


The old man  
must have stopped our car  
two dozen times to climb out  
and gather into his hands  
the small toads blinded  
by our lights and leaping,  
live drops of rain.

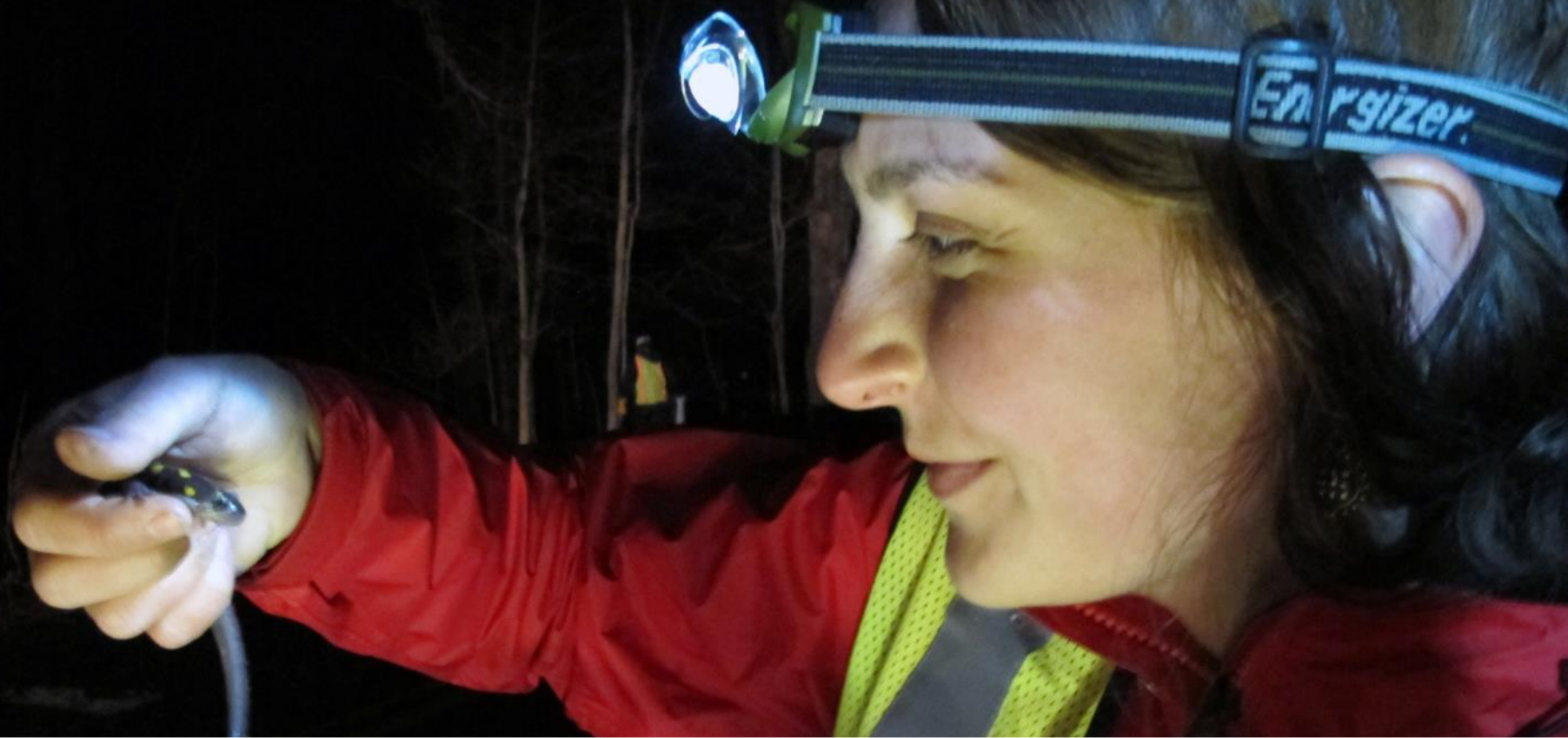
The rain was falling,  
a mist about his white hair  
and I kept saying  
you can't save them all,  
accept it, get back in  
we've got places to go.



But, leathery hands full  
of wet brown life,  
knee deep in the summer  
roadside grass,  
he just smiled and said  
***they have places to go, too.***

— Joseph Bruchac,  
*Entering Onodaga*

# Start Your Own Salamander Brigade



## Bringing Grassroots Amphibian Conservation to Your Town

*This workshop is brought to you with support from the Davis Conservation Foundation & the New Hampshire Charitable Foundation.*



# What is *Big Night*?





photo: Katie Barnes

*It's an amazing world out there during the crossing.*

– Pam Shuel, Rindge

# What spurs an amphibian migration?

(1) thawed ground (minimal snow cover)

(2) warm ( $> 40^{\circ}$ ) nighttime temperatures

(3) rain\*





# **Big Night Amphibians**



**spotted salamander**  
(*Ambystoma maculatum*)



# Big Night Amphibians



davehuth.com

**spotted salamander**  
(*Ambystoma maculatum*)

# Big Night Amphibians



**wood frog**  
(*Lithobates sylvatica*)

photo: Chris Yearick/Upper Susquehanna Coalition



# Big Night Amphibians



**wood frog**  
(*Lithobates sylvatica*)

# ***Big Night Amphibians***



photo: Thomas LeBlanc



# Big Night Amphibians



**spring peeper**  
(*Pseudacris crucifer*)

photo: Patrick Coin

# ***Big Night* Amphibians**



photo: Tim Garceau



**spring peeper**  
*(Pseudacris crucifer)*



# Big Night Amphibians



**Jefferson salamander**  
(*Ambystoma jeffersonianum*)



# Big Night Amphibians



**blue-spotted salamander**  
(*Ambystoma laterale*)

photo: Todd Pierson



# Big Night Amphibians



**Jefferson/blue-spotted hybrid**  
(*Ambystoma jeffersonianum-laterale*)

photo: Jacob Drucker

# Other Salamanders



**red eft (newt)**  
(*Notophthalmus viridescens*)



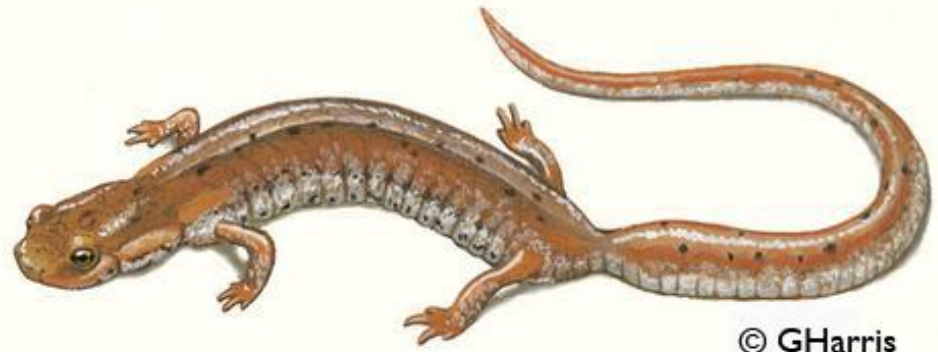
**Eastern newt**  
(*Notophthalmus viridescens*)

© davehuth.com



**redback salamander**  
(*Plethodon cinereus*)

© Matthew Ignoffo



© GHarris

**four-toed salamander**  
(*Hemidactylium scutatum*)



# Other Frogs

**gray tree frog**  
(*Hyla versicolor*)



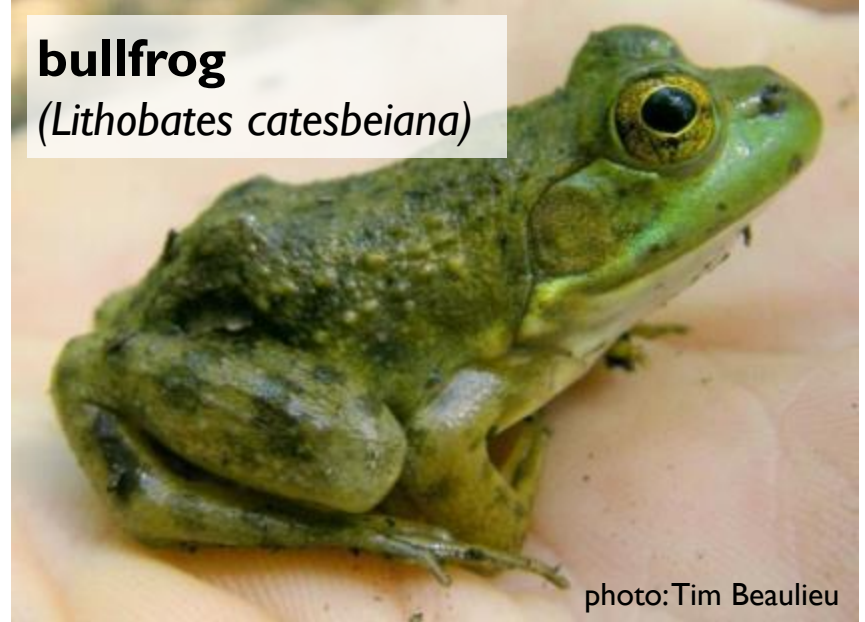
**pickerel frog**  
(*Lithobates palustris*)



**green frog**  
(*Lithobates clamitans*)



**bullfrog**  
(*Lithobates catesbeiana*)



# A Class All Its Own



**American toad**  
(*Bufo americanus*)



# So what?



Hubbard Brook Experimental Forest, NH:  
biomass of redback salamanders twice that of  
all bird species combined (Burton & Likens 1975).



# So what?



MA: biomass of vernal pool-breeding amphibians greater than *all* breeding birds & small mammals in the 53-acre forest surrounding a single vernal pool (Windmiller 1996).



# So what?



important prey



# So what?



**important prey**

Vernal pools have likely served as “fast food oases” for spring wildlife in New England for at least 10,000 years (Morgan & Calhoun 2011).

photo: Linda Ruth



# So what?



**important prey**

It is not uncommon for a small vernal pool to produce over 10,000 froglets (Morgan & Calhoun 2011)!

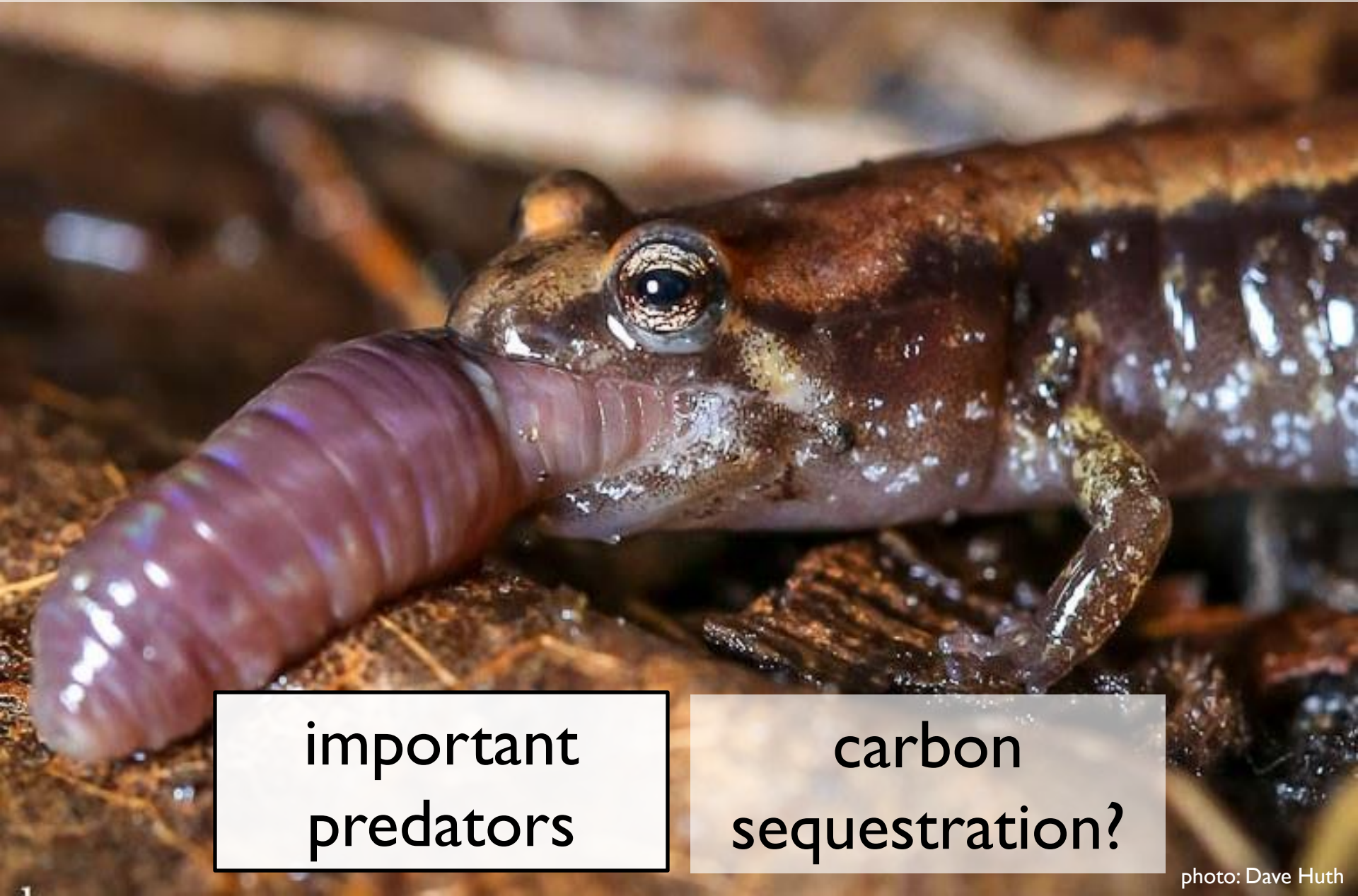
# So what?



important  
predators



# So what?



important  
predators

carbon  
sequestration?

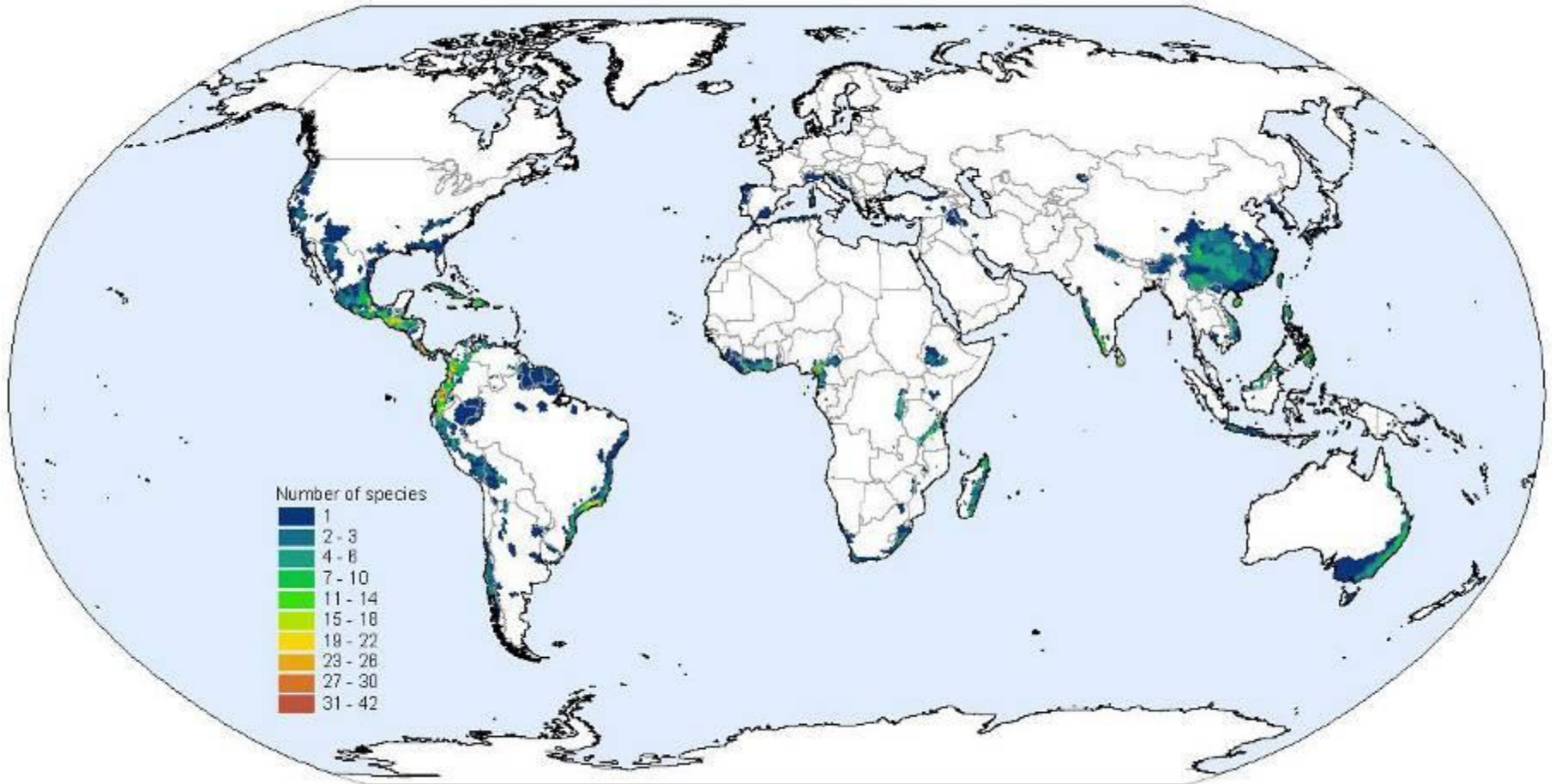
# So what?



photo: Timothy Beaulieu



# So what?



Nearly **50%** of salamander species worldwide are threatened or presumed extinct.

# So what?



## AMPHIBIAN ROAD MORTALITY

**Canada:** 2 miles, 4 years, 30,000 dead amphibians

**UK:** 20-40% of breeding population die each year on roads

**Australia:** 5.5 million reptiles & amphibians roadkilled annually

**NY:** 50-100% mortality of salamanders attempting to cross a paved, rural road

**MA:** local extirpation of spotted salamanders due to road mortality within 25 years





**LOCATION** matters.

Roadkill hotspots for amphibians and reptiles occur on **sites with wetlands within 100 m of the road** (Langen et al. 2008).

photo: Richard Cassin



# LOCATION matters.



Causeways have **4x** more amphibian roadkill and **9x** more reptile roadkill than roads not located near wetlands or water bodies (Langen et al. 2009).



# TRAFFIC VOLUME matters.



photo: Russ Cobb

Traffic volume for rural road = approximately **450** vehicles/day.

**30-100%** amphibian mortality at **240-960** vehicles/day. (Van Gelder 1973, Kuhn 1987, Heine 1987)

Salamander abundance **2.3** times higher in forested sites than along roadsides at **300** vehicles/day. (deMaynadier 2000)

# Solutions?

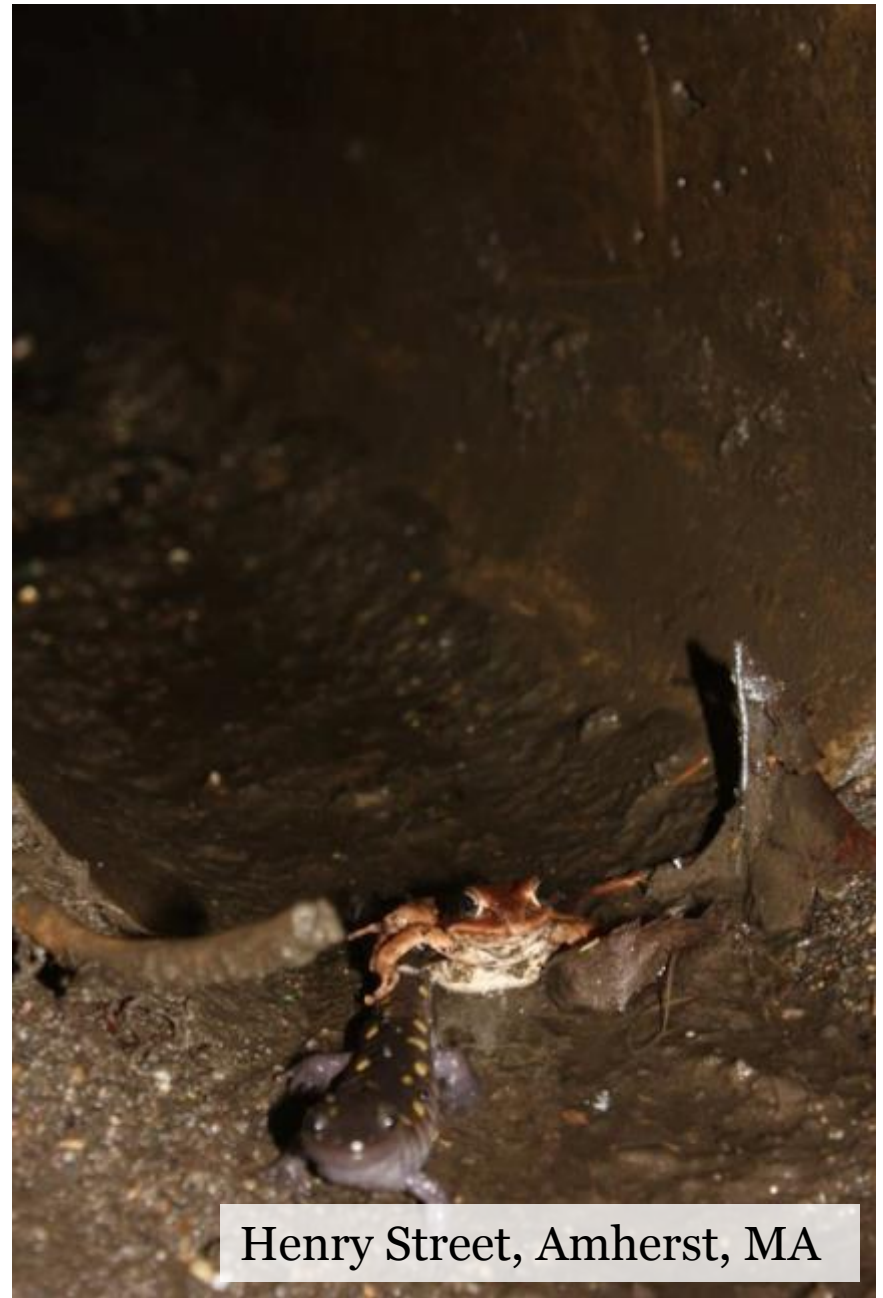


photo: Legacy Habitat Management Limited

amphibian tunnels



# Solutions?



Henry Street, Amherst, MA

photos: Noah Charney

# Solutions?



Monkton Road, Monkton, VT



# Solutions?



Beekman Road, East Brunswick, NJ



# Salamander Crossing Brigades





# What do Salamander Crossing Brigades do?



© Brett Amy Thelen



© Cheryl Martin

## **before the Big Night(s)**

- ✓ **Stay** “on call”.
- ✓ **Prepare** field gear.

## **on the Big Night(s)**

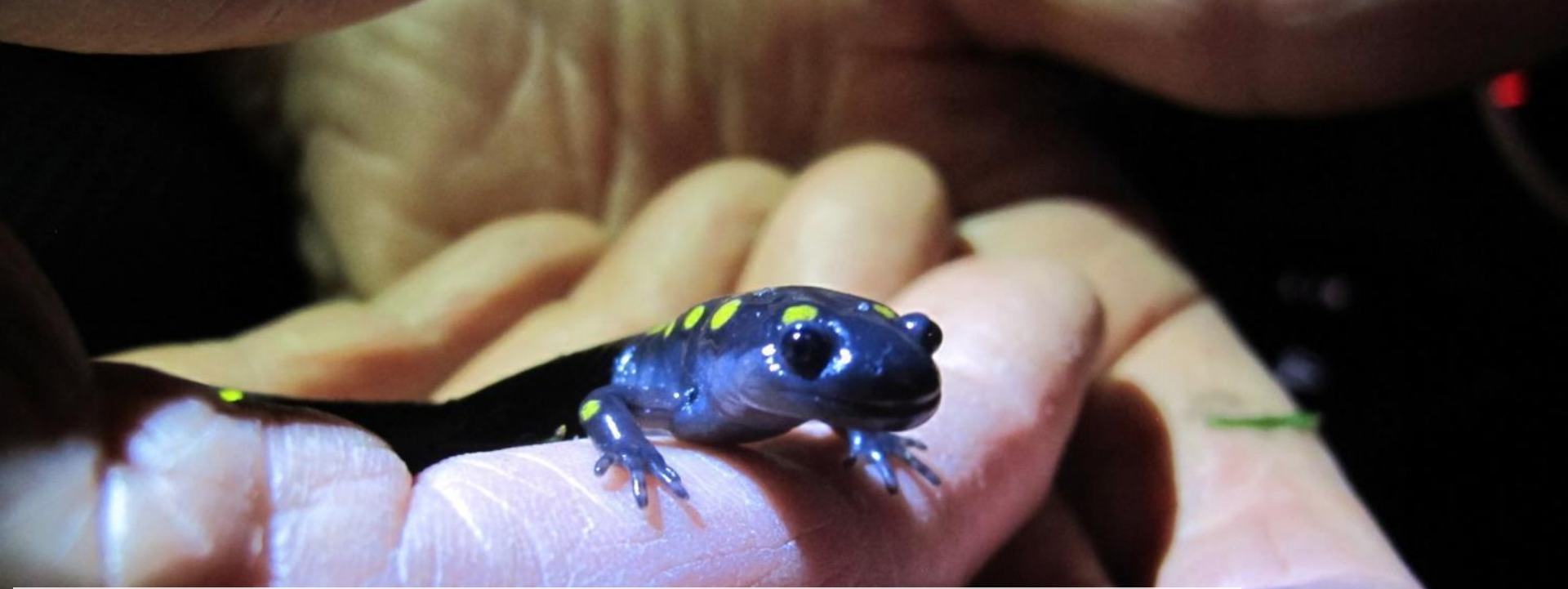
- ✓ **Move** amphibians across the road.
- ✓ **Keep count**, by species.
- ✓ **Report** your data.
- ✓ **Stay SAFE.**

# How It Works





# Handling Amphibians



**(1)** Make sure your hands and bucket are clean.

**(2)** Keep a gentle, firm hold around the center of their bodies.

**(3)** Do not pick them up by their legs or tails.

**(4)** Release them gently; no tossing!

# What do Site Coordinators do?

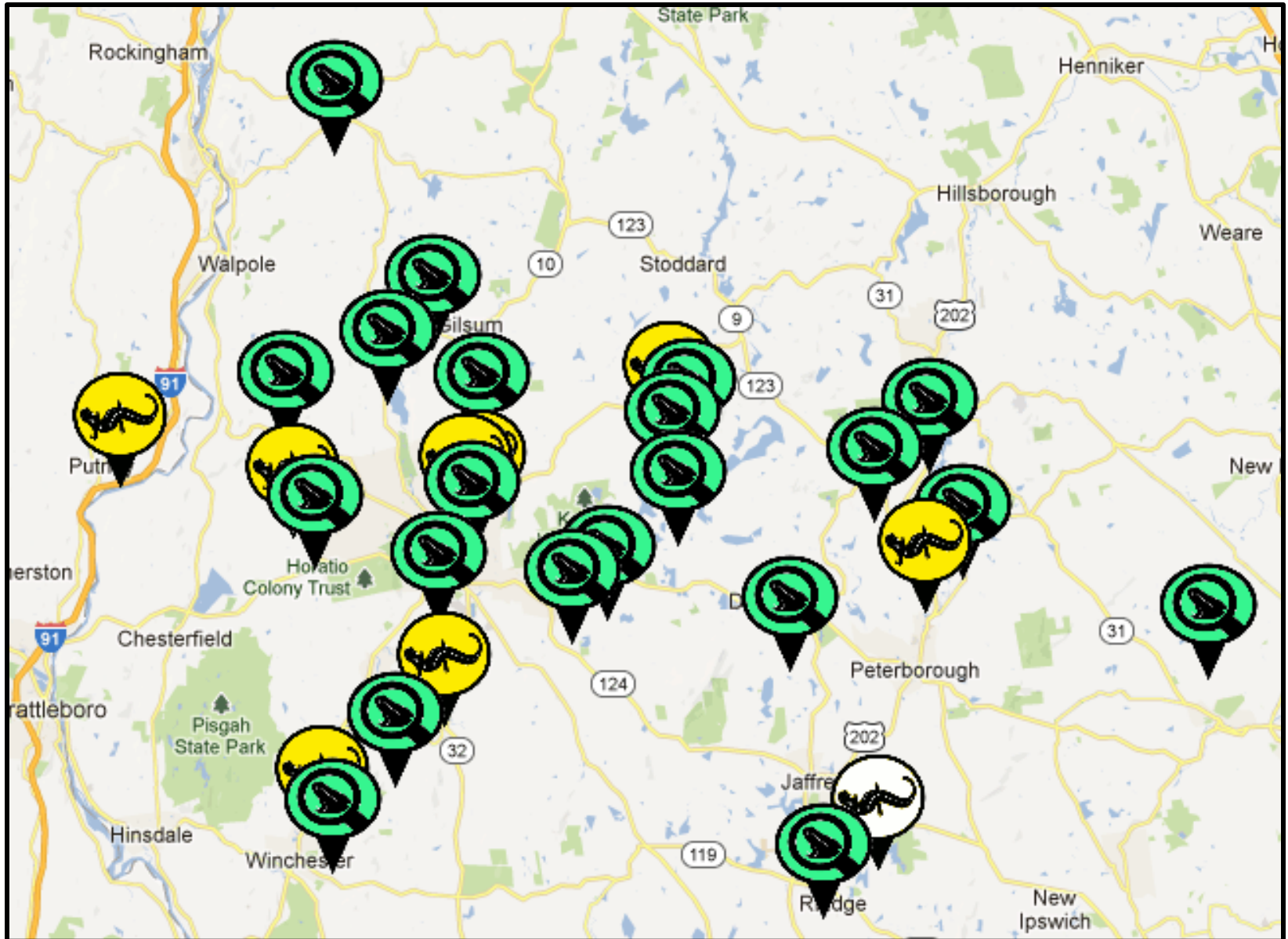


photo: Frances Micklow/Star Ledger




- ✓ **Stick around** from mid-March through late April.
- ✓ **Familiarize themselves** with their crossing site.
- ✓ **Keep track** of field equipment (signs, ID sheets, etc.)
- ✓ **Greet volunteers**; sign them in and out.
- ✓ **Share information** with passersby.
- ✓ **Help identify** amphibian species.
- ✓ **Collect amphibian counts**.



# Crossing Sites



# How to Find New Crossings

<i>Thursday</i> <b>MARCH 24</b>	<i>Friday</i> <b>MARCH 25</b>	<i>Saturday</i> <b>MARCH 26</b>	<i>Sunday</i> <b>MARCH 27</b>	<i>Monday</i> <b>MARCH 27</b>
				
 <b>High Probability:</b> get out your rain gear and reflective vest!	 <b>Maybe So, Maybe Not:</b> watch the weather; it's a nail-biter.	 <b>Very Unlikely:</b> too cold, too dry, or too snowy...there'll be no migration tonight!	 <b>Very Unlikely:</b> too cold, too dry, or too snowy...there'll be no migration tonight!	 <b>Maybe So, Maybe Not:</b> watch the weather; it's a nail-biter.

Watch the **WEATHER.**



# What spurs an amphibian migration?

(1) thawed ground (minimal snow cover)

(2) warm ( $> 40^{\circ}$ ) nighttime temperatures

(3) rain\*



# Tips for Finding New Crossings



Watch the **CLOCK**.



# How to Find New Crossings



Watch for **WETLANDS**.



# How to Find New Crossings



photos: BEEC and Brett Amy Thelen

Bring a **FRIEND.**



# How to Find New Crossings



Drive **SLOWLY.**

# How to Find New Crossings



davehuth.com

**Listen carefully.**



# How to Find New Crossings



photo: Dave Huth

**Scan the whole road.**



# How to Find New Crossings

A dark grey car is shown from a rear three-quarter view, driving through a large puddle of water. The car's rear wheel is partially submerged, and a large splash of water is being kicked up behind it, obscuring the rear of the car. The background shows a residential street with a yellow house and a red roof under a cloudy sky.

**Park safely.**



# How to Find New Crossings

<b>Amphibian Crossing Site Data Sheet</b> <i>for scouting out new crossing sites</i>		 		
Site Location: (road names, town, address) <i>Childs Bog, at the intersection of Nelson &amp; Breed Roads, Harrisville</i>		Map to site enclosed? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		
Volunteer Name(s): <i>Vern L. Pool</i>	Phone Number: <i>(603) 358-2065</i>	Email Address: <i>ilovefrogs@email.com</i>	Mailing Address: <i>1 Spotted Salamander Lane  <u>Ambystoma</u>, NH 00000</i>	
Detailed driving directions to site. (Please include mileages, road names, landmarks, and description of surrounding habitat types. Please use a different data sheet for each site.)  <i>Breed Road, at its intersection with Nelson Road in Harrisville and extending approximately 3/4 mile south. This section of road is adjacent to Childs Bog, and has water on both sides (Childs Bog + a small stream that empties into it).</i>				
Start Time: <i>8:00 pm</i>	End Time: <i>10:00 pm</i>	Is the road <input checked="" type="checkbox"/> WET or <input type="checkbox"/> DRY?	Rain: 0   <input checked="" type="radio"/> 2   3   4 <sup>1</sup> (circle one)	Temperature (°F): <i>48</i>
Date: <i>4/12/16</i>		Traffic: <input type="checkbox"/> light (0-15 cars/hr) <input checked="" type="checkbox"/> med (15-40 cars/hr) <input type="checkbox"/> heavy (>40 cars/hr)		
Number of Cars: <sup>2</sup>		Total number of volunteers: <i>2</i>	Total number of volunteer hours: <i>4</i>	
Please return form, map and photos to: Brett Amy Thelen Harris Center for Conservation Education 83 King's Highway Hancock, NH 03449 thelen@harriscenter.org (603) 358-2065		COMMENTS:  <i>We heard a barred owl calling. Several drivers slowed down to ask what we were doing and cheered us on.</i>		

<sup>1</sup> 0 = no rain, 1 = sprinkle, 2 = rain, 3 = heavy rain, 4 = downpour  
<sup>2</sup> Complete this form only if there are multiple volunteers at the site, and one is available to count cars.

## Write it down.

# How to Find New Crossings

SPECIES		LIVE	DEAD	TOTAL
Salamanders	Spotted Salamander	 18 live	 10 dead	28
	Jefferson/ Blue-spotted Complex			
	<u>Redback</u> Salamander			
	Eastern Newt			
	Other Salamander (please name)			
Frogs	Wood Frog	                          64 live	                25 dead	89
	Spring Peeper	27 live	 11 dead	38
	Pickereel Frog			
	Other Frog (please name)			
Toads	American Toad			2
Other Species				

This data sheet was adapted by the Harris Center for Conservation Education (Hancock, NH) from one developed by the North Branch Nature Center (Montpelier, VT).

Keep **COUNT.**





# Wear a reflective vest.



*Could you see these people if they weren't wearing reflective vests? No. No, you could not.*



# STAYING SAFE *for individuals*



- ✓ **Wear** a reflective vest.
- ✓ **Shine** a *bright* light.
- ✓ **Stay** alert.
- ✓ **Step** aside for cars.
- ✓ **Don't attempt** to stop traffic *or* shine your lights at cars.

# STAYING SAFE *for families*



photo: Brett Amy Thelen

- ✓ **Leave** very young children at home.
- ✓ **Find** a family-friendly crossing.
- ✓ **Make sure** everyone is wearing a reflective vest.
- ✓ **Bring** one adult for each child.



# STAYING SAFE *as a group*



photo:Theresa Earle

- ✓ **Pick** your sites carefully.
- ✓ **Check** in with your local police department.
- ✓ **Use** cones and/or signs.

# Communicating with Volunteers: volunteer trainings



photos: Brett Amy Thelen, Jess Baum , Julie Tilden Brown

**TIP:** Emphasize *fun* and *safety*.



# Communicating with Volunteers: volunteer trainings

## Monadnock Region Volunteers Needed for Salamander Crossing Brigades



*Published: Mar 4, 2016*



As the earth thaws and spring rains drench New Hampshire, thousands of salamanders, frogs, and toads make their way to vernal pools to breed. Many are killed when their journeys take them across busy roads. Each spring, the Ashuelot Valley Environmental Observatory, the citizen science arm of the Harris Center for Conservation Education, trains volunteers to serve on **Salamander Crossing Brigades** at amphibian road crossings throughout the Monadnock Region. These heroic citizen scientists count migrating amphibians and safely usher the animals across roads during one or more "Big Nights." Since 2007, the Crossing Brigades have moved nearly 25,000 amphibians out of harm's way!

Volunteers are crucial to the success of this project. Project organizer and Science Director for

**TIP:** The Stewardship Network: New England ([newengland.stewardshipnetwork.org](http://newengland.stewardshipnetwork.org)) can help with volunteer recruitment and publicity.

# Communicating with Volunteers: before *Big Nights*

Thursday MARCH 24	Friday MARCH 25	Saturday MARCH 26	Sunday MARCH 27	Monday MARCH 27
				
 <b>High Probability:</b> get out your rain gear and reflective vest!	 <b>Maybe So, Maybe Not:</b> watch the weather; it's a nail-biter.	 <b>Very Unlikely:</b> too cold, too dry, or too snowy...there'll be no migration tonight!		



# Communicating with Volunteers: after *Big Nights*

## Field Report from the Migration on March 10

### Earliest Big Night in Crossing Brigade History!

Frogs came out in big numbers last Thursday – the earliest amphibian migration in Crossing Brigade history, *by two full weeks* – but you were ready! All told, 60 Crossing Brigade volunteers collectively helped a whopping **1,928 amphibians** get where they were going on the first migration night of the season. If you missed it, do not fret! There is certainly more migration to come, possibly as soon as tomorrow. In the meantime, read on for details from the crossing site nearest you...

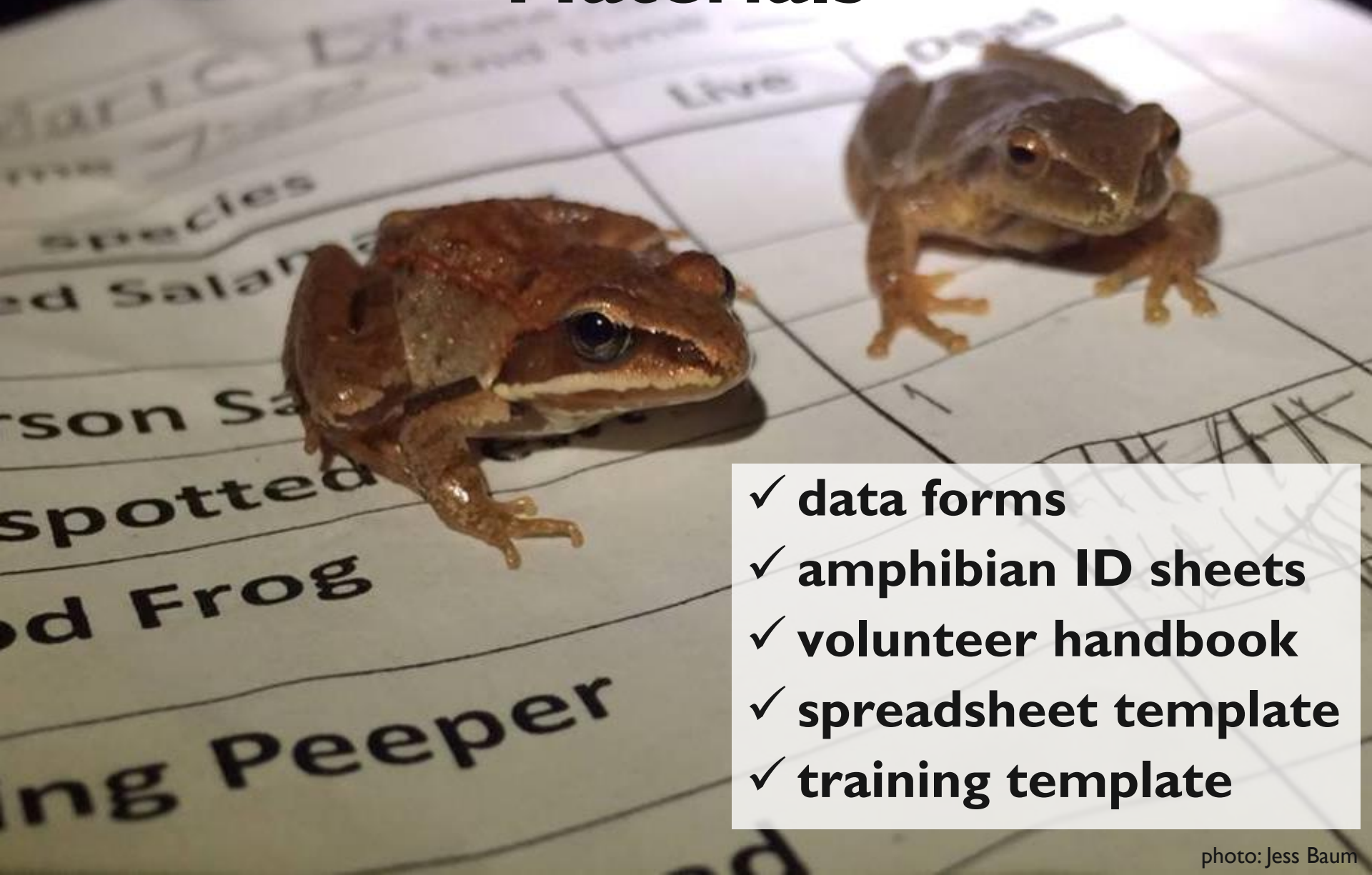
**North Lincoln Street in Keene** was hopping (literally!), as a robust crew of 25 Crossing Brigadiers moved 905 live spring peepers (and counted more than 291 dead) and 167 wood frogs (+ 32



*Wood frogs and spring peepers made their first big move on March 10, but the salamander migration is yet to come. See more photos from the 2016 amphibian migration [on Flickr](#).*

*(photo: Kevin Pearson)*

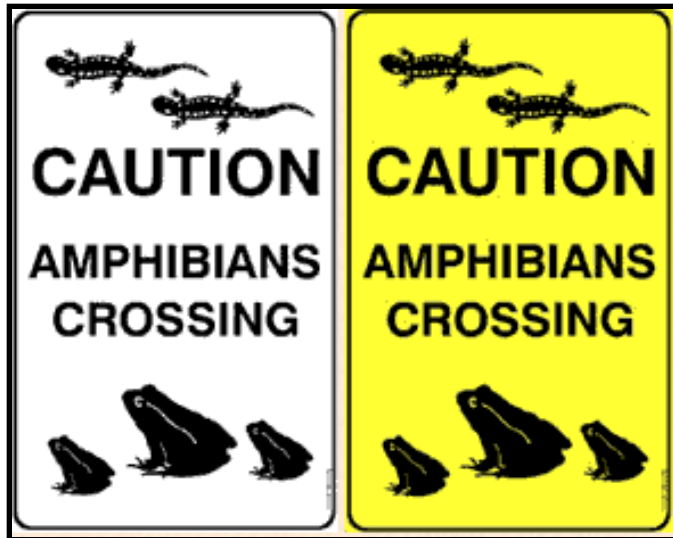
# Materials



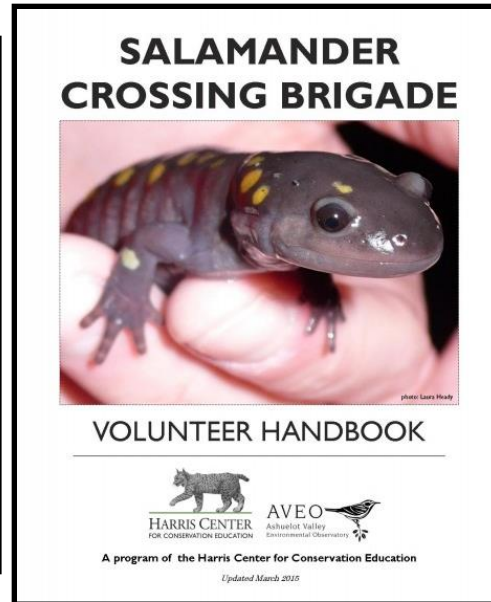
- ✓ data forms
- ✓ amphibian ID sheets
- ✓ volunteer handbook
- ✓ spreadsheet template
- ✓ training template



# Resources



**vernalpool.org**  
sign templates  
+ listserve



**aveo.org**  
materials  
+ list of crossing  
programs



**Stewardship Network:  
New England**  
volunteer recruitment  
+ publicity

# Citizen Science?



photos: Brett Amy Thelen



# Successes

**FOR SALE**  
**BLAIS**  
& ASSOCIATES  
REALTORS®  
**352-1972**

land conserved as migratory  
amphibian pathway



# Successes



**31,000+** amphibians  
crossed since 2006



# Successes



photos: Jess Baum, Stephen Day & Jess Dude

*I can't tell you how much **JOY** these salamanders bring us.*

– Kerry Rochford Hague, Charlestown

# Next Steps

- ✓ **Read** the Volunteer Handbook.
- ✓ **Sign up** for supporting materials.
- ✓ **Contact me** with questions, or to share your data, stories, and feedback.





# Questions?



**Brett Amy Thelen**  
thelen@harriscenter.org  
(603) 358-2065  
harriscenter.org | aveo.org