, NH)	Publicly used access, Rte 142, Vernon, VT	EWM, CLP, PLS, PHR, YFI
West River/CT River convergence (including Retreat Meadows) & small portion of CT River, VT side; Brattleboro, VT (Chesterfield, NH)	Publicly used access, Rte 30, Brattleboro, VT	EWM, CLP, PLS, PHR, TFG
Un-named brook/CT River convergence & portion of CT River, NH side; Pine St., Walpole (No. Walpole), NH	TransCanada launch, Pine St., No. Walpole, NH	EWM, PLS, TFG, YFI
Herrick Cove/CT River, VT side; Rockingham, VT (Charlestown, NH)	TransCanada launch, Herrick Cove Rd., Rockingham, VT	EWM, CLP, PLS
Black River/CT River convergence & portion of CT River, VT side; Springfield, VT (Charlestown, NH)	VT Fish & Wildlife access, Rte. 5/11, Hoyts Landing, Springfield, VT	EWM, CLP, PLS, JKW
Wilder Dam, CT River; Hartford (Wilder), VT & Lebanon (E. Wilder), NH	TransCanada launch, Passumpsic St., Wilder, VT	EWM, PLS
Ompompanoosuc River/CT River convergence & small portion of CT River, VT side; Norwich (Pompanoosuc), VT (Lebanon, NH)	VT Fish & Wildlife access, Old Bridge Road, Pompanoosuc, VT	EWM, PLS, PHR
Clay Brook/CT River convergence & portion of the CT River, VT & NH side; Lyme, NH & Orford, NH	Publicly used access (hand-carry), Edgell Bridge, Clay Brook, Orford, NH	EWM, PLS, PHR, TFG, YFI
CT River backwater cove, Lake Morey outlet brook/CT River convergence; Fairlee, VT & Orford, NH	No apparent land access; access via the CT River from Edgell Bridge, Clay Brook, Orford, NH	EWM, PLS, YFI
CT River, portion on NH side; Orford, NH	Town launch, Boat Landing Rd.	PLS, YFI
Jacob's Brook/CT River convergence; Orford, NH	Access via the CT River from town launch on Boat Landing Rd.	PLS
Waits River/CT River convergence & small portion of CT River, VT side; Bradford, VT	VT Fish & Wildlife access, Bugbee Landing	PLS
Comerford Reservoir, CT River; Barnet, VT	TransCanada launch, Comerford Dam Rd.	PLS
Moore Reservoir, CT River; Pine Island, Littleton, NH	Publicly used launch, Rte135/18	PLS
Moore Reservoir, CT River; Hilltop Rd., Littleton, NH	TransCanada launch, Hilltop Rd.	No IAP seen
Moore Reservoir, CT River; Waterford, VT	TransCanada launch, Riverside Cemetery Rd.	No IAP seen
Israel River/CT River convergence; Lancaster, NH	Publicly used launch, Rte 2 bridge	JKW
Back Lake (the outlet flows to CT River); Bacon launch, Pittsburg, NH	Bacon boat launch, Spooner Rd.	No IAP seen
2nd CT Lake, CT River, Idlewilde; Pittsburg, NH	TransCanada launch, Idlewilde Rd.	No IAP seen
3rd CT Lake, CT River; Pittsburg, NH	TransCanada launch, Rte. 3	No IAP seen

* = as defined by NH's 14 banned aquatic species as well as VT's Category 1,2 and 3 aquatic and wetland invasive plant species and IPANE's listed aquatic species. (See those 3 lists on pages 4-6.)

This information should not be considered complete. The screening surveys performed were of limited duration. Subsequent inspection visits may reveal additional locations or species.
See the final report for more details and information about native species found at the survey locations.

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New Hampshire Department of Environmental Services
Watershed Management Bureau – Exotic Species Program

Nov. 22, 2004 - from <http://www.des.state.nh.us/factsheets/bb/bb-40.htm>

Law Prohibits Exotic Aquatic Weeds

As of January 1, 1998, the sale, distribution, importation, purchase, propagation, transportation, or introduction into the state of exotic aquatic weeds is prohibited (RSA 487:16-a). This new law was designed to act as a tool for lake managers to help prevent the spread of nuisance aquatic weeds. It is hoped that by preventing their transport over land, their spread between lakes will be stopped.

The following is a list of prohibited exotic aquatic species in New Hampshire:

Scientific Name	Common Name
<i>Myriophyllum heterophyllum</i>	variable milfoil
<i>Myriophyllum spicatum</i>	Eurasian milfoil
<i>Cabomba caroliniana</i>	fanwort
<i>Hydrilla verticillata</i>	Hydrilla
<i>Trapa natans</i>	water chestnut
<i>Myriophyllum aquaticum</i>	parrot feather
<i>Potamogeton crispus</i>	curly leaf pondweed
<i>Lythrum salicaria, L. virgatum, L. alatum</i>	purple loosestrife
<i>Phragmites australis</i> or <i>P. communis</i>	common reed
<i>Egeria densa</i>	brazilian elodea
<i>Hydrocharis morsus-ranae</i>	frogbit
<i>Butomus umbellatus</i>	flowering rush
<i>Najas minor</i>	European naiad
<i>Nymphoides peltata</i>	yellow floating heart

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Non –native Aquatic Plant Species in Aquatic and Wetland Habitats in Vermont

(From a VT DEC list updated May 2004)

Category One: Non-native aquatic or wetland species with a demonstrated ability to be highly invasive on a localized or widespread scale. These species are currently having economic and/or ecological impacts in Vermont.	Common Name
<i>Butomus umbellatus</i> L.	Flowering-rush
<i>Iris pseudacorus</i> L.	Yellow iris
<i>Lythrum salicaria</i> L.	Purple loosestrife
<i>Myriophyllum spicatum</i> L.	Eurasian watermilfoil
<i>Phragmites australis</i> (Cav.) Trin. Ex Steud.	Common reed
<i>Polygonum cuspidatum</i> Sieb. & Zucc. (syn.: <i>Fallopia japonica</i> (Houtt.) Dcne.)	Japanese knotweed
<i>Trapa natans</i> L.	Water chestnut
Category Two: Non-native aquatic or wetland species considered having the potential to be invasive on a localized or widespread scale.	
<i>Hydrocharis morsus-ranae</i> L.	European or frogbit
<i>Najas minor</i> Allioni	Brittle water-nymph
<i>Nymphoides peltata</i> (Gmel.) Kuntze	Yellow floating heart
<i>Potamogeton crispus</i> L.	Curly-leaved pondweed
<i>Rorippa amphibia</i>	Great watercress
Category Three: Non-native aquatic or wetland species not known to be present in Vermont, but with the potential to become invasive if/when they arrive on a localized or widespread scale.	
<i>Cabomba caroliniana</i> A. Gray	Fanwort
<i>Egeria densa</i> Planchon	Brazilian waterweed
<i>Hygrophila polysperma</i> (Roxb.) T.Anders.	East Indian hygrophila
<i>Hydrilla verticillata</i> (L. f.) Royle	Hydrilla
<i>Salvinia molesta</i> Mitchell Complex (<i>S. molesta</i> , <i>auriculata</i> , <i>biloba</i> or <i>herzogii</i>)	Giant salvinia
<i>Myriophyllum aquaticum</i> (Vell.) Verdc.	Parrot's feather
<i>Myriophyllum heterophyllum</i> Michx.	Variable-leaved watermilfoil

One of the invasive animal species that appears in Category One of the Vermont list is Zebra Mussel (*Dreissena polymorpha*). The Connecticut River is considered one of the few NH waterbodies possibly susceptible to impact by this invasive species.

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IPANE - Invasives (Aquatic)

11/22/04 (from http://invasives.eeb.uconn.edu/ipane/currentinvasives/current_inv.htm#life)

Updated 12/01/04 from excerpts from the "Working List for IPANE Project" & 2006 IPANE training session notes

Aquatic		
<i>Cabomba caroliniana</i> A. Gray	Fanwort	CACA
<i>Callitriche stagnalis</i> Scop.	Pond water-starwort	CAST
<i>Egeria densa</i> Planchon	Brazilian waterweed	EGDE
<i>Eichhornia crassipes</i> (Mart.) Solms	(Common) Water hyacinth	EICR
<i>Glossostigma diandrum</i> (L.) Kunze	Glossostigma	GLDI
<i>Hydrilla verticillata</i> (L. f.) Royle	Hydrilla	HYVE3
<i>Hydrocharis morsus-ranae</i> L.	European or Common frogbit	HYMO6
<i>Marsilea quadrifolia</i> L.	European waterclover	MAQU
<i>Myriophyllum aquaticum</i> (Vell.) Verdc.	Parrotfeather	MYAQ2
<i>Myriophyllum heterophyllum</i> Michx.	Two- or Variable-leaf watermilfoil	MYHE2
<i>Myriophyllum spicatum</i> L.	Eurasian watermilfoil	MYS2
<i>Najas minor</i> Allioni	Brittle water-nymph	NAMI
<i>Nymphoides peltata</i> (Gmel.) Kuntze	Yellow floating heart	NYPE
<i>Pistia stratiotes</i> L.	Water lettuce	PIST2
<i>Potamogeton crispus</i> L.	Curly-leaved pondweed	POCR3
<i>Rorippa microphylla</i> (Boenn. ex Reichenb.) Hyl. ex A.& D. Löve	Onerow yellowcress	ROMI3
<i>Rorippa nasturtium-aquaticum</i> (L.) Hayek (Syn:Nasturtium officinal Ait. f.)	Watercress	RONA2
<i>Salvinia molesta</i> Mitchell Complex	Kariba-weed, Salvinia	SAMO5
<i>Trapa natans</i> L.	Water chestnut	TRNA
Additional Wetland Plant Species:		
<i>Butomus umbellatus</i> L.	Flowering-rush	BUUM
<i>Iris pseudacorus</i> L.	Yellow iris	IRPS
<i>Lythrum salicaria</i> L.	Purple loosestrife	LYSA2
<i>Myosotis scorpioides</i> L.	True forget-me-not	MYSC
<i>Phragmites australis</i> (Cav.) Trin. Ex Steud.	Common reed	PHAU7