The Vermont Reptile and Amphibian Atlas

Update

2019

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For the Forest Ecosystem Monitoring Cooperative
(FEMC)

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Vermont Reptile and Amphibian Atlas (2019)

Background

Localized intensive monitoring

Amphibian monitoring at Mt. Mansfield provides locally intensive data on a subset of amphibian species. While these data are particularly valuable and allow us to see year-to-year population changes of the monitored species at Mt. Mansfield and provide local information on abnormalities, and natural history, they do not allow us to see more widespread changes in the distribution and/or natural history (calling times, migration dates, etc.) of the full range of reptiles and amphibians statewide. Nor do they allow us to see changes in forest health, or the impacts of forest fragmentation and consumption on a larger scale. In addition, there is a real need to get reptile and amphibian natural history and management information out to a wide variety of landowners, land managers, and other natural resource professionals.

Statewide extensive monitoring

The Vermont Reptile and Amphibian Atlas is an effort begun in 1994 by the Reptile and Amphibian Scientific Advisory Group for the Vermont Endangered Species Committee. The atlas project initially began as an effort to gather data for use by this committee. Data were needed in order to make informed recommendations regarding the appropriate status and conservation of these species. Since then, the goals have widened to incorporate education, citizen involvement, and dissemination of information. The ultimate goal of the Atlas is to gather and disseminate data on the reptiles and amphibians of Vermont in a way that involves and informs Vermont individuals and organizations so that they will become more informed and effective stewards of wildlife habitat. The Atlas has grown since its inception in 1994 to involve over 7,000 volunteers and thirty-five private organizations and government agencies. With the help of organizations, agencies, volunteers, and staff members, we are continuing to collect information and broaden our knowledge base regarding the natural history, distribution, and effective conservation of Vermont's reptiles and amphibians. By providing the best and most up-to-date information on the conservation of these species in Vermont, we have become a trusted party in many conservation activities throughout the state.

Goals for the 2019 Atlas work

The goals for the Vermont Reptile and Amphibian Atlas for 2019 were to: (1) to gather data for the Vermont Reptile and Amphibian Atlas; (2) to update and improve the Atlas website, Facebook page, and other outreach efforts (3) to review and enter current and previous years' herpetological reports; (4) to forward electronic files of the most recent calendar year's data to the VT Nongame and Natural Heritage Program; and (5) to respond to daily requests for information on the identification, conservation, natural history, and management of Vermont's reptiles and amphibians. We accomplished and exceeded all these goals.

We were also required to submit this report and the most recent full-year's data to FEMC in the format of an Excel spreadsheet(s) with appropriate labels and metadata (for tabular data). The data will be added to the FEMC project library and made available to other researchers (subject to accessibility restrictions). The written report will be posted to the FEMC website. This Atlas report and the data were sent in January of 2020.

Update of the Website

The complete overhaul of our website including updated distribution maps for all Vermont amphibians and reptiles was a major multi-year project for us that we finalized in early 2019. Every year we also update the searchable table of what S1-S3 species in what towns still need to be photo-documented. A mid-summer update of those tables has been uploaded to the Atlas website and a winter 2020 update will be uploaded before the next field season. In addition, a new hardcopy of the Vermont Reptile and Amphibian Atlas with the updated maps is in press.

Archiving Records

The Vermont Reptile and Amphibian Atlas is the primary repository for reptile and amphibian records from Vermont. Our data have been used for almost all recent publications covering this area and we provide records of rarities to Vermont Fish and Wildlife's Nongame and Natural Heritage Program annually. We currently have over 109,000 records in our database. These days voucher specimens come in the form of digital photographs that can be kept in container fields in the database. However, we had an archive of 5,000-10,000 slides, hundreds of old photos, and tens of thousands (140 3-ring binders) of original hard-copy reports that needed to be scanned, labelled, and embedded within our database records so that all materials would be electronic and easily transferable to future formats. The oldest record we have with an actual date from Vermont is 1678, though we have some archaeological reports that are earlier but without exact dates. Of course, most reports are much more recent, and we continue to gather new reports. We want all these data and the original reports and vouchers to be available in perpetuity.

This year with the help of FEMC archiver Matthias Sirch we scanned **all (hundreds) of the print vouchers and 14 old herptile survey reports**. In addition we have been working with SecurShred in South Burlington, Vermont to scan and label all the hardcopy-originals of herp reports. During 2019 we scanned and labeled **34,986 reports**. We have now completed scanning original reports for 28 of our 40 native species, seven hypothetical species, and all crossing and nesting areas. These scans are now referenced in the original reports. We expect to run another GoFundMe fundraising campaign this winter to raise funds to scan the remaining reports and hopefully start scanning old slide documentation. We expect the archiving effort to take two more years and additional funds.

Coordinates

All of our new records are entered into our database with latitude and longitude coordinates for point mapping. New smart-phone photos show us almost exactly where the photos came from. This was not always the case. Older records most often came with physical descriptions of roads or landmarks describing the location. We have hired a person to work one day per week during the non-field season assigning coordinates to reports that did not have them and checking the accuracy of coordinates for those that did. We also had the help of four UVM students as part of a public outreach course. So far we have successfully assigned latitude and longitude coordinates to 17,535 of our 19,005 reports of S1-S3 species and we have begun assigning coordinates to older records of more common species as well. This project will also be ongoing for multiple years.

Contributed records

During 2019 over 880 contributors (651 new, 229 repeat) provided 2,769 new records that were entered into the Vermont Reptile and Amphibian Atlas Database. This brings the total number of reports entered to 109,674.

The 2019 reports included 24 verified reports of S1 species, 138 verified reports of S2 species, 248 verified reports of S3 species, 193 verified reports of S4 species, and 2,031 verified reports of S5 species. Reports also include unverified and negative records, amphibian and reptile road crossing locations, vernal pools, turtle egg-laying sites, and snake dens. Sightings came from 228 towns, cities, grants, and gores and all Vermont counties. They included verified reports of all of Vermont's native species with the **exception of Fowler's Toad** (*Anaxyrus fowleri*), **Boreal Chorus Frog** (*Pseudacris maculata*, probably extirpated from Vermont), and **North American Racer** (*Coluber constrictor*).

Exotic species

Every year we receive a few reports of non-native reptiles and amphibians that were either released pets or were accidentally transported via boats, trucks, RVs, and cars. This year a **Carolina Anole** (*Anolis carolinensis*) was reported from Gardener's Supply in Burlington. It is not unusual for southern lizards to hitch hike on plants brought up from the south; however, this anole and most other southern species will not survive a Vermont winter outdoors. A **Pond Slider** (*Trachemys scripta*), a common pet turtle species, was reported from Hildred Drive in Burlington. This turtle was laying eggs. That is unusual. The Pond Slider will probably survive, but hopefully the eggs will not hatch. This species has become invasive in southern New England. As our climate continues to warm, they could become invasive in Vermont.

Hypothetical species

Like last year, we received a report and photo of a **Blanding's Turtle** (*Emydoidea blandingii*). This time from Wardsboro. This species has populations south and northwest of us, so it could potentially be native and breeding here. It is also a popular pet turtle. At this point we still consider this species hypothetical in Vermont.

We also had four reports of **Eastern Box Turtle**s (*Terrapene carolina*). One of these was a 2019 report with photos from Brookline in what appears to be appropriate habitat, and a second old photo-documented report from 2003 in nearby Dummerston was also added to the database. This adds to a series of reports from that area of Vermont. As a result of this cluster of reports we suspect that we may well have a small and dispersed population of native box turtles in Vermont. A survey group spent part of day searching the area but did not find this or other box turtles. Still, more extensive surveying would be required to find individuals of a small and dispersed population.

Additional **Eastern Box Turtle** reports came in from Georgia (2009, no photo) and Whitingham (2019, with photo). Both of these appear to have been turtles brought in from out of state.

New locations for S1 species

We received a report and photo of a **Common Five-lined Skink** (*Pleistiodon fasciatus*) from a new location in West Haven. This location is in the same town as, and within a 1.5 miles of previous reports, but it is a new site for this species.

We received a sight record of a **Spiny Softshell** (*Apalone spinifera*) from Lake Champlain in Shoreham in 2015. This is well south of this species known range. A photograph would be very helpful in confirming softshells that far south in Lake Champlain.

Another **Spiny Softshell** was seen and photographed from the **Winooski River** in Burlington. This is very exciting in that it is the first report of this species in that historic part of its range in many decades.

Targeted survey efforts

This year I personally took employees or volunteers to over 30 towns in 11 counties in an effort to fill in distribution or photo-documentation gaps.

Progress on needed documentation

Over the last five years we (volunteers and employees) have filled in 538 data gaps (new town records with photo-documentation) for S1-S3 species.

Quality control, maintenance of the Atlas database, data requests

I reviewed all records, contact was made to all contributors, data were entered into our database and rare species reports have been forwarded to the Wildlife Diversity Program of Vermont Fish and Wildlife. We continually check for mistakes and typos in our database and make corrections. This year's export included latitude and longitude coordinates whenever possible, and coordinates were mapped and checked for accuracy.

Data sharing

In 2019, I met with and provided data to the **Natural Resource Conservation Service** for herptile conservation efforts at a variety of their conservation sites in Vermont and I will be providing data for them regularly over the next few years. Data on rare turtles is exported regularly to the **Orianne Society**. Data on all *Ambystoma* were provided to **Miami University** for a PhD research project. **Merck Forest** in Pawlet requested data on all herps on their property. A conservation consultant requested data on all reptiles and amphibians found at **North Beach** in Burlington. The

Green Mountain National Forest requested and was provided data on a Common Five-lined Skink sighting on their property. Reptile and amphibian data were requested and provided to **Putney Central School** for their school forest. Data on amphibian crossing areas was provided for an **Act 250 review** of a proposed development site in East Montpelier.

I have been more aggressive about providing data to contributors from target towns where we need more data. What I provide to these people is a list of common reptiles and amphibians that are expected to be in their towns but have not yet been photo-documented. For towns that have a good chance or providing habitat for rarer species, I include our list of herptiles that should always be documented. I provided this sort of data to residents of over twenty towns. Many of these exchanges resulted in new town records.

I depend upon the Atlas data we have gathered over the last two decades for my teaching. I am hoping to generate better stewardship of our wildlife and ecosystem resources through these classes.

Outreach and related activities

During 2019 I gave thirteen presentations or field trips in Vermont to the general public, colleges, high-schools, and foreign students. I presented on our Monkton amphibian underpasses at the Canadian Herpetological Society's annual meeting. I led field trips and/or gave presentations at both the state's annual wildlife festivals (Herrick's Cove, and Dead Creek).

Our **Facebook** site has been posting regularly throughout the year and it has been generating new records as well.

Continued press coverage helps to keep the VT Herp Atlas in the public's consciousness, and we have had regular coverage this past year in newspapers, online, and on radio. Working with **Vermont Fish and Wildlife**, we continued to generate press releases that were reviewed, edited, and distributed through their outreach network. This continues to generate a much larger and wider reach and we are very appreciative of their support and cooperation.

Our discovery of the explosion of the **Northern Leopard Frog** population along the Otter Creek flood plain was reported on many TV and radio stations. It was later selected as one of the top ten favorite stories of the year by VPR.

We continue to involve and guide working professionals, students, and lay people in direct experiences as colleagues, volunteers, interns, and by serving as informal or formal advisors. We also continue to draw attention to spring summer and fall (and now early winter) amphibian migrations and the threats of habitat fragmentation by roads, through promoting and participating in spring amphibian crossing nights. Increased awareness is needed to fund the projects and make the systemic changes needed to move us toward sustainable practices.

Reptile and Amphibian Scientific Advisory Group (RASAG) to the Vermont Endangered Species Committee (ESC) work that is dependent on Atlas data

The Vermont Reptile and Amphibian Atlas was begun by the RASAG in an effort to gather the needed data to make more informed decisions regarding conservation action and priorities for reptiles and amphibians in Vermont. Here are three 2019 activities informed by that data.

<u>Protection of habitat for state listed species</u>

The recommendation to list critical habitat for the **Spiny Softshell** (*Apalone spinifera*) was approved early this year by the ESC.

<u>Recovery Plan</u>

We worked with Vermont Fish and Wildlife to finalize a recovery plan for **Spotted Turtle** (*Clemmys guttata*). This plan has been approved by the ESC.

Mudpuppy (*Necturus maculosus*)

The RASAG proposed listing the Mudpuppy as a threatened species in Vermont in 2018. We had done this twice before. We continue to be concerned that populations of Mudpuppies in the major tributaries of Lake Champlain can't sustain the regular (every four years) mortality brought about through the use of the lampricide TFM that is used to control sea lamprey. Data strongly suggest that TFM treatments eliminated populations of Mudpuppy from Lewis Creek and have greatly reduced populations in the Lamoille River. However, since control of sea lamprey through the use of lampricides is a program that Vermont Fish and Wildlife supports, they have not supported the listing in the past.

Members of the RASAG and ESC met with the Secretary of Natural Resources, the Commissioner of Fish & Wildlife, and the Directors of Wildlife and Fisheries for Fish and Wildlife with a list of suggested conservation actions for the Mudpuppy. Vermont Fish and Wildlife has agreed to pursue one of these actions and we believe if successful, it will create a population of Mudpuppies in a section of the Lamoille River that will not be treated with TFM.

Awards

Our conservation efforts for reptiles and amphibians have won us a number of awards at local, regional, and national levels. This year Atlas coordinator Jim Andrews received the **Sally Laughlin Award from Vermont Secretary of Natural Resources Julia Moore** "in recognition of his dedicated work to protect and conserve the threatened and endangered species of the state of Vermont."

Financial and other support

The **Forest Ecosystem Monitoring Cooperative** (formerly Vermont Monitoring Cooperative) has been our largest source of funding for many years. Their funding for 2019 originated with a **USDA Forest Service, Northeastern Area State and Private Forestry** cost-sharing grant. A commitment to additional funding of $9,800 through July of 2020 was finalized. The $9,800 represents a drop of $10,200 in funding since 2015. This will allow continued monitoring at Mt. Mansfield but will greatly reduce funding for the statewide monitoring. We look forward to a return to past funding levels for this valuable work in the future.

The **Vermont Fish and Wildlife State Wildlife Grants** (SWG) have also been an important and regular source of funding for statewide Atlas efforts. Our most recent grant runs through 2021 and will be used largely to pay Jim Andrews though it also requires a large match of volunteer hours from me.

The Lintilhac Foundation has been a long-time supporter of this work. Since their funds are from the private sector they can also be used as match for other sources of funding.

In early 2019, we ran an online **GoFundMe** fundraising effort that successfully raised the funds for data scanning and part-time help during 2019.

Also in 2019 we were pleasantly surprised by a donation of $4,000 from the employees of the **Red Hen Baking Company** in Middlesex. This helped make up the loss in funding from FEMC.

Colby Hill Ecological Project (CHEP) funds long-term monitoring in Lincoln in its entirety.

Surveys along some state roads, as well as teaching a VTrans training course are paid by **VTrans**.

The **Orianne Society** is providing support in the form of the labor of its local director Kiley Briggs who is working with us on our website, cartography, and the continuation of postings and responses on our Facebook page.

Vermont Family Forests continues to be our fiscal agent and umbrella organization for most Atlas activities.