

The Vermont Reptile and Amphibian Atlas

Update

2018

April 4, 2019

**For the Forest Ecosystem Monitoring Cooperative
(FEMC)**

James S. Andrews

Vermont Reptile and Amphibian Atlas (2018)

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 2018 Atlas work

The goals for the Vermont Reptile and Amphibian Atlas for 2018 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 on April 4, 2018.

Update of the Website

The complete overhaul of our website was a major multi-year project for us. It had originally been set up in a format that no longer worked well with the internet. Consequently it was rebuilt in a new format from the ground up with completely new maps, updated species information, photos, and look-up tables. It contains over 80 pages of information. We are very excited to have this update in place and of course will continue to update it.

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 will start providing records to the Global Biodiversity Information Facility (GBIF) and other repositories over the coming years. We currently have over 104,000 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 have 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 need to be scanned, labelled, and embedded within our database records so that all materials will 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 these data and the original reports and vouchers to be available in perpetuity. This year we tried a pilot and had SecurShred of South Burlington scan and label one three-ring binder of original reports. The pilot worked well, and we now hope to have them scan all our paper files over the next few years. Scanning and labeling of original paper reports alone is estimated to cost around \$8,000. That does not include the scanning of slides and photos. After scanning, the digital files must be collocated with the original reports. We completed a public fundraising campaign using GoFundMe. We have raised the funds needed to begin this project, but we expect the archiving effort to take multiple 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. She has finished over half of the unusual and rare species. This project will also be ongoing for a multiple years.

Contributed records

During 2018 over 700 contributors provided about 3,300 new records that were entered into the Vermont Reptile and Amphibian Atlas Database. This brings the total number of reports entered to over 106,000.

The 2018 reports included 23 reports of S1 species, 123 S2 species, 480 S3 species, 146 S4 species, and 2,461 S5 species. Reports also include amphibian and reptile road-crossing locations, and important habitat types such as vernal pools, turtle egg-laying sites, and snake dens. Sightings came from 222 towns, cities, grants, and gores and all Vermont counties. They included all of Vermont's native species with the exception of Fowler's Toad and Boreal Chorus Frog (probably extirpated). We entered two reports of North American Racers, but they were both historic reports (1905 & 1914), so there were no current sightings of North American Racers entered in 2018.

Exotic species

Every year we receive a few reports of non-native reptiles and amphibians that were either released pets or were somehow transported to Vermont on RV's, boats, nursery stock, or other items. The year 2018 was no exception; a **Common House Gecko** (*Hemidactylus frenatus*) was photographed and reported from Cornwall, a **Russian Tortoise** (*Agrionemys horsfieldii*) was photographed, captured and returned to its owner in Waitsfield, and **Pond Sliders** (*Trachemys scripta*), a common pet turtle species, were reported from Calais, Milton, & Winooski. The gecko has been taken inside as a pet. The Pond Sliders will probably survive. As our climate continues to warm, they could become invasive in Vermont, but we have no evidence of breeding here at this point. They have become established at some sites in southern New England.

Hypothetical species

We received a report and photos of a **Blanding's Turtle** (*Emydoidea blandingii*) laying eggs in Norwich. 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. We monitored the nest (none hatched), did some limited turtle trapping in the most likely home wetland, and spread the word to locals to be on the lookout for the species, but I suspect it is a released pet.

Outside-of-range reports for S1 species

We received another odd report of an S1 species outside of where we would expect it. A **Common Five-lined Skink** (*Plestiodon fasciatus*) was described but not photographed from along the Long Trail in the Manchester portion of the GMNF. It makes me wonder if a skink could have traveled as an egg or captive adult with a backpacker. I asked the GMNF biologist to check out the site, but he changed jobs before he had a chance to do that, so the report has not been followed up on.

Unusually late records gathered by or contributed to the Atlas Project during the fall and early winter of 2018/19

As was the case over the last two falls, some of the most unusual verified reports of 2018 have been the late-season reports of amphibians. **Four-toed Salamanders** (*Hemidactylium scutatum*), **Blue-spotted Salamanders** (*Ambystoma laterale* group), **Eastern Red-backed Salamanders** (*Plethodon cinereus*) and **Northern Leopard Frogs** (*Lithobates pipiens*) were seen moving on a warm wet night in Salisbury on November 26. Another significant amphibian movement was seen on North Street in New Haven on December 21 with **Eastern Red-backed, Four-toed, and Blue-spotted Salamanders** reported along with **Spring Peepers** (*Pseudacris crucifer*) and even a **Gray Treefrog** (*Hyla versicolor*). Gray Treefrogs are almost never seen past October. **Common Gartersnakes** (*Thamnophis sirtalis*) were reported as late as December 29th in two locations.

Interesting reports from earlier in 2018

Among the most interesting of the reports were the first report of **Eastern Musk Turtle** (*Sternotherus odoratus*) from Glen Lake in Castleton. Nearby Lakes Hortonia and Bomoseen were both known to have populations of this species, but not Glen Lake.

We received another report of **Common Five-lined Skink** from Benson on Lake Road. This is the third report from the same area of Lake Road and is one of only two known sites in Benson for this species.

We continue to confirm and extend the known range of the **Blue-spotted Salamander** in the northern Connecticut River Valley with additional reports in Canaan and new town records from Guildhall. The valley of the Connecticut River in that area has oxbows within the floodplain that serve as breeding habitat for this species.

Cindy Sprague's data on **Eastern Ratsnakes** (*Pantherophis alleghaniensis*) in the Bristol/New Haven area continue to show how chicken coops (they love eggs) are preferred feeding habitats for this species. We also now know that multiple snakes are using the same denning area.

We continue to receive many new **Wood Turtle** (*Glyptemys insculpta*) records as well as multiple reports from previously known sites from the ongoing studies of Mark Powell and the Orianna Society's Kiley Briggs. Steve Parren's reports of **Wood Turtle**, **Spotted Turtle** (*Clemmys guttata*), and **Spiny Softshell** (*Apalone spinifera*) studies in 2018 have been received and entered into our database.

Targeted survey efforts

This year I personally took employees or volunteers to Addison, Brookfield, Brookline, Buels Gore, Chester, Clarendon, Colchester, Concord, Dover, East Haven, Ferrisburgh, Granby, Guildhall, Hancock, Isle La Motte, Leicester, Londonderry, Lunenburg, Marshfield, Morgan, Norton, Norwich, Orwell, Panton, Plainfield, Rupert,

Rutland City, Shrewsbury, St. Johnsbury, Starksboro, Sudbury, Tunbridge, Vergennes, Victory, Waltham, Warren Gore, Waterford, and Windham in an effort to fill in distribution or photo-documentation gaps. By August of 2018 we had added over 200 new town records (photo or sight) of S4-5 species either from volunteers or our own efforts.

No reptiles or amphibians were killed or harmed during any of these activities.

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 and we continue to work to add latitude and longitude for as many of the old S1 through S3 reports as possible as well as all new reports of any species. FEMC funds are being used to pay Kate Kelly for the review and upgrading process.

We also regularly respond to requests for data but are careful not to reveal locations for sensitive species. In 2018, I exported data to NRCS for possible herptile conservation efforts in Salisbury, to the towns of Bolton, Groton, Peacham, and Stowe; The Putney Central School, Lone Rock Point, and a consultant providing conservation guidance for the managers of North Beach in Burlington. Lists of common species in need of documentation were forwarded to individuals in 45 Vermont towns.

The searchable list of needed records was updated again and put on line on our website (VtHerpAtlas.org). This feature has generated many reports that have helped us fill in gaps in our distribution maps. I am hoping eventually to have photo-documented reports of all species found in all Vermont towns, cities, grants, and gores. Since cell phones with cameras have become ubiquitous, this is easier to accomplish than when the Atlas was first started.

Outreach and related activities

During 2018, I gave a total of thirteen presentations or field trips in Vermont, New Hampshire, and Massachusetts. An invited presentation at the Forest Ecosystem Monitoring Cooperative's annual meeting focused on **Climate Change and herps**. Sue Morse and I once again co-taught the Vermont Agency of Transportations Habitat's and Highways program.

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 awareness and we have had regular coverage this past year in newspapers, online, and on radio, including what has become an annual appearance on VPR's Vermont Edition. Working with **Vermont Fish and Wildlife**, we have generated a number of 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.

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.

Teaching with Atlas data

I depend upon the Atlas data we have gathered over the last two decades for my teaching as a lecturer at UVM, Hogback Community College, and at VTrans. I am hoping to generate better stewardship of our wildlife and ecosystem resources through these classes.

Reptile and Amphibian Scientific Advisory Group (RASAG) to the Vermont Endangered Species Committee 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 2018 activities informed by that data.

Protection of habitat for state listed species.

We have reviewed and forwarded a proposed listing drafted by Steve Parren to protect critical habitat for the Spiny Softshell. The ESC has supported the recommendation and once the nesting-area maps are updated, the recommendation will go to Secretary of the Agency of Natural Resources.

Recovery Plan

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

Mudpuppy

The RASAG proposed listing the Mudpuppy as a threatened species in Vermont. We have 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. Although supported by the ESC the recommendation was once again denied as a result of fisheries management concerns. This has however gained us some leverage to pursue some conservation actions for this species other than listing. Once again, the Atlas data are key in these efforts.

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 2018 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 has been discussed but not 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.

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

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

The **Orienne 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.