

# HYDRILLA MANAGEMENT DEMONSTRATION PROJECT IN THE CONNECTICUT RIVER

NEANS Panel Meeting  
May 2023

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Engineer Research and Development Center  
(ERDC)



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New England District



# CT RIVER HYDRILLA DEMONSTRATION PROJECT



- Project Details:
  - No eradication/control program for hydrilla exists in CT.
    - RiverCOG and CAES initiated USACE involvement
  - Funding made available through FY23 Congressional Energy and Water Development appropriation
  - NAE District working closely with USACE Engineer Research and Development Center (ERDC) Aquatic Plant Control Research Program
  - USACE looking to achieve effective and proactive engagement with agencies & public/stakeholders about the project
  - Education and outreach an important project component
    - Regarding the negative effects of hydrilla and what is being proposed to manage/control hydrilla in CT River



# CT RIVER HYDRILLA DEMONSTRATION PROJECT



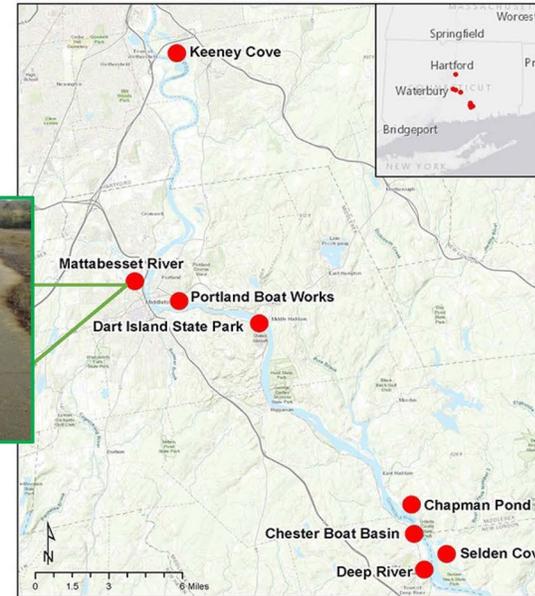
Fact Sheet  
**Lower Connecticut River Hydrilla  
Invasion - USACE Demonstration Project**  
May 2023

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**PROJECT GOAL:** Protect and restore the Connecticut River, its tributaries, and associated ecological and economic benefits from hydrilla invasion impacts

### PROJECT OBJECTIVES

1. Implement science that protects public and environmental safety
2. Conduct research to develop and evaluate best management practices
3. Technology transfer of best management practices



Map of proposed 2023 environmental study locations. A site subset will be selected for 2024 field demonstration based on 2023 field survey results.

### USACE ACTIONS

1. Public engagement, stakeholder notification, and coordination
2. Environmental and technical studies to guide site selection and treatment plan development
3. Federal, state, and local environmental permitting
4. Field demonstration and evaluation

### PROJECT TIMELINE





# CT RIVER HYDRILLA DEMONSTRATION PROJECT



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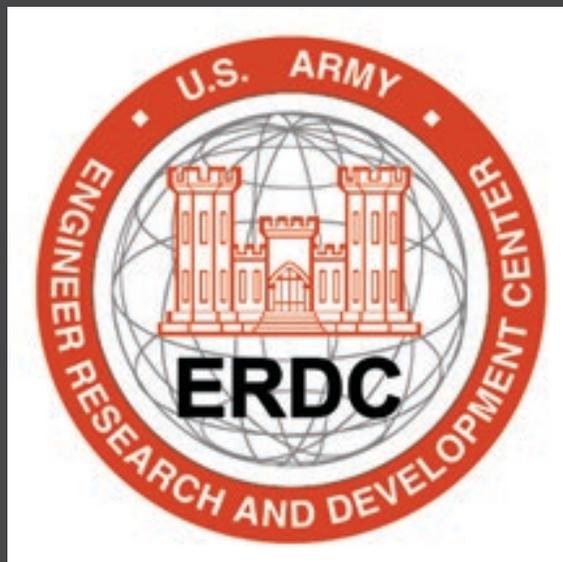
# Ben Sperry

- Gainesville, FL
- Research Biologist – USACE ERDC, Environmental Laboratory
- Courtesy Assistant Professor – University of Florida, Center for Aquatic and Invasive Plants
- Specializations: Hydrilla control, herbicide application technology, management program optimization
- Benjamin.P.Sperry@usace.army.mil



# Aquatic Plant Management Team

- Conduct R&D to provide operational guidance to CE Districts and partner Federal, state, and local agencies for improved management of invasive aquatic vegetation
- Serve as subject matter experts to other agencies for aquatic plant control issues
- Collaborate with other entities to develop/evaluate management tools for use in the US



# The Plant: Clade C Hydrilla (CT hydrilla)

- Genetically distinct strain discovered in 2016
- Very little applied management research conducted to date
- Will require management to maintain needs of users, local economies, and fish & wildlife
- Potential to spread to outside systems
- Applied research approach = determination of optimal control methods and provide science-based management guidance to key agency personnel



# The Site: Connecticut River

- **Extremely large**
- **Many users**
- **Tidally influence**
- **Hydrodynamically complex - site-specific water exchange characteristics**



# The Unknown: Research Gaps

- Detailed understanding of growth and reproduction under varying environmental conditions
- Water exchange dynamics in the CT River
- Management timing in conjunction with phenological “weak points” in the life cycle
- Identification of the most effective and selective herbicides:
  - Application rates
  - Exposure time requirements
  - Application techniques to optimize control



# The Plan: Research Objectives

Measure	Current knowledge	Approach	Goal
Development of herbicide strategies for selective hydrilla control	Response of CT hydrilla to herbicides in site-specific exchange patterns is currently unknown	Field and mesocosm studies	Provide information required to initiate and refine product- and site-specific management guidance
Biology, Ecology, and Phenology of CT hydrilla	Largely unknown	Field and mesocosm studies	Identification of weak points for targeted management and understanding of potential range of spread outside CT River
Development of management and containment protocols for the CT River and other systems	Management and Containment protocols available for other submersed species	Capstone data compilation for short and long-term hydrilla management and containment	Operational protocols to guide resource managers

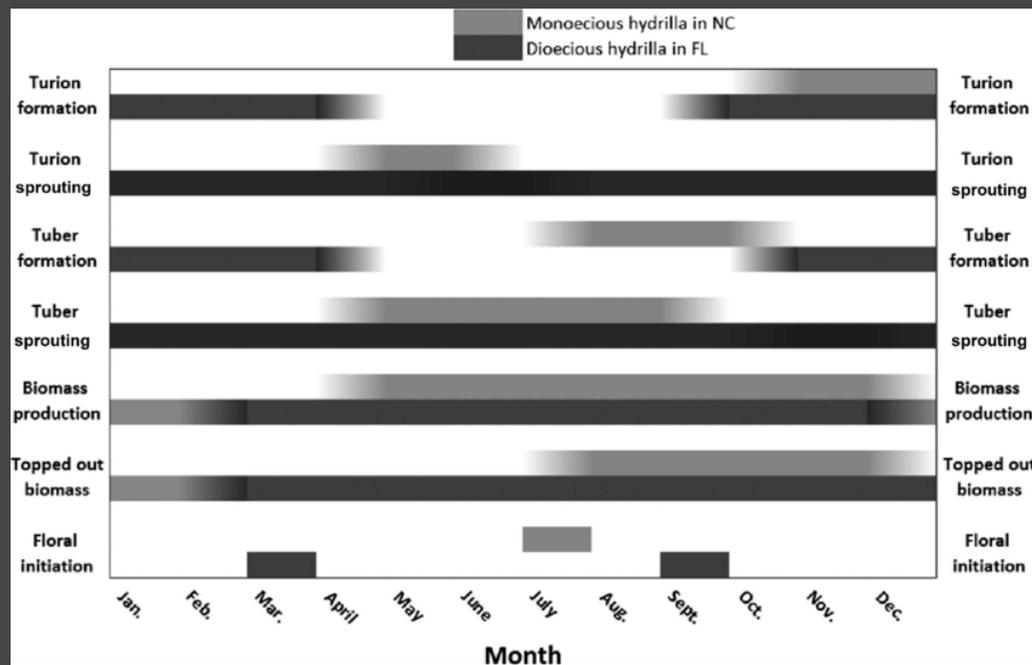
# 1) Water Exchange and Herbicide Application Techniques

- Tracer dye (Rhodamine WT) studies
- Site-specific water exchange rates
- Herbicide delivery technique evaluation



## 2) Plant Phenology

- Life cycle research
- Record major reproduction and growth events
- Identify weak points for management interventions



### 3) Herbicide Assays - Mesocosms

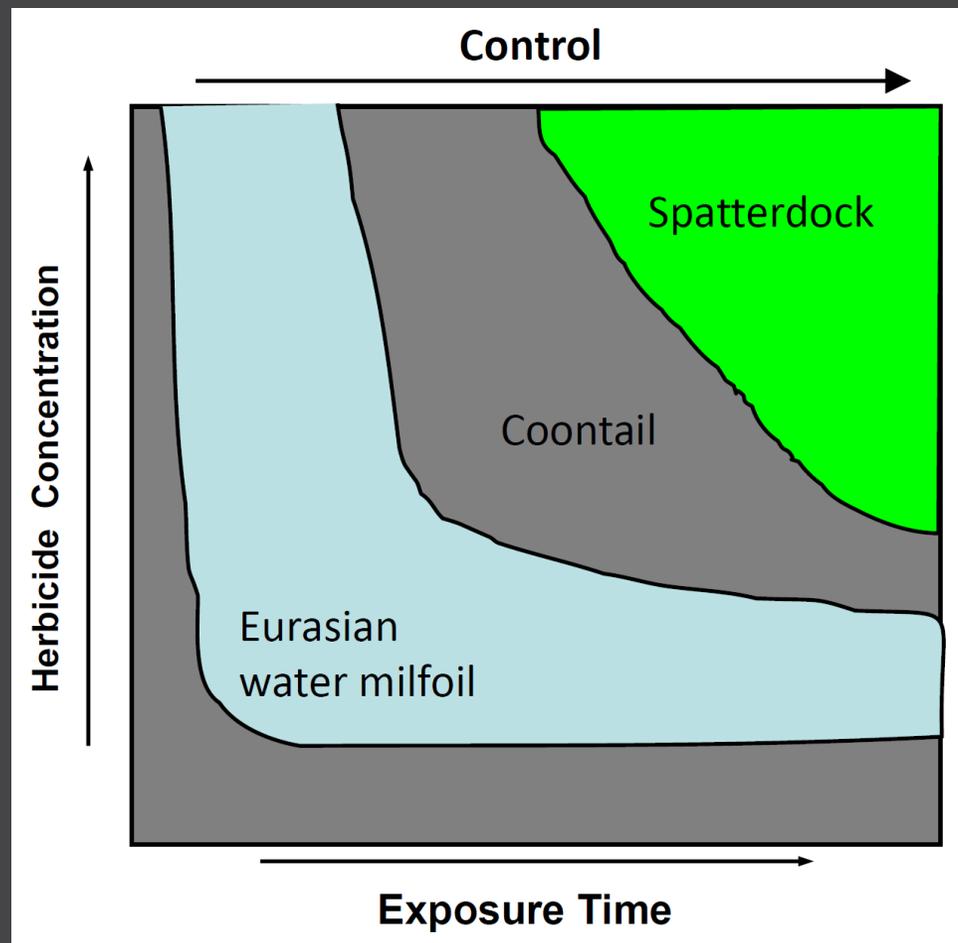
- Plant/herbicide exposure relationships



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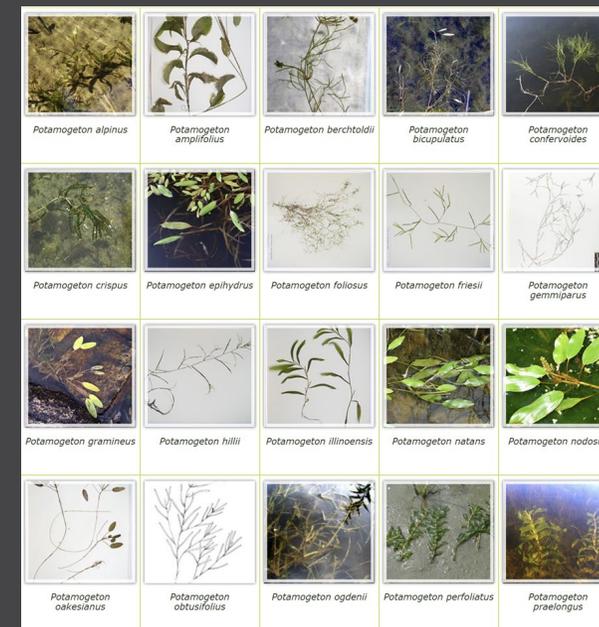
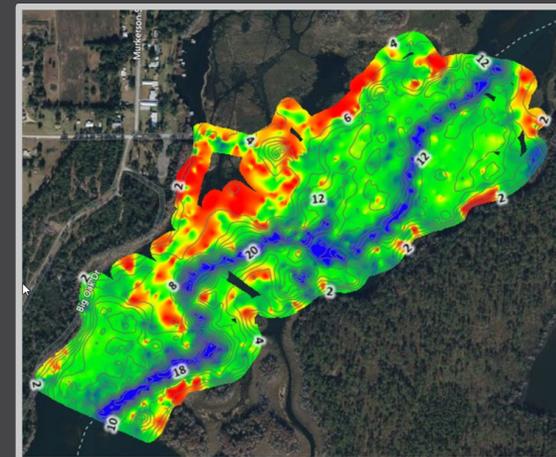
# Concentration Exposure Time (CET) and Selectivity

- Each plant species has a unique “CET profile” or dose-sensitivity to each herbicide



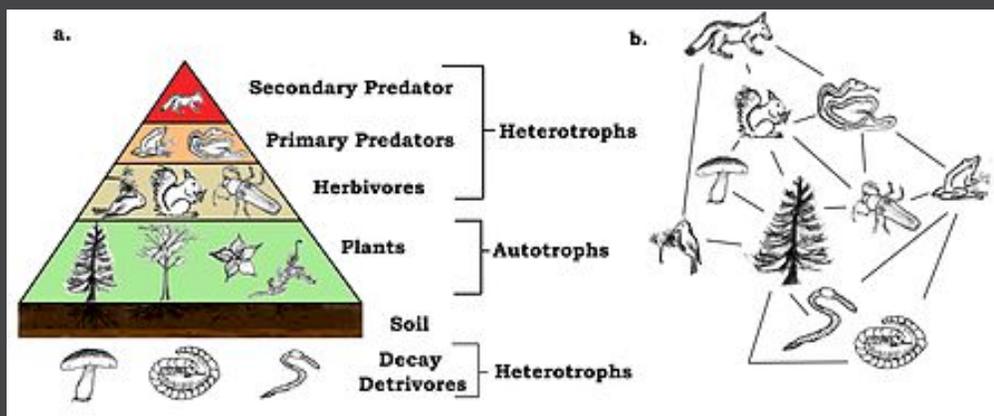
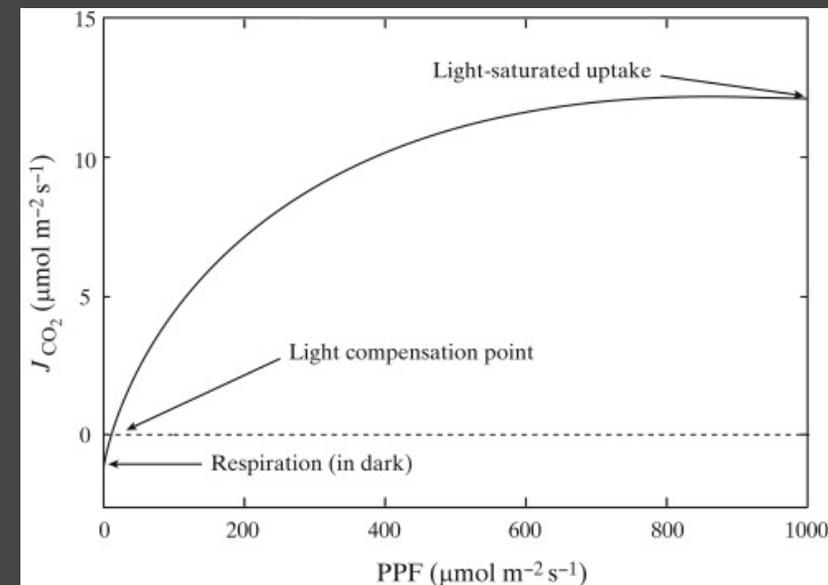
# 4) Herbicide Treatment Demonstrations

- Base on small-scale data for efficacy and selectivity
- Small plot evaluations
- Measure aqueous herbicide concentrations, plant control, non-target plant response



# 5) Plant Biology and Ecology

- Competitiveness with native plants
- Turion production dynamics
- Hybridization potential
- Environmental impacts on growth
  - Temperature
  - Salinity
  - Light



## 6) End-Use Guidance

- Master guidance document
- Resource management workshops
- Containment and management protocols

**Do You Recognize This Plant?**

**HYDRILLA HAS BEEN FOUND IN THE CONNECTICUT RIVER**

Map showing the Connecticut River basin from Quebec to New Hampshire.

**CLEAN DRAIN DRY**

**THINK YOU FOUND HYDRILLA? PLEASE NOTE LOCATION AND TAKE A PHOTO**

**HYDRILLA IDENTIFICATION**

- Whorls of more than 3 leaves
- Leaves often have visibly toothed edge
- Leaf vein often has small visible spines
- Toothed edges and whorls of more than three leaves

It grows very quickly and is very hard to control resulting in dramatic impacts on recreational uses such as boating, fishing, and swimming.

It is very important that all river users CLEAN, DRAIN, and DRY their boats, trailers, and recreational equipment to prevent the spread of this aquatic invasive species. Please help control its spread by reporting it if you think you see it.

**EMAIL OR SEND PHOTOS TO:**

- Vermont Department of Environmental Conservation Management Division: 802.828.1331
- New Hampshire Department of Environmental Services State Sanitary Program: 603.271.2246
- Maine Department of Conservation and Recreation: 617.426.1200
- Connecticut Agricultural Experiment Station: 203.974.8512

For more information: <https://www.northeastern.edu>

NEANS



**ERDC/REL TR-10-16**

**ERDC**

US Army Corps of Engineers  
Engineer Research and Development Center

Research and Development Research Program

**Demonstration and Evaluation of Eurasian Watermilfoil Control using Aquatic Herbicides in Fort Pond Lake, MT**

ROBERT L. FORTINALE, KURT D. BERTHON, AND B. SHAPIRO  
RICHARD E. BILBAC, AND TROY R. PENNINGTON

November 2010

Environmental Laboratory

US Army Corps of Engineers • Engineer Research and Development Center

# Chemical Control Approach

- Requires Vigilance
- Rare for one herbicide treatment to “solve” a problem
- Eradication programs largely unrealistic and not usually successful
- Invasive Plant Management – requires multiple years to develop maintenance program



# CT RIVER HYDRILLA DEMONSTRATION PROJECT



USACE public messaging and outreach efforts to date:

- NAE District website:  
<https://www.nae.usace.army.mil/Missions/Projects-Topics/Connecticut-River-Hydrilla/>
- Five hydrilla fact sheets & one USACE demonstration project fact sheet
- Agency workshop (March 2023)
- Public stakeholder presentation/project introduction (end of June 2023). In-person hybrid meeting in Middletown, CT
- FAQs/Answers being developed
- Social media posts have been made and will continue with project updates and notifications. Cross-posting with CRC and others in the works
- Technical working group
  - Members from: CAES, RiverCOG, CT DEEP-Fisheries, MA DCR
- Education & Outreach working group
  - Members from: CAES, RiverCOG, CRCOG, CT River Conservancy, CT DEEP- Fisheries



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## USACE and NEANS Panel

- Previous NEANS work focused on public messaging on hydrilla was done in 2006
- USACE is looking for input/feedback/recommendations from NEANS Panel on public messaging regarding hydrilla management



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Thank You!

NAE District hydrilla website:  
<https://www.nae.usace.army.mil/Missions/Projects-Topics/Connecticut-River-Hydrilla/>