Amphibian Migrations & Road Crossings Project

VOLUNTEER HANDBOOK

Amphibian Migrations and Road Crossings Project

NEW YORK STATE Department of Environmental Conservation | Hudson River Estuary Program

Cornell University

The Amphibian Migrations and Road Crossings Project is part of a larger NYSDEC Hudson River Estuary Program and Cornell University effort to partner with local communities to conserve the diversity of plants, animals, and habitats that sustain the health and resiliency of the entire estuary watershed.

Contents

2023

Visit the Amphibian Migrations and Road Crossings Project website for amphibian identification guides, data forms, project summaries, video links, and other resources for volunteers! https://www.dec.ny.gov/lands/51925.html

Important Note:

NYS law prohibits the collection and possession of amphibians without a NYSDEC permit. The NYSDEC does not interpret the momentary assistance or incidental movement to help an amphibian avoid injury or death as collection or possession, provided it is immediately released and placed back into its environment.

Acknowledgements

Many thanks to Bonnyvale Environmental Education Center in Vermont and Harris Center for Conservation Education in New Hampshire for letting us adapt their volunteer handbook for use with the AM&RC Project!

Jefferson/blue-spotted salamander complex. *Photo by L. Heady*

Why did the amphibian cross the road?

Have you ever witnessed large numbers of salamanders and frogs crossing the road on rainy spring nights? Ever wonder where they came from and where they're going?

The forests of New York are inhabited by a group of salamanders that are seldom seen, as they spend much of their time under leaves and moss on the forest floor, in burrows created by small animals, and hunkered down under rocks and rotting logs. Referred to as "mole salamanders" because of their subterranean shelters, this group belongs to the family *Ambystomatidae* and, in the Hudson Valley, includes the spotted salamander (*Ambystoma maculatum*), the Jefferson salamander (*A. jeffersonianum*), the blue-spotted salamander (*A. laterale*) and the marbled salamander (*A. opacum*). These salamanders forage on the forest floor for a variety of invertebrates, including earthworms, snails, and insects. Wood frog (*Rana sylvatica*) is also a forest-dwelling amphibian. **Mole salamanders and wood frogs are important links in forest food webs and indicators of healthy, functioning ecosystems.**

While they spend much of the year in their terrestrial habitats, mole salamanders and wood frogs all breed in **woodland pools**, a type of small, temporary wetland found in forests. During late winter and early spring, on rainy nights when temperatures rise above freezing, these amphibians migrate to breeding pools by the hundreds, if not thousands. (See "Big Night" below.) (The marbled salamander is different from the other species in this group, as it breeds in the fall.)

Wood frog. *Photo by L. Heady*

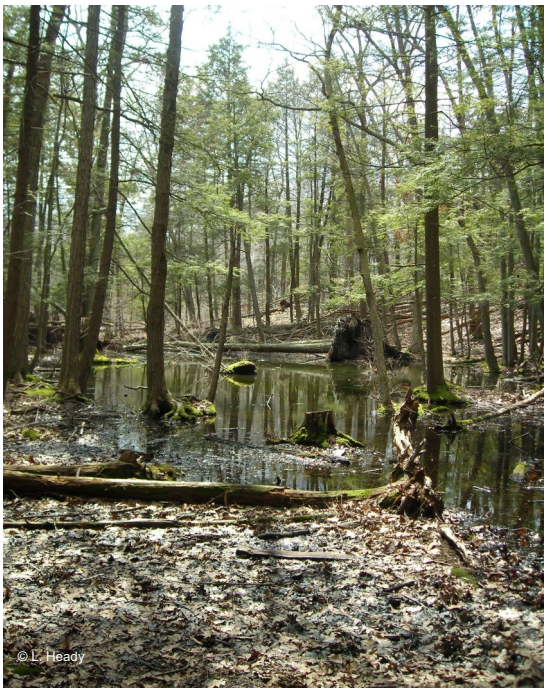
But why are these amphibians so frequently seen crossing the road? Migration distances to woodland pools can vary from a few hundred feet to more than a quarter of a mile! Unfortunately, migration pathways often cross roads and long driveways, leading to mortality of slow-moving wildlife, even in low traffic areas.

What is "Big Night" and when does it occur?

As winter begins to wind down, salamanders and wood frogs are lured from their forest shelters on warm, rainy nights and migrate to woodland pools for breeding. When conditions are right, they will migrate in large numbers. Throughout the Northeast, this annual migration is often called "Big Night" and in the Hudson estuary watershed, typically occurs in March and April. Some years, Big Night is easy to predict: **thawed ground, warm temperatures (above 40°F), and heavy evening rain will trigger the migration of many amphibians**. Other years, the increasingly variable conditions of late winter and early spring make it difficult to predict the migration, and the timing will differ throughout the estuary watershed, depending on local conditions such as snowpack depth. Very often, we observe several "medium-sized" nights of amphibian movements.

Why is this important?

Amphibians are declining throughout the world. In New York, the Department of Environmental Conservation (DEC) has identified several species of woodland pool breeding amphibians as species of greatest conservation need in the 2015 State Wildlife Action Plan. Threats to NY populations include habitat loss and degradation, roadkill, and disease. Concern about the impacts of climate change on amphibian habitat is increasing, as well.



Species like spotted salamander and wood frog need large, healthy forests that are connected to their breeding habitat, like this woodland pool. *Photo by L. Heady*

How can you help?

- learn and teach others
- take good care of woodland pool and forest habitat
- help migrating amphibians

Woodland Pool and Forest Conservation Needs

Woodland pools are a type of small, temporary wetland (or vernal pool) found in forested landscapes. They occur in isolated, shallow depressions that typically hold water during the spring or fall, but are dry by late summer or during droughts. Woodland pools provide critical breeding habitat for a number of amphibians and invertebrates that have adapted to these unique conditions. Fish, on the other hand, cannot tolerate the cycles of filling and drying in woodland pools. Without predatory fish, the pools are ideal nurseries for developing eggs and aquatic young of frogs and salamanders.

Due to their small size, woodland pools are usually not afforded protection by state and federal wetland regulations, and are often missed during land-use planning reviews. Even when pools are protected through local initiatives, the surrounding forested habitat is often fragmented. There are few mechanisms in place to conserve both the pool and adequate upland forest necessary to support populations of pool-breeding amphibians, which may move as far as a quarter mile from the pool. In addition, the forecasted droughts and severe precipitation events associated with climate change may impact the timing of inundation in woodland pools, which is so closely linked to amphibian breeding cycles. Such changing conditions will make it especially important for future conservation plans to prioritize clusters of woodland pools in contiguous forested areas.

How can you participate with AM&RC?

The DEC's Hudson River Estuary Program and Cornell University Department of Natural Resources & the Environment are working with communities to help them conserve important habitats in the estuary watershed. The Amphibian Migrations & Road Crossings (AM&RC) Project was designed to bring attention to forest and woodland pool habitats, and the wildlife species that rely on them, by engaging volunteers in this critical aspect of amphibian life history.

AM&RC Volunteers...

...find and document Hudson Valley locations where migrating amphibians cross roads as they travel between the forest and woodland pools
...help to reduce mortality at road crossing sites by carefully moving salamanders, frogs, and toads across safely
...record information about weather, traffic, species, and counts of live and dead amphibians, and submit their observations to the Hudson River Estuary Program
...take all necessary precautions to keep themselves safe.

What are my responsibilities as an AM&RC volunteer?

1. **Sign up for AM&RC project emails** through DEC Delivers.
2. **Attend a training** or watch online volunteer training modules.
3. **Learn to identify** the amphibian species that might be encountered during migration.
4. **Get prepared to be safe** while walking along the road on dark, rainy nights.
5. **Watch the weather, check your email, and be ready** to hit the road when the time is right!
6. On migration nights, **use care** when moving amphibians, and handle as little as possible.
7. **Record data** and **submit your observations.**

Volunteer with spotted salamander.
Photo by L. Heady

CHECKLIST:

What you need for a migration

- ✓ **reflective vest**
- ✓ **raingear**
- ✓ **bright flashlight**
- ✓ **headlamp**
- ✓ warm layers
- ✓ extra batteries
- ✓ clipboard or notebook
- ✓ blank data forms
- ✓ pencil
- ✓ AM&RC fact sheets
- ✓ AM&RC identification guide
- ✓ a buddy

Optional:

- ✓ blinking light
- ✓ clean bucket
- ✓ spatula (for dead amphibs)
- ✓ camera or phone
- ✓ brimmed hat
- ✓ umbrella

What to Expect During Migrations

How Do I Know When it's Time?

Migrations start in late winter or early spring, on rainy nights after the ground has thawed and air temperatures after sunset are at or above 40F. To get alerts when the conditions look promising, you can subscribe to receive project emails through DEC Delivers (sign up at https://www.dec.ny.gov/lands/51925.html).

Where Do I Go?

The estuary watershed is very large! Vigilant volunteers are helping us locate high-activity crossings. If you don't already know of a site, see page 6.

Getting Started

Salamanders, frogs, and toads typically begin moving at nightfall. Ideally, you should be at your site from shortly after sunset until car or amphibian traffic slows (usually before midnight). When you arrive, take a few moments to familiarize yourself with the site. When you are ready, walk carefully along the road, scanning the pavement with a bright flashlight for amphibians. Train your eyes to look for shiny "objects" or sudden movement. Watch where you step! If safe, keep your feet on the street, where it's easier to see amphibians than in grassy shoulders along roads.

I Found One!

When you spot an amphibian, record it on your data sheet, pick it up with a firm but gentle grip, and move it across the road in the direction it was traveling. Some amphibians will be impossible to catch as they move briskly along; when this happens, simply watch to make sure they make it across the road and include them in your count. Dead amphibians should be counted separately and removed from the road so they are not counted more than once. If you're unsure about species identification, take photos to send to us (please make sure they're in focus and capture different angles.)

Wood frog. Photos by D. Huth

Handling Amphibians

Remember, amphibians are small and delicate. They are sensitive to chemicals and readily absorb toxins through their skin. Before handling any amphibians, please make sure your hands are free of insect repellent, lotion, soap, perfume, and hand sanitizer, and wet your hands with rainwater. Maintain a gentle, yet firm hold around the center of their bodies at all times. Do not hold amphibians by their legs or pick up salamanders by their tails.

If your site is hopping with activity, you can use a clean bucket to move several animals at once. Make sure it's free of soap, detergent, and chemical residues. If possible, rinse the bucket in rainwater before using it to transport amphibians. When releasing amphibians, make sure you place them well off the road, so they are not accidentally crushed underfoot.

Encountering Casualties

You will, unfortunately, encounter amphibians that have been killed by passing vehicles. If you are comfortable with examining these casualties, carefully inspect them to identify their species (if unknown, they should be reported as 'unknown frogs' or 'unknown salamanders'). After you have identified and counted the dead, use a spatula, scoop, or (not for the faint of heart!) your hands to remove them from the road.

The End of the Night

Toward the end of the evening, vehicle traffic will taper off. You can stay at your site for as long as you wish. When you're ready to leave, make sure you mark the end time and temperature on your data form, estimate the length of road you surveyed, and make sure you've completed the entire data form. Watch carefully for critters on your drive home! Please submit your data as soon as you get home (see page 7).

Staying SAFE on Migration Night!

Your personal safety is of the utmost importance.
It will be dark, wet, and foggy on migration nights, and driving visibility will be dramatically reduced. You should not interfere with drivers or traffic.
You are responsible for your own safety.

Wear a reflective vest.

Wear a reflective vest. Wear a reflective vest. Wear a reflective vest. **Wear a reflective vest**. (This one is really important.)

Shine a light.

Make sure you have a big light for migration night, and enough batteries to keep it bright. Dim lights can vastly reduce both your ability to see amphibians and drivers' ability to see *you*. Headlamps are handy for keeping notes on how many salamanders you've crossed — and for making yourself extra visible to passing cars — but flashlights are key when it comes to looking for critters on the road. Many volunteers opt to use both, and may also attached a blinking light to the back of their jacket as an extra precaution.

Stay alert.

Driving visibility is dramatically reduced on rainy, foggy nights, and drivers may not expect to see pedestrians in the roadway. Keep your eyes and ears peeled for vehicles, and step off the road as soon as they come into view. In addition, it's quite likely that there will come a time when you see a salamander in the headlights of an oncoming car, and feel tempted to dart into the road for a quick amphibian rescue. *Don't do it!* It's easy to slip while running on wet roads or for salamanders to squirm out of your hands when you're in a rush, putting you in danger. If a car is coming, step aside. If passersby inquire about what you're doing, you can give them a copy of the AM&RC fact sheet.

Bringing kids?

Amphibian migrations can be a transformative experience for children, but you'll need to take some extra precautions to keep young volunteers safe and sound. Before taking them to an amphibian road crossing, ask yourself: Are your children able to follow directions? Do they know how to be safe around traffic? Will they be gentle with amphibians? If your answers are a resounding yes, then scope out your crossing site ahead of time to make sure it's family-friendly (wide shoulders, good visibility, street lights, slower-moving traffic). On migration night, make sure everyone in your group is wearing a reflective vest. And maintain a 1:1 adult:child ratio *at all times,* with the primary responsibility of each adult being the safety of the child in their care.

*Joe is ready for the migration! He's dressed for success with a **reflective vest**, **headlamp**, **rain gear**, and **a brimmed hat** to keep the rain out of his eyes. Off camera, he has a **buddy** with a **bright light**!*

Photo by L. Heady

How to Find New Amphibian Crossings

What if you don't know of road crossing sites near you?

This is the perfect opportunity to get out there and find some! The Hudson River estuary corridor spans millions of acres and ten counties—that's a lot of terrain to search for road crossings. With the help of volunteers, we can learn where migrating amphibians are facing high mortality from passing cars, and by working with communities, we can devise appropriate conservation actions.

American toad. *Photo by L. Heady*

When to Look

Review page 4 to learn what conditions are promising for a migration and when to survey.

Where to Look

If you don't know of a migration location, you can scout for road crossings in your car. Look for roads near wetlands and vernal pools, especially in forests. Helpful resources that will give you a birds-eye look of your neighborhood include online aerial photos, like Google Maps; wetland and forest maps (viewable on the Hudson Valley Natural Resource Mapper); and town habitat maps, natural resources inventories, or studies. You can also check for records of vernal pool amphibians on iNaturalist. Remember, do not attempt surveys on extremely busy roads;it's too dangerous.

How to Look

When you conduct road surveys, bring a friend (the driver can pay attention to the road and traffic, while the spotter looks for amphibians) and drive slowly (10-15mph). Open car windows will help you hear the "quacking" of wood frogs that will indicate you may be near a woodland pool. Scan the entire road for live or dead amphibians, and have the spotter follow along on a map and keep notes on the route you surveyed. (You can also use a map app on your phone, and take screen shots to help you recall exactly where you were.)

What is THAT in the Road?!

You will be tricked by blowing leaves, charismatic sticks and rocks, and an occasional scurrying mouse. Go slowly! Those sticks may be salamanders; the leaves may be wood frogs; and the pebbles may be spring peepers. (The mouse is probably a mouse.)

When to Pull Over

If you start seeing live or dead amphibians on the road, pull over somewhere safe. Make sure your car is off the road and easily visible. If possible, don't park directly in front of a house. (This can make homeowners understandably uncomfortable.) Note where you are on a map. Don't get out of the car unless you are prepared for being safe on the road (reflective vest, flashlight, raingear). If you have safety gear and are prepared to document the migration, follow the directions on pages 3-5. (If you don't find any migration activity, we'd still like to know where you surveyed, so please submit your data either way.) Be sure to check under your car for critters before you leave, and as much as possible, avoid driving on roads with migration activity!

Documenting the Migration and Submitting Data

We appreciate if you collect data at the crossings where you assist amphibians!

- Reviewing the data form before migration nights is a good practice, and will serve as a reminder of what you'll need to consider while surveying roads.

What to do <u>during the migration</u>:

- **Record your observations on print-outs of the data form**. Don't forget to document temperature, weather, and traffic while you're surveying the amphibians.
- If you survey more than one road, or multiple segments that are far apart on the same road, **use a different data form for each location**.
- **Take photos of each of the species you document.** Photo validation increases the certainty of your data, and can be used to answer questions you have about identifications.

What to do <u>after the migration</u>:

- **Enter your data and photos in the online, Survey123 form.** If you're too tired when you return home to carefully enter your data, wait until the next morning.
- **Provide names and contact information for all volunteers in your group** so we can stay in touch by email or mail. It's not uncommon for us to follow-up with data questions or requests for photos, or to mail out a thank you and sticker to new volunteers!
- **Double-check your data entry** before you submit the form! It's very helpful to us if volunteers check the accuracy of their observations before they click "submit."

Spring peeper. Photo by L. Fila

What data will you collect?

- time and temperature
- weather conditions
- traffic
- location of crossing
- numbers of different species of live or dead salamanders, frogs, and toads

Most Common Species

The most commonly encountered species during migrations are:

1) **spotted salamander**
2) **northern spring peeper**
3) **wood frog.**

In far fewer numbers, the next most common include:

4) **four-toed salamander**
5) **Jefferson/blue-spotted salamander complex**
6) **eastern American toad**
7) **eastern newt**
8) **redback salamander.**

Tip for new volunteers:

Start with learning these eight species!

Amphibian Migrations and Road Crossings
Data Collection Form PAGE 1

- Please enter your data online the same night as you observed the migration (or the next morning). The online form is at the project webpage https://www.dec.ny.gov/lands/51925.html
- Record separate data forms for each road crossing location.

Date:		Start	End
	Time of observation:		
	Temperature (F):		

Current precipitation conditions (circle the one most appropriate condition):

no rain light rain rain heavy rain downpour

Weather conditions in the past 24 hours (circle all that apply):

no rain rain snow

Did you observe any of the following conditions during the migration? (circle all that apply):

fog light breeze windy

Traffic during migration:

___**light** (0-3 cars in 20 min) ___**medium** (4-20 cars in 20 min) ___**heavy** (21+ cars in 20 min)

MIGRATION CROSSING LOCATION INFORMATION

County:

Town, Village, or City:

Road name:

Have you surveyed this road ever before? Y or N

Nearest crossroads:

Approximate length of road stretch you surveyed (in miles): (remember, 1 mile=5,280 feet)

_____ miles

Additional comments on crossing location:

VOLUNTEER INFORMATION (Please fill out all sections; we may need to contact you with questions.)

Total number of volunteers in group: _____

Phone number:

Your name:

E-mail address:

Mailing address:

Names of other volunteers in group:

Please add email and mailing addresses of all volunteers in your group. Attach a separate piece of paper if necessary.

Amphibian Migrations and Road Crossings - Data Collection Form PAGE 2

AMPHIBIAN INFORMATION		
Indicate all species observed crossing or dead in the road. Write in additional observed species in the blank rows of the table (see example below). If you're uncertain about an identifcation, mark as "unknown" and send photos.		
Species Observed	**# live**	**# dead**
SALAMANDERS		
spotted salamander		
Jefferson/blue-spotted salamander complex*		
four-toed salamander		
eastern newt		
redback salamander		
unknown salamander		
FROGS AND TOADS		
wood frog		
spring peeper		
American toad		
unknown frog		
Example: *pickerel frog*	*east* ~~IIII~~ III 8	IIII 4

**Distinguishing between blue-spotted and Jefferson salamanders is virtually impossible in the field. For this project, we'll consider all blue-spotted and Jefferson salamanders to be hybrids.*

If you're able, please circle the general compass direction that most of the amphibians were moving: **N NE E SE S SW W NW too variable**

Approximately how many of the recorded live animals did you or your group help cross the road? _____

Reminder! You can submit photos for species you're not able to identify.

Additional comments:

Thank you! .