

MAINE BIG NIGHT



Amphibian Migration Monitoring

Volunteer Training Manual 2022



Maine Big Night: Amphibian Migration Monitoring prepared by Gregory LeClair of Waterville, Maine. Methods and protocols designed with assistance of the MBN Scientific Advisory Committee; Dr. Matthew Chatfield, Dr. Marcia Moreno-Baez, Dr. Jeffery Parmelee, and Dr. Cheryl Frederick.

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About this Manual

This manual contains information to prepare volunteers to pass the *Maine Big Night* training quiz and be a source of reference.

Important tip: Everything you'll need for Big Night, including this manual, the quiz, site lists, data sheets, and more can be found on Maine Big Night's Google Drive, linked [HERE](#). Also, access our website at:

www.vernalpools.me/big-night



Questions? Email us at MaineBigNight@gmail.com or stay up-to-date and join us on Facebook (facebook.com/groups/bignightmaine/) or Twitter ([@MaineBigNight](https://twitter.com/MaineBigNight))



What is a *Big Night*? When do they happen?

Every spring, when the ground has thawed, the rain has started, and nighttime temperatures maintain above freezing, frogs and salamanders (collectively referred to as *amphibians*—a group of vertebrate animals, usually with wet, mucus-covered skin) all throughout North America begin their migration to their breeding grounds called *vernal pools*. Vernal pools are bodies of water that are typically temporary—many will dry up by summertime. In Maine, these migrations usually occur in April.

If a night happens to be in the realm of 45°F or higher, the odds of a true “big night” happening are high—these nights are where immense numbers of migrating amphibians move simultaneously. In the matter of a few hours, you may see dozens, even hundreds, of migrating amphibians at the right time at the right place. While these are perfect conditions, you can still find smaller amounts of amphibians migrating in cooler conditions, right down to about 32°F.

Keep an eye on the weather—updates may be posted on Maine Big Night’s Facebook page, but oftentimes you’ll have to watch yourself and determine when a big night may occur in your area!

The Problem

Oftentimes, amphibians have to cross roads in order to reach their breeding habitat. Being so small and traveling at night in low visibility, amphibians are extraordinarily hard to see; mortality rates on roads can approach 100% in areas with high traffic. Because of this, amphibians may be decreasing significantly in some areas.

The Project

Maine Big Night—Amphibian Migration Monitoring (MBN) was created as a direct result of observing the impacts roads are having on amphibian populations. The project seeks to identify important crossing sites by recruiting volunteers to collect data while directly relieving pressure from road mortality. In a world with increasingly fragmented habitat, decreasing amphibian populations, and changing climates, finding these migration routes will only become more important every year.

How to Participate

In order to participate in *Maine Big Night*, you must complete the following three steps:

1. *Complete the training and pass the associated quiz with an 80% or better.*
2. *Sign the safety/liability waiver.*
3. *Sign up for a site, or multiple sites, that you'd like to survey.*
4. *Survey that site whenever you can on rainy nights between March 15th and May 15th.*

1. Complete the training and pass the associated quiz with an 80% or better.

This manual covers the necessary materials needed to become a certified volunteer scientist for Maine Big Night. Read or listen carefully, because you'll need to pass a 25 question multiple-choice test with an 80% or better (20 questions correct). The quiz is open-notes, so you may use this manual or your own notes to take the quiz. If you fail, you can re-take the quiz immediately as many times as you like! The quiz can be accessed [HERE](#). You must take and pass the quiz if you did not submit data in the previous year.

2. Sign the safety/liability waiver.

Before you can sign up for a site and begin collecting data, you are required to digitally sign the liability waiver found [HERE](#). This waiver ensures that you understand the risks associated with collecting data for this project, and that you are responsible for any damages, injuries, illnesses, etc. incurred while participating. While we do everything we can to prepare you to be safe and do our best to remove unsafe locations or methods, you are ultimately responsible for your safety. A legal parent or guardian must sign for participants under 18 years of age.

3. Find and sign up for a site, or multiple sites, that you'd like to survey.

After completing the training and signing the waiver, you will be allowed to sign up for a site to survey. Each site is a 0.3km (~1000ft) stretch of road, usually adjacent to a vernal pool or other type of wetland. Once you sign up, you will be responsible for not only assisting amphibians in crossing roads, but also collecting data. If you adopt a site, you should survey that segment for at least 1hr between March 15th and May 15th. Sites available for surveys can be found [HERE](#).

Project Overview

The goals of *Maine Big Night* are as follows:

1. Identify significant and vulnerable migration routes for amphibians throughout the state of Maine.
2. Provide direct relief of road mortality to local amphibian populations.
3. Provide an opportunity for Maine citizens to participate in wildlife conservation and natural sciences.

Who gets to participate?

Anybody who completes the required material is welcome! We only ask that participants must be able to operate safely in a roadway—this is essential for maintaining a safe project.

What do I do?

As an MBN volunteer scientist, you will be responsible for helping save amphibian lives while collecting important data. You will be able to head out into the field on your own (or preferably with friends/family!) to have your own adventure in wildlife conservation science.

Where does the project take place?

The project takes place throughout the state of Maine at select sites. More sites are added every year; as of the start of 2022, there are 445 different sites throughout the state. If you have found a site that you think should be monitored, it can be added to the site register by emailing us (MaineBigNight@gmail.com). Please be prepared to provide specific road details.

When does the project take place?

You can participate in the project anytime between March 15th and May 15th. You are welcome to prepare beforehand at any time. During the project period, you can collect data anytime between sunset and sunrise.

Why does this project exist?

Amphibians are one of the most endangered groups of animals on the planet, with some common species even becoming rarer. This project seeks to evaluate the impact roads are having on populations while providing recommendations to transportation and wildlife officials about more wildlife-friendly road design.



A behind-the-scenes look at the mapping model used to find sites. White circles indicate significant vernal pool locations, and yellow lines indicate potential MBN survey sites. This image is of a very active area in Brunswick!

Adopting a Site

Once you have completed this training, passed the quiz, and signed the liability waiver, you will be allowed to “adopt” a road segment to survey. “Adopting” a segment means that you are committing to surveying it for at least 1 hour in total between March 15th and May 15th. You may break the hour between several nights; ex. 30 minutes on April 13th, 10 minutes on April 18th, and 20 minutes on April 20th. You may survey for more than an hour (in fact, it is encouraged!) and you may adopt multiple sites to survey. To adopt a site, simply follow [this link](#) to the site lists (sites are sorted into separate documents by county; click on the county or counties most applicable to you to see what’s available), find the site(s) you’d like to survey, and submit a site adoption request at the bottom of the linked page.

About Sites

Sites are 0.3km (~1000ft) long stretches of road that typically span wetland or forest habitat, usually with a significant vernal pool nearby. Sites are selected based on proximity to these habitats, as well as known or predicted amphibian presences. The pool may not always be in view, but it is close enough that amphibians may cross roads to access it. Sites can be found on both dirt and paved roads, in cities, small towns, and even remote camp roads. At the link above, you will find information such as the site ID, road/route name, town name, speed limit, specific directions, special notes, who has adopted the site, and whether the site could host families.

Kennebec County ☆ 📁 ☁
 File Edit View Insert Format Data Tools Add-ons Help *Last edit was seconds ago*

100% \$ % .0 .00 123 Arial 10 B I S A

G4 162 Mud Mill Rd to halfway between edge of powerline and 202 Mud Mill Rd

	A	B	C	D	E	F	G	H	I
1	NOTE: If you would like to adopt a site that does not have directions listed, please contact Greg LeClair (gregory.leclair@maine.edu).								
2	SITE ID	ROAD NAME	TOWN	ROUTE NUMBE	SPEED LIMIT	FAMILY FRIENDLY	DIRECTIONS/ADDRESS	AVAILABLE?	NOTES
3	MM1Aug	Mud Mill Rd	Augusta		25	potential	The bend near the intersection with Kennebec Lodge Ln. Contact Greg LeClair for further details.	No	
4	MM2Aug	Mud Mill Rd	Augusta		25	potential	162 Mud Mill Rd to halfway between edge of powerline and 202 Mud Mill Rd	Yes	
5	Mid1Aug	Middle Rd	Augusta		25	potential	236-266 Middle Rd	Yes	
6	Aug1Bel	Augusta Rd	Belgrade		45	no	Contact Greg LeClair - at intersections with Harm's Way and Keene Dr	No	
7	Aug2Bel	Augusta Rd	Belgrade		45	no	Contact Greg LeClair - roughly between intersection with Rt.8 and Maple Leaf Self Storage	Yes	
8	Han1Chels	Hankerson Rd	Chelsea		25	potential	Centered on S. Donbero Rd; 27 Hankerson Rd to Deer Run Dr	Yes	

An example of a site sign-up sheet.

Adopting a Site Continued

Family Friendly Sites

Sites are considered not family friendly if speed limits are over 35mph, have low visibility, or are considered unsafe for other reasons. Only sites that have good visibility with slow speed limits are considered potentially family friendly. If you are participating with children, it is ultimately up to you to decide which of the potentially family friendly sites are safe enough, if any.

Adding a Site

If you happen to know of a site that is not on the list, please email us (MaineBigNight@gmail.com) to get the site added to the site roster. Please be prepared with specific details about the location!

Surveying a Site

Remember, sites are 1000ft long. In some cases, most of the action will be happening right in one spot, but in others it could be spread throughout the entire site. Be sure to walk through your whole site to make sure you are getting the most accurate picture possible.



Data Collection

The data that volunteers collect is what will allow wildlife and other government agencies to direct future conservation measures, and thus is incredibly important. Data is recorded on official MBN [data sheets](#), an image of which is provided below with directions for filling them out.

Maine Big Night Data Sheet Submit all data to www.ofpoolsandpeople.me/big-night-volunteers-materials-and-training/



Site ID:		Recorder:		Date:	Temp at Start: °F
Start Time:	End Time:	Is the road ___WET or ___DRY?		# Certified Vol:	# Uncertified Vol:
Rain: None Sprinkle Rain Heavy Downpour <small>(circle one)</small>		Traffic (tally):			
SPECIES		LIVE	DEAD	INJURED	
SALAMANDERS	Spotted Salamander				
	Blue-spotted Salamander				
	Eastern Red-backed Salamander				
FROGS	Spring Peeper				
	Wood Frog				
	Green Frog				
OTHER	<i>(Please Name and Photograph)</i>				

NOTES

Data sheet adapted from Harris Center for Conservation Education (Hancock, NH) and the North Branch Nature Center (Montpelier, VT)

Site ID: When you sign up for a site, you'll notice a column that says "Site ID". Enter that here; it is usually an abbreviation of the street name and town name combined.

Recorder: Write the first initial and last name of the person *writing* the data.

Date: Record the date, including year, in mm/dd/yyyy format.

Temp at Start: Record the temperature in °F at the start of the survey. You may use your phone weather app or other means.

Start Time/End Time: Write the time (remember to include AM or PM) that you begin surveying and then finish surveying.

Is the road wet or dry?: Check the line to the left of the word that best describes road conditions. If the road is at least 50% wet, check off "wet".

Certified/Uncertified Vol: Total the number of certified and uncertified volunteers participating.

Rain: Circle the condition that best describes the current level of precipitation.

Traffic: Tally the total number of vehicles that pass during survey. This includes vehicles that turn around, the same vehicle that passes twice, etc.

Notes: Record anything you may consider noteworthy!

Continued on next page

Data Collection Continued

Maine Big Night Data Sheet Submit all data to www.ofpoolsandpeople.me/big-night-volunteers-materials-and-training/



Site ID:		Recorder:	Date:	Temp at Start: °F
Start Time:	End Time:	Is the road ___WET or ___DRY?	# Certified Vol:	# Uncertified Vol:
Rain: None Sprinkle Rain Heavy Downpour <small>(circle one)</small>		Traffic (tally):		
SPECIES		LIVE	DEAD	INJURED
SALAMANDERS	Spotted Salamander			
	Blue-spotted Salamander			
	Eastern Red-backed Salamander			
FROGS	Spring Peeper			
	Wood Frog			
	Green Frog			
OTHER	<i>(Please Name and Photograph)</i>			

NOTES

Data sheet adapted from Harris Center for Conservation Education (Hancock, NH) and the North Branch Nature Center (Montpelier, VT)

Recording Species Information:

Live: Tally the number of individuals found alive in the appropriate species row (species identification tips found on p.16 - 21). For example, if you find three live Spring Peepers, you would place three tally marks under the “live” column next to “Spring Peeper”.

Dead: Tally the number of individuals found dead in the appropriate species row.

Injured: Tally the number of individuals found with fresh injuries. If old injuries/scars are noticed, include that in the notes section.

Unknown Individuals: If you cannot identify an animal, living or dead, write “UNK” under “Other” and take a picture for future submission.

Avoiding Double-Counting:

Accidentally counting the same individual twice is an easy mistake to make, and can harm the quality of the data. To avoid double-counting, all living and dead individuals should be moved from the road. Moving dead individuals can be accomplished with gloves, spatulas, etc. and should be moved out of the road.



NEW—Record Data on your Device!

By accessing [this link](#), you can fill out an online data sheet on your phone or tablet while you survey! Not only is this a very easy way to collect data, it also makes submitting much easier—you just hit the “submit” button at the bottom and you are all done with your recording and submitting duties!

Notes about cellular/WIFI access: The form can work when not connected to the internet and will save your entries until you connect to internet again, however you will not be able to submit until you are connected to WIFI again. DO NOT refresh while not connected to internet—you will lose connection to the form.

The online data sheet link can be found at the start of this page, in our Google Drive under the “Data Sheets and Data Entry Link” folder, or through our website under (vernalpools.me/big-night/) “Training and Volunteers”.

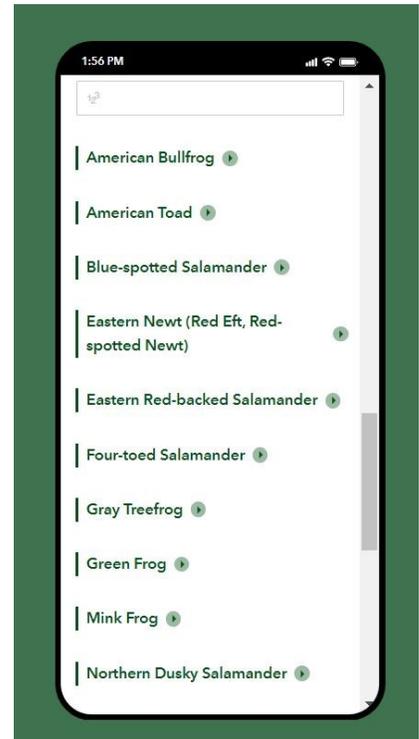


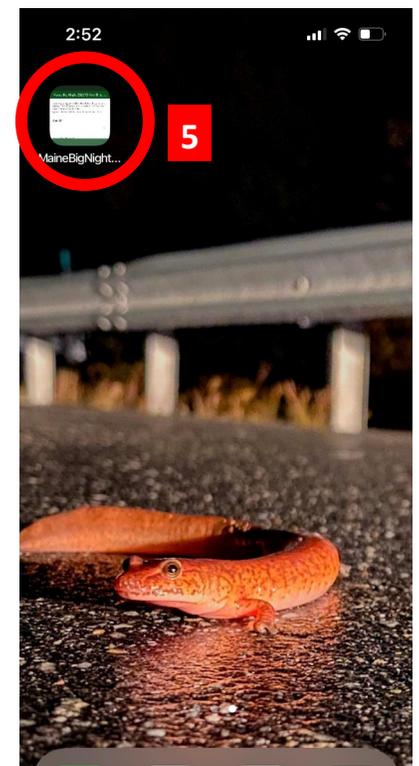
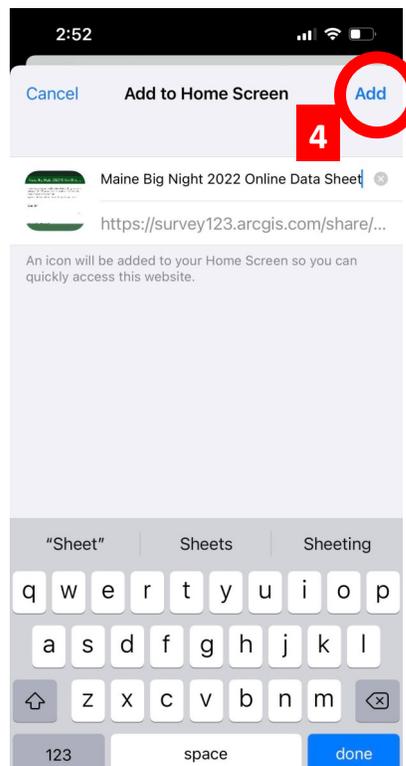
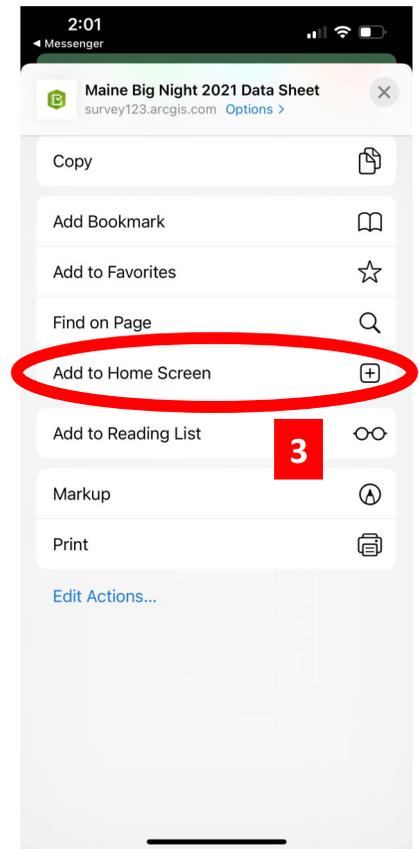
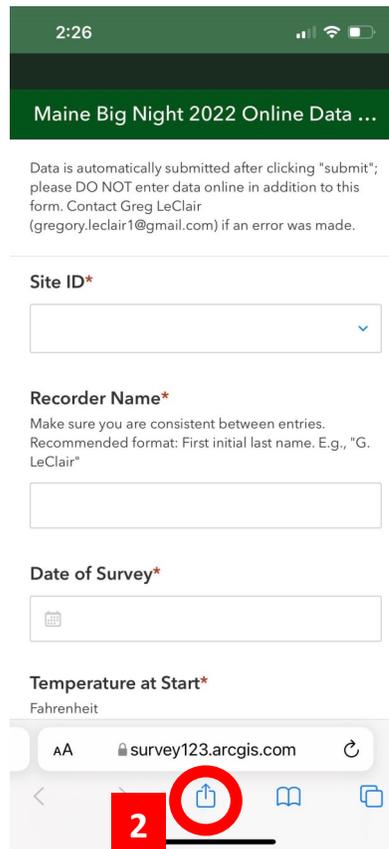
Image: Jeff Parmelee

Adding a Link to the Online Data Sheet on Your Apple Device

For ease of access, you can “bookmark” the link of the online data sheet to the home screen of your device without having to first open your internet browser, functioning much like an app.

Apple Directions:

1. Open the following link in Safari: <https://arcg.is/1nj5nL>
2. Click the “Share” button at the bottom of the screen
3. Scroll down to “Add to Home Screen”
4. If desired, change the name of the bookmark, then click “Add” in the top right.
5. The final result is below. Tapping this icon will open the online data sheet directly.

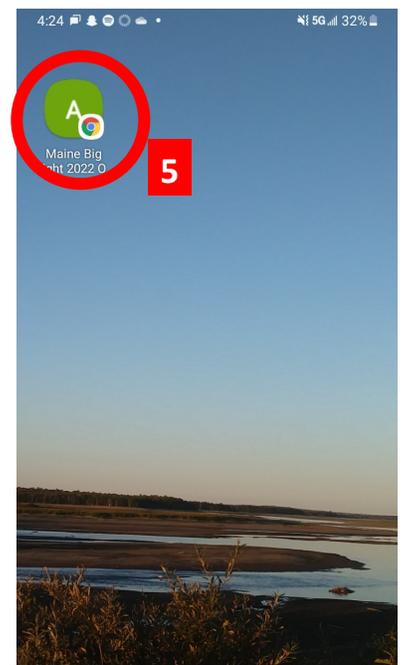
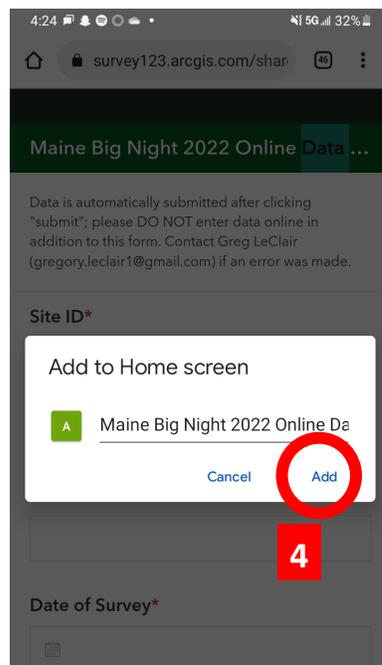
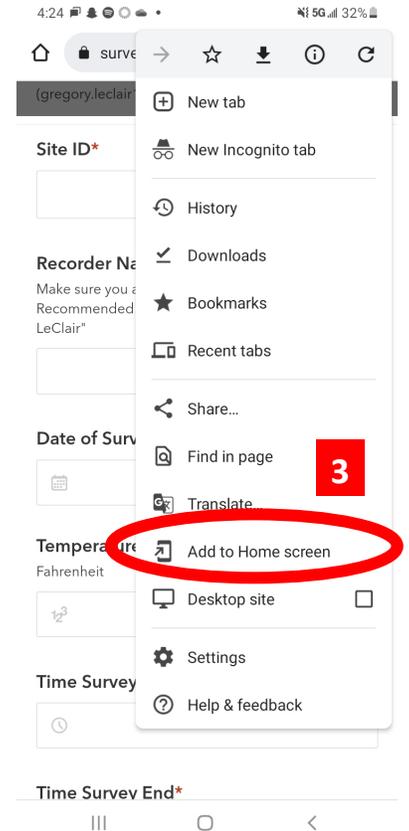
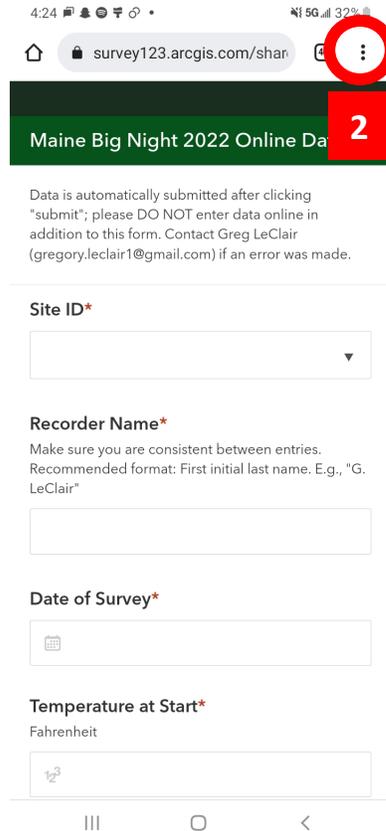


Adding a Link to the Online Data Sheet on Your Android Device

For ease of access, you can “bookmark” the link of the online data sheet to the home screen of your device without having to first open your internet browser, functioning much like an app.

Android Directions:

1. Open the following link in Chrome: <https://arcg.is/1nj5nL>
2. Click the “Menu” button in the top right of the screen
3. Tap “Add to Home screen”
4. Tap “Add” on the next two windows
5. The final result is below. Tapping this icon will open the online data sheet directly.



Submitting Data

Once you have collected data, you will be responsible for submitting it in one of two ways:

- 1) Submit your data via Survey123 [here](#). If you collected data in the field using this form on your phone, you do not need to resubmit.
- 2) Send your data to the project coordinator. This can be delivered in person through arrangements, mailed, or scanned/photographed and sent via email to the project (MaineBigNight@gmail.com). Please title all emails "MBN 2022 Data" when sending emails with data.

When submitting via the Google Form, you will need to re-submit a form for every species you see as the structure of the form only allows data to be recorded one at a time. If you make a mistake, you will be given the option to edit your response after submitting the form.

What if I get no amphibians?

If you don't find anything, please still submit data! Just don't fill out species information on the form when you submit. It is equally important to know where amphibians are and are not!

Data is automatically submitted after clicking "submit"; please DO NOT enter data online in addition to this form. Contact Greg LeClair (gregory.leclair1@gmail.com) if an error was made.

Site ID*

Recorder Name*

Make sure you are consistent between entries. Recommended format: First initial last name.
E.g., "G. LeClair"

Date of Survey*

Temperature at Start*

Fahrenheit

Safety

Working on rainy roads at night poses potentially high, even life-threatening risks to participants. In order to stay safe, MBN has the following measures in place to help protect its volunteers:

1. The liability waiver to demonstrate that the participant understands that they are ultimately responsible for their own safety.
2. Sites that are considered unsafe (ex. high speed limits, low visibility, etc.) are not considered for data collection and are removed.
3. Sites that are inappropriate for families are indicated.
4. Safety gear is required for participants to increase visibility to traffic.
5. This training and the associated quiz are used to demonstrate knowledge of safety requirements.
6. Law enforcement is notified prior to data collection to alert them to volunteer presences.

Items 1-3 have been covered already, so the following will focus on 4-6.

Safety Gear

While in the field, participants are **required** to wear a high visibility vest (reflectors required) and use a flashlight, headlamp, or other light source (NOT glowsticks, though they may be used in addition to another light source). Vests can be found cheapest online at Amazon.com, but can also be found at Walmart, Home Depot, Marden's, Tractor Supply, and other hardware stores. Orange or yellow color are both acceptable.

Brightly colored clothing with reflectors may be accepted on a case-by-case basis. Please reach out to us (MaineBigNight@gmail.com) to confirm if your non-high visibility vest clothing item qualifies.



Continued on next page...

Safety Continued

Safety in the Field

Participants *cannot* slow, direct, or stop traffic under any circumstance. Several organizations in Maine host their own big night events where collaboration with law enforcement has allowed entire roads to be closed to traffic; we recommend participating in these events if a closed road is what interests you. Participants also cannot enter active traffic to move an animal, living or dead.

As soon as traffic is seen coming, participants should exit the road to a minimum of three feet from the road surface until the traffic is gone.

Parents and guardians must limit participation to children who understand traffic safety and maintain a 1:1 ratio of adults to kids. For their safety, children cannot participate at sites labeled as not family friendly. Children also have the same gear requirements as adults—a high-visibility vest and flashlight/headlamp. Children who do not yet understand traffic safety should either not participate or must be directly attached to an adult, i.e. child carrier, backpack carrier, etc.



If you are driving your vehicle to the site, make sure that you park your vehicle in an easily visible spot (not in a dip or around a bend) and keep some form of lights on (daytime running lights or headlights are preferable, with a blinker or caution lights; make sure high beams are OFF). If you can, park as far off the road as safely possible. If you have them, use small traffic cones or electric road flares to signal oncoming traffic that you are parked in an upcoming spot, such as around a bend or over a hill.

Notification to Law Enforcement

When a volunteer member signs up for a site, the project coordinator or other MBN official will alert the appropriate law enforcement agency of the participant— what they will be doing and where they will be working. Participant names and other information will not be shared; only that they work for the project, what working for the project entails, and where they will be. This will not only improve safety, but also maintain a positive public image.

Can't get the required gear? No problem!

New this year, several organizations around the state host materials to help volunteers get started in the field. You can sign out high visibility vests, headlamps, clipboards, data sheets, and ID cards to get you out in the field *for free*. All items *must* be returned within a month of season end (by June 15th).

If you intend on signing out materials, please contact the host you plan to sign materials out from and let them know you are coming. Materials can only be signed out to certified volunteers; however, a certified volunteer is welcome to sign out extra materials to supply friends and family that will be joining them in the field. Items are first come, first serve.

Below is a list of participating organizations that you may sign out materials from:

Blue Hill Heritage Trust

157 Hinckley Ridge Rd, Blue Hill, ME
(207) 374-5118
info@bluehillheritagetrust.org

Saco River Wildlife Center

238 River Rd, Limington, ME
(207) 702-1405
sacoriverwildlifecenter@gmail.com

Downeast Coastal Conservancy

603 Colonial Way, Suite 3, Machias, ME
(207) 255-4500
info@downeastcoastalconservancy.org

Sweet Tree Arts

4 Church St, Hope, ME
lspinchbeck@sweettreearts.org
www.sweettreearts.org

Greater Lovell Land Trust

208 Main St, Lovell, ME
(207) 925-1056
info@gllt.org

University of Maine Farmington

Contact Leigh Ann Fish
Leighann.fish@maine.edu
(207) 778-7855

Patten Free Library

33 Summer St, Bath, ME
(207) 443-5141

Runamuk Acres Conservation Farm

344 School St, New Portland, ME
(207) 628-2118
runamukacres@gmail.com

Amphibian Handling

As mentioned previously, moving amphibians is an integral part to collecting solid data—and saving lives! The following is information about handling amphibians in ways that are efficient, safe, and as least stressful to the animals as possible.

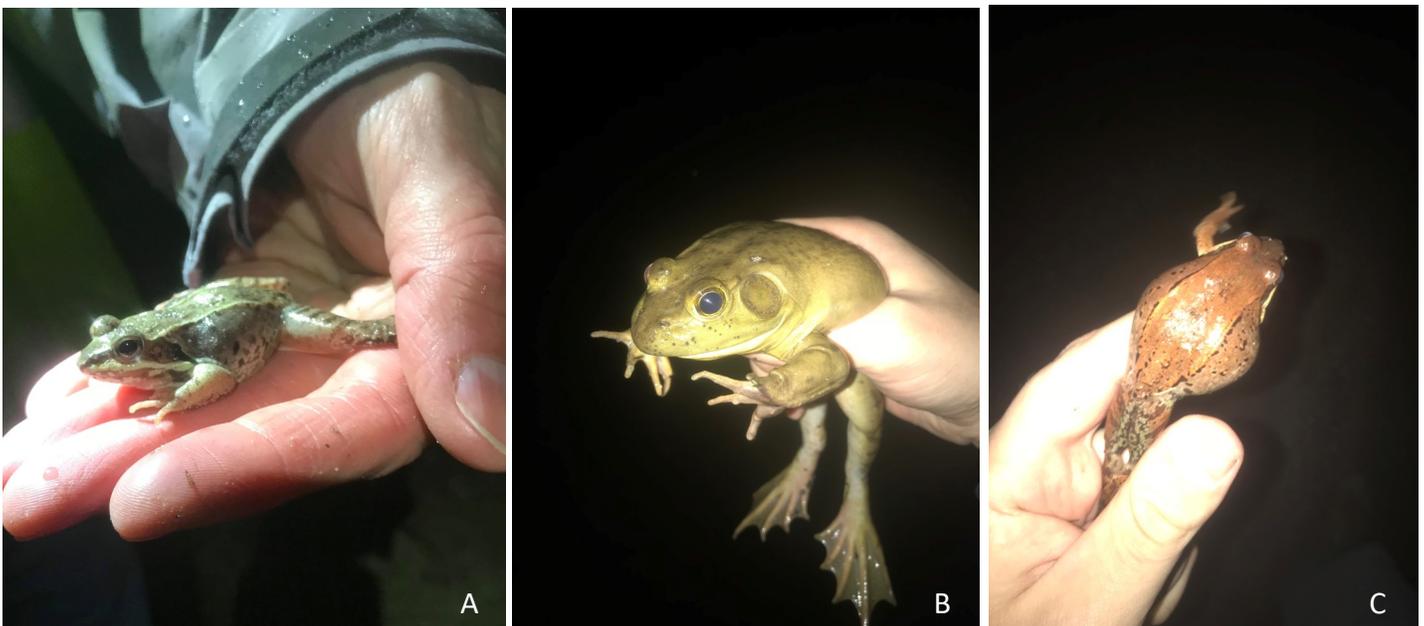
Before You Handle Amphibians

Amphibians have very thin skin that soaks up just about anything they touch. Many household products are harmful to amphibians (including deodorant, cleaning products, many foods, oils, etc.), so hands should be washed *thoroughly* with warm water before entering the field. If you wish, you may wear nitrile gloves, though it is not necessary.

Moving Frogs

Frogs can be challenging to catch and hold as they can be fast and very active. When the frog is still, simply cup your hands around the frog without squishing it, and then using either one or both of your hands, scoop and carry the frog to the other side of the road in a cupped hand or held as demonstrated in the images below. Frogs should never be dangled by a leg. It's also worth noting that many frogs will have the energy to cross roads themselves; it's best to allow them to do this instead of handling, and can be accomplished by following closely behind the frog, if time permits.

Note: Some frogs (American Toad, Pickerel Frog, etc.) produce toxins that are irritating if they come in contact with the mouth or eyes. Hands should be washed regularly to avoid accidental discomfort, which may include burning sensations, foaming at the mouth, stomach aches, etc.



Several acceptable ways to hold a frog. Image “A” depicts a pinned leg-hold, where the body is supported by the hand. “B” depicts a loose but firm mid-section hold with the thumb, which is easiest for large frogs. “C” shows the legs carefully extended into a closed hand while the body is supported by fingers.

Amphibian Handling Continued

Moving Salamanders

Salamanders are usually easier to catch, but can be hard to hold! Similarly to frogs, cup your hands gently around the salamander, but do not squeeze it; simply hold it above the road. If the salamander tries to walk out of your hands, move your free hand in front of the salamander as it walks, which should free your other hand to continue this pattern, making a treadmill-like action for the salamander. *Never* pick up or squeeze a salamander's tail—some species will drop their tails as a defense mechanism, which can be very stressful and energetically exhausting!

Note: Similar to frogs, some salamanders produce irritating chemicals. Wash your hands intermittently to avoid accidentally touching your eyes or mouth with irritating substances.



General Note

Amphibians should be handled as briefly as possible and are only to be moved across the road in the direction they are headed. Amphibians should never be transported elsewhere.

After You're Done

Wash your hands well with soap and warm water. This is especially important if you plan to go to another site; amphibians are being struck hard by disease, so there is a chance you may accidentally transfer a deadly disease to a new area if you don't properly disinfect!

Amphibian Identification

The following covers the identification of common and uncommon amphibians of Big Night. Those that are still learning to identify amphibians are encouraged to print this section out and take it with them into the field.

Frogs

Spring Peeper

Size: 1in long

Identifying Characteristics: Very small size. Usually has an x-shaped mark on the back. Tan to brownish color. Calls a high-pitched peep.

Big Night Rarity: Common

Fun Fact: Males have a dark colored throat, females do not. See if you can identify any!



Wood Frog

Size: 2-3in long

Identifying Characteristics: Fairly plain mid-size frog, usually has a black or dark brown “facemask”. Can be light to dark brown, or even red. Call sounds like a “quacking” or “clucking”.

Big Night Rarity: Common

Fun Fact: Wood Frogs have the northernmost range of any frog in the world; this is partially due to their ability to freeze solid!



American Toad

Size: 3-4 in long

Identifying Characteristics: Dry, bumpy skin. Two large glands directly behind eyes. Call is a long, drawn out trill.

Big Night Rarity: Uncommon

Fun Fact: Toads produce toxin from glands all over their skin, which comes out as a white, sticky substance. It’s fine if it touches your hands, but expect foaming and stomach aches if it’s ingested!



Frogs Continued

Green Frog

Size: 2-4in long

Identifying Characteristics: A larger frog that can be green, yellow, black, brown, and even blue. Appearance is often somewhat “messy”. A distinct line of skin running down the back distinguishes it from bullfrogs. Call a twangy, single note.

Big Night Rarity: Common

Fun Fact: Their twangy-call has earned them the nickname of the “Banjo Frog”.



American Bullfrog

Size: Up to 8in long

Identifying Characteristics: Usually large, greenish-yellow to dark green. To separate from Green Frog, look for lack of ridge just behind eardrum (tympanum). Call a bellowing, mooing sound.

Big Night Rarity: Uncommon

Fun Fact: Bullfrogs are very adaptable and have begun invading other areas in the United States—to the point of becoming a problem!



Gray Treefrog

Size: 1-3in long

Identifying Characteristics: Appearance resembles lichen or tree bark. Has large, sticky toe-pads used for climbing. Can be gray or have large patches of green—especially in juveniles. Call a short, bird-like trill. Males have bright yellow inner thighs, only visible when legs are extended.

Big Night Rarity: Rare

Fun Fact: Their scientific name, *versicolor*, refers to their ability to change their color from dark grays, to white, to green!



Frogs Continued

Pickerel Frog

Size: 1-3in long

Identifying Characteristics: Overall bronze color with square/rectangular spots, usually in two rows down the back. Call sounds like a door creaking open.

Big Night Rarity: Uncommon

Fun Fact: Pickerel Frogs produce a nasty toxin capable of killing other amphibians; make sure you wash your hands after handling one to prevent hurting others!



Image: Nell Rux

Leopard Frog

Size: 1-3in long

Identifying Characteristics: Lime green to light tan with circular spots surrounded by light halos. Differentiated from Pickerel Frog by rounder spots and greener overall color. Call a short snore.

Big Night Rarity: Uncommon

Fun Fact: Leopard Frogs produce enzymes that are being tested as cures for mesothelioma, brain cancer, and lung cancer.



Image: Ashley Flanders

Mink Frog

Size: 1-3in long

Identifying Characteristics: Green with black and brown splotching over the entire body, otherwise similar in appearance to Green Frog. Smells musty. Webbing on rear foot usually extends the tip of the outermost toe.

Big Night Rarity: Rare

Fun Fact: Mink Frogs are named for their smell—apparently smelling like mink, or rotten onions. Mink frogs are also highly resistant to a modern, very deadly frog disease called Ranavirus—this may be due to bacteria that lives on their skin.



Image: Nick Dunham

Salamanders

Spotted Salamander

Size: Up to 8in

Identifying Characteristics: Unmistakable black body with yellow spots. Large salamander overall.

Big Night Rarity: Common

Fun Fact: Spotted Salamanders are the only known vertebrate animals capable of photosynthesis due to a mutualism with algae.



Image: Greg LeClair

Blue-spotted Salamander/Unisexual Salamander Complex

Size: Up to 6in long

Identifying Characteristics: Can be all gray to black, usually with blue flecking on the belly. Almost as large as Spotted Salamanders.

Big Night Rarity: Uncommon

Fun Fact: Blue-spotted Salamanders regularly steal genetic information from other salamanders, making them an endlessly complex salamander to study.



Images: Greg LeClair

Eastern Newt/Red Eft

Size: 1.5-3in long

Identifying Characteristics: Usually a bright red with small black halos running down either side of the back. Can have dulled brown or gray backs. Adults (fully aquatic) brown/olive green on top with yellow belly and black spots.

Big Night Rarity: Uncommon

Fun Fact: The Red Eft stage is what you're likely to find on a Big Night; this is the juvenile stage, which can take several years to complete. When they're ready to become adults, they enter the water for the rest of their lives!



Image: Karen Gray

Salamanders Continued

Eastern Red-backed Salamander

Size: 2-3in long

Identifying Characteristics: Single red stripe running down the back, with a dark gray metallic body. Occasionally, individuals may be lacking the red stripe, called “lead-backs”.

Big Night Rarity: Uncommon

Fun Fact: Eastern Redbacks are some of the most common vertebrates in the woods; some say they even outweigh all the other vertebrates in a patch of woods combined!



Top: Kaili Stalling. Bottom: Karen Gray.

Northern Two-lined Salamander

Size: 2-4in long

Identifying Characteristics: Tan color with two faintly separated yellowish lines running down the back. Tail flat and paddle-like.

Big Night Rarity: Rare

Fun Fact: Found commonly around streams, these salamanders will wiggle wildly until they reach water to escape predators.



Image: Anne Simpson

Northern Dusky Salamander

Size: 2-4in long

Identifying Characteristics: Can be brown or all black. When brown, nondistinct swirling patterns throughout body. Has a short shovel-like nose, and rear legs much thicker/larger than front, and front but somewhat paddle-like tail. Don't confuse with lead-phase Eastern Red-backed Salamanders, which will have all legs similar sized and rounded tails.

Big Night Rarity: Rare

Fun Fact: One of the lungless salamanders, Duskiess breathe through their skin instead of through an internal respiratory system.



Image: Sarah Smith

Salamanders Continued

Four-toed Salamander

Size: 2-3in long

Identifying Characteristics: Reddish brown back with belly patterned like a Dalmatian dog. Base of tail has noticeable constriction. Rear foot only has four toes; other salamanders have 5.

Big Night Rarity: Uncommon

Fun Fact: Four-toed salamanders specialize in sphagnum moss swamps. If your site has a nearby moss swamp, keep an eye out for these hard-to-see salamanders!



Image: Karen Gray

Northern Spring Salamander

Size: 4-7in

Identifying Characteristics: Bright pinkish red salamander, large in size. Tail as long as body and flat. Squared-off nose.

Big Night Rarity: Unrecorded

Fun Fact: A true habitat specialist, Spring Salamanders are only found in small, cool headwater streams and may become harder to find due to climate change. Keep an eye out for them in mountainous sites. They are yet to be recorded during a spring MBN survey.



Image: Greg LeClair

Tips & Tricks

- When arriving at your site, try to avoid driving through it—you may run over amphibians yourself if you do!
- Make sure you look under and around your car before leaving—you don't want to hit any amphibians on your way out!
- Connect with other Big Nighters, or bring friends and family. The event is far more fun with company, and you may even find more amphibians!
- Don't forget to take photos! Not only can you document the species you found, but also fun photos of you and your co-volunteers. We regularly need photos for marketing, reports, training material, etc., and will provide credit if you submit them!
- If you're having trouble seeing amphibians, get low and aim your light down the road. You may be able to pick out silhouettes of a frog or salamander easier.
- Are your data sheets getting wet? Try getting a clipboard with built-in storage, a Rite in the Rain notebook, a rain cover, or use your phone.
- Headlamps are easier to use when writing data or handling amphibians, but can be harder to spot amphibians with than regular flashlights. Try taking your headlamp off and using it as a regular flashlight until you find your next amphibian.
- Big Nights can get cold—try to avoid wearing cotton if at all possible. Wool and synthetic materials will help you stay warmer if they get wet.
- Try to layer your clothes—waterproof layer on top, insulating layers underneath.
- Having trouble finding where the amphibians are crossing? Follow the road toward frog calls—they may lead you to the action.
- It's entirely possible that you may find other creatures on Big Night. Very warm nights later in the season can occasionally bring out snakes and turtles. Some have even encountered owls, raccoons, and beavers!
- If you park your car, daytime running lights or parking lights are suggested over headlights—they can make it hard to see when walking back toward your car.

Big Night Checklist

Preparing for Big Night

- Training material read
- Quiz passed with 80% or better
- Liability waiver signed
- Vest and flashlight acquired
- Site(s) adopted

The IDs for the site(s) I adopted:

While I wait...

- I am a member of the Facebook group
- I am watching the weather for nighttime temperatures of about 40 degrees or higher and rain
- I am finding people to come with me
- I scouted my site(s) during the daytime so I know where to park safely and where the action will likely be.

Tonight's the night! Don't forget:

- | | |
|---|--|
| <input type="checkbox"/> High-visibility vest | <input type="checkbox"/> Pencils (work better than pens when wet!) |
| <input type="checkbox"/> Flashlight | <input type="checkbox"/> Friends |
| <input type="checkbox"/> Extra batteries | <input type="checkbox"/> Camera |
| <input type="checkbox"/> Data sheets | <input type="checkbox"/> Phone |
| <input type="checkbox"/> Rain gear | <input type="checkbox"/> Time-keeping device |
| <input type="checkbox"/> Warm clothes (wool or synthetic) | <input type="checkbox"/> Gloves/spatula |
| <input type="checkbox"/> Snacks | <input type="checkbox"/> Hand sanitizer |
| <input type="checkbox"/> Water | |
| <input type="checkbox"/> Clipboard | |