

The North Carolina Department of Transportation (NCDOT) is seeking \$5.165 million from the US Department of Transportation's (USDOT's) Wildlife Crossings Pilot Program (WCPP) to upgrade multiple drainage structures and install approximately 2.2 miles of wildlife fencing along I-40 near the North Carolina/Tennessee state line. Also proposed are improvements to the ramp culverts at the nearby I-40 interchange with Cold Springs Creek Road (Exit 7, NFSR 148) to complement wildlife passage improvements already made thereby NCDOT. NCDOT proposes to provide \$1,300,000 in matching funds for the project.

I-40 is a critical component of North Carolina's infrastructure as a part of the National Highway Freight System and a North Carolina Strategic Transportation Corridor (Corridor Q). Traffic volume in this area is approximately 28,500 vehicles per day. According to Annual Average Daily Traffic (AADT) NCDOT data for 2021, 22 percent of the traffic in this area consists of large trucks.

I-40 in the Pigeon River Gorge (Gorge) area is a four-lane roadway with narrow shoulders and a nearly continuous barrier-divided median. The facility bisects extensive forests that provide quality habitat for black bear (*Ursus americana*) and many other species. Much of the adjoining lands are US Forest Service holdings and a short distance to the south of I-40 is the Great Smoky Mountains National Park (GSMNP).

When I-40 was constructed in 1968, extensive blasting was required along the deep and narrow Gorge, leading to numerous road cuts and fills that fragmented habitat. When wildlife attempt to cross the highway, the median barrier inhibits or blocks their passage. This is a particular conservation concern for herpetofauna and smaller mammals. A study of highway crash reports, carcass removals, and roadkill surveys, conducted by Wildlands Network and the National Parks Conservation Association (NPCA), recorded 158 wildlife vehicle collisions (WVCs) along a 28-mile corridor of I-40 (including the Gorge) from 2018 to 2021. Black bear and white-tailed deer (*Odocoileus virginianus*) were the primary animals recorded, along with at least one elk (*Cervus elaphus*). Like studies conducted in Virginia, studies in the Gorge confirm that WVCs are appreciably higher than reflected by accident reports alone.

The I-40 project will reduce WVCs and improve terrestrial habitat connectivity and the ability of wildlife to cross I-40 by creating dry culverts while adding new pipes for stream conveyance. While bears have been known to use one of the structures (Groundhog Creek), streamflow through all three of the pipes here likely limits use by other area wildlife. The fence will also extend to the I-40 westbound tunnel, thereby incorporating the proposed passage improvements with an existing overpass that is used by wildlife. This will create a mix of several wildlife crossing possibilities over a short distance of highway.

TABLE OF CONTENTS

BASIC PROJECT INFORMATION	•••••	•••••	1
Project Description			1
Project History			2
Project Location			3
Lead Applicant			4
Budget Narrative			4
PROJECT MERIT CRITERIA		•••••	5
Criterion 1.1: Wildlife Vehicle Collisions			5
Criterion 1.2: Terrestrial and Aquatic Hak	oitat Conne	ectivity	7
Criterion 2.1: Leveraging Investments			
Criterion 2.2: Economic Development & \	/isitation O	pportunities	11
Criterion 2.3: Innovation			12
Criterion 2.4: Education & Outreach			12
Criterion 2.5: Monitoring & Research			13
Criterion 2.6: Survival of Species			13
PROJECT READINESS			
Technical Feasibility			14
Project Schedule			14
State and Local Approvals			15
Assessment of Project Risks & Mitigation	Strategies		16
Environmental Permits and Reviews			16
SELECTION CONSIDERATIONS		•••••	17
Safety			17
Climate Change and Sustainability			17
Equity			
Workforce Development, Job Quality, and	d Wealth C	reation	18
SUPPLEMENTAL MATERIALS			
	Email:	mrcox@ncdot.gov	
<u> </u>	Tel:	919.707.6153 (o)	
NCDOT Environmental Policy Unit		919.818.5901 (m)	

XSN8A4TT1DY5

UEI:

BASIC PROJECT INFORMATION

Project Description

The North Carolina Department of Transportation (NCDOT) seeks \$5.165 million to provide wildlife crossing structures and wildlife fencing on I-40 in Haywood County. NCDOT proposes providing \$1,300,000 in matching funds as part of the I-40 Groundhog Creek Area Wildlife Passage Structures project.

This grant will fund creation of dry, abandoned and partially grout-filled pipes to increase the permeability of the I-40 corridor to meso-mammals and herpetofauna. Specifically, new 60-inch by 100- to 150-foot, directionally bored, welded steel pipes will be installed to convey normal stream flows. This will leave the four existing culverts (72-to 96-inch diameter) as normally dry passage conduits that can convey flows during flood events. The new pipes will be installed slightly below the elevation of existing culverts, improving hydraulic connectivity. The scour holes of the existing culverts would be filled with rip rap and aggregate mix to provide benches leading into the newly "abandoned" culvert outlets. Similarly, though less extensive, bench-grading would also be performed on the existing culvert inlets. Rather than installing a new pipe at the Groundhog Creek structure, a grouted bench or elevated floor will be added to one of the existing triple pipe culverts and inlet and outlet benches constructed to create the dry passageway.



WHITE OAK CREEK OUTLET

At this and three other similar pipes, a new directionally-bored pipe would be installed below the elevation of existing pipe and remaining scour hole filled to provide bench leading into "abandoned" pipe.



I-40 WB RAMP AT EXIT 7 OUTLET

Benching would be added to one barrel of this reinforced concrete box culvert (RCBC), and the RCBC under the eastbound exit ramp, to improve use by wildlife. The grant will also fund the installation of 2.2 miles (1.1 miles on each side of I-40) of wildlife fencing to bracket the multiple hydraulic structures under I-40 near and including Groundhog Creek. The fence will also extend to the I-40 westbound tunnel, thereby incorporating the proposed passage improvements with an existing overpass that is used by wildlife. This will create a mix of several wildlife crossing possibilities that are connected by wildlife fence over a short distance of highway.

The project would also fund proposed improvements to the two existing reinforced concrete box culverts (RCBCs) under the existing ramps at the I-40 and Cold Springs Creek Road interchange (Exit 7). This exit is about 2 miles from Groundhog Creek (and about 1.5 miles from proposed fence end) and is the location where wildlife passages and fencing were recently incorporated into a bridge replacement project (NCDOT State Transportation Improvement Program (STIP) Project B-6054A) that carries I-40 over a forest service road (Cold Springs Creek Road, FSR 148) and Cold Springs Creek. Like the proposed stream culvert improvements at and near Groundhog Creek, improvements to the RCBCs would also include inlet and outlet grading and installation of sills/baffles and backfill in one barrel of the dual barrel RCBCs



to create dry passageways. Monitoring of these culverts has shown some wildlife approaching but are not passing through these structures, which is similar to interactions observed at Groundhog Creek culverts (NPCA and Wildlands Network 2022).

Project History

When I-40 was constructed in 1968, extensive blasting was required along the deep and narrow Pigeon River Gorge (Gorge), leading to numerous road cuts and fills that fragmented habitat. When wildlife attempt to cross the highway, the median barrier often inhibits or blocks their passage. This is a particular conservation concern for herpetofauna and smaller mammals. A study of highway crash reports, carcass removals, and roadkill surveys, conducted by Wildlands Network and the National Parks Conservation Association (NPCA), recorded 158 wildlife vehicle collisions (WVCs) along a 28-mile corridor of I-40 (including the Gorge) from 2018 to 2021. Black bear (*Ursus americanus*) and white-tailed deer (*Odocoileus virginianus*) were the primary animals recorded, along with at least one elk (*Cervus elaphus*). Like studies conducted in Virginia, studies in the Gorge confirm that WVCs are appreciably higher than reflected by accident reports alone.

An earlier study conducted by Virginia DOT (VDOT 2017) determined that standard highway crash data significantly undercounts the actual number of WVCs including

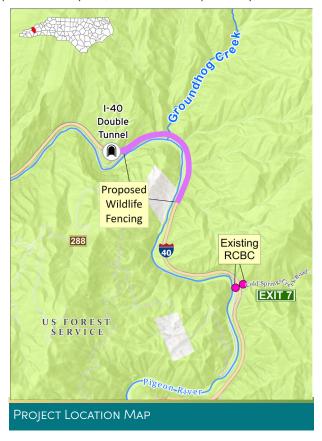
by up to a factor of 8.5 in one area studied. Virginia therefore uses a factor of 5 for adjusting crash reports for WVC estimates and assessment of WVC mitigation needs.

Compared to the surrounding area, the valleys of Groundhog Creek and the adjacent Pigeon River tributaries have lower slopes and less relief than much of the Gorge terrain, making them more conducive to wildlife movements. This increased activity by wildlife has led to the frequently reported WVCs. Bears and other wildlife have been documented using the three-barrel culvert (84-inch diameter) at Groundhog Creek (NPCA and Wildlands 2022). However, the partial streamflow through the pipes likely limits use by some area wildlife. Other stream culverts near Groundhog Creek are single pipes that carry stream flow, when present, which combined with outlet perches likely deters wildlife use of these structures.

Project Location

I-40 is a critical component of North Carolina's infrastructure as a part of the National Highway Freight System and a North Carolina Strategic Transportation Corridor (Corridor Q). Traffic volume in this area is approximately 28,500 vehicles per day.





I-40 in the Gorge is a four-lane, nearly continuous concrete median-divided highway with narrow paved shoulders. The facility crosses over extensive forests that are quality habitat for black bear and many other wildlife. Much of the adjoining lands are US Forest Service holdings and a short distance to the south of I-40 is the Great Smoky

Mountains National Park (GSMNP).

TRIBAL LAND

This project is not located on land belonging to a federally recognized Indian Tribe.

RURAL OR URBAN DESIGNATION

This project is in a Rural area as designated by the U.S. Census Bureau.

COMMUNITY DEVELOPMENT ZONE

This project is not located in any of the four federally designated community Development zones.

Lead Applicant

NCDOT is the Eligible Applicant and project lead. NCDOT has a long history of successful project delivery. NCDOT has provided detailed cost and schedule information in this application and additional information on the basis for the cost and schedule is included in the supplemental materials. The financial plan is in place. NCDOT has successfully delivered many USDOT grant projects and is currently working on several grant-funded projects, including the I-85 FUTURES and STERLING projects, which were awarded MPDG funds in 2023. In addition, North Carolina has a strong reputation for prudent use of federal highway funding. The state formed its State Highway Commission (now NCDOT) in 1915. The commission and NCDOT have successfully managed projects receiving Federal-Aid Highway program since the passage of the Federal Aid Road Act of 1916, through many changes and reauthorizations.

NCDOT is guided by its agency Strategic Plan and the North Carolina Division Business Plan. Based on 2023 data, <u>NCDOT manages approximately \$1.4 billion per year in Federal-Aid Funds</u>.

NCDOT will administer the grant. Contract development will occur through coordination by NCDOT's Federal Grants Manager in the Office of Strategic Initiatives & Program Support with the Programs Management Office, the Environmental Policy Unit, and the Division of Highways Chief Engineer's Office.

OTHER PARTIES

Coordination has taken place with NCWRC who has conducted research in the project area and is interested in opportunities to continue future monitoring.

Budget Narrative

TOTAL PROJECT COSTS

The total project cost is \$6,465,000 with NCDOT requesting \$5,165,000 from the WCPP and the NCDOT providing the \$1,300,000 in matching non-federal funds. This project will have the following phases: final design plans, NEPA compliance and documentation, and construction. NCDOT has determined the following cost: design plans and NEPA documentation (\$300,000), fencing materials and installation for 2.2 miles (\$1,695,936), trenchless pipe installation (\$1,800,000), RCBC improvements (\$125,000), grading work (\$50,000), and monitoring and outreach (\$200,000) for a total cost of \$4,170,936. Including current regional (NCDOT Division 14) rates for construction engineering and inspections and contingencies results in a total project cost of \$6,464,951.

NON-FEDERAL SHARE

The NCDOT Executive Grants Committee has committed to providing the \$1,300,000 matching funds for this project, if awarded, through NCDOT's General Maintenance Reserve Fund which is funded through the State Highway Fund. State Highway Fund Revenues for the Highway Fund are generated from the state motor fuels tax and DMV fees. The Highway Fund primarily supports projects that maintain the state's existing transportation system. This includes general maintenance, roadside environmental activities, resurfacing highways, replacing bridges, paving unpaved secondary roads, and state aid to municipalities. Funds are distributed across North Carolina based on need.

OTHER FEDERAL FUNDS

There are no additional federal funds currently allocated for this project.

PROJECT MERIT CRITERIA

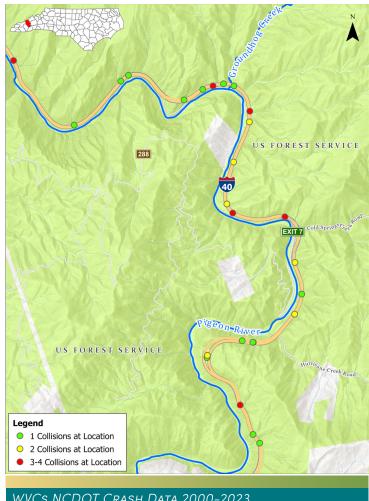
Criterion 1.1: Wildlife Vehicle Collisions

The project contributes to the Wildlife Vehicle Collisions (WVCs) criterion by installing wildlife fencing to direct wildlife to abandoned dry pipes at culvert crossings of I-40 in the vicinity of and including Groundhog Creek and by providing dry barrels in box culverts at an I-40 interchange (Exit 7). The Groundhog Creek and Exit 7 areas were listed as priority sites for WVC mitigation measures per the Research Results and Mitigation Strategies document report published by Wildlands and NPCA, June 2022. The fencing would also enhance wildlife use of the overpass of the existing double tunnel on I-40 north of Groundhog Creek.

Wildlife fencing is known to be the most effective measure to reduce WVC (Clevenger and Huijser 2011). The addition of wildlife fencing to underpasses in Virginia reduced WVCs by 92 percent (Donaldson 2022). The proposed culvert improvements along with fencing would create a 1 mile segment of I-40 with multiple locations where

wildlife could avoid crossing the roadway, reducing potential WVCs. The proposed improvements are intended to provide habitat connectivity needs for small animals and reduce WBCs involving small animals, bear, and deer. While WVCs with small animals may not directly cause substantial damage to vehicles, driver recognition of potential WVCs of this type contribute to erratic and sometimes unsafe evasive maneuvering.

Increasing the permeability of I-40 to wildlife is important because WVCs can be expected to increase over time because of the continuing human population increase, and corresponding traffic increases. From April 2020 to July 2023, the human population in North Carolina is estimated to have increased 3.8 percent, higher than the 1.0 percent increase reported for the United States overall, as reported by the U.S. Census Bureau. The populations of Haywood

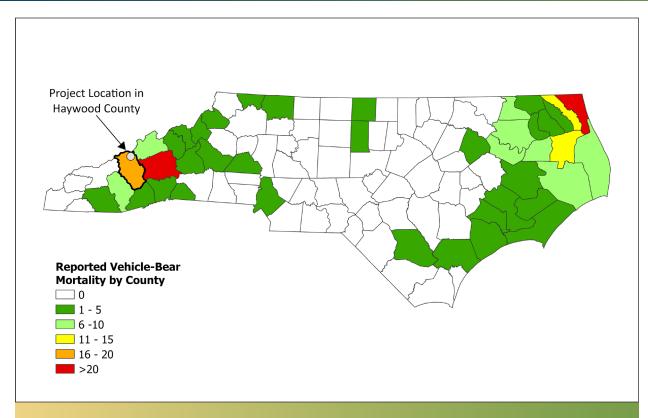


WVCs NCDOT CRASH DATA 2000-2023

County and Buncombe County to the east on I-40, which also includes the Asheville metropolitan area, grew by 1.4 percent and 2.4 percent, respectively. Traffic volumes on I-40 in the Gorge have increased from an estimated 24,000 to 25,000 vehicles per day (vpd) in 2007 to about 28,500 vpd in 2021.

In addition to the growing number of NC residents and corresponding traffic increase on I-40, it is also notable that some wildlife populations in the region are increasing, which can further contribute to rising WVC rates. According to the NCWRC, the North Carolina mountains are home to approximately 8,000 bears and the population is currently growing at a rate of 3 to 4 percent annually. This increase has led to more frequent bear fatalities from WVCs. As shown in the figure below, Haywood and Buncombe Counties have far more bear-related collisions than adjacent counties.

The NCWRC has opened limited hunting to an existing bear sanctuary and will be extending the bear harvest season. The Gorge in the project area is bounded on the north by the Harmon Den Bear Sanctuary and further to the south is the GSMNP, a de facto bear sanctuary. Both areas are home to large numbers of bears. In addition to bear, the white-tailed deer harvest in Haywood County has increased from a range of 58-232 individuals/year from 1976-2010 to a range of 394-613 individuals in the last



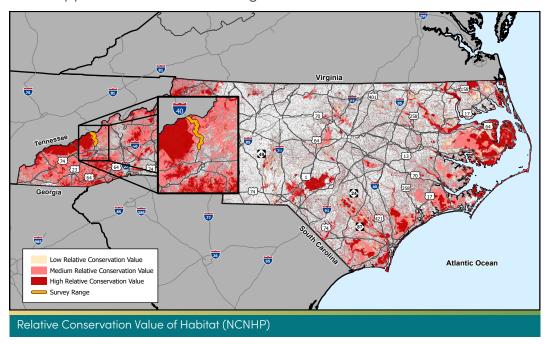
NC BLACK BEAR ANNUAL REPORT (2021 DATA)

5 years (NCWRC). While several factors can affect total year-to-year deer harvest, an increase in white-tailed deer population is typically a large component of markedly increased harvest. Increasing bear, and possibly white-tailed deer population as well, can be expected to contribute to more WVCs along I-40 in the project area over time.

As noted in the Project History, from 2018 to 2021, a total of 158 WVCs were reported along the 28-mile section of I-40 through the Gorge. These WVCs mostly involved bear, white-tailed deer and at least one elk. A study conducted by Virginia DOT (VDOT 2017) determined that standard highway crash data significantly undercounts the actual number of WVCs including by up to a factor of 8.5 in one area studied. Virginia therefore uses a factor of 5 for adjusting crash reports for WVC estimates. Observations of roadkill by NPCA and Wildlands Network (2022) combined with carcass removal records in the Gorge from 2018–2020, accounted for about five times as many of the WVC records as from crash reports alone, which is consistent with the Virginia correction factor. Applying this factor to available crash records from 2001–2020, an estimated 600 WVCs may have occurred in the Gorge over this period. It's also notable that the number should be higher because of the confined roadway section, steep wooded shoulders and fill slopes in the Gorge that likely obscures many mortally wounded wildlife.

Criterion 1.2: Terrestrial and Aquatic Habitat Connectivity

I-40 in the Gorge parallels the Pigeon River and bisects large extents of permanently protected forested wildlife habitats in mountainous terrain. The largely roadless GSMNP is to the west of the project area. As shown in the figure, an almost contiguous expanse of high and moderate quality wildlife habitat border the project area, mostly comprised of the GSMNP and Pisgah National Forest. The landscape of the Appalachian Mountains here is rugged with variable elevations from 1,500 to 5,000+ feet and numerous streams and river drainages. Therefore, this region has a variety of habitats that support a diverse assemblage of wildlife.



I-40 and its artificial surface, traffic noise, and median barriers collectively impede or block dispersal movements by numerous wildlife species. This further impairs wildlife movements in the Gorge due to the river and steep terrain. The nearly continuous concrete median barriers on the highway constitute a physical barrier to several meso-mammals and herpetofauna, as well as create an impediment or barrier to black bear cubs and white-tailed deer fawns. Existing culverts under I-40 are used by wildlife though additional capacity, and most importantly dry passage, should increase their use.

The project will improve the permeability of I-40 and habitat connectivity for meso-mammals and herpetofauna, which is ecologically important and needed. Improvements will also enhance crossing opportunities for bear and other large wildlife. The project contributes to the Terrestrial and Aquatic Habitat Connectivity criterion by improving the ability of wildlife to encounter and use multiple improved hydraulic crossing structures under I40 and an existing double tunnel overpass.

Black bear, long-tailed weasel (Mustela frenata), southern water shrew (Sorex



BEAR USING GROUNDHOG CREEK CULVERT TO PASS UNDER I-40 (NPCA & WILDLANDS)

palustris punctulatus), American mink (Neogale vison), bobcat (Lynx rufus), muskrat (Ondatra zibethicus), gray fox (Urocyon cinereoargenteus), raccoon (Procyon lotor), striped skunk (Mephitis mephitis), and eastern spotted skunk (Spilogale putorius) are several mammals that are expected to or may use the improvements. The project should also benefit terrestrial reptile and amphibian species including, but not limited to, spring salamander (Gyrinophilus porphyriticus), Eastern newt (Notophthalmus viridescens), longtail salamander (Eurycea longicauda), spotted salamander (Ambystoma maculatum), wood frog (Lithobates

sylvaticus), and Blue Ridge two-lined salamander (*Eurycea wilderae*). In addition, the area is home to timber rattlesnake (*Crotalus horridus*) and other state (NCWRC) and regional (Southeastern Association of Fish and Wildlife Agencies) species of greatest conservation need (SGCN), including the Eastern box turtle (*Terrapene carolina carolina*).

Criterion 2.1: Leveraging Investments

The project leverages investments by incorporating WVC mitigation and habitat conservation into necessary hydraulic structure improvements. The existing hydraulic structures under I-40 in the Gorge are over 50 years old and nearing the end of their useful life. The project would address maintenance needs by boring new hydraulic conveyances while also providing wildlife passage improvements by leaving the existing pipes in place. The existing culverts would become dry passages except during flood events. This dual benefit approach would provide valuable data that could be useful for other sites.

As previously stated, these project areas were listed as priority sites for mitigation measures in the Research Results and Mitigation Strategies report published by Wildlands and NPCA in June 2022. NCDOT is leveraging the investment in the research, monitoring and analysis that was performed throughout the Gorge by these groups from 2018 to 2021. This project will complement previous improvements to the I-40 bridge replacement over Cold Springs Creek Road (Exit 7) constructed as NCDOT STIP Project B-6054A. NCDOT STIP Project B-6054A included short fencing and cattle guards to discourage wildlife access to I-40, in addition to narrow benches that allow wildlife passage under the new bridge. The proposed effort will provide dry crossings under existing ramps to allow for wildlife passage reducing WVCs on I-40. Collectively these efforts will enhance the permeability of this section of highway, which is also an area

with historically elevated WVCs.

In addition to NCDOT STIP
Project B-6054A, the NCDOT
is pursuing or evaluating
WVC reduction measures
elsewhere in the Gorge.
Fencing and benching under
several other I-40 bridges
has been incorporated
into replacement projects
currently underway as part
of the larger NCDOT STIP
Project B-6054.

North Carolina's commitment to leveraging further investments for wildlife passage projects is demonstrated by the



B-6054A I-40 (EXIT 7) NEW BRIDGE WITH WILDLIFE PATHS

Memorandum of Understanding (MOU) that was signed by the NCDOT and NCWRC in 2023. The NCDOT and NCWRC have been effectively working together on mitigating highway impacts on wildlife habitats for years. This has included many small-scale habitat connectivity projects involving bridge replacements as well as the construction of dedicated highway underpasses to meet specific WVC reduction and conservation objectives. While the agencies have been working together effectively, it was recognized that this relationship should be formalized to ensure continued collaboration. The MOU represents one of only a handful of such agreements across the nation.

Included in the MOU are several efforts to increase the implementation and understanding of wildlife mitigation needs. A specific task of the MOU is "Utilize our mutual understanding of each agency's missions, goals, and objectives to seek opportunities and funding for cooperative projects and activities dealing with highway/wildlife issues". The NCWRC is tasked with monitoring wildlife mitigation projects and working with NCDOT to identify scientifically based WVC reduction and conservation needs. Funding for the I-40 project would allow a more thorough assessment of anticipated benefits of improving existing hydraulic structures to reduce WVC and improve habitat connectivity. The NCWRC would deploy trail cameras to evaluate the effectiveness of the structures and fence at directing wildlife, as intended. Successful demonstration of improvements would further advance the ability to advocate and seeking more diverse funding sources for needed WVC reduction and habitat connectivity projects identified during NCDOT project development.

The MOU outlines specific procedures for integrating project planning and coordination; public safety; maintenance and expansion of habitat connectivity and wildlife habitat conservation; inventory, monitoring, and biological studies; reducing impacts to WVCs; and information and education.

The agencies will:

- Cooperatively seek to make highways less hazardous for wildlife and lessen the
 impact highways have on important habitats and ensure maximum benefit and
 consideration for mitigation efforts that promote wildlife habitat conservation and
 connectivity.
- Further develop methods for evaluating the success of wildlife mitigation measures, including monitoring crossing structures and fences to determine their effectiveness in facilitating wildlife passage.
- Create a WVC data collection tool will be made jointly available for encouraged use and contribution by both agencies (and possibly others) for traffic safety and conservation project evaluations.
- Develop effective and efficient passage structures and associated barriers for various species of wildlife to make highways less hazardous for motorists and wildlife while minimizing effects of habitat fragmentation.
- Jointly develop a "Wildlife Passage Guidance" document that will aid in the familiarity and incorporation of standard prescriptions for highway projects.
- Work together to investigate avenues to minimize highway impacts to federally listed and other sensitive species, and their habitats.
- Cooperate during transportation long-range planning, project development, and operations. allowing NCWRC to provide substantive wildlife resource recommendations to NCDOT.
- Utilize our mutual understanding of each agency's missions, goals, and objectives
 to seek opportunities and funding for cooperative projects and activities dealing
 with highway/wildlife issues.

An intra-agency working group was established to accomplish these goals shortly after the MOU was signed. It recently released the NCWRC-NCDOT Wildlife Passage Guidance. The Guidance document will assist transportation planners and engineers, local and regional transportation planning organizations, other government and resource agencies, and non-profit organizations with wildlife passage planning and design based on the over twenty years of experience that NCDOT and NCWRC have in this field in NC.

The project represents both agencies' commitment and investment in accomplishing several goals established by the MOU.

Criterion 2.2: Economic Development & Visitation Opportunities

The project contributes to the Economic Development and Visitation Opportunities criterion through increasing awareness of wildlife and crossing structures and encouraging safe visitation to the area. The successful completion of this project, along with the extensive photographs of wildlife using the improved crossing structures that can be used as marketing materials at visitor centers (as noted in Criterion 2.4), will encourage travelers to the area by increasing awareness of wildlife.

According to the National Park Service (NPS), since 2012, Great Smoky Mountains National Park (GSMNP) has averaged almost 11.5 million visits per year, with more than 14 million visitors in 2021. It is the most visited national park in the US. While much of the tourist industry development for GSMNP is focused on nearby gateway communities such as Gatlinburg, TN, there is substantial tourist traffic flowing down I40 through the Gorge to both the park and the adjacent (and equally popular) Pisgah and Cherokee National Forests. The Pigeon River itself has also become the center of a vibrant whitewater rafting industry, with the rafts visible from I-40 where the river parallels the interstate in Tennessee. This tourist activity, which can only be expected to increase over time, can be leveraged and improved by the positive implementation of wildlife road crossing structures in the Gorge. Wildlife crossing projects, if communicated well to the public at local, regional, and national scales, will generate even more visitation interest in this beautiful mountain environment.

Tourism is of vital importance to Haywood County and surrounding areas. Based on the 2020 Census, the population of Haywood County, NC was 62,089. The median household income in Haywood County is \$33,922, with 11.5 percent of its population living below the poverty line. Furthermore, the largest employer in Haywood County, the Canton Paper Mill, permanently closed in Spring 2023. While this portion of Haywood County is not classified as an Area of Persistent Poverty (APP) or a Historically Disadvantaged Community (HDC), it is adjacent to Cocke County Tennessee, which is classified as an HDC. Funding of this project will bring increased awareness to the diversity of species accessing the crossing structures and encouraging visitation.

Criterion 2.3: Innovation

The project contributes to the Innovation criterion by assessing how leaving obsolete hydraulic conveyance structures in place to provide wildlife passage under existing highway infrastructure can serve as a cost-effective alternative to more expensive structural approaches. Bears and many other wildlife use corrugated pipe culverts, including those at Groundhog Creek (NPCA and Wildlands 2024; NCWRC unpublished). This project can further our understanding of the use of corrugated pipes in an area with a high bear density by increasing the availability of dry culverts.

The project is also innovative because wildlife crossing, WVC reduction, and infrastructure needs may all be met collectively by improving hydraulic structures. This approach is an efficient way to use limited funds to meet multiple objectives. This approach is also innovative because wildlife passage measures may be achievable with less expensive and intrusive means. Constructing large overpasses or large bridges would require considerable expense as well as major traffic control challenges on I-40. In contrast, all work proposed for this project can likely be achieved with much less expense and likely little or no long-term disruption of highway operations.

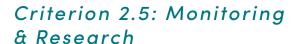
Criterion 2.4: Education & Outreach

The project contributes to the Education and Outreach criterion by providing information

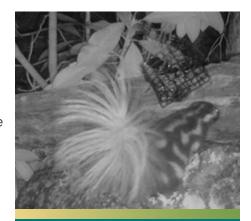
I-40 Haywood Co: Groundhog Creek Area Wildlife Passage Structures | **SEPTEMBER 2024 PROJECT NARRATIVE**

to tourists and area residents on wildlife crossings. Materials, including photographs of animals using the crossings, can also be placed at the North Carolina Welcome Center on I-40 and at the Haywood rest area.

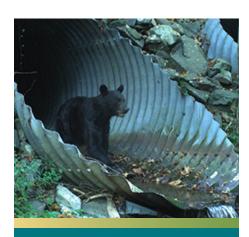
In addition to the public, the project can better educate both NCDOT and NCWRC staffs regarding wildlife mitigation measures and promote the objectives of the MOU. Early identification of existing or anticipated WVC issues is important in highway project planning and development. Case-studies like using directional-boring and leaving the abandoned pipes can serve as a case study for NCDOT on the effectiveness of using existing hydraulic structures as opportunities to increase safe wildlife passage of roadways. Such knowledge would ensure consideration of WVC reduction and wildlife conservation needs because of the availability of the applied information.



The project contributes to the Monitoring and Research criterion by building on the extensive body of research collected for this area by Wildlands Network and NPCA (2018-2021), which includes observed carcasses, crash reports, and survey data and assessment of roadside wildlife activity patterns and existing structure-wildlife permeability. NCDOT has WVC data for this part of I-40 beginning in 2001. Of the 336 reported WVCs, 304 were determined to be caused by large mammals. This includes 167 reported bear WVCs, 85 deer WVCs, one elk WVC, and 51 indeterminate large mammal WVCs. This robust data set may be useful in the evaluation of pre- and post-construction estimates of the ability of fencing and improved crossing structures to reduce WVCs in mountainous areas with large bears and other smaller mammals. The NCWRC or others will assess the effectiveness of the improvements. As noted under Criterion 2.4, the information could be used to better guide future project development of infrastructure projects.



SPOTTED SKUNK AT CAMERA TRAP IN GROUNDHOG CREEK AREA (NCWRC)



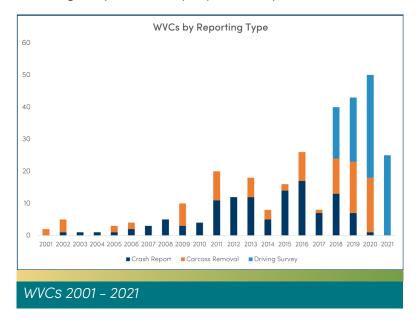
BEAR USING CULVERT UNDER I-40 (NPCA & WILDLANDS)



BOBCAT USING CULVERT UNDER I-40 (NPCA & WILDLANDS)

Criterion 2.6: Survival of Species

The project contributes to the Survival of Species criterion by providing habitat connectivity for state-listed species in Haywood County, including timber rattlesnake longtail salamander, and woodrat spp. (Neotoma spp.). As noted above, dry culverts are anticipated to benefit or reduce WVCs involving the long-tailed weasel, southern water shrew, American mink, bobcat, muskrat, gray and red fox, raccoon, striped skunk, eastern spotted skunk, bear, and deer. Meso-mammals and herpetofauna are the wildlife groups that ecolgically need the proposed improvements.



PROJECT READINESS

Technical Feasibility

The project will utilize directional boring of welded steel pipe which is commonly used in North Carolina to replace aging or undersized hydraulic structures where open-cuts are not feasible. The lack of available detour routes, heavy traffic, and deeply buried culverts in the I-40 Gorge limit the ability to construct new underpass structures by other means, or with larger structures. The project cost estimates were based on NCDOT regional expertise (Division 14) with directional bore contracts, current wildlife fencing costs for materials and installation, as well as recent similar construction work underway within the Gorge mentioned in this proposal. Due to the aforementioned recent NCDOT Division 14 construction projects in the Gorge, this project cost proposal includes an additional cost for construction engineering and inspection as well as a contingency. If project costs begin to exceed estimates, adjustments will be made to stay within budget or NCDOT will investigate opportunities to provide additional funding to complete the project as proposed.

Project Schedule

Upon funding award, NCDOT is prepared to move quickly toward implementation. NCDOT, in coordination with NCWRC, has already identified the locations and materials for fencing installation. Design and NEPA documentation is expected to begin within 6 months of receiving funding. Construction is anticipated to begin within 1 year of receiving funding and would be complete within 2 years.

AWARD RECEIVED

NEPA & PERMITTING

CONSTRUCTION

PUBLIC ENGAGEMENT

MONITORING & RESEARCH

The project will take place within existing NCDOT right of way (ROW). If additional ROW is required, NCDOT will work with the US Forest Service (USFS) which has previously expressed broad support for wildlife passage improvements in the Gorge. The work will have jurisdictional impacts, though work will likely be considered maintenance and/or temporary and every effort will be made to avoid and minimize impacts. If impacts are determined during final design, NCDOT will acquire the appropriate permits from the US Army Corps of Engineers and NC Division of Water Resources.

Further, the potential federal listing of tricolored bat (Perimyotis subflavus) under the Endangered Species Act, is anticipated to occur in late 2024. The listing for this species should not affect the project schedule. NCDOT is developing a programmatic consultation for the species in coordination with the FHWA, the US Army Corps of Engineers, and the US Fish and Wildlife Service. This formal conference/consultation should be complete by August 14, 2024, and a biological/conference opinion is expected to be delivered from USFWS by September 30, 2024. However, percussive activities nor night work are not anticipated. Tree clearing, if needed, would be conducted outside of tree clearing moratoriums.

State and Local Approvals

The project is not programmed in the State Transportation Improvement Program, Land of Sky Rural Planning Organization (RPO) Long-Range Transportation Plan (LRTP), or the State Long Range Transportation Plan. However, NCDOT has the ability to process a STIP amendment prior to obligation of funds. Although this project is not specifically included in Land of Sky RPO's LRTP, it does include recommendations for wildlife crossing locations, including the Groundhog Creek area. Further, Land of Sky RPO and French Broad River Metropolitan Planning Organization (FBRMPO) have developed Potential Wildlife Crossings for the French Broad River MPO and Land of Sky RPO Planning Areas plan (2023), which identifies this section of I-40 as a high priority location.

A comprehensive public involvement effort has taken place in the area in support of wildlife crossing upgrades in Tennessee and North Carolina. The Safe Passage Coalition has committed itself not just to raising funds for wildlife improvements to the highway, but also to raising awareness and public support for the effort. Media content developed by the Coalition can be found at their website.

Assessment of Project Risks & Mitigation Strategies

NCDOT does not anticipate any specific concerns from resource partners due to the partnership and ongoing coordination with the NCWRC regarding wildlife passage and transportation facilities.

NCDOT and NCWRC signed a Memorandum of Understanding (MOU) in April 2023 to cooperatively and collaboratively work together on project planning and coordination; public safety; maintenance and expansion of habitat connectivity and wildlife habitat conservation; inventory, monitoring, and biological studies; impacts to wildlife due to vehicles; and information and education. An intra-agency working group developed and recently released the NCWRC-NCDOT Wildlife Passage Guidance.

An intra-agency working group was established to accomplish these goals shortly after the MOU was signed. It recently released the NCWRC-NCDOT Wildlife Passage Guidance. The Guidance document will assist transportation planners and engineers, local and regional transportation planning organizations, other government and resource agencies, and non-profit organizations with wildlife passage planning and design based on the over twenty years of experience that NCDOT and NCWRC have in this field in NC.

Environmental Permits and Reviews

NATIONAL ENVIRONMENTAL POLICY ACT

NCDOT has already begun environmental review and regulatory coordination for the project as part of this application. The NEPA process for the project will begin within 1 month of receiving funding award and will be completed within 6 months. NCDOT anticipates that this project will be classified as a Categorical Exclusion (CE) based on its current Programmatic Agreement with Federal Highway Administration (FHWA) for CEs.

The NCDOT has designated liaisons within all necessary regulatory agencies who are assigned to work specifically on NCDOT projects. The project will take place entirely within existing NCDOT disturbed right of way. The road shoulders where fence would be installed are cuts and fills, so there should be no archaeological concerns. Utility conflicts at the site are minimal and coordination can begin as soon as funding is announced. Potential regulatory and permitting concerns have been addressed through early coordination in the site selection process and designated liaisons within the regulatory agencies will ensure streamlined coordination and timely issuance of permits.

PROJECT PUBLIC INVOLVEMENT

NCDOT acknowledges the importance of its obligation to provide robust public involvement throughout the decision-making process and project implementation across the state. These efforts, as directed by NCDOT, are critical to the success our projects. Following our <u>Statewide Public Involvement Plan</u> and in coordination with our Public Involvement Team and Communications Office, a comprehensive Public Involvement Plan (PIP) will be developed for the project. The PIP will identify opportunities to educate the public on the purpose and need for the project as well as education on wildlife in the region and wildlife corridors and crossings. Public engagement opportunities may include meetings, stand-alone kiosks at rest areas and visitor centers, and participation at area events.

A comprehensive public involvement effort has taken place in the area in support of wildlife crossing upgrades in Tennessee and North Carolina. The Safe Passage Coalition has committed itself not just to raising funds for wildlife improvements to the highway, but also to raising awareness and public support for the effort. Media content developed by the Coalition can be found at <u>Safe Passage Press</u>.

SELECTION CONSIDERATIONS

Safety

Our proposed construction of wildlife fencing on I-40 is completely aligned with the National Roadway Safety Strategy, given the strong emphasis in the project for reducing the number of dangerous, potentially lethal crashes between vehicles and large-bodied wildlife. See Criteria 1.1 above. The combination of cost-effective culvert placement and a properly designed system of wildlife fencing can be expected to reduce wildlife vehicle collisions by as much as 90 percent, making this an extremely effective and efficient highway safety intervention project.

Climate Change and Sustainability

The construction of wildlife fencing and crossing culverts on I–40 would promote the climate resilience of the entire Southern Appalachian Ecosystem. Improving the connectivity of habitats, both terrestrial and aquatic, will increase the ability of species to seek shifting microclimates that are suitable as the climate changes. See Criteria 1.2 for more information on how the project reduces barriers between high quality habitat areas. Also, by reducing major crashes involving large mammals, the project will also serve to reduce WVC related traffic congestion and increased greenhouse gas emissions.

Equity

The proposed work on the I-40 corridor will promote urban-rural equity by marking

a substantial investment in highway safety in rural Haywood County, NC. Haywood County has a poverty rate of 11.5 percent and is facing economic distress due to the 2023 closing of the Canton Paper Mill. By reducing crashes, the crossing projects will promote the livelihood and prosperity of rural residents who can least afford the property damage and health care implications of a high-speed collision with a bear, deer, or elk. This reduction in WVCs will also benefit adjacent Cocke County, TN, which is a Historically Disadvantaged Community (HDC).

Workforce Development, Job Quality, and Wealth Creation

Project construction will last at least six months, bringing opportunities to local workers and revenue to the restaurants, hotels, and other businesses that will benefit from the construction activities. This will promote wealth creation in the area.

NCDOT has established a Disadvantaged Business Enterprise (DBE) program to address ongoing discrimination and the continuing effects of past discrimination in transportation markets nationwide. This program will be used in all aspects of project letting.

In accordance with 49 CFR Part 26 and the Special Provisions, NCDOT has established goals for participation of DBEs in USDOT-assisted contracts, as well as State-assisted contracts. The Triennial Goals are set as follows:

- 2020 2022 Triennial DBE Goal for Federal Transit Administration 1.9%
- 2021 2023 Triennial DBE Goal for Federal Aviation Administration 8.9%
- 2021 2023 Triennial Combined Goal for NCDOT Division of Aviation (state funded projects) 10.7%
- 2022 2024 Triennial DBE Goal for FHWA 13.0%
- 2019 2021 Triennial Combined Goal for NCDOT (state funded projects) 12.3% (revising soon).

On July 19, 2024, <u>NCDOT reported</u> that for a third straight year, the Department awarded a record amount of funding to small businesses. "NCDOT awarded nearly \$65.4 million to small business enterprises (SBEs) through contracts under \$1 million in the 2024 fiscal year, generating a 35 percent increase over the previous record of about \$48.4 million in 2023 and double the target of \$28 million."

NCDOT is also committed to improving the depth of the transportation talent pool. Through the NCDOT Office of Civil Rights (OCR), the Department offers an On-the-Job Training (OJT) program. As of 2021, the OJT program included:

- 103 participating contractors
- 33 contractors with an assigned trainee goal
- 5 contractors without an assigned trainee goal
- 111 trainees enrolled.

The Department operates Accelerated Boot Camps (ABCs), which are accelerated, two-week versions of the Highway Construction Trades Academy (HCTA), in NCDOT's 14 Divisions as well as full, six-week versions of the program. HCTAs and ABCs are customized to the local area and are designed to train participants and connect the talent pipeline to new employment. Currently, typical subjects may include:

- Construction math
- OSHA 10, CPR/First Aid
- Flagger certifications
- Introduction to Earthmoving and Heavy Equipment Training
- Introduction to Commercial Driver's License (CDL).

Participants in OJT or HCTAs can receive Advanced Highway Skills Training (AdT) in current/developing needs areas. This includes bridgework, disaster recovery, EV charging station installation, and CDL for women. The Department is actively examining expansion of these programs to include additional subjects, including broadband installation and maintenance.

NCDOT is also working with its Historically Black Colleges and Universities (HBCUs) and the state's MSI (UNC Pembroke, established by the Lumbee Tribe of North Carolina) to build the transportation labor force. Some examples include:

- NC A&T State University's Center of Excellence for Connected and Autonomous Vehicle Technology.
- Fayetteville State University's SAP Next-Gen Lab for transportation geospatial research.
- Elizabeth City State University's four-year Unmanned Aircraft Systems (UAS) degree program.

NCDOT's OCR will explore the possibility of providing HCTA, ACTs, and/or AdTs in the Division during construction. The Department will encourage the use of DBE firms as part of the letting/administration process.



United States Department of the Interior



FISH AND WILDLIFE SERVICE Asheville Field Office 160 Zillicoa Street Suite B Asheville, North Carolina 28801

August 29, 2024

FHWA WILDLIFE CROSSINGS PILOT PROGRAM 2024 GRANT APPLICATION USFWS ASHEVILLE FIELD OFFICE (AFO) LETTER OF SUPPORT FOR NCDOT

RE: The <u>Wildlife Crossings Pilot Program | FHWA (dot.gov)</u> competitive grant program awarding grants to eligible entities for projects with the goal of reducing Wildlife Vehicle Collisions (WVC) while improving habitat connectivity for terrestrial and aquatic species.

In support of NCDOT's ongoing and longstanding coordination, incorporation and construction of wildlife crossings on transportation facilities in North Carolina, and their joint Wildlife Stewardship MOU with the NC Wildlife Resource Commission, this letter serves as the USFWS AFO's support for the following proposed NCDOT projects:

I-26 Madison County: Wildlife Fence Installation for Wildlife Crossings and Roadway Safety - This project proposes to install 6.5 miles of appropriately designed wildlife fencing to direct species, especially large mammals, to the existing wildlife crossing structures. The fencing would minimize highway access while directing wildlife to the underpasses and the Big Laurel Creek bridge.

I-40 Haywood County: Groundhog Creek Area Wildlife Passage Structures – This project seeks to install wildlife underpasses at Groundhog Creek as well as 2.2 miles of wildlife fencing to bracket the multiple hydraulic structures under I-40 near and Groundhog Creek. The fence will extend to the I-40 westbound tunnel, thereby incorporating the proposed passage improvements with an existing overpass that is used by wildlife. This will create a mix of wildlife crossing opportunities within a section of the Pigeon River Gorge.

The two projects below fall within the USFWS Raleigh Field Office (RFO) work area. Acknowledging that, and the RFO's stated support, the AFO provides additional support given the impacts to endangered red wolves (*Canis rufus*).

US 64 Washington County: Wildlife Fencing to Reduce Wildlife Vehicle Collisions (64 SAFETY) – This project proposes to upgrade the existing wildlife underpasses with appropriate wildlife fencing for approximately 7 miles of US 64. The fencing will reduce WVC in an area with critically endangered red wolf, black bear, and white-tailed deer populations and improve habitat connectivity for all species within this corridor.

US 64 Dare County: The Red Wolf Essential Survival Crossings Under Evacuation Route (RESCUER) - RESCUER proposes to reduce WVC and improve habitat connectivity for the entire length of US 64 within the Alligator River National Wildlife Refuge (ARNWR). This project is critical for the continued existence of the only wild population of the critically endangered Red Wolf in the world. This project is a joint application with the USFWS's Red Wolf Recovery Program and ARNWR. It is supported by Wildlands Network, the Center for Biological Diversity, and coalition partners through a \$2 million fundraising challenge to match a \$2 million anonymous donor. More information can be found here.

Over the last 10 years vehicle strike mortalities have been the leading cause of mortality in Red Wolves. Installing wildlife fencing to reduce WVC along with multiple wildlife underpass structures to provide habitat connectivity for species including the critically endangered Red Wolf, black bear, white-tailed deer, meso-mammals, small mammals, and herpetofauna is an essential mitigation measure to address impacts from US 64 through ARNWR. Specific to this funding opportunity, this first phase addresses one of the WVC hotspots and is a main area of concern along US 64 identified by both Huijser and Begley (2023) based on all Red Wolf vehicle strike mortality data and previous WVC studies conducted on US 64.

The USFWS AFO appreciates the efforts that the NCDOT is making toward reducing WVCs across the state. Such projects align with the USFWS mission, that is "Working with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people." We appreciate the opportunity to provide our support.

Sincerely,

Holland Youngman USFWS Wildlife Biologist NCDOT Liaison

HOLLAND

Digitally signed by HOLLAND YOUNGMAN

Date: 2024.08.29
14:25:13 -04'00'



Cameron Ingram, Executive Director

August 29, 2024

Grant Selection Committee Members Wildlife Crossing Pilot Program United States Department of Transportation, Federal Highway Administration

Subject: Letter of support for Wildlife Crossing Pilot Program (WCPP) grant application for the

North Carolina Department of Transportation's I-40 project in Haywood County, North

Carolina

Dear Grant Selection Committee Members,

As the state agency charged with protecting North Carolina's fish and wildlife resources, the North Carolina Wildlife Resources Commission (NCWRC) supports NC Department of Transportation's (NCDOT) grant application for I-40 wildlife crossing project which was developed with the NCDOT in accordance with a recently signed Memorandum of Understanding (MOU). The MOU formalized interagency coordination on wildlife conservation, highway safety, and mitigation needs on existing and developing highway projects in North Carolina.

This project would increase available dry passage area for wildlife at existing, aging stream culverts under I-40 in the Pigeon River Gorge, an area that is bounded by extensive National Forest and diverse wildlife habitats. In tandem with wildlife fencing, structure improvements would improve the ability of wildlife, particularly meso-mammals, to avoid or bypass this section of 4-lane roadway and its concrete barrier median. The NCWRC supports the application because the project should improve habitat connectivity for several species of wildlife, reduce wildlife vehicle collisions, increase knowledge about implementing wildlife passage measures in mountainous terrain in the eastern United States, and complement other wildlife passage investments that already have been developed by NCDOT elsewhere on I-40.

Thank you for the opportunity to provide comments in support of this project.

Sincerely,

Cameron N. Ingram, Executive Director

Camer N. Ongram

Mailing Address: Director's Office • 1701 Mail Service Center • Raleigh, NC 27699-1700 **Telephone:** (919) 707-0010 • **Fax:** (919) 707-0020



September 3, 2024

US Department of Transportation Federal Highway Administration 1200 New Jersey Avenue, SE Washington, DC 20590

Dear Federal Highway Administration Representatives,

The Safe Passage Fund Coalition (SPFC) is comprised of seven nonprofit organizations united to make it possible for the public to donate in support of improving wildlife connectivity and human safety in Western North Carolina. We believe it is possible to balance the needs of the rich biodiversity that inhabits our mountain region with the ever-growing human population.

Western North Carolina is home to large tracts of protected, public lands including the 522,427-acre Great Smoky Mountains National Park, and the Pisgah and Cherokee National Forests to the northeast (512,758 and 650,000 acres, respectively). These forests are home to a growing and dispersing elk population, a large and robust black bear population, white-tailed deer, and many other species of mammals, reptiles, amphibians, birds, and other taxa. Under current climate change predictions, the nationally significant habitat network formed by the National Park and National Forests will be critical for the long-term health northward flow of regional plants and animals.

The Safe Passage Fund Coalition has been actively engaging the invested public to draw attention to this urgent conservation matter. Through our communications and outreach, we have raised \$210,320 to support this work.

We are pleased to express our support of the North Carolina Department of Transportation (NCDOT)'s proposal for the following projects:

I-40 Haywood County: Groundhog Creek Area Wildlife Passage: In 2022, Wildlands Network and the National Parks Conservation Association published "Road Ecology Research and Mitigation Strategies to Improve Wildlife Connectivity and Human Safety along I-40 in the Pigeon River Gorge," one of the largest road ecology research projects ever completed in the eastern United States. This study aimed to identify locations with high incidents of wildlife-vehicle















collisions, monitor wildlife activity rates along the roadside, and evaluate roadway permeability by monitoring black bear, white-tailed deer, and elk. The results from this study show that black bear movement was highest at the Groundhog Creek culverts and the I-40 westbound tunnel that facilitates movement as an overpass structure but lacks directional fencing. Therefore, we support NCDOT's efforts to improve safe passage at Groundhog Creek and the tunnel as an excellent location to continue addressing these wildlife connectivity issues throughout the broader area of the Pigeon River Gorge.

I-26 Madison County: Wildlife Fence Installation for Wildlife Crossings and Roadway Safety: In 2022 and 2023, National Parks Conservation Association conducted two years of research on a 9-mile stretch of Interstate 26 in North Carolina. The evidence-based work resulted in recommendations that include adding directional fencing to existing wildlife underpass structures in that corridor.

We look forward to advancing our cause with the support of the Wildlife Crossing Pilot Program. Thank you for the opportunity for our organizations to work cooperatively.

Respectfully,

The Safe Passage Fund Coalition

Tim Gestwicki, Chair North Carolina Wildlife Federation

Guenevere Abernathy
The Conservation Fund

Ben Prater Defenders of Wildlife

Jeff Hunter National Parks Conservation Association

Frances Figart Smokies Life

Jill Gottesman
The Wilderness Society

Nikki Robinson Wildlands Network



FHWA WILDLIFE CROSSINGS PILOT PROGRAM 2024 GRANT APPLICATION NCDOT REQUEST FOR SUPPORT

The <u>Wildlife Crossings Pilot Program | FHWA (dot.gov)</u> is a competitive grant program that awards grants to eligible entities for projects with the goal of reducing Wildlife Vehicle Collisions (WVC) while improving habitat connectivity for terrestrial and aquatic species.

In support of NCDOT's ongoing and longstanding coordination, incorporation and construction of wildlife crossings on transportation facilities in North Carolina, and the joint Wildlife Stewardship MOU with the NC Wildlife Resource Commission. The Land of Sky Rural Planning Organization would like to express our strong support for the NCDOT's application Wildlife Crossings Pilot Program Grant Funding for the following projects located in the Land of Sky Rural Planning Organization's planning boundary:

I-26 Madison County: Wildlife Fence Installation for Wildlife Crossings and Roadway Safety - This project proposes to install 6.5 miles of appropriately designed wildlife fencing to direct species, especially large mammals, to the existing wildlife crossing structures. The fencing would minimize highway access while directing wildlife to the underpasses and the Big Laurel Creek bridge.

I-40 Haywood County: Groundhog Creek Area Wildlife Passage Structures – This project seeks to install wildlife underpasses at Groundhog Creek as well as 2.2 miles of wildlife fencing to bracket the multiple hydraulic structures under I-40 near and Groundhog Creek. The fence will extend to the I-40 westbound tunnel, thereby incorporating the proposed passage improvements with an existing overpass that is used by wildlife. This will create a mix of wildlife crossing opportunities within a section of the Pigeon River Gorge.

The Land of Sky Rural Planning Organization also supports the following projects located in other parts of North Carolina:

US 64 Washington County: Wildlife Fencing to Reduce Wildlife Vehicle Collisions (64 SAFETY) – This project proposes to upgrade the existing wildlife underpasses with appropriate wildlife fencing for approximately 7 miles of US 64. The fencing will reduce WVC in an area with critically endangered red wolf, black bear, and white-tailed deer populations and improve habitat connectivity for all species within this corridor.



US 64 Dare County: The Red Wolf Essential Survival Crossings Under Evacuation Route (RESCUER) - RESCUER proposes to reduce WVC and improve habitat connectivity for the entire length of US 64 within the Alligator River National Wildlife Refuge (ARNWR). This project is critical for the continued existence of the only wild population of the critically endangered Red Wolf in the world. This project is a joint application with the US Fish and Wildlife Service's Red Wolf Recovery Program and ARNWR. It is supported by Wildlands Network, the Center for Biological Diversity, and coalition partners through a \$2 million fundraising challenge to match a \$2 million anonymous donor. More information can be found here.

Over the last 10 years vehicle strike mortalities have been the leading cause of mortality in Red Wolves. Installing wildlife fencing to reduce WVC along with multiple wildlife underpass structures to provide habitat connectivity for species including the critically endangered Red Wolf, black bear, white-tailed deer, meso-mammals, small mammals, and herpetofauna is an essential mitigation measure to address impacts from US 64 through ARNWR. Specific to this funding opportunity, this first phase addresses one of the WVC hotspots and is a main area of concern along US 64 identified by both Huijser and Begley (2023) based on all Red Wolf vehicle strike mortality data and previous WVC studies conducted on US 64.

Respectfully,

Vicki L. Eastland

Land of Sky RPO Director





North Carolina Department of Transportation & North Carolina Wildlife Resources Commission Wildlife Passage Guidance



I-140 Brunswick County





Wildlife cross or access roadways during foraging, mating, and dispersal activities. These interactions with roadways can compromise roadway safety and traffic reliability. Roadways can also impair wildlife conservation by fragmenting habitats and causing the mortality of rare species. Wildlife crossing structures are proven to enhance habitat connectivity and facilitate wildlife movement under or over North Carolina's roads.

In 2023 the North Carolina Department of Transportation (NCDOT) and the North Carolina Wildlife Resources Commission (NCWRC) entered into a *Wildlife Stewardship Memorandum of Understanding* (MOU) that is intended to foster and enhance communication and cooperation between the two agencies.

Considerations are expected to include:

- Cooperative project planning and coordination
- Public Safety
- Maintenance and expansion of habitat connectivity and wildlife habitat conservation
- Inventory, monitoring, and biological studies
- Impacts on wildlife due to vehicles
- Habitat loss due to invasive species
- · Maintenance of recreational access
- Information and education
- Conflict resolution

The MOU identified this guidance document as a necessary tool to help facilitate communication and stewardship related to terrestrial wildlife passage. It is a living document; updates will be made as new information, techniques, and technologies are developed. This guidance is based on many years of study, implementation, observational data collection, and peer-reviewed reports and literature, as cited. For further information, you may contact: NCDOT's Environmental Policy Unit or Environmental Analysis Unit's Biological Surveys Group at <code>epu@ncdot.gov</code> or <code>bsg@ncdot.gov</code> and WRC's Eastern Habitat Coordinator, Travis Wilson at <code>travis.wilson@ncwildlife.org</code> or the Western Habitat Coordinator, Dave McHenry at <code>david.mchenry@ncwildlife.org</code>. (Note, this guidance also complements and should be used in conjunction with existing guidance for aquatic organism passage included in <code>NCDOT Guidelines for Drainage Studies and Hydraulic Design.)</code>

Background

The NCDOT and NCWRC have collaborated to construct numerous wildlife crossings of highway corridors statewide. NCWRC monitoring has shown that these properly planned and implemented dedicated wildlife crossings are effective in North Carolina. Dedicated crossings are costly and thus are typically focused on priority wildlife habitats, species conservation needs, and/or identified safety concerns. However, adding dry passage and other design modifications to bridge and culvert replacement projects can also provide opportunistic wildlife habitat connectivity on a much broader scale.

Many of North Carolina's 18,000 bridges and culverts already accommodate wildlife movements. Extending dry, clear passage areas under a bridge or improving a culvert crossing during replacement is the most cost-effective and practical method to connect wildlife habitats statewide. The addition of wildlife fencing can significantly improve the effectiveness of wildlife crossing structures. NCDOT and NCWRC have developed standard design features for bridges and culverts, including some lower or no cost considerations, as described in greater detail herein. Both agencies will educate staff and partners to better integrate wildlife passage into routine bridge and roadway designs for North Carolina highways. A multidisciplinary approach has been proven to result in our most effective wildlife passage success stories, so both agencies strive to include an array of expertise for any wildlife crossing decision-making. For example,





when NCDOT's hydraulic engineers are considering increased capacity in a culvert system, an opportunity arises for wildlife passage to also benefit from that needed floodplain capacity.

Animal-Vehicle Collision Data

NCDOT and NCWRC are continually improving the collection of wildlife-vehicle mortality data to help assess the need for warning signs, crossing structures, fencing, and other mitigative efforts (Figure 1). Reported animal-vehicle collision (AVC) data are available and may support mitigation measures for some projects1. North Carolina had over 20,000 reportable AVCs including four fatalities in 2022, (NCDOT 2020-2022). The estimated comprehensive crash costs for all of North Carolina's 2022 AVC is \$486,000,000 (based on NC Standardized Crash Cost 2022). Carcass removal data from other states has documented actual AVC occurrences more than five times greater (in Utah study) and nine times greater (in Virginia study) than the accident-reported AVC numbers (Olson, 2013; Donaldson & Lafon, 2008). Applying the most conservative correction factor to reportable AVC suggests there are closer to 100,000 large AVC occurring annually in North Carolina.



Figure 1 Wildlife warning on I-26 West, Madison County.

Techniques for Enhancing Design for Wildlife Passage

Increasing hydraulic capacity often results in larger structures that provide better habitat connectivity. Bridges typically provide more span length and opening than culverts and thus often better accommodate movements of a broader range of wildlife species. In-kind bridge-to-bridge replacements or culvert-to-bridge replacements should be evaluated on streams with frequent wildlife usage, such as along high-quality habitats and contiguous riparian corridors. In high-quality habitats, such as large floodplain wetlands, if sloping abutments preclude the ability to provide clear floodplain or streambank benches under the structure then bridge span should be increased or vertical abutments used. For single pipe or box culvert crossings, widths that allow bedload retention and floodplain/streambank construction should be pursued while also maintaining a natural stream channel width. Maintenance of a natural stream width may require notched sills or baffles, per NCDOT *Guidelines For Drainage Studies* (Figures 2 and 3). Where practical, high-flow floodplain barrels should be added to hydraulic crossings to provide dry passage areas

Wildlife Passage Guidance

¹ Reportable crashes are those that involve injury or meet the \$1,000 property damage threshold.





for terrestrial wildlife; these would supplement the hydraulic design capacity and help to maintain the stream's baseflow channel dimensions for aquatic passage through the primary barrel(s) (Figures 4 and 5).



Figures 2 and 3. Wide corrugated metal pipe (Wayne County, SR 1300, Unnamed Tributary) retaining bedload (left) and aluminum box culvert (Transylvania County, #870163, North Prong Glade Creek) with notched sills and baffles buried by bedload (right, note partially exposed sill in photo right).

Benching

Floodplain or approach benches must be constructed to transition high-flow culvert barrels or dry benching in or under single pipes, boxes, or bridges, into the stream banks upstream and downstream of the structure (Figures 4 and 5). This will encourage wildlife use by creating unobstructed habitat connectivity under the roadway. Bank sloping may be required on incised stream channels to transition the floodplain or lower dry ground elevation down to the bench elevations (Figure 4).





Figures 4 and 5. Benching into box culvert (left, Transylvania County, #870012, Hogsed Creek) and benching with bank sloping (right, Mecklenburg, I-485 vicinity, unnamed tributary).





Rip Rap / Armoring

Full armoring of streambanks or sloping abutments can deter passage of wildlife that move along stream corridors, and it can encourage wildlife to attempt at grade road crossings. Widespread use of riprap creates barriers to wildlife movement; riprap should be avoided where effective soil stabilization can be achieved with vegetation. Where armoring must be used, the following guidance will enhance habitat connectivity.

- 1. Avoid the use of rip rap under new bridges if not needed for scour protection or slope stabilization (Figures 6-8). Unarmored stream banks under bridges often remain stable without matting or any stabilizing treatments (observations by NCWRC and NCDOT staff). Some situations such as a sharp channel meander may warrant armoring the outside of the meander while leaving the opposing bank unarmored to allow unobstructed wildlife passage.
- 2. Where plating is used, incorporate a rip rap-free area in the excavated slopes, or construct a path over the rip rap using aggregate, coarse stone, or floodplain material that eliminates voids and creates a flat surface (Figures 9, 10, and 11). (Note, topping treatments are not expected to be maintained post-construction due to access limitations. The fine materials will often accumulate over time naturally due to sediment deposition during floods.)
- **3.** Where possible, rip rap should be keyed-in or embedded below grade before overfilling with native material or aggregate, as approved (Figures 12 and 13).
- 4. Rip rap used for floodplain benching and as backfill inside dry culvert barrels should be topped with native streambed/floodplain material to reduce roughness and rip rap voids that can deter wildlife use. (Figures 3 and 14). This is consistent with current NCDOT Guidelines for Drainage Studies and Hydraulic Design. Exceptions may include stream systems with heavy sediment loads, such as urban streams, that will fill in rip rap voids quickly during flood events. The construction engineer and environmental staff should approve all materials used.
- 5. The portions of lateral ditches that are armored and that cross floodplains should be topped to fill in voids similar to floodplain benching and dry culvert barrels to make it traversable for wildlife.
- **6.** Erosion control matting with nylon mesh needs to be avoided on benches, or anywhere in riparian areas according to standard Division of Water Resources General Certification conditions, due to the entanglement hazard it poses for wildlife.





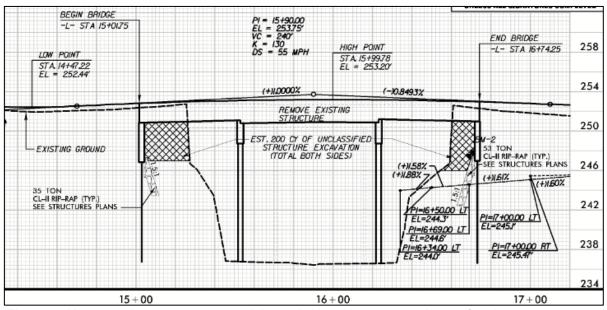


Figure 6. Unarmored slopes on proposed Anson bridge #030217 over Lanes Creek.



Figures 7 and 8. Unarmored floodplains under bridge in Iredell County (left, #480212, Patterson Creek) and large bridge in Stokes County (right, #840008, Dan River).

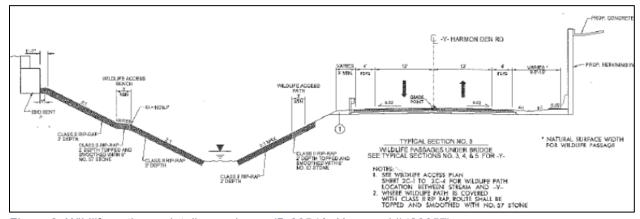


Figure 9. Wildlife pathway detail over rip rap (B-6054A, Haywood #430057)







Figure 10. Wildlife pathway or "bench" as built from Figure 9.



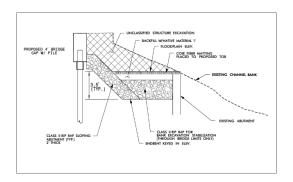
Figure 11 Eno River bench, Orange County, NC.

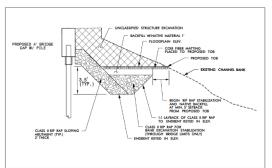




BRIDGE FLOODPLAIN EXCAVATION STABILIZATION DETAIL







DETAIL NOTES:

- 1. FOR USE WHERE EXISTING ABUTMENTS AND BULKHEADS ARE NOT TO BE COMPLETELY REMOVE
- 2. EXCAVATE TO FLOODPLAIN ELEVATION AS SPECIFIED ON PRELIMINARY GENERAL DRAWINGS
- 3. FLOODPLAIN STABILIZATION TO BEGIN WITH A 5' MINIMUM SETBACK FROM PROPOSED TOB
- 4. FOR ALL LOCATIONS OF CLASS II RIPRAP, FILL VOIDS WITH CLASS B RIP RAP
- COIR FIBER MATTING TO BE INSTALLED OVER LIMITS OF FLOODPLAIN EXCAVATION AND AREAS BACKFILLED WITH NATIVE MATERIAL

DETAIL NOTES:

- 1. FOR USE WHERE EXISTING ABUTMENTS AND BULKHEADS ARE TO BE COMPLETELY REMOVED
- 2. EXCAVATE TO FLOODPLAIN ELEVATION AS SPECIFIED ON PRELIMINARY GENERAL DRAWINGS
- 3. FLOODPLAIN STABILIZATION TO BEGIN WITH A 5' MINIMUM SETBACK FROM PROPOSED TOB
- 4. FOR ALL LOCATIONS OF CLASS II RIPRAP, FILL VOIDS WITH CLASS B RIP RAP
- COIR FIBER MATTING TO BE INSTALLED OVER LIMITS OF FLOODPLAIN EXCAVATION AND AREAS BACKFILLED WITH NATIVE MATERIAL

Figure 12. Rip rap embedment detail for floodplain stabilization.



Figure 13. Construction of bench over embedded rip rap (Edgecombe County, # 320113, Otter Creek).







Figure 14. Native material backfilled over rip rap in aluminum box culvert (Henderson County, #440073, Greer Creek).

Dedicated Wildlife Crossing Design

The NCDOT is responsible for managing public funds while addressing an increasing number and complexity of regulatory and planning considerations to deliver transportation projects. The NCWRC is similarly charged with ensuring public funds are used for conservation priorities and objectives. Costbenefit analysis of safety/habitat connectivity measures must validate the extra costs associated with providing habitat connectivity/safety measures.

Projects specifically identified for conservation needs or vehicle collision reduction will be planned and developed in accordance with the 2023 Wildlife Stewardship MOU under established procedures (e.g., NEPA/SEPA scoping, NEPA/404 merger). Such projects typically involve new roadways or upgrades to existing roadways including widening, areas with legacy conservation needs, and/or roadways where AVC issues have increased or developed over time. Available wildlife population and habitat information, wildlife mortality rates, cost-benefit analyses, and other pertinent supporting information will be collectively considered where these dedicated wildlife passage accommodations are pursued for either safety and/or conservation. The NCWRC has been monitoring wildlife crossing structures to collect data to assure the effectiveness of structures and help guide future project decisions. This monitoring will continue in accordance with the MOU.





Structure Types and Objectives

There are several dedicated wildlife crossing structures in North Carolina with different designs and objectives. Large wildlife crossing structures can be overpasses or underpasses that allow wildlife to travel over/under the roadway using a grade-separated bridge or culvert (Figures 15 and 16). North Carolina has constructed several successful wildlife underpasses that provide habitat connectivity for a full range of wildlife species. By contrast, site-specific or species-specific crossings will typically cover a much smaller area and may only utilize small crossing structures (Figure 17). Structures intended to promote ecological connectivity should provide both the ability to pass large mammals as well as small mammals, reptiles, and amphibians. Connectivity projects will often include multiple structures providing better habitat connectivity and conservation value, particularly for small and/or range-limited species.



Figure 15. Wildlife underpass on US 64 in Washington County.







Figure 16. Wildlife underpass on US 17 in Jones County for connecting habitat for a range of species.



Figure 17. Culvert designed for small and medium animal passage on EF Middleton Blvd. Brunswick County.

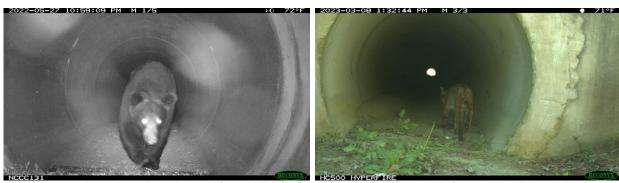




Culverts

Culverts offer a wide range of designs and sizes to provide passage for small and medium species with some larger species commonly using them as well (Figure 18). When incorporating culverts for wildlife passages the following key design features are important and should be evaluated:

- 1. Align culverts to provide a clear line of sight through the structure (Figure 19)
- 2. Backfill culverts with a natural substrate.
- **3.** Incorporate grates in the culvert to allow light and acclimatization to outside conditions (Figure 20)
- **4.** Elevate grates and properly grade culvert approaches to prevent concentrated stormwater from entering the crossing structure. In some cases, specialized crossing structures such as full open grate structures may be necessary to effectively provide wildlife passage (Figure 21).



Figures 18 and 19. Bear in culvert, US 17 Wildlife Crossing Jones County (left), and daylight visible through culvert, US 17 Wildlife Crossing Jones County.



Figures 20 and 21. Grate in median of wildlife culvert, EF Middleton Blvd Brunswick County (left) and open grate crossing Ashe County.





Wildlife Fencing

Providing appropriate wildlife crossings with wildlife fences is a proven effective measure to reduce AVC. Fencing both provides a mechanism for excluding wildlife from the roadway corridor as well as directing wildlife toward a viable crossing location. Studies conducted within North Carolina and across North America have documented a reduction of AVC from 58% - 98.5% (NC US 64 wildlife 58% McCollister and Van Manen, 2010), (Utah I-15 deer 98.5% Bissonette and Rosa, 2012), (Trans-Canada Highway wildlife 80% Clevenger et al., 2001), (Arizonia Preacher Canyon elk Dodd and Gagnon, 2008). Although traffic levels, road characteristics, and wildlife habitat vary considerably, review of NCDOT 2020-2022's AVC data shows wildlife crossings and fencing installed for I-140 in Brunswick County have reduced AVC on I-140 by 75% compared to a nearby unfenced stretch of US 17, and 50% for stretches of US 64. NCDOT's standard wildlife fencing details (866.07 Wildlife Fence with Chain Link & 866.08 Wildlife Fence for Rocky Soils with Chain Link) are designed for large mammals and smaller species with options to accommodate various terrains and durability needs. (Figure 22), When using wildlife fencing it should always be incorporated in conjunction with a crossing structure (Figures 23 and 24). Wildlife fencing without an appropriate wildlife crossing structure will increase habitat fragmentation. The fencing intends to exclude wildlife access to a roadway while also increasing the effective area of the structure. The design of wildlife fencing should complement the structure size and target species. For large mammal crossings, taller heavy fencing extending up to a few miles would be appropriate, while a crossing for reptiles and amphibians may be only 2-3 feet in height and relatively short as determined by habitat and species range. There are multiple options suitable for reptile and amphibian fencing. Considerations such as species, habitat, and fire frequency should be considered when determining the appropriate fence. Fence options include concrete or aluminum headwalls, small mesh wire fences, as well as specialized products marketed for reptiles/amphibians.

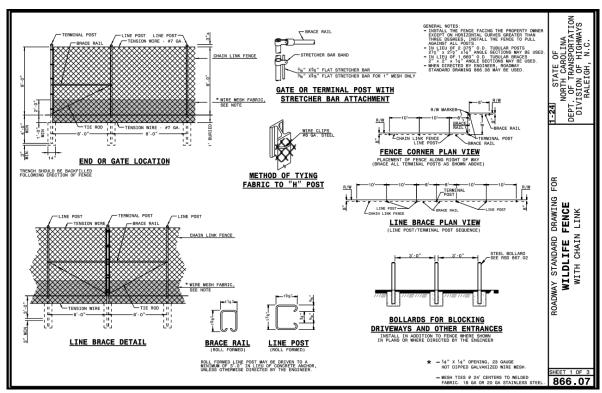


Figure 22. Wildlife fence standard detail (866.07).

Many factors must be considered with wildlife fencing such as terrain, private property, access points, ditch crossings, gates, maintenance, controlled access fence connections, etc. Gaps and openings in fences





create pathways for wildlife to access the roadside of the fencing therefore greatly reducing the effectiveness of the fence and risking AVCs. For NCDOT to properly provide maintenance, the fence should be placed within the limits of the right-of-way or permanent easement. Slope considerations should evaluate both the positive and negative effects of the slope alignment. A higher terrain on the roadside of the fence (Figures 23 and 24) that can provide a jump out for larger species such as white-tailed deer. Conversely, higher terrain outside the fence increases the possibility of wildlife jumping over the fence into the roadway.



Figures 23 and 24. Woven-wire wildlife fence run (left) and tie into crossing structure (right). US 17 Jones County

Greenway and Trail Considerations

The combined presence of greenways or trails providing wildlife passage is a common consideration. The two are not mutually exclusive; however, multiple factors need to be considered in these circumstances. Foremost is how the presence of people using the structure can shift the amount, timing, and type of usage by wildlife. How significant that shift is will vary depending on the type of trail and trail activity. For example, a high-use urban greenway will have a more significant impact on wildlife usage than a rural portion of the Mountains to Sea trail. When looking at trail type in conjunction with the wildlife passage objective, a busier more developed trail should provide physical separation from the wildlife corridor to the maximum extent practicable while also providing vegetated screening. This approach will help ensure the wildlife corridor will accommodate a broader range of wildlife species.

A designed wildlife bench or crossing may look very attractive in the future to use as part of a trail corridor. For this reason, it is important to document the original intent of the wildlife passage and consider the above factors when considering a trail addition.





Maintenance of Crossing Structures

In most cases wildlife crossing measures will not include maintenance beyond what NCDOT typically incurs for a standard structure; however, there are a couple of significant exceptions that are paramount to supporting the investment made in the crossing. These include:

- 1. Vegetation maintenance within a wildlife crossing should be coordinated with NCDOT environmental staff and/or NCWRC prior to cutting or spraying. Uncoordinated clearing activities have resulted in crossings being blocked or filled by brush often covering existing wildlife trails. Vegetation management is necessary for both NCDOT right-of-way maintenance and the success of the wildlife crossing. Vegetation management activities are typically more frequent in the earlier years post-construction until a suitable vegetation structure and setback are established.
- 2. Wildlife fence maintenance will insure both the integrity and longevity of the fence. Vegetation can easily grow through and over a fence eventually stressing the fence. Right-of-way setbacks and routine vegetation management around the fence can reduce problems, increase the life of the fence, and allow easy visual inspection from the roadway. Gaps in the fence that develop from tree falls, vehicle crashes, etc. should be repaired as soon as possible. Wildlife will quickly find new gaps in the fence and access the roadway, significantly increasing the likelihood of a wildlife-vehicle collision.
- 3. It is also important to coordinate with NCWRC on all projects adjacent to wildlife crossings to ensure the activities will not impact the effectiveness of the structure. Even inconspicuous projects (highway lighting, emergency management signs, utility work, access breaks, etc.) could have adverse effects on wildlife use of a crossing structure.





References

2022 Standardized Crash Cost Estimates for North Carolina. *Microsoft Word - Crash Costs* 2022 20230602.docx (ncdot.gov.)

Bissonette, J.A., and Rosa, S. An Evaluation of a Mitigation Strategy for Deer-Vehicle Collisions. Wildlife Biology, Vol. 18, No. 4, 2012, pp. 414-423. *An evaluation of a mitigation strategy for deer-vehicle collisions - Bissonette - 2012 - Wildlife Biology - Wiley Online Library.*

Clevenger, Anthony P., et al. "Highway Mitigation Fencing Reduces Wildlife-Vehicle Collisions." Wildlife Society Bulletin (1973-2006), vol. 29, no. 2, 2001, pp. 646–53. JSTOR, http://www.jstor.org/stable/3784191. Accessed 31 Oct. 2023.

Dodd, N., and Gagnon, J.W. Preacher Canyon Wildlife Fence and Crosswalk Enhancement Project, State Route 260, Arizona. Arizona Game and Fish Department, Research Branch, Phoenix, 2008. *Dodd, N. L., J. W. Gagnon (yumpu.com)*.

Donaldson, B. M., & Lafon, N. W. (2010). Personal Digital Assistants to Collect Data on Animal Carcass Removal from Roadways. Transportation Research Record, 2147(1), 18-24. https://doi.org/10.3141/2147-03.

Matthew F. McCollister and Frank T. van Manen "Effectiveness of Wildlife Underpasses and Fencing to Reduce Wildlife–Vehicle Collisions," Journal of Wildlife Management 74(8), 1722-1731, (1 November 2010). https://doi.org/10.2193/2009-535.

NCDOT 2020-2022 2021 Animal Crash Data (ncdot.gov).

NCDOT Guidelines for Drainage Studies and Hydraulic Design. NCDOT Guidelines for Drainage Studies and Hydraulic Design. *Guidelines For Drainage Studies*.

Olson, Daniel D., "Assessing Vehicle-Related Mortality of Mule Deer in Utah" (2013). All Graduate Theses and Dissertations, Spring 1920 to Summer 2023. 1994. https://digitalcommons.usu.edu/etd/1994.

MEMORANDUM OF UNDERSTANDING

BETWEEN

THE NORTH CAROLINA WILDLIFE RESOURCES COMMISSION AND

THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

This Memorandum of Understanding ("MOU") is made and entered into on the last date executed below, by and between the North Carolina Department of Transportation, an agency of the State of North Carolina, hereinafter referred to as "NCDOT" and the North Carolina Wildlife Resources Commission, an agency of the State of North Carolina, hereinafter referred to as "NCWRC". The NCDOT and the NCWRC are referred to herein individually as "Party" and collectively as "the Parties."

This MOU is intended to foster and enhance stewardship through communication and cooperative projects between the two agencies including, but not limited to, the following categories: cooperative project planning and coordination; public safety; maintenance and expansion of habitat connectivity and wildlife habitat conservation; inventory, monitoring, and biological studies; impacts to wildlife due to vehicles; habitat loss due to invasive species; maintenance of recreational access; information and education; and conflict resolution.

WHEREAS, NCWRC has statewide responsibility for the conservation and management of all wildlife resources in the State of North Carolina.

WHEREAS, NCDOT is responsible for connecting people, products, and places safely and efficiently with customer focus, accountability, and environmental sensitivity to enhance the economy and vitality of North Carolina.

WHEREAS, NCDOT provides funding for two NCWRC liaison staff via a reimbursement agreement, most recently renewed for a 5-year term in 2022.

WHEREAS, the Parties recognize and encourage a continued commitment to developing this working relationship because of the projected increase in population and consequent demand for movement of goods, services, and people in North Carolina and the impacts highways have on North Carolina's wildlife and environment.

WHEREAS, vehicle mobility and wildlife conservation benefits are both State priorities and are the focus of this MOU.

NOW, THEREFORE, the parties hereto, each in consideration of the promises and undertakings of the other as herein provided, do hereby covenant and agree, each with the other, as follows:

ROLES AND RESPONSIBILITIES

1. NCWRC agrees:

- A. To make available to NCDOT its biological expertise, knowledge, and applicable data for consulting on highway/wildlife issues, identifying important conservation areas, planning highways, determining key areas of habitat connectivity, evaluating methods and means of mitigating highway effects on wildlife, and monitoring of the effectiveness of wildlife mitigation measures.
- B. To cooperate with NCDOT by having appropriate staff coordinate with NCDOT through long-range planning, project development, design, construction, and operations to identify concerns about impacts to wildlife and habitats, and motorists and produce effective guidance/feedback for wildlife and habitat mitigation pertaining to the safety of motorists and wildlife survivability.
- C. To analyze and provide supporting conservation information for the identification and prioritization of existing and targeted wildlife passage areas, which will aid project pursuits via conventional or grant funding by either of the Parties.

2. NCDOT agrees:

- A. To collaborate with NCWRC liaisons throughout long-range planning, project development, design, construction, and operations.
- B. To implement practicable recommendations made by NCWRC regarding effective wildlife techniques, designs, and processes that affect NCDOT facilities and resources.
- C. To explore stewardship guidance for inspection and long-term maintenance of wildlife passage structures/fencing when incorporated into a transportation project as an avoidance, minimization, or mitigation measure; and to explore potential funding mechanisms for the aforementioned inspection and long-term maintenance.
- D. To consider effects to existing wildlife passage structures/fencing prior to any future NCDOT activities that could impact wildlife usage of the structures/fencing.
- E. To create, manage, and utilize in project development processes a GIS dataset to include the following: all existing and proposed wildlife passage structures and fencing, targeted high priority wildlife corridors, and aquatic barriers.
- F. To provide applicable datasets to NCWRC and other parties (RPOs/MPOs, federal agency partners, etc.) for long-range planning and project development purposes.

3. The Parties mutually agree:

- A. To cooperatively seek to make highways less hazardous for wildlife and lessen the impact highways have on important habitats and ensure maximum benefit and consideration for mitigation efforts that promote wildlife habitat conservation and connectivity.
- B. To further develop methods for evaluating the success of wildlife mitigation measures, including monitoring crossing structures and fences to determine their effectiveness in facilitating wildlife passage.
- C. To create a wildlife vehicle collision data collection tool to be developed and implemented in the NCDOT GONC platform that will be made jointly available for encouraged use and contribution by both Parties (and possibly others) for traffic safety and conservation project evaluations. The tool will build upon existing data, with both Parties collaboratively defining pertinent locations of wildlife/vehicle conflict to develop means to quantify, prioritize, and minimize or eliminate these conflict locations. All efforts shall be made to make this data sharing platform available in the form of a mobile application.
- D. To cooperate on investigations of endemic or emerging wildlife diseases utilizing samples from road killed wildlife and to ensure sanitary disposal of carcasses.
- E. To develop effective and efficient passage structures and associated barriers for various species of wildlife to make highways less hazardous for motorists and wildlife while minimizing effects of habitat fragmentation.
- F. To jointly develop a "Wildlife Passage Guidance" document that will aid in the familiarity and incorporation of standard prescriptions for highway projects.
- G. To work together to investigate avenues to minimize highway impacts to federally-listed and other sensitive species, and their habitats.
- H. To collaborate on news releases, submission of grant or award applications, and other external communications affecting the agencies' collective responsibilities to promote wildlife habitat conservation and connectivity.
- I. To cooperate during transportation long-range planning, project development, and operations for NCWRC to provide substantive wildlife resource recommendations to NCDOT.
- J. To utilize our mutual understanding of each other's missions, goals, and objectives to seek opportunities and funding for cooperative projects and activities dealing with highway/wildlife issues.
- K. To meet annually, or more frequently as needed, to discuss matters affecting this MOU, including, but not limited to: (a) evaluating the coordination process; (b) discussing current and future NCDOT project planning, development and operations activities; (c) identifying cooperative work and priorities for the coming year; (d) evaluating the resulting partnership; (e) discuss needs, actions, and priorities associated with this MOU; and (f) determining whether the MOU should be maintained as is or be modified.

4. Conflict Resolution:

The NCWRC and NCDOT agree to work cooperatively to minimize conflicts in the implementation of this MOU. Where an impasse has been reached, each Party agrees to involve relevant agency management as necessary to resolve the conflict as quickly as possible.

5. Effective Date and Duration:

The Agreement becomes effective the date of execution and remains in effect for five (5) years, or until cancelled by either party as described herein. It shall automatically extend for an additional five (5) years if not terminated or otherwise modified.

6. <u>Termination Generally:</u>

- A. In the event either party to this MOU should choose to withdraw from this Agreement, written notification must be given to the other entity thirty (30) days prior to withdrawal. Basis for termination shall be as follows:
 - a. Either party may give notice not to extend this MOU prior to the date of auto-renewal.
 - b. Notwithstanding the foregoing or any other provision of this Agreement, failure on the part of either party to comply with any provisions included in the Agreement or subsequently approved will be grounds for the other party to terminate its participation in this Agreement.

7. Notices:

All written notices concerning this MOU shall be delivered via email or sent by certified mail, return receipt requested to the parties as follows:

A. NCWRC:

David R. Cox, Supervisor Habitat Conservation Division NCWRC – Rogers Depot 1718 Hwy 56 West Creedmoor, NC 27522 Travis.Wilson@ncwildlife.org

B. NCDOT:

Marissa Cox, Group Leader NCDOT EAU Biological Surveys Group 1598 Mail Service Center Raleigh, North Carolina 27699-1598 mrcox@ncdot.gov

The parties may update the contact information as necessary; such approved changes will not necessitate a formal amendment to this MOU.

ADDITIONAL PROVISIONS

- 1. <u>Non-discrimination:</u> In carrying out the terms of this MOU, the Parties agree to comply with N.C. Gen. Stat. 125-16, prohibiting discrimination in employment, the provisions of which are incorporated herein.
- 2. <u>Records Retention:</u> All Parties are subject to North Carolina record retention statutes regarding all books, reports, files, electronic data, and other records relating to this MOU. Upon request, the Parties shall produce copies of all such records.
- 3. Other Agreements: This MOU in no way restricts either Party from participating in similar activities with other public or private agencies, organizations, or individuals.
- 4. <u>Compliance with Applicable Law:</u> All work performed pursuant to this MOU shall be in compliance with all applicable State and Federal laws and regulations.
- 5. <u>Integration:</u> This MOU constitutes the entire agreement between the Parties pertaining to the subject matter herein and accurately sets forth the rights, duties, and obligations of each Party. All prior or contemporaneous agreements and understandings, oral or written, are hereby superseded, and merged herein. The provisions of this MOU may be abrogated, modified, rescinded, or amended in whole or in part only by mutual written consent executed by the Parties.
- 6. <u>Severability:</u> In the event that any provision of this MOU or portion thereof is held invalid, illegal, or unenforceable, such provision or portion thereof shall be severed from this MOU and shall have no effect on the remaining provisions of this MOU, which shall remain in full force and effect.
- 7. This MOU may be amended by the mutual agreement of both parties. Any amendments shall be in writing and signed by both parties.
- 8. This MOU contains the entire agreement between the parties and there are no understandings or agreements, verbal or otherwise, regarding this Agreement except as expressly set forth herein.
- 9. This Agreement and any documents incorporated specifically by reference represent the entire Agreement between the parties and supersede all prior oral or written statements or Agreements.
- 10. A copy, facsimile copy, or digitally signed copy of the signature of any party shall be deemed an original with each fully executed copy of this Agreement as binding as an original, and the parties agree that this Agreement can be executed in counterparts, as duplicate originals, with facsimile signatures sufficient to evidence an agreement to be bound by the terms of this Agreement.
- 11. This MOU is intended as guidance and does not authorize funding or project effort, nor is it legally binding on or enforceable against the parties.

IN WITNESS WHEREOF, this Agreement has been executed, in duplicate, the day and year heretofore set out, on the part of NCDOT and NCWRC by authority duly given.

NC DEPARTMENT OF TRANSPORTATION

BY:

TITLE: SECRETARY NCDOT

DATE: 03-30- Z023

NC WILDLIFE RESOURCES COMMISSION

BY:

TITLE: Executive Pirector

DATE: 4/6/2023