

To: Jon Kart

From: Jim Andrews
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Re: **Annual report for my Scientific Collection Permit SR-2015-02(a1)**

Date: February 5, 2018

This is my annual report as required for Scientific Collection Permit SR-2015-02(a1) expiring on 12/31/2019.

Contributed records

During 2017 over 800 contributors provided about 4000 new records that were entered into the Vermont Reptile and Amphibian Atlas Database. This brings the total number of contributors to almost 7,000 people and our total number of reports entered to over 100,000.

The 2017 reports included 923 reports of S1 species (903 from one study), 157 S2 species, 458 S3 species, 149 S4 species, and 2,365 S5 species. Reports also include amphibian and reptile road crossing locations, vernal pools, turtle egg-laying sites, and snake dens. Sightings came from 194 towns, cities, grants, and gores and all Vermont counties. They included all of Vermont's native species with the exception of Fowler's Toad, Boreal Chorus Frog (probably extirpated), and Spotted Turtle. In February of 2018, we received a report of a few 2017 sightings of Spotted Turtles, but those data have not yet been entered into our database. We entered one report of a North American Racer, but it was an historic newspaper report from 1914 so there were no 2017 sightings of North American Racers received in 2017.

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 2017 was no exception; a **Western Hog-nosed Snake** (*Heterodon nasicus*) was photographed and reported from Royalton and single **Pond Sliders** (*Trachemys scripta*), a common pet turtle species, were reported from both Brattleboro and Norwich. The Western Hog-nosed Snake will almost certainly die over the winter. The Pond Sliders may survive, but we have no evidence of breeding in Vermont. They have become established at some sites in southern New England.

Hypothetical species

We received a report of two **Eastern Hog-nosed Snakes** from an area in Vermont very close to and in similar habitat to previous reports of the same species. Eastern Hog-nosed Snakes are considered a hypothetical species in Vermont. By hypothetical we are referring to species that may be breeding in Vermont, but we have no solid evidence of that breeding and a very limited number of reports. Unfortunately, although the descriptions are convincing, details on the date are missing as well as the photographs that were taken at the time. We also entered reports of **Eastern Hog-nosed Snake** from Maidstone where a man was importing the snakes with an intent to raise them in the wild.

Outside-of-range reports for S1 species

We received a handful of odd reports of S1 species outside of where we would expect them: **Spiny Softshell** near Mount Philo in Charlotte and in Rutland City; and **Common Five-lined Skinks** from Grand Isle and West Windsor. None of these reports had photos associated with them but some were well enough described to strongly suggest released or transported animals of these species or perhaps related species from out of state.

Unusually late records gathered by or contributed to the Atlas Project during the fall and early winter of 2017/18

As was the case in the fall of 2015, some of the most unusual verified reports of 2017 have been the late-season reports of amphibians. In December of this year we had well-documented reports of **Blue-spotted Salamander**, **Spotted Salamander**, **Northern Dusky Salamander**, **Four-toed Salamander**, **Eastern Red-backed Salamander**, **Eastern Newt**, **Green Frog**, **Spring Peeper**, and **Wood Frog** active and moving on the surface. Almost all of the December reports were on the unusually warm rainy night of December 5 when nighttime temperatures reached 10 C. We continued to receive reports of amphibian and even reptile reports during a thaw in January 2018. As a result of our data, we will be able to help document the current and future effects of climate change on reptiles and amphibians in Vermont.

Interesting reports from earlier in 2017

Among the most interesting and valuable of the S2 reports was tracking down the contributor and location of a 2016 iNaturalist report of the first photo-documented report of a **Four-toed Salamander** from Bennington County. We also picked up a few other new site reports for this species in Benson, Colchester, Monkton, Sudbury, and Wells. I continue to believe this species is more widespread than our records indicate and that we will fill in many more gaps as people learn how to find and identify it.

We received spring and fall confirmation of the Canaan **Blue-spotted Salamander** population near Route 102 and the Johnson Farm Wildlife Management Area.

As a result of Cindy Sprague's study of our isolated New Haven/Bristol/Monkton **Eastern Ratsnake** population, we have learned a great deal about the favored feeding locations for that population as well as a denning site. All of Cindy's data have been entered into our atlas.

We received many new **Wood Turtle** records as well as multiple reports from previously known sites from ongoing studies of Mark Powell. Steve Parren's reports of **Wood Turtle**, **Spotted Turtle**, and **Spiny Softshell** studies in 2017 were received in February and have not yet been entered into our database.

We received photo documentation of new town records of **Jefferson Salamander Group** salamanders from Danville and Roxbury.

We continued to fill in scores of gaps in the distribution and photo-documentation of more common reptiles and amphibians.

Targeted survey efforts

This year we visited Benson, Bristol, Cambridge, Castleton, Cornwall, Fair Haven, Ferrisburgh, Goshen, Landgrove, Lincoln, Middlebury, Monkton, Morristown, New Haven, Orwell, Panton, Pawlet, Pomfret, Putney, Shoreham, Vergennes, Waltham, West Haven, and Weybridge in an effort to fill in distribution or photo-documentation gaps. We gathered new photo-documentation from most of these towns, and new distribution records from many of them, but most of the species were fairly common species.

However, we targeted some old quarries in Pawlet to try to document **Eastern Ribbonsnake** (S1, High Priority SGCN) in that area. We were excited to find and document them as well as **Northern Watersnakes** and other more common species in those quarries. This extends the known range of ribbonsnakes further south in Vermont.

Once again, since the fall was so unseasonably warm, we were able continue fieldwork through November. Even during late fall, stream salamanders can often still be found in and along the streams. We were able to gather new photo-documentation reports in October and November from Addison, Weybridge, Morristown, Cornwall, Ferrisburgh, and Orwell, with **Northern Two-lined Salamander** from Panton being the latest find on November 15th. Since Panton is a fairly flat valley town with lots of agriculture, we were excited to find a very small piece of isolated habitat for this species.

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 are working 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. During 2017, I exported data (Vermont Wood Turtles) to the regional Wood Turtle Recovery Group, the US Department of Defense (all herps on DOD lands in Vermont), Vermont Center for Ecostudies (amphibian crossing areas in Addison County), Burr and Burton Mountain Campus (herp species that need to be documented in Northern Bennington County), Friends of the Green River Reservoir (herp species that need to be documented in Orleans County), the Vermont Agency of Transportation (VTrans), (herps along Route 22A in Orwell south to Fair Haven) in prep for a Route 22A upgrade, VTrans (amphibian crossing data from Route 125 near Payne Drive) for a culvert upgrade and wildlife crossing report, US Natural Resource Conservation Service (Wood Turtles on farmlands), Green Mountain National Forest (Wood Turtles near the Battenkill on USFS lands regarding mowing), and Marsh Billings National Historical Park (herps that needed documenting in the Woodstock area).

We also are working closely with graduate students, biologists, and academic faculty in providing advice and data in locating and studying the distribution of, and effects of, a variety of different reptile and amphibian diseases in Vermont.

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.

We have been working regularly for the last year to **update our website** both in format and in much of the content. We hope to make the new site public in the next couple months.

Drift-fence-monitoring

We once again had funding from the Forest Ecosystem Monitoring Cooperative (FEMC formerly VMC) amphibian drift-fence monitoring on Mt. Mansfield. Consequently we gathered a complete year of data from that site for our long-term monitoring data set. The Snake Mountain fence was also opened for two nights for my UVM class.

Mt. Mansfield Results

Although we had not used power analysis to evaluate apparent trends in species populations since 2001, we used it again this year to see if we had the statistical power to detect the trends suggested by the regression lines. The power analyses confirm that:

- Populations of **Spring Peeper** have **declined** over the long-term duration of this study; **however, the last six years of data have shown a rebound.**
- Populations of the **Eastern Red-backed Salamander** have **increased dramatically** over the length of the study.
- Populations of the **Northern Two-lined Salamander** have **increased** although we continue to catch relatively few.

- Populations of **American Toad** have increased over the duration of the study; however, we began gathering data at a very low-point in their populations. If we had begun monitoring five years later, the population trend line would appear fairly level.
- Although always rare at this site, the **number of abnormalities remains very low**.

Life history differences and similarities between species will help us rule out some potential causes of these changes and suggest others, but at this point, little is known about what is driving these changes.