

# NHDOT SPR2 PROGRAM

## RESEARCH PROGRESS REPORT

<b>Project #</b> SPR 42372I		<b>Report Period</b> Year 2021 <input type="checkbox"/> Q1 (Jan-Mar) <input type="checkbox"/> Q2 (Apr-Jun) <input type="checkbox"/> Q3 (Jul-Sep) x Q4 (Oct-Dec)	
<b>Project Title:</b> Wildlife Vehicle Collisions Data Gathering and Best Management Practices			
<b>Project Investigator:</b> Amy Villamagna		<b>E-mail:</b> amvillamagna@plymouth.edu	
<b>Phone:</b>			
<b>Project Start Date:</b> 5/19/2021	<b>Project End Date:</b> 12/31/2022	<b>Project schedule status:</b> x On schedule <input type="checkbox"/> Ahead of schedule <input type="checkbox"/> Behind schedule	

**Brief Project Description:**

Currently we do not understand the scope or the cost of wildlife vehicle collisions (WVCs) in New Hampshire. Citizens die every year in New Hampshire in collisions with wildlife. There is also a cost in terms of emergency response and property damage from the collisions. Records of collisions with wildlife are not held in one easy to access central location. A better understanding of where these collisions are happening and how often could allow future projects to incorporate more wildlife crossing structures during project development and design to reduce wildlife vehicle conflict.

The proposed project will include a review of the sources of information available about WVCs in NH including the Department of Safety data that is shared with the Highway Design Bureau, the roadkill and accident data collected by the various NHDOT Districts and the NH Fish and Game roadkill data. Data from the NH Fish and Game wildlife sightings database may also be pertinent.

Based on the results of this review process, the project deliverables will include a mapping interface that would identify hot spots of WVCs, a review of WVC mitigation measures, and a summary of best management practices that have been found to effectively reduce WVCs in the Northeast. Development of educational material for NHDOT staff about the cost and prevention of WVCs is also planned.

**Progress this Quarter (include meetings, installations, equipment purchases, significant progress, etc.):**

During the fourth quarter we:

- Presented progress during a Zoom TAG meeting on November 5, 2021.
- Consolidated two collisions datasets (IDMS 2002-2017 and VISION 2017-2019) following schema presented during November TAG meeting. 2017 records were examined closely for potential duplicates, anomalous animal records, and/or training records (the latter was suggested during our November TAG meeting).
- Mapped collisions statewide for the full time period (2002-2019) and for the most recent 10 years (2010-2019) and 5 years (2015-2019). Summarized WVCs by municipality for above three time periods
- Identified records that were plotted in the municipality centroid and removed them from the spatial dataset.
- Mapped and summarized WVCs that have occurred within habitat blocks and priority corridors (as defined by recent NHDFG GIS layers following the modeling procedure adopted for “Connect the Coast” project).
  - 71 of 98 collisions in Plymouth occurred within 300 feet of Priority Habitat Block
  - 4865 of 20577 WVCs occurred within 300 feet of Priority Habitat Block.
  - Reorganized the layout of the StoryMap based on feedback from TAG member
    - Created a summary table of all WVC reduction strategies that is presented early in StoryMap
    - Moved “Wildlife Management Strategies” tab out of the main tabs to enhance focus on DOT focused strategies.
  - Pursuing hotspot analysis used the statistical test Getis-Ord to identify road segments (1 mile) where WVCs were significantly more abundant than adjacent segments. This process has been adopted by several WVC studies,

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including 2021 studies from the Road Ecology Center at University of Davis<sup>1</sup>.

- Added detail to literature review for StoryMap and Final Report
- Sought (and received) locations of previously installed wildlife passage features at roadway-stream crossings from NH Dept of Environmental Services with Pete Steckler’s assistance. The intent is to assess WVCs before and after feature installation. DES provided two locations (Bedford and Shelburne) where wildlife passage features were installed along with stream crossings and provided us with an approach for identifying additional projects via the permitting process and NHDES Wetland Permit Planning Tool

**Items needed from NHDOT (i.e., Concurrence, Sub-contract, Assignments, Samples, Testing, etc...):**

At this point in time, we don’t need anything from NHDOT.

**Anticipated research next three (3) months:**

Over the next quarter we will be focusing our efforts on GIS mapping and spatial analysis of the collision data, starting the statistical analysis of data, and refining the StoryMap.

**Circumstances affecting project:**

At this point in time, we feel like we are on track to complete the project within the previously defined period. Progress during the fourth quarter was slower than third quarter, but that was expected given the reduced capacity to work on project during fall academic term.

Tasks (from Work Plan)	Planned % Complete	Actual % Complete
<i>Collect WVC data for NH (2021 Q3)</i>	100%	100%
<i>Create series of static maps (2021 Q3 -Q4)</i>	60%	60%
<i>Conduct literature review and synthesis (2021 Q3-Q4)</i>	50%	85%
<i>Collect ancillary data (2021 Q4 – 2022 Q1)</i>	10%	10%
<i>Creation of ArcGIS Online viewer for WVC data (2021 Q3-Q4)</i>	25%	0%
<i>Statistical analysis of WVC data (2022 Q1-Q2)</i>	0%	0%
<i>Development of ArcGIS StoryMap (2022 Q1)</i>	0%	30%
<i>Write technical report (2022 Q1-Q4)</i>	0%	25%
<i>Develop short videos (2022 Q2)</i>	0%	0%
<i>Present results (2022 Q4)</i>	0%	0%

**Barriers or constraints to implementing research results**

As described briefly in progress review, there are inconsistencies in how WVC are reported since 2002. Some inconsistencies relate the specificity of the animal involved and others to the spatial precision of the collision location record. We plan to summarize these concerns so that revisions could be made to initial data collection that would ultimately enhance confidence in the results.

<sup>1</sup> [https://roadecology.ucdavis.edu/sites/g/files/dgvnsk8611/files/files/CA\\_Roadkill\\_Hotspots\\_2021\\_2.pdf](https://roadecology.ucdavis.edu/sites/g/files/dgvnsk8611/files/files/CA_Roadkill_Hotspots_2021_2.pdf)