Mapping and Inventory of Vernal Pools in the Wood-Pawcatuck Watershed

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Project Goal

Protect and conserve vernal pools and other vulnerable amphibian habitats by informing stakeholders of their locations and importance

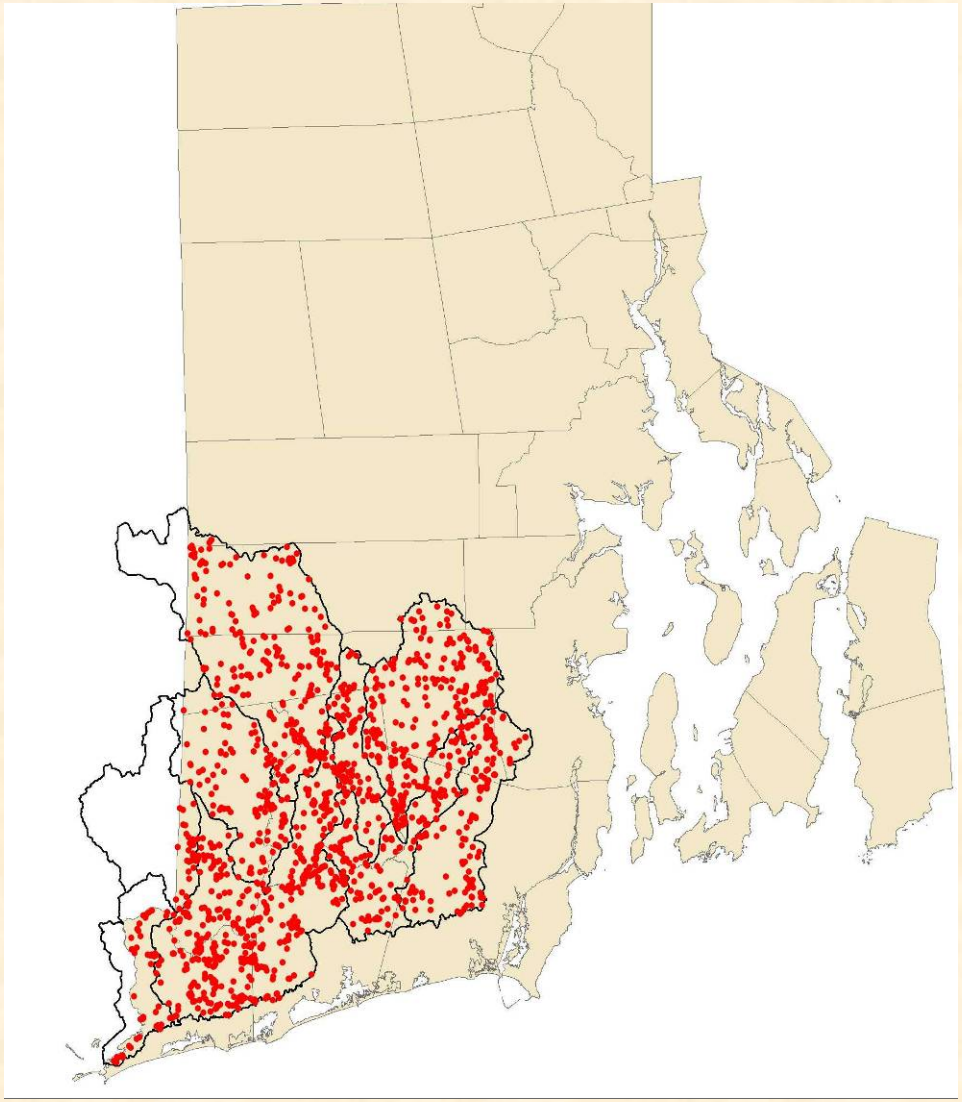
Project Objectives

1. Compile a comprehensive inventory of confirmed and potential vernal pools in the Wood-Pawcatuck watershed
2. Confirm viability of mapped pools for species of concern
3. Distribute mapping and confirmation information to stakeholders
4. Test and initiate a comprehensive inventory of RI vernal pools

Project Overview

- Base on a mapping effort by TNC 2003
- Focus on study area: Wood-Pawcatuck watershed
- Compile, classify and inventory all known vernal pool study data within Study Area
- Select potential pools of highest conservation concern for field verification
- Develop and implement viability criteria
- Develop training and materials for field work
- Train staff and conduct field verifications
- Apply viability criteria to compiled inventory
- Construct inter-operative dataset
- Distribute data

Methods: Study Area / Sources



DATA SOURCES

- TNC (2003) Mapping
- URI Studies
  -Egan 2001
  -Skidds 2003
  -Mitchell 2005
  -Mitchell et al. 2007

3. Unpublished data
   -Raithel, DEM DFW
   -Narcisi, URI MSC
   -Curtis, URI MSC
   -Skidds, NPS

Result: 1492 features

Methods: Study Site Selection

Focus on highest potential conservation value

1. Most Vulnerable
    - Not on protected land
2. Highest Productivity Potential
    - High surrounding forest cover (>50% within 1000')
    - Low development intensity (<25% within 750')

Result: 678 study features

Methods: Confirmation Criteria

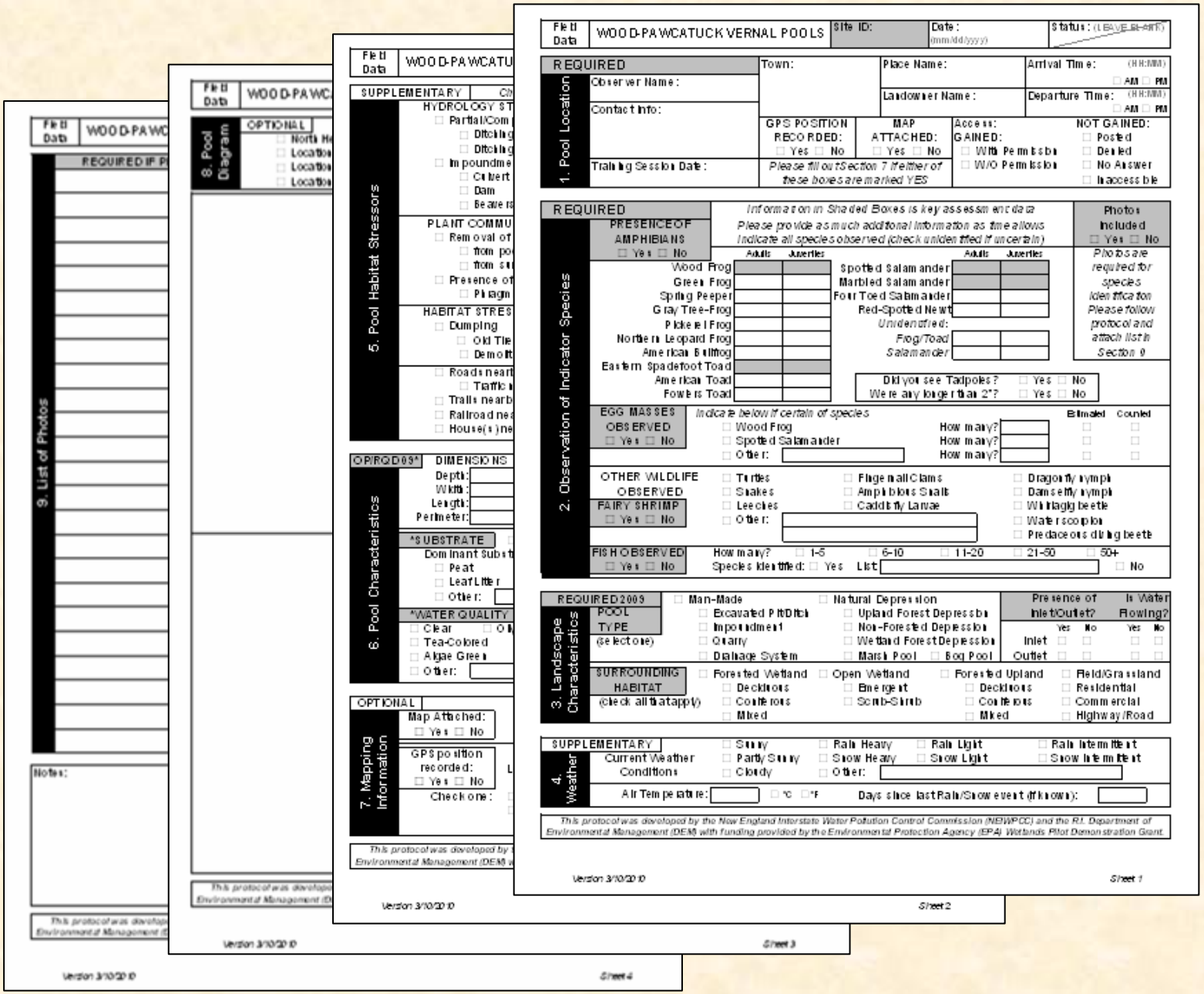
Confirmation based on indicator species:

- Wood Frog (*Rana sylvatica*)
- Spotted Salamander (*Ambystoma maculatum*)
- Marbled Salamander (*A. opacum*)
- Eastern Spadefoot (*Scaphiopus holbrookii*)
- Fairy Shrimp (*Eubranchipus* sp.)

Final status also based on:

- Ephemeral hydrology
- Basin confinement

Methods: Field Forms/Training



Methods: Verifications

Field Verification

- RIDEM Staff: Water Resources; Compliance and Inspection
- Wood-Pawcatuck Watershed Association
- Other organizations
- Two field seasons; spring 2008 and 2009
  - March 21 to May 8

Remote-sensed Verification

- Connectivity (confinement status)
- Water regime, when obvious

Draft Results: Effort and Basic Statistics

- 1525 potential vernal pools inventoried
- 270 features classified through interpretation of former studies
  - 81% (+) and 19% (–)
- 678 study sites selected
- 515 features field-assessed at least once
- 60 features assessed twice
- Viability determined at 91% of the field-assessed mapping features
  - 67% (+) and 33% (–)
- Confirmed the status of 738 features (48%)
- Verified 566 viable breeding areas (+)

Draft Results: Classification Results

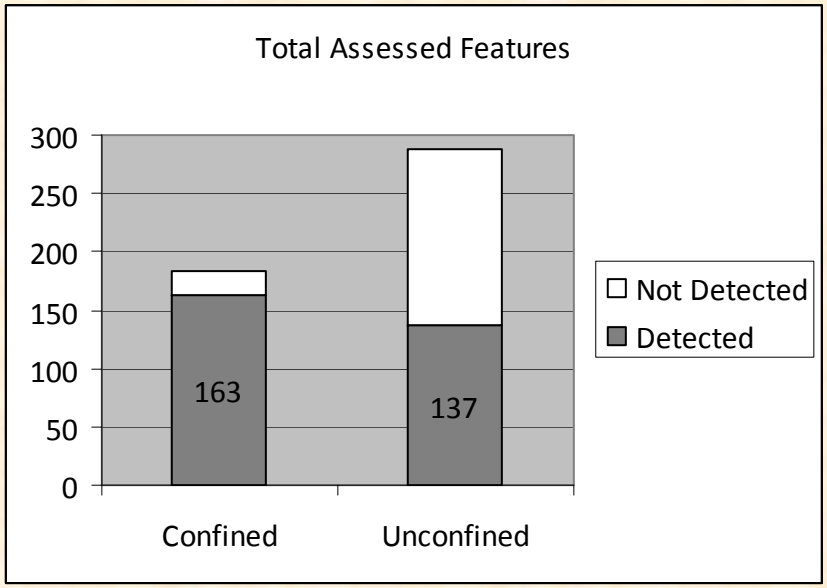
Final Viability Classification	Number of Mapping Features
Confirmed (+) Confined Vernal Pool	159
Confirmed (+) Unclassified ABA*	25
Confirmed (+) Wetland ABA*	131
Likely Vernal Pool	21
Confirmed (–) Non Vernal Pool	153
Potential Vernal Pool, Undetermined	26
Potential Vernal Pool, Un-assessed	163
Total	678

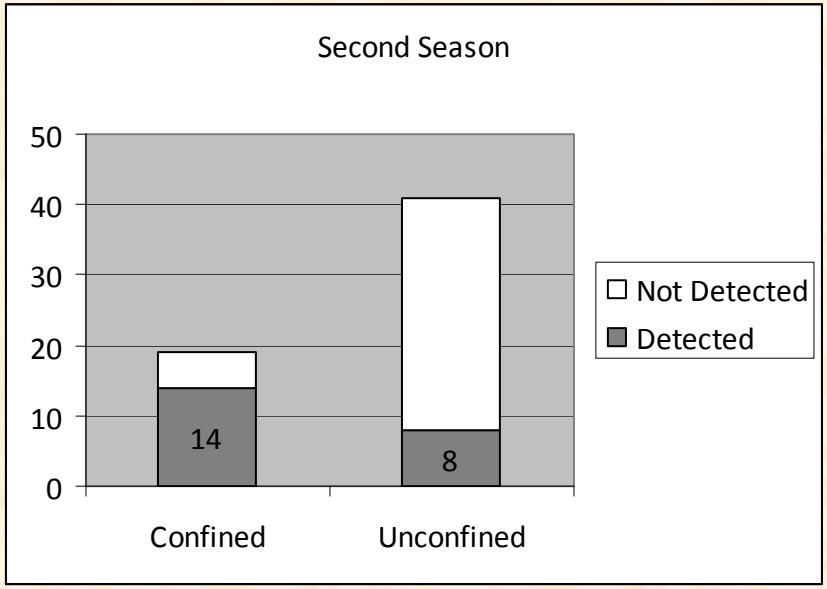
*Amphibian Breeding Area

Classification	Criteria	
	Ephemeral Hydrology and confined Basin	Indicator Species Present
1. Confirmed (+) Confined Vernal Pool	✓	✓
2. Confirmed (+) Wetland Amphibian Breeding Area	–	✓
3. Likely Vernal Pool	✓	–
4. Non-Vernal Pool	–	–
5. Potential Vernal Pool	Not Verified	Not Verified

Draft Results: Other Findings

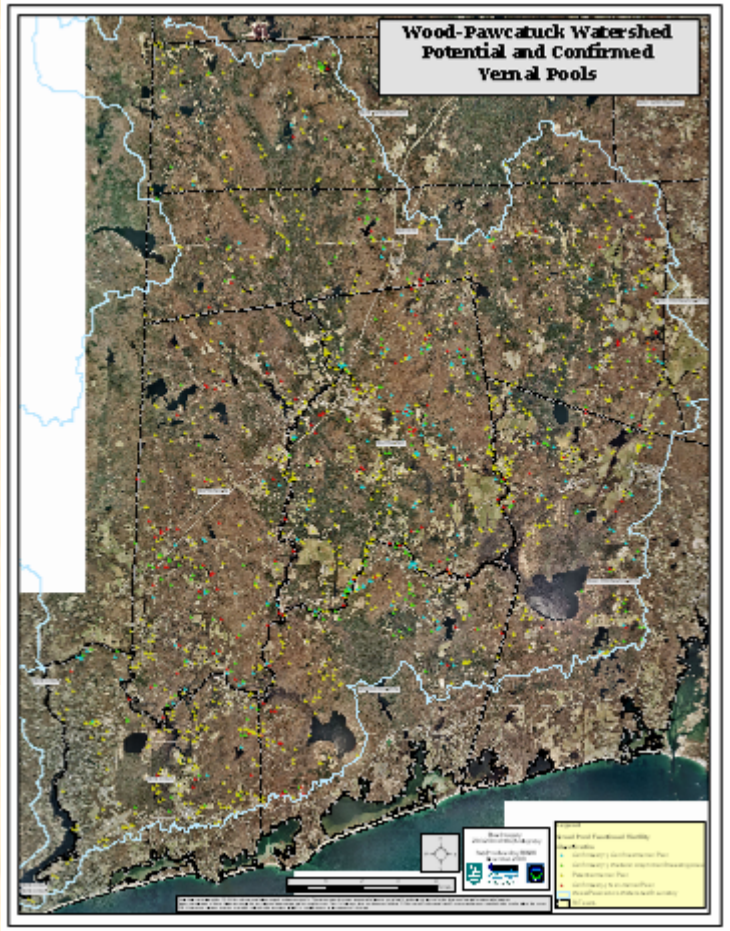
- Indicator species detected at
  - 89% of confined vernal pools (163 of 184)
  - 48% of unconfined features (137 of 288)
  - 74% of confined pools previously undetected (14 of 19)
  - 20% of unconfined pools previously undetected (8 of 41)





Draft Results: Deliverables

1. Central GIS shapefile
   - Contains simplified classifications
   - Links to other electronic data
   - Intended for distribution
2. Field-verification data
   - Link to shapefile
   - Contain detailed data
   - Contain final classifications
3. Source data
   - Link to shapefile through FV data
4. Big hard-copy map



Discussion: Project Outcomes

- Expanded and enhanced the utility of the inventory
- Developed, tested and revised viability criteria
- Developed and tested field protocols
- Trained ~75 volunteers, 23 DEM staff, several staff from other federal and State agencies in functions, characteristics and identification of vernal pools

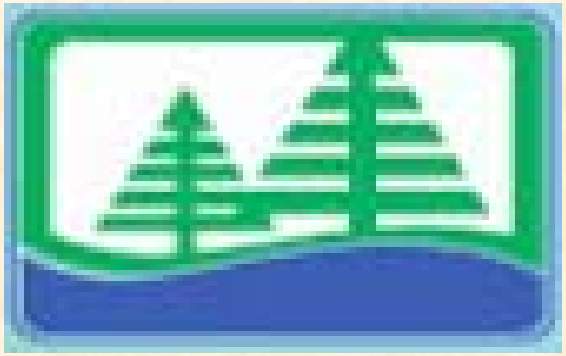
Discussion: Data Utility

- Municipalities, Land trusts
  - Inform decisions regarding land acquisition and management
- General Public, Landowners
  - Inform decisions regarding stewardship on private and public properties
- DEM Staff
  - Inform regulatory and management decisions
  - Signal need for further investigations
  - Analyses may inform policy

Discussion: Lessons and Next Steps

- Caution confirming as (–) after single visit
- Physical criteria sometimes difficult to determine
- Non-typical pools may provide important breeding habitat
- Department undertake policy discussions regarding outcomes
- Develop data forms to reflect final criteria
- Distribute shapefile
- Update at regular intervals
- Add probabilistic component

Thanks to Contributors



Wood-Pawcatuck Watershed Association