

VERNAL POOL PROJECT



photo: Dave Huth

VOLUNTEER HANDBOOK



a citizen science program of the Harris Center for Conservation Education

updated April 2018

Contents

About the Vernal Pool Project.....	1
What are Vernal Pools?	1
Obligate Vernal Pool Species.....	2
Getting Started.....	3
Documenting Vernal Pools.....	4
Things to Bring.....	5
Best Practices	5
Tips for the Field	6
Labeling Photographs.....	7
Drawing Field Sketches	8
Egg Mass Identification.....	9
Tadpole or Salamander Larvae?.....	13
Fairy Shrimp	13
Vernal Pool Documentation Checklist.....	14
Want to Learn More?.....	14
Sample Field Data Form.....	15
Guidelines for Contacting Landowners.....	17



fairy shrimp

photo: Vernal Pool Association

About the Vernal Pool Project

Every spring, small depressions in the forest floor fill with rain, melting snow, and eventually, salamander and frog eggs. By summer's end, many of these vernal pools will have dried out, revealing little trace of the life they contained in April.

These woodland pools serve as critical spring breeding habitat for amphibians, insects, and even crustaceans, who in turn exert a powerful influence on the ecology of the surrounding forest. Because they're small, seasonal, and temporary, they are also especially vulnerable to development, logging, and road impacts.

Knowing the locations of these tiny, but important ecosystems can help town

planners, conservation commissions, and conservation-minded developers make more informed decisions about land use in our communities. However, we can only protect vernal pools if we know where they are!

As a first step towards the conservation of these vital ecosystems in southwest New Hampshire, the Harris Center for Conservation Education trains volunteers to identify and document vernal pools, with special focus on lands where information is needed for conservation planning.

The Harris Center has used high-resolution aerial photography and other remote sensing data to develop maps of potential vernal pools (PVPs) on a

subset of our conserved lands. Now, volunteers are needed to verify the accuracy of the remote data by ground-truthing and documenting these PVPs.



photo: Brett Amy Thelen

wood frog egg mass

What are Vernal Pools?



A local vernal pool, flooded in April and dry in October. photos: Brett Amy Thelen

Vernal pools are temporary bodies of water that form when melting snow and spring rain fill shallow depressions in the forest floor. They are not permanently connected to other water bodies and they often dry out completely by late summer. This wet-dry cycle prevents fish from establishing permanent populations in these isolated, ephemeral pools.

Because they are free of fish that might otherwise eat amphibian eggs and larvae, vernal pools provide critical breeding habitat for a host of forest-dwelling amphibians and invertebrates. Such "obligate species" depend on these ephemeral ecosystems for their survival. Vernal pools also serve as important wetland "stepping stones" for other amphibians, turtles, birds, and even small mammals in upland landscapes.

Obligate Vernal Pool Species

In New Hampshire, the primary vernal pool indicator species are:

Wood Frog (*Lithobates sylvatica*)

Spotted Salamander (*Ambystoma maculatum*)

Jefferson Salamander (*Ambystoma jeffersonianum*)*

Blue-spotted Salamander (*Ambystoma laterale*)*

Marbled Salamander (*Ambystoma opacum*)**

Fairy Shrimp (*Eubbranchipus vernalis*)

* frequently hybridize ** extremely rare

Breeding activity is most commonly verified by photographs of **egg masses** laid by obligate amphibian species, but can also be documented with photographs of wood frogs in amplexus, congressing mole salamanders, tadpoles or larvae of obligate frog or salamander species, or adult fairy shrimp.



wood frogs in amplexus, with egg masses
photo: Vernal Pool Association



spotted salamander congress
photo: Kris Corwin



fairy shrimp
photo: Vernal Pool Association



Jefferson salamander egg mass
photo: Russ Cobb

Getting Started

Think **SPRING**.

In early spring, wood frogs and mole salamanders clamber out of underground burrows and make their way to vernal pools to breed. The spring amphibian migration is highly weather-dependent, but courtship and egg laying often occur by mid- to late April. When wood frogs are chorusing, you can easily follow their raucous quacking to the nearest vernal pool. Egg masses typically remain visible — making for easy photo documentation of breeding by obligate species — through late May, and larval salamanders and tadpoles may remain in pools through August. Many folks prefer to go vernal pooling in late April or early May, before mosquitoes and black flies have taken wing!

It is also possible to identify vernal pools during the dry months: look for depressions in the forest floor containing water- or sediment-stained leaves, sphagnum moss, or wetland plants, and keep your eyes peeled for caddisfly cases or fingernail clams nestled below the leaf litter. If you find a pool in the off-season, note its location for a follow-up visit in the spring. Remember — vernal pool documentation is not complete without a photograph of obligate species breeding activity, which only occurs in the spring.

Landowner Permission is KEY.

You must have written landowner permission to visit vernal pools on private property. In most cases, the Harris Center will have already obtained landowner permission for properties being surveyed in conjunction with this Vernal Pool Project. However, if you are documenting vernal pools on other private land, it is *essential* that you obtain landowner permission before visiting the property.

To keep things neighborly, we suggest talking with landowners directly and inviting them to accompany you on your vernal pool ground-truthing mission. See page 17 for more guidelines for contacting landowners.

Landowner permission is not usually necessary for public land. If you're unsure, check with the Harris Center to see if permission is needed before visiting a site to search for PVPs.

Take Good Notes.

As you walk to your vernal pool, pay close attention to distances, direction of travel, and landmarks (numbered telephone poles, distinctive trees, boulders, etc.) Writing detailed directions along the way will make it much easier for other folks to locate your pool.

GPS or Paper Maps?

We **strongly** suggest that you use a GPS unit

or smartphone mapping app to record the exact latitude and longitude of your vernal pool, as this makes mapmaking and information sharing *much* easier. GPS users: please report coordinates in decimal degrees, using

NAD83 or WGS84 datum. Otherwise, you'll need to mark the location of your pool on an online map or paper topographic map, making sure to label the map with the pool's code and your name. If you have access to a scanner, you can scan labeled paper maps to include with the rest of your electronic records.

Null Data are Important Data.

Predicting the presence of vernal pools via remote sensing is notoriously difficult, so it is highly likely that some of the PVPs on your map will not be vernal pools. These data are still important to us. **Make sure to report back on all PVPs you visit**, even the ones that don't turn out to be vernal pools.



spotted salamander photo: Dave Huth

Documenting Vernal Pools

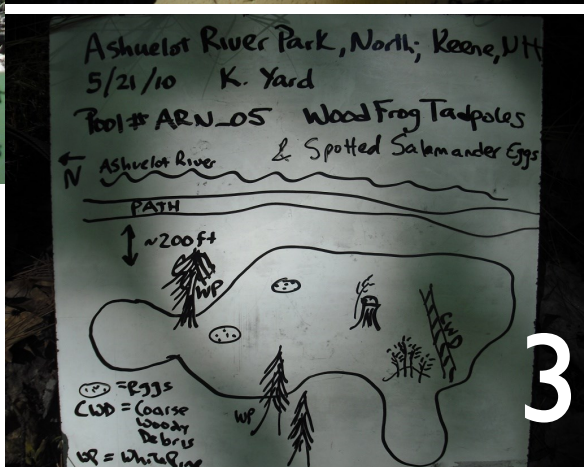
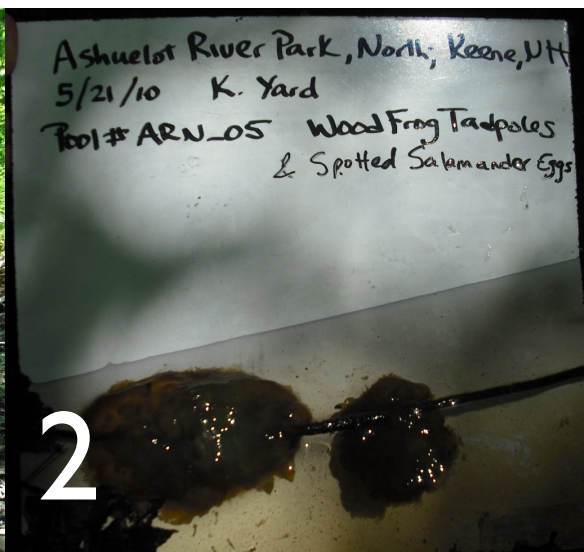
To document a vernal pool for use by local conservation planners, please submit the following information via email to thelen@harriscenter.org or online at www.harriscenter.org/vernal-pool-project. Digital photographs are **strongly** preferred.

1. A labeled photograph of the **flooded vernal pool**.
2. A labeled photograph of **at least one egg mass** (or, in the case of fairy shrimp, of adult shrimp) **for each obligate species** found in the pool.
3. A photograph of your **field sketch of the vernal pool**. (See page 8 for tips.)
4. A **completed data form**, including: **GPS coordinates**, written directions to the pool, estimated egg mass counts by species, and habitat information. (See pages 15 and 16 for a sample data form.)



Vernal Pool Project Data Form

1. Date: 5/21/10 2. Town: Keene 4. PVP ID Code: RN-05 5. Property Name: Robin Hood Park 6. Volunteer Name: Sally Thelen 7. Start Time: 10:00 AM 8. End Time: 11:30 AM 9. This pool was: [X] mapped by AVEO or other project partners as a PVP [] previously unmapped 10. Written Directions to Site: From Robin Hood Park at the trailhead on Jackson Road, after parking in the north-western pull-off, follow the road west approx. 0.2 mi to the first pull-off on your left just beyond a tree stone wall. 11. Is this site a vernal pool? [X] Yes [] No [] Unknown [] Unable to Locate 12. Pool Type: [X] Natural Depression [] Ditch or Trench [] Created Wetland (for mitigation purposes) 13. Origin of Pool: [X] Natural [] Quarry/Sand Pit [] Ditch or Trench [] Ruts from Wheeled Vehicles [] Unknown [] Other 14. Disturbance: [X] None [] Runoff/Siltation [] Agriculture [] Forest [] Wetlands [] Open Water (lakes, ponds, rivers, streams) [] Residential/Urban (mostly pavement and structures) [] Industrial/Urban (mostly pavement and structures) [] Paved Roads/Driveways [] Other [] 15. Did you observe water flowing out of the pool on the survey date? [X] Yes [] No 16. Did you observe water flowing out of the pool on the survey date? [X] Yes [] No



Things to Bring

Provided by the Harris Center

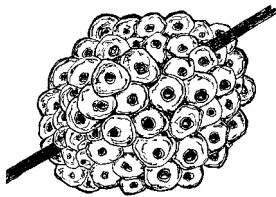
- ✓ Small whiteboard
- ✓ Field maps with labeled PVPs
- ✓ GPS coordinates of PVPs
- ✓ Egg mass identification sheet
- ✓ Field data sheets
- ✓ this Vernal Pool Volunteer Handbook
- ✓ Landowner contact information

Other

- ✓ Dry erase markers
- ✓ Pencils
- ✓ Rag
- ✓ Digital camera
- ✓ GPS or smartphone with mapping app
- ✓ Polarized sunglasses
- ✓ Shallow, light-colored bin or frisbee
- ✓ Clipboard
- ✓ A friend or field partner

Optional

- ✓ *Field Guide to Animals of Vernal Pools*
- ✓ Hip waders, rain boots, or old sneakers
- ✓ Dipnet
- ✓ Binoculars
- ✓ Bug spray



wood frog egg mass drawing: Dawn Morgan

Best Practices

Handle with Care.

In all of your fieldwork, strive for only minor, temporary disruption of the vernal pool and its residents. Be gentle with egg masses and amphibians, and *never* handle them if you have lotion, sunscreen, hand sanitizer, or bug spray on your hands, as amphibians are very sensitive to chemicals. When you're done, *gently* release critters and egg masses back into the pool.

Leave Four-Legged Friends at Home.

Please do not bring dogs with you on your vernal pool visits, as romping dogs can inadvertently dislodge egg masses or disturb breeding amphibians.

What if it's Mucky?

In many cases, it will be possible to collect data simply by observing from the pool's edge. If you must wade into a pool to get a closer look, move slowly and gently check the substrate first. If it's mucky, limit your time in the water to minimize disturbance (and to keep your boots firmly on your feet!)

Practice Low-Impact Photography.

Whenever possible, leave egg masses attached to vegetation or sticks and take photographs in place.

Clean Your Gear.

Amphibians are especially vulnerable to viruses and other diseases, which can be spread from pool to pool on your boots and field gear. When traveling from one vernal pool complex to another, be sure to remove any mud, algae, or vegetation from your boots and any other field gear that may come into contact with the water. It's also a good idea to disinfect your gear with a 4% bleach solution at the end of each day, and to let it air dry before visiting any other vernal pools.

Tips for the Field

You Could Find a “New” Vernal Pool.

If you find a vernal pool that was not predicted on your map, determine its location as best you can with a GPS unit, smartphone, or map, and **document it**. Make sure to name and label your pool for documentation. For “found” pools that have not yet been given an identification code, assign a new code by adding a letter to the code for the nearest PVP (i.e., ARN-07**A**, ARN-07**B**, etc.) Please remember to include your name, the date (including the year), the town, and the pool’s code in your in-photo labels.

Take a Good Look Around.

Walk slowly around each pool looking for amphibian egg masses. Make sure to cover the entire perimeter, and to pay special attention to shrubby areas and submerged sticks or vegetation, which often serve as attachment sites for amphibian eggs. Polarized sunglasses will help you see more clearly below the surface of the water. You may also wish to use binoculars to look for rafts of wood frog egg masses in the center of the pool.

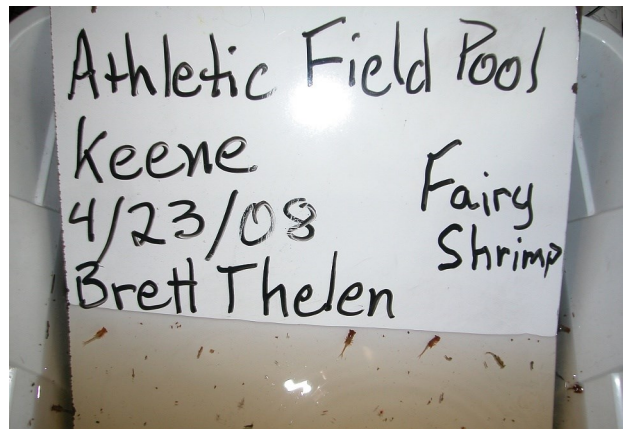


spotted salamander photo: Dave Huth

Getting Good Photographs.

To photograph obligate species breeding activity, place a labeled whiteboard in the water behind egg masses before snapping your picture. When taking pictures of the pool itself, prop your whiteboard on a tree or hand it to your field partner to hold in the foreground for better visibility.

You’ll get better pictures if you turn off your flash, and egg mass photos will show greater detail if the masses are gently raised to the surface of the water.



Whenever possible, leave egg masses attached to vegetation or sticks and take photographs in place. However, you may also wish to gently scoop some pond water — containing egg masses, salamander larvae, or fairy shrimp — into a shallow, light-colored bin or frisbee for close-up shots. Don’t forget to double-check your digital photos before leaving your site to make sure that the writing on the “labels” is legible and that the subject of your photo is clearly visible.

Don’t Forget the Data! Sharing your data is one of the most important parts of this process.

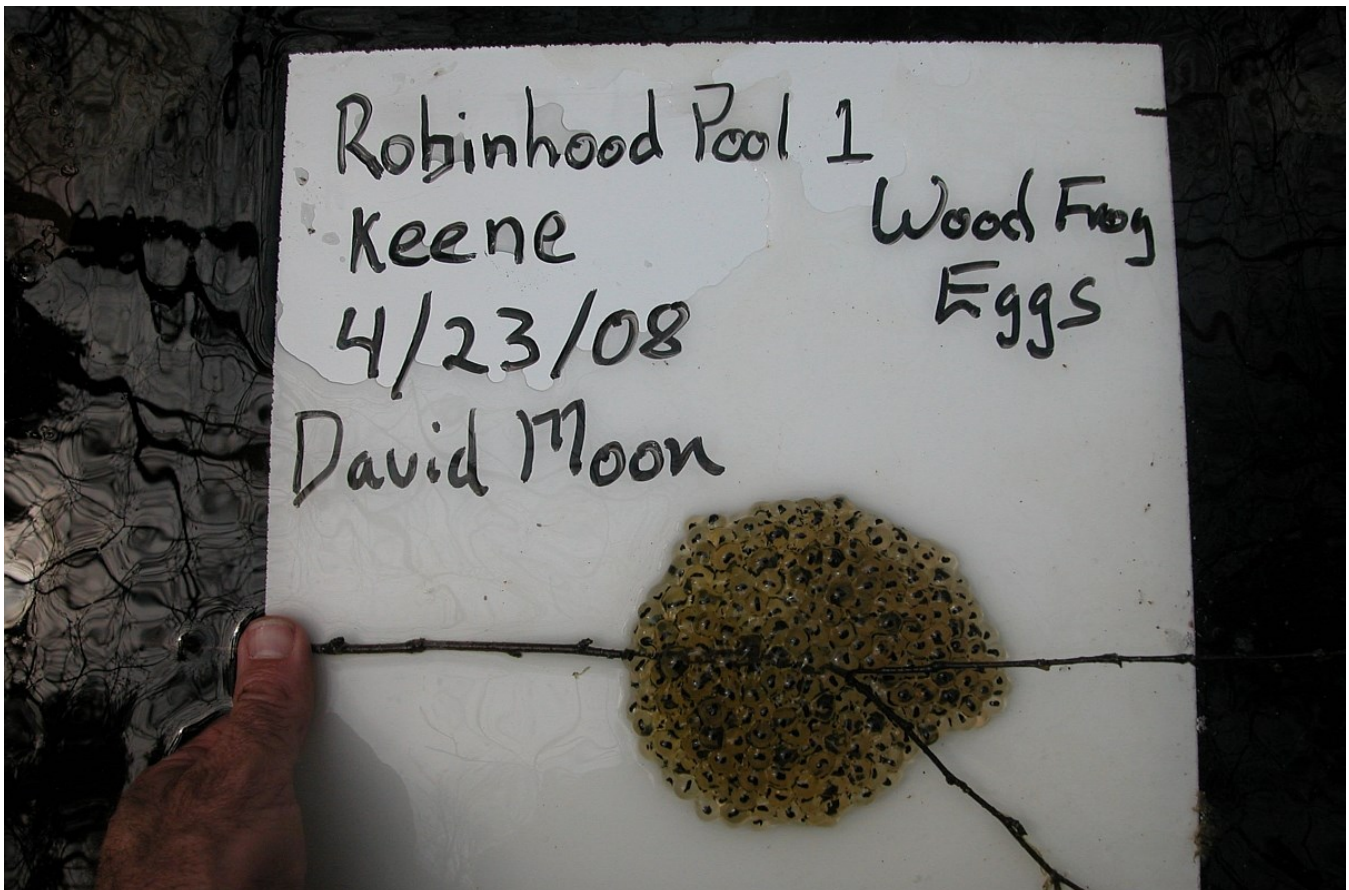
When your fieldwork is complete, **be sure to submit all your data** (including photographs) via email to thelen@harriscenter.org or online at harriscenter.org/vernal-pool-project. Use the checklist on page 14 to confirm that you have everything.

Labeling Photographs

Help keep track of all your vernal pool pictures by “labeling” your photograph within the photo itself! Simply write:

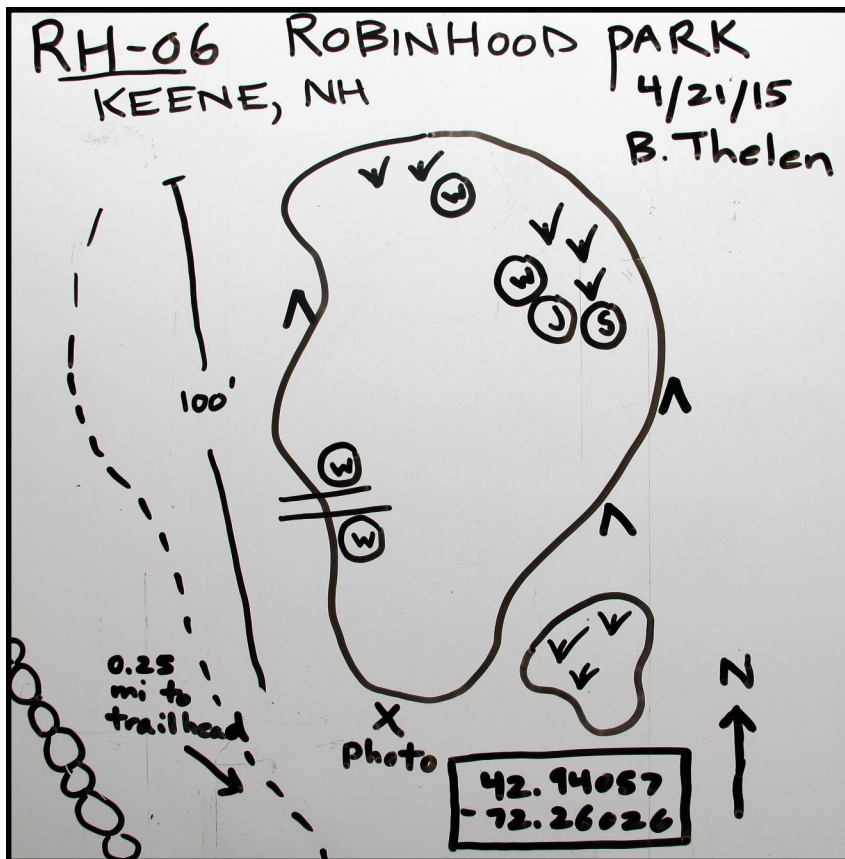
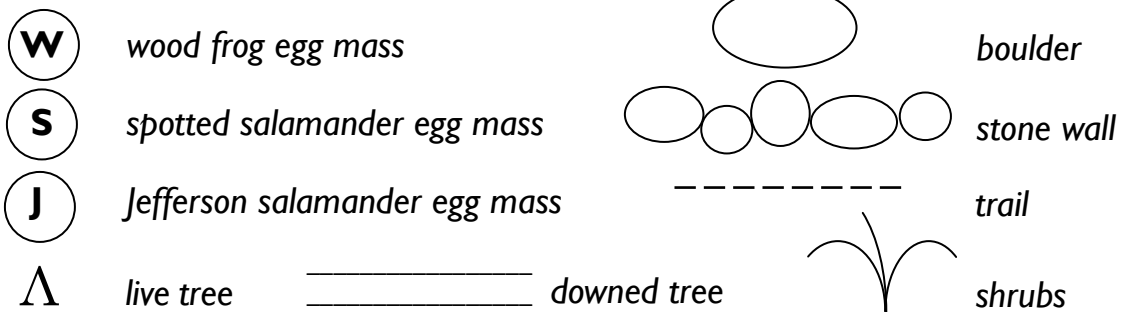
1. the pool’s code
2. the town
3. the date, including the year
4. your name
5. what the picture documents (e.g., wood frog eggs)

on a dry erase whiteboard and include the board in your photographs. You’ll get better pictures if you turn off your flash, and don’t forget to double-check your photos before leaving your site to make sure that the writing on the “labels” is legible and the subject of each photo is clearly visible.



Drawing Field Sketches

Your field sketch should show: (1) the shape and approximate size of the pool; (2) a compass orientation; (3) the approximate distance to a logical, nearby reference point, such as a road or trail; (4) the locations of amphibian egg masses; (5) the place where you took your overview photo of the pool; and (6) other distinguishing features, such as stone walls, large boulders, shrubby areas, footpaths, or distinctive trees. Use the standardized symbols below to make your sketch easy to interpret, and be sure to label your sketch with the pool's code or name, the date, the town, and your name. You may also wish to include GPS coordinates for the pool (in decimal degrees), if you have them.



Sample Field Sketch

Feel free to get creative, so long as the basic elements — date, town, pool code, observer name, compass orientation, approximate distance to a logical reference point such as a road or trail, distinguishing characteristics, and egg mass locations — are included. *Maps do not need to be drawn to scale.*



Jefferson salamander photo: Dave Huth

VERNAL POOL AMPHIBIAN EGG MASS IDENTIFICATION

Wood Frog (*Lithobates sylvatica*)



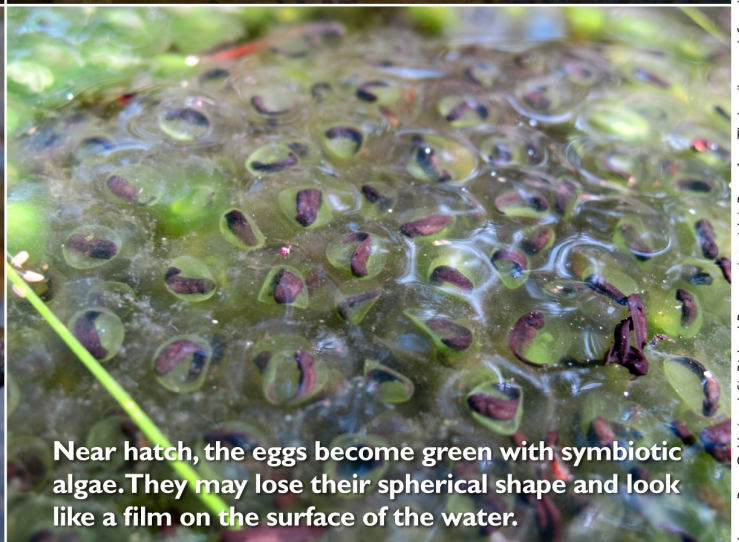
Freshly deposited wood frog eggs are a dense mass the size of a golf ball.



They may appear bubble-like at the surface of the water.



As the eggs absorb water, the mass swells to the size of a softball.



Near hatch, the eggs become green with symbiotic algae. They may lose their spherical shape and look like a film on the surface of the water.



WOOD FROG egg masses are **spherical, lumpy blobs the size of baseballs or softballs**. Each mass may contain **up to 1,500 individual eggs**, which become green with symbiotic algae as the season progresses. Unlike salamander eggs, wood frog egg masses do not contain an outer, gelatinous casing. Many wood frogs lay their eggs communally, and you may find large stretches of wood frog eggs containing thousands of embryos. These egg rafts may appear bubble-like at the surface of the water.



VERNAL POOL AMPHIBIAN EGG MASS IDENTIFICATION

Spotted Salamander (*Ambystoma maculatum*)



Spotted salamander eggs are often attached to twigs.



They are often laid communally, and they hold their shape out of water.



The outer casing is clear or milky-white in color.



After several weeks, they may become green with symbiotic algae.



SPOTTED SALAMANDER egg masses consist of **30 to 150 individual eggs surrounded by stiff gelatin**, which holds its shape out of water. The masses range in diameter from one to six inches, are **circular to oval or kidney-shaped**, are often attached to twigs, and may be widely distributed throughout the pool. They are **clear or white in color**, and may turn green later in the season as algae grows inside the gelatin.



VERNAL POOL AMPHIBIAN EGG MASS IDENTIFICATION

Jefferson/Blue-spotted Salamander Complex (*Ambystoma spp.*)



Jefferson salamander eggs appear loose or “drippy” out of water.



They are often deposited in cylindrical “tubes” along the length of twigs.



Hybrid egg masses often contain pearl-like, white, infertile embryos.



Jefferson salamander egg masses are usually smaller in size and number than spotted salamander masses.

photos: Russ Cobb (top left and bottom right); Richard Bonnett (top right); Nathan Schaefer (bottom left); Dave Huft (Jefferson salamander)



JEFFERSON/BLEUE-SPOTTED SALAMANDER egg masses are cylindrical in shape when attached to twigs and irregular when attached to soft vegetation. The masses are clear and not as stiff as spotted salamander eggs. They may appear loose or “drippy” out of water. They are typically found in **small clusters of 12 to 75 eggs**. Egg masses laid by Jefferson/blue-spotted hybrids often contain many white, infertile eggs.



VERNAL POOL AMPHIBIAN EGG MASS IDENTIFICATION

Spermatophores



SPERMATOPHORES are deposited by both spotted and Jefferson salamanders. They **look like bread crumbs** scattered on the vernal pool floor, and are **often attached to twigs, stems, or leaf points**. Each spermatophore is composed of a white or yellow capsule on top of a clear, gelatinous platform.

EGG MASS OVERVIEW



WOOD FROG

Texture: Tapioca Pudding
Shape: Spherical
Number of Eggs: Up to 1,500



SPOTTED SALAMANDER

Texture: Jello
Shape: Circular to Oval or Kidney-shaped
Number of Eggs: 30 to 150



JEFFERSON SALAMANDER

Texture: Jelly
Shape: Cylindrical or Irregular
Number of Eggs: 12 to 75

photos: Brett Amy Thelen (top left, bottom left, and bottom middle); Nathan Schaefer (top right); Russ Cobb (bottom right); Dave Huth (salamanders)



Tadpole or Salamander Larvae?

It's easy to tell **TADPOLES** from **SALAMANDER LARVAE**: just look for feathery gills at the base of the neck. Because a body of water may be home to several different species of frogs — including species that do not rely on vernal pools for survival — and because tadpoles are very difficult to identify to species, we rarely rely on tadpoles for determining whether a pool is indeed a vernal pool. Mole salamander larvae can also be difficult to identify to species, but because all mole salamanders are considered vernal pool indicator species in New Hampshire, the mere presence of mole salamander larvae is enough to classify a pool as vernal.



no gills = tadpole

photo: Tim Beaulieu



gills =
salamander
larvae

photo: Vernal Pool Association

Fairy Shrimp

are delicate-bodied crustaceans about 0.5 to 1.5 inches long (slightly larger than a grain of rice). They may swim slowly, dart quickly, or remain stationary in the water column as they rhythmically beat their abdominal appendages, which double as respiratory organs. Occasionally, people mistake mosquito larvae for fairy



photo: Brett Amy Thelen

shrimp: unlike fairy shrimp — which are orange to green in color, and move gracefully through the water column — larval mosquitoes are black, and they exhibit distinctly spastic or wriggly movement. Fairy shrimp are the only obligate vernal pool invertebrate species that are recognizable exclusively as adults.

Vernal Pool Documentation Checklist

For each pool, please submit the following data to harriscenter.org/vernal-pool-project or via email to thelen@harriscenter.org:

- ☐ **labeled photos of:**
 - ☐ the vernal pool
 - ☐ amphibian egg masses or fairy shrimp
 - ☐ a field sketch of the vernal pool
- ☐ **data form or spreadsheet**, including:
 - ☐ pool location (via GPS or map)
 - ☐ written directions to the pool
 - ☐ estimated egg mass counts
 - ☐ habitat information



wood frog photos: Dave Huth

Want to Learn More? *Check out these vernal pool resources.*

A Field Guide to the Animals of Vernal Pools by Leo Kenney & Matthew Burne

A concise, user-friendly field guide to the amphibians, reptiles, and invertebrates of Northeast vernal pools. This is *the* field guide for vernal pool enthusiasts.

Vernal Pools: Natural History and Conservation by Elizabeth Colburn

With chapters on hydrology, vegetation, wildlife, and management, this comprehensive book contains everything you've ever wanted to know about vernal pools.

Identifying and Documenting Vernal Pools in New Hampshire by Michael Marchand

The official vernal pool documentation manual published by the New Hampshire Fish and Game Department, available as a free download on the NHFG website.

vernalpool.org Chock full of photographs and teaching tools, this website is also home to the fantastic Vernal Pool Association listserve.

vernalpools.me The most comprehensive website about vernal pool ecology in the Northeast.

Excellent videos, annotated presentations, downloadable field identification cards, and scientific and layperson-friendly publications related to vernal pools. Well worth exploring!

Sample Field Data Form

side 1

Vernal Pool Project Data Form



1. Date: 4/25/15 2. Town: Keene

3. Property Name: Robin Hood Park 4. PVP ID Code: RH-01

"PVP" stands for "potential vernal pool." PVP ID codes can be found on the field maps provided by AVEO.

5. Volunteer Name: Sally Mander Phone: 358-2065 Email: spottic@harriscenter.org

Volunteer Name: Woody Frog Phone: 525-3394 Email: woody@harriscenter.org

6. Start Time: 10 AM End Time: 11:30 AM Total Volunteer Hours: 3

7. Latitude: 42.7772

Longitude: -72.6745

LOCATION

Use NAD83/WGS84 for all coordinates, and enter coordinates in decimal degrees, with at least four decimal places, if possible.
Example: Latitude 42.9505 Longitude -72.2955

8. Source of Coordinates (Lat/Long):

☒ GPS ☐ Google Earth ☐ AVEO ☐ Topo Map ☐ Other _____

9. This pool was: ☒ mapped by AVEO or other project partners as a PVP ☐ previously unmapped

Please mark the location of previously unmapped pools on your field map and label each "new" pool by adding A, B, C etc. to the number of the nearest PVP on the property (e.g., RH-7A for an unmapped pool discovered near Robin Hood Park Pool RH-7).

10. Written Directions to Site: Enter Robin Hood Park at the trailhead on Jordan Road, after parking in the well-worn pulloff. Follow the trail west approx. 0.5 mi. This is the first pool on your left, just beyond a low stone wall.

Please include: (1) a description of a logical starting point, including parking information; (2) the distance from the starting point to the pool; (3) your direction of travel; and (4) any other distinctive landmarks that could help us re-locate this site in the future.

HABITAT

11. Is this site a vernal pool? ☒ Yes ☐ No ☐ Unknown ☐ Unable to Locate

12. Pool Type: ☒ Upland-Isolated ☐ Floodplain ☐ Wetland Complex

13. Origin of Pool: ☒ Natural Depression ☐ Natural, but Altered ☐ Constructed Pond

Check one. ☐ Quarry/Sand Pit ☐ Ditch or Tire Rut ☐ Created Wetland (for mitigation purposes)
☐ Unknown ☐ Other _____

14. Disturbances: ☒ None ☐ Dumping ☐ Ditching/Draining ☐ Ruts from Wheeled Vehicles

Check all that apply. ☐ Runoff/Siltation ☐ Other _____

15. Surrounding Habitat: ☐ Open (shrubs, agriculture, grasslands) ☒ Forest ☐ Wetlands

Check all that apply, within 250 feet of the pool.

☐ Open Water (lakes, ponds, rivers, streams)

☐ Residential (lawn, some pavement & structures)

☐ Industrial/Urban (mostly pavement and structures)

☐ Paved Roads/Driveways ☐ Unpaved Roads/Driveways ☒ Other hiking trail

16. Did you observe water flowing out of the pool on the survey date? ☐ Yes ☒ No

Sample Field Data Form

HYDROLOGY

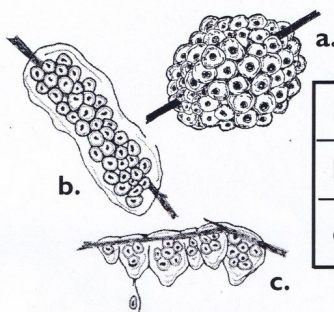
17. Pool Width (ft): 50 Pool Length (ft): 80 ☐ Measured ☒ Estimated
18. Maximum Water Depth on Survey Date: ☐ Ankle-deep (< 6") ☐ Shin-deep (6-12") ☒ Knee-deep (1-2 ft)
☐ Hip-deep (2-3 ft) ☐ Chest-deep (3-4) ☐ Deeper than 4 ft
19. Were fish observed in the pool? ☐ YES ☒ NO

Presence of fish may indicate a permanent body of water that is not a vernal pool. Please note if the PVP is connected to another water body, or is within a river floodplain.

OBLIGATE SPECIES

20. Please circle the estimated total number of egg masses for each obligate species.

If you have an exact egg mass count, enter it in this column:



a. Wood Frog Egg Masses	0	1-25	26-100	<u>> 100</u>	
b. Spotted Salamander Egg Masses	0	<u>1-25</u>	26-100	> 100	
c. Jefferson Salamander Egg Masses	0	1-25	26-100	> 100	<u>5</u>

21. Was the entire pool surveyed for egg masses? ☐ YES ☒ NO

If not, why and what percentage of the pool was surveyed? Percent Surveyed 75%

We could not see into the shrubby area in the center of the pool.

22. How many branches and twigs were in the pool? Check one. ☐ NONE ☐ 1-10 ☒ > 10

Downed woody material is often used by amphibians for egg attachment.

23. Were spermatophores observed in the pool? ☒ YES ☐ NO

24. Were fairy shrimp present? ☐ YES ☒ NO ☐ NOT SURE



25. General Comments and Wildlife Observations:

Wood frog egg masses are about to hatch. Removed a few beer cans from the pool.
Saw a garter snake sunning itself at the pool's edge!

Include comments about the pool, surrounding habitat, or additional wildlife observations. Note adult amphibians seen in and around the pool. Please share any questions that you have or advice for volunteers that may be conducting follow-up visits.

26. Which photos have you taken for this pool?

- Pool Overview ☒
 Field Sketch ☒
 Wood Frog Egg Mass ☒
 Spotted Salamander Egg Mass ☒
 Jefferson Salamander Egg Mass ☒
 Fairy Shrimp ☐

If you submit images to us, the name of each electronic image file should include: (1) the PVP ID code, (2) the subject of the photo, (3) the town name, (4) your last name, and (5) the date of survey. For example: RH7_SSeggs_Pboro_Thelen_42113. Send images and data to thelen@harriscenter.org or submit online at www.aveo.org.

This data form was adapted from the field data forms for the Maine and Vermont Vernal Pool Mapping Projects. All line drawings were created by Dawn Morgan.



Guidelines for Contacting Landowners

When do I need landowner permission?

Landowner permission is not usually necessary for public land like state parks or town conservation land. However, it is essential for privately-owned parcels, even if they are under conservation easement. **Do not look for vernal pools on private land without first obtaining consent from the landowner.** Check with the Harris Center if you're unsure whether you need landowner permission to visit a particular property.

How do I get permission, exactly?

You must have *written* landowner permission to visit vernal pools on private property. In most cases, the Harris Center will have already obtained landowner permission for properties being surveyed in conjunction with this project. However, if you are documenting vernal pools on other private land, it's vital that you receive landowner permission before visiting the property. To keep things neighborly, we suggest talking with landowners directly.

What should I say?

Start by introducing yourself and the project:

Hi, my name is Sally Mander and I am volunteering with a project to map vernal pools on conserved land in the Monadnock Region. Based on an analysis of aerial photographs, we think you may have a vernal pool on your property. May I have your permission to visit the site and take pictures of any vernal pools I find there?

Better still: invite the landowner to accompany you on your visit! Inviting landowners along sets the stage for positive working relationships. Additionally, since many of these landowners have chosen to establish conservation easements on their land, they might relish the opportunity to explore it with a skilled observer. They may also already know the locations of vernal pools for you to document.

What if the landowner has never heard of vernal pools before?

This is the perfect opportunity for informal education. The landowner may not know the *term* vernal pool, but she might be familiar with the “wicked big puddle” that forms in her woods every year. Explain that these puddles are important breeding sites for salamanders and frogs who migrate there each spring.

What if a landowner seems resistant to the idea of me visiting her land?

Don't force the issue. Stress that we will *not* go on anyone's land if they don't want us to be there, then make sure to let the Harris Center know that the landowner has declined to give permission. One “no” from a landowner is all it should take for us to confirm that we will not go on her land. Any unverified pools can simply remain on our maps as “potential” pools.

What if a landowner has questions that I can't answer?

Encourage her to visit harriscenter.org/vernal-pool-project for more detailed information, or to contact Vernal Pool Project coordinator Brett Amy Thelen at (603) 358-2065 or thelen@harriscenter.org.

What if a landowner is concerned about the legal ramifications of having volunteers or vernal pools on her land?

Assure her that the New Hampshire Recreational Use Statute (212:34) specifically exempts landowners from liability for anyone “hiking” or “sightseeing” on her property, and volunteer fieldwork for this project falls under that statute. Additionally, although state wetlands regulations were recently amended to include vernal pools as wetlands that must be considered in development plans, there is limited legal protection for vernal pools in New Hampshire. In theory, if it is not part of a larger development project that requires a wetland permit, a New Hampshire landowner could clearcut the area around a vernal pool or develop the pool itself without legal repercussion. However, the conservation easements on these properties may already include protections for vernal pools and/or restrictions on certain forestry practices.

ABOVE ALL, please remember to notify the landowner of your visit in advance, to respectfully abide by the landowner's wishes regarding scheduling, parking, and other details, to thank the landowner after your visit, and to *keep all landowner contact information confidential*.