

MAINE BIG NIGHT 2022 REPORT

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MAINE BIG NIGHT 2021 REPORT

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MESSAGE FROM
THE PROJECT CREATOR

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Greg LeClair



In last year's report I said I'm waiting for the year that things slow down and I don't get to gloat about how much our project is growing. Well, this is yet another year of incredible growth by all accounts; particularly exciting is we have now not only surpassed 10,000 amphibians recorded but we are quickly hurdling towards 20,000!

This year was not only a blast, but important. Now that we have successfully completed five years of data collection, we have achieved a form of unseen social status—we are no longer the newbies on the block. We are an established, proven, and worthy brigade of scientists that are making differences in short term and long term arenas. With last year's federal infrastructure bill including \$350 million for wildlife road-crossing infrastructure, the time is now to apply our data and heal the ecological wounds in our state just a little bit more. Stay tuned.

I'll see you all again in the spring. Thank you for your amazing, beautiful, continued effort, year after year.

Greg

MAINE BIG NIGHT NEWS

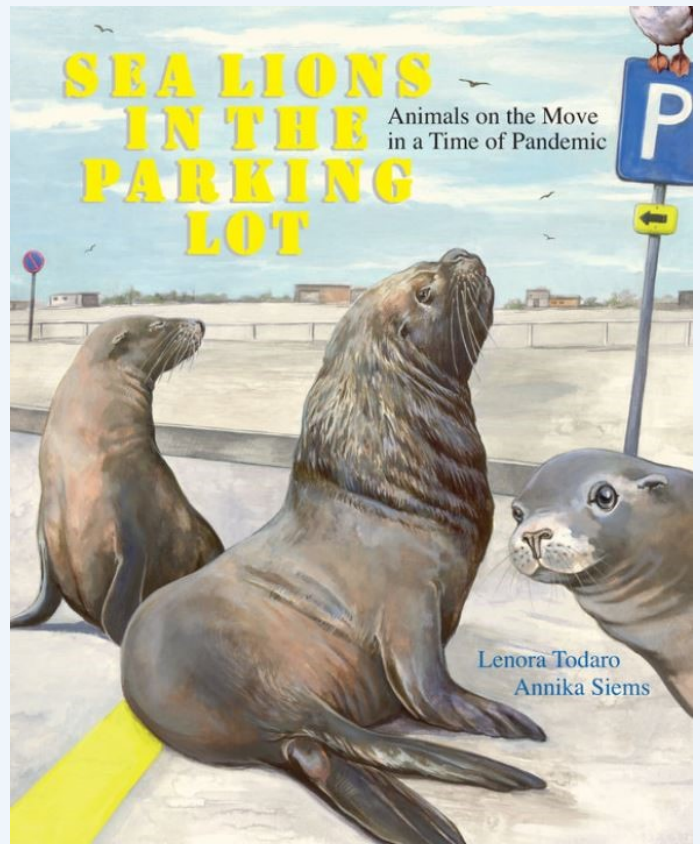
MBN Receives Two Awards

This year, two organizations recognized MBN for its successes; the University of Maine and Natural Resources Council of Maine awarded the Outstanding Service Award and a Brookie Award respectively. The Brookie Award was particularly exciting given its practice of recognizing resilient and creative projects in Maine that contribute to protecting its natural resources. Greg LeClair gave a speech with the other awardees at an award ceremony in July and even had a professional video made about MBN. More information can be found [here](#).



In the News and Outreach

This year, Maine Big Night was highlighted both on [National Public Radio](#) and [Maine Public Radio](#), as well as the [Portland Press Herald](#), [News Center Maine](#), and the [Bangor Daily News](#). The project also performed 9 presentations since the end of the 2021 season, including to the Maine Wildlife Society and an international wildlife working group focusing on how the COVID-19 pandemic has affected wildlife. Finally, the project was even referenced in a children's book, *Sea Lions in the Parking Lot* by Lenora Todaro, where interesting impacts of the pandemic on wildlife were highlighted.



*Top: Jeff Parmelee provides an interview to News Center Maine during an MBN survey. Bottom: The children's book *Sea Lions in the Parking Lot* by Lenora Todaro features a vignette on MBN's work.*

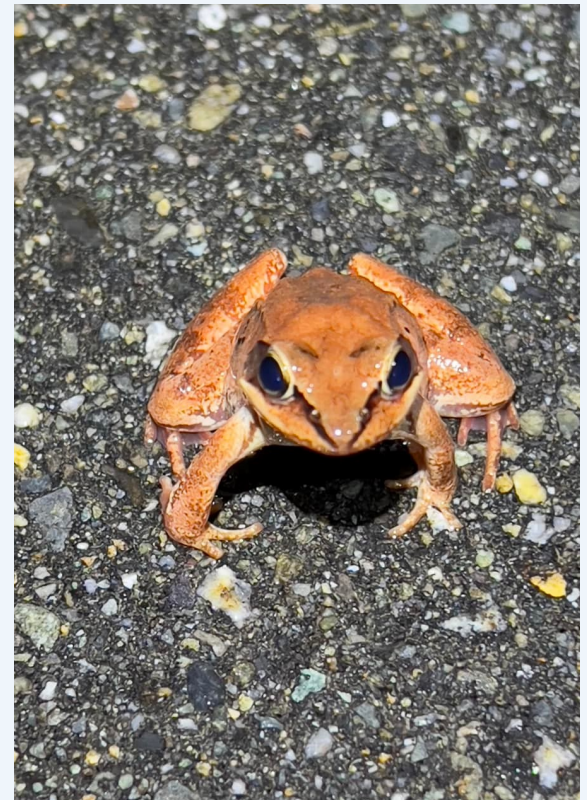


Legos & Shoes: Big Night Becoming Mainstream

Every year, more and more people join Maine Big Night and other big night projects. It is quickly becoming commonplace to find that your neighbors, friends, and family have heard of or even participated in such projects. Part of this success comes from the ways our work is expressed, and this year had some fantastic examples. First, some amazing big night-themed shoes by Mae Richardson have stolen hearts on social media—who wouldn't want those?! Second, a custom Lego set made by Erin McAllister and her family feature many hidden big night treasures—from egg masses to clay sculptured critters to MBN signage, we are contemplating asking Lego to sponsor such a fun and ingenious idea.

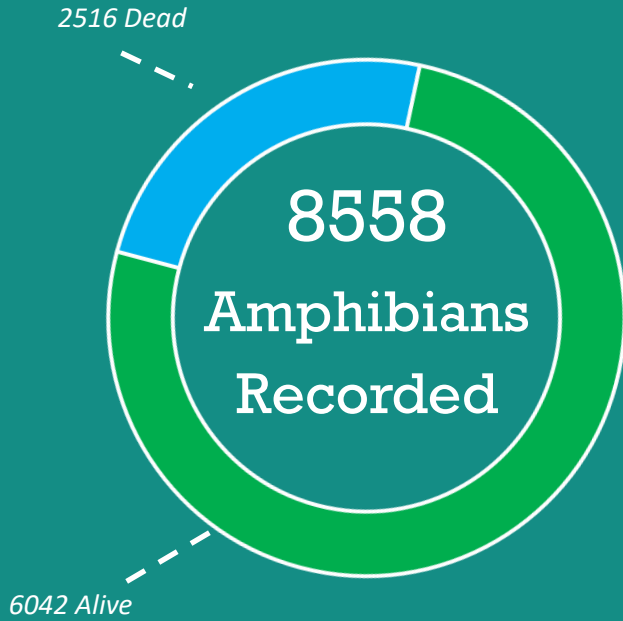
MBN Begins Making Moves for Wildlife Infrastructure

The ultimate goal of our project is not just to help road-crossing amphibians by helping them across with our own hands, but also to create a more permanent solution that can help amphibians (and other species!) cross when we can't be there. This comes in the form of wildlife crossing structures that are installed either under or above roadways; here in Maine, this will take the form of under-road culverts designed to be accessible to wildlife. While we are in the early stages of this work, we have started a working group and identified federal funding that can support creating these structures at sites that are in need. We are actively working with Maine Department of Transportation, Maine Department of Inland Fisheries and Wildlife, and Maine Audubon to use our data, as well as other sources, to identify areas in Maine with the greatest need and try to match these areas with the most monetarily feasible options—that is, areas that are already slated for struction/maintenance within the Department of Transportation. Hopefully, by our next report, these areas will have been identified!



Top: Custom lego set by Erin McAllister. Bottom: Wood Frog by Laura Casey.

RESULTS



OVERALL MORTALITY RATE:

29.40%

▼ 2.49 from 2021 (31.89%)

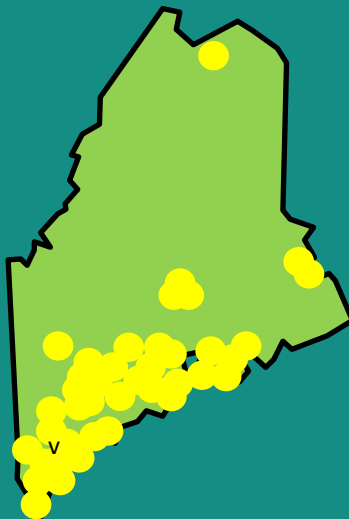
1323

Hours
Surveyed



246

Sites
Surveyed



361

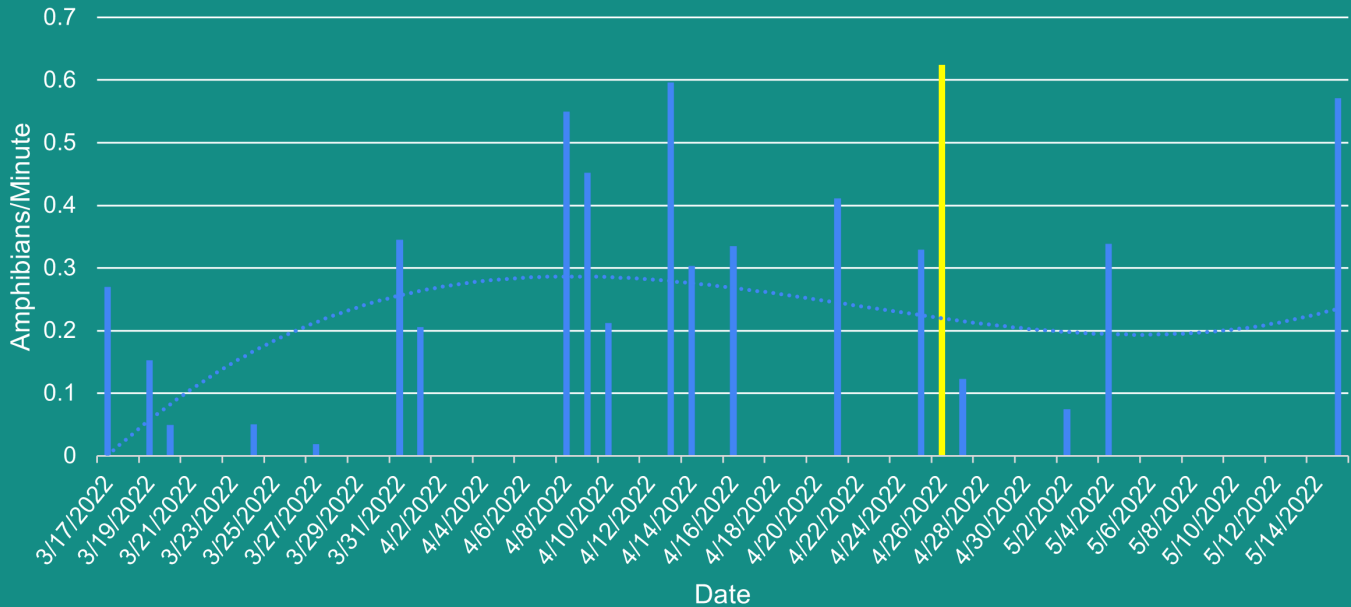
Volunteers
Certified



Species	Alive	Dead	Total	Mortality Rate
American Bullfrog	31	9	40	22.5%
American Toad	87	33	120	27.5%
Blue-spotted Salamander	188	57	245	23.27%
Eastern Newt	90	13	103	12.62%
Eastern Red-backed Salamander	399	28	427	6.56%
Four-toed Salamander	261	30	291	10.31%
Gray Treefrog	26	9	35	25.71%
Green Frog	115	54	169	31.95%
Mink Frog	0	0	0	0.00%
Northern Dusky Salamander	0	0	0	0.00%
Northern Leopard Frog	37	43	80	53.75%
Northern Two-lined Salamander	0	0	0	0.00%
Pickerel Frog	107	33	140	23.57%
Spotted Salamander	1271	252	1523	16.55%
Spring Peeper	2333	1338	3671	36.45%
Wood Frog	1085	353	1438	24.55%

When was the big night?

Amphibian Encounters Standardized by Survey Time



April 26 Conditions According to Volunteer Data:



Drizzle



47°F

RESULTS

During the 2022 season, volunteers collected data between March 15 and May 15. The first date that was actually surveyed was March 17th, and the last date surveyed was May 15th. March 17th is the earliest we've recorded movements in this project to date, keeping with the notion that migrations are beginning earlier and earlier. We recorded 8558 amphibians, but were noticeably less diverse in species than last year; not seen this year but found last year were Mink Frogs (*Rana septentrionalis*) and all of our stream salamander species.

Mortality rates are remaining relatively stable, albeit high. 2019 and 2021 mortality rates were nearly identical to this year's (only a percent or two off),

starting to paint the picture that it is perhaps normal for Maine to have an average mortality rate of about 1 in 3 amphibians not surviving an annual road crossing.

As usual, the animals most frequently seen were Spring Peepers (*Pseudacris crucifer*), Spotted Salamanders (*Ambystoma maculatum*), and Wood Frogs (*Rana sylvatica*). We did have an unusually high number of Eastern Red-backed Salamanders (*Plethodon cinereus*) being particularly boasted by strong numbers from a few sites, as well as Four-toed Salamanders (*Hemidactylium scutatum*).

Perhaps what catches my eye the most from our numbers this year, though, is the extremely high



Photo by Jasmin Robinson.

mortality rates for Northern Leopard Frogs (*Rana pipiens*). While we did count 80 of them, over *half* were found dead! This is particularly worrisome since leopard frogs are a species of concern in Maine and are declining throughout their range. While road mortality isn't typically considered a major impact on this species, this may certainly be evidence that it can be particularly intense in some areas!

Luckily, mortality rates have remained relatively stable or even decreased this year for our vernal pool breeders. Spotted Salamanders were only a percent more than last year at 16%, and Wood Frogs dropped significantly to 24% mortality, a near 20 point drop from last year! Blue-spotted salamanders, however, did see a sharp increase—from just 7% in 2021 to 23% this year, it more than tripled. Why this is is not known, but it is unusual for this species to have such a high rate as it usually remains quite low!

While we missed all of our stream salamanders this year, this marks the first season that Spring Salamanders (*Gyrinophilus porphyriticus*) were found by an MBN volunteer, however it was not during an official survey. These salamanders were found not far from where another was found on the road in the fall of 2021, indicating that these roadways may be important to keep an eye on during upcoming seasons. Sites have been added to these areas accordingly in hopes that we can evaluate this rare species further.

Our biggest migration nights seemed to fall to a much more normal time compared to last year's early movements. While our biggest "big night" fell on April 26th, we had several other great movement nights, including April 8th, April 9th, April 13th, and May 15th. Admittedly April 17th had actually shown to be the busiest night, however this was produced by only a lonely entry with less than an hour of survey time, so it was pulled from this analysis since all of these other dates are loaded with much more data.

Five years into our project, we are starting to see a clear image of where our most problematic sites are. For at least three years, Durham Rd in Brunswick, Forest Avenue in Orono, Bennoch Rd in Orono, and Boyd's Corner Rd in South Berwick have all had mortality rates that have been consistently above 60%. What do these three sites have in common? High traffic roads cutting through forested wetland complexes—that is, forests with lots of pools, swamps, and marshes interspersed around the roads. These are amphibian hotspots, and when a busy road cuts through the middle of them, the likelihood that amphibians will be impacted is very high.

Finally, volunteerism remains growing. This year, the statistic that I find most exciting is that we surveyed enough for 55 straight days of survey, end-to-end; that's some serious effort! We also finally succeeded in getting multiple school groups into the field, and more volunteers are bringing friends and family; this is great not only for us to enjoy company, but help our amphibians even more!

Data Note

Data used to compile results represent all data that met data quality standards. Data that were evaluated as being low quality were not included in any of the aforementioned results or analyses.



Top Left: Volunteers by Molly Reidy. Top Right: Elise Morano holding a Spotted Salamander. Bottom: Spotted Salamander by Kaili Stalling.

The 10 DEADLIEST SITES of 2022

1. Durham Rd, Brunswick**

83% mortality.

2. Forest Avenue, Orono**

Three sites at 83%, 75%, and 70% mortality. Blue-spotted Salamanders and Northern Leopard Frogs present.

3. Lewis Rd, Kittery

81% mortality.

4. Ash Swamp Rd, Scarborough

80% mortality. Blue-spotted Salamanders present.

5. Bennoch Rd, Orono**

Two sites at 80% mortality and 75% mortality, top deadliest road in 2021.

6. Lambert Rd, Brewer

78% mortality. Blue-spotted Salamanders and Northern Leopard Frogs present.

7. Blue Hill Rd, Surry

73% mortality. Blue-spotted Salamanders present.

8. College Rd, Greene

71% mortality.

9. Ledgewood Dr, Falmouth

70% mortality.

10. Boyd's Corner Rd, South Berwick**

68% mortality. Blue-spotted Salamanders present.

*Sites with high mortality but less than 10 amphibians recorded are not included on this list. Roads marked with a ** are "repeat offenders" - they have been flagged as high mortality sites in previous years. Species of concern are listed as present if detected in 2022 data. Background photo by Jeff Parmelee.*

PSA

ROAD SALT POLLUTION



Since 2020, we have been recording amphibians diseased by heavy levels of road salt. This is typically most visible in frogs; damage to the kidneys from heavy salt loads makes it difficult to regulate water intake properly and frogs can “balloon”, severely limiting movement and possibly leading to death. For more information, please see Frymus et al. 2021 “Salted roads lead to edema and reduced locomotor function in wood frogs”.

Please take special note of any suspected diseased animals and send photos to us with location details to mainebignight@gmail.com so we can continue to monitor this issue in the state.

PREPARING FOR 2023

With the first five years of our project completed, the next few months and years will be a time for major development in the project as we start applying our data to practice. This is certainly an exciting stage for the project as the data you've all been working hard to collect is about to start making real differences. In the meantime, we will be looking to improve the project in the following ways.

Expected changes:

- Streamline the volunteer experience by creating an interactive site adoption map. This is currently in beta and will likely be ready for the 2023 season (thank you Dean Hernandez!).
- Targeted outreach will be conducted to urban and northern areas to increase participation and access in those areas.
- Targeted Spring Salamander survey routes will be released and made available to volunteers.
- Since there are areas with more volunteers with sites, we will introduce a new system that allows site adopters to indicate they are willing to take more volunteers at their site with them.

Goals

- Continue increasing access to the project, especially to urban and underserved communities.
- Reduce data errors, especially as they relate to site locations and certification status. These will hopefully both be solved with our new online site adoption tool.
- Get greater coverage in mountainous and northern sites.

Cross your fingers that applying our data to making long-term change is smooth! It is usually a long and bumpy road for doing so, but once it happens, it will be so rewarding. Don't forget to stay in touch on our Facebook page (www.facebook.com/groups/bignightmaine), on Twitter @mainebignight, and our website (vernalpools.me/big-night/). As usual, updates will typically start coming through around January and February.

A VERY SPECIAL

THANK YOU

Maine Big Night is quickly becoming one of the *premier* community science groups in the northeast, and that is absolutely due to the amazing community that has chosen to contribute to this project. From volunteering artwork to statistical expertise to time collecting data, our project has grown for the FIFTH (!) straight year in a row. Every year brings something new and exciting, and this year was a hallmark year for amphibian numbers, recognition, and participation. This also marks the first year I got to meet MBN volunteers in person—this is something I plan on continuing every year!

This year was made particularly successful by our team of experts; John Morrison from the World Wildlife Fund for strategic guidance, Dr. Marcia Moreno-Baez and Dean Hernandez for their incredible GIS support, Rebecca Blaesing for her life-saving admin work and volunteer management, and our collaborators in taking this project to the next level, including the Maine Department of Inland Fisheries and Wildlife, the Maine Department of Transportation, and Maine Audubon. A special thanks to Harrison Goldspiel and Dr. Noah Charney for involving the UMaine community and assisting in charting future directions. As always, thank you to our scientific review committee for continued guidance—Dr. Matthew Chatfield, Dr. Cheryl Frederick, Dr. Jeff Parmelee, and Dr. Marcia Moreno-Baez. Thank you to the Moore Foundation for funding our work and increasing our impact. Finally, a big thank you to the two organizations that support our logistics and make our project functional; The Center for Wildlife Studies and Of Pools and People.

Stay Updated!

Facebook: facebook.com/groups/bignightmaine/

Twitter: [@mainebignight](https://twitter.com/mainebignight)

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Report written and compiled by Gregory LeClair

