



# NORTH CAROLINA WCPP APPLICATION

September 2024



RED  
WOLF



BLACK  
BEAR



DEER



*Photo Credit: Kerri Murphy*

## Red Wolf Essential Survival Crossings Under Evacuation Route (RESCUER)

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ALLIGATOR RIVER NATIONAL  
WILDLIFE REFUGE (ARNWR)  
US 64, DARE COUNTY



The North Carolina Department of Transportation (NCDOT), with close support from US Fish and Wildlife Service's (USFWS) [Red Wolf Recovery Program](#), the Alligator River National Wildlife Refuge (ARNWR), and the North Carolina Wildlife Resources Commission (NCWRC), seeks \$25 million in USDOT funding under the Wildlife Crossings Pilot Program (WCPP) for Wildlife Crossings on US 64 within the ARNWR in Dare County, NC to support the Red Wolf Recovery Program, and reduce wildlife vehicle collisions (WVC) while increasing habitat connectivity across the refuge. These agencies are also partnered with numerous stakeholders and non-government organizations (NGOs) to help deliver a project that balances the transportation, safety, and wildlife interests of all involved parties.

The **Red Wolf Essential Survival Crossings Under Evacuation Route (RESCUER)** project is critical for the continued existence of the only wild population of Red Wolves<sup>1</sup> in the world. In an assessment of the impact of roads and traffic on the Red Wolf, Huijser and Begley (2023) noted that from 1987 through 2022, there were 91 recorded Red Wolf road mortalities. Of those, 78 could be tied to the locations of paved roads. The section of US 64 that bisects the ARNWR accounted for over 24 percent of the total Red Wolf road mortalities. There have been three additional Red Wolf vehicle strike mortalities along this section of US 64 since that report.

RESCUER proposes installing multiple wildlife underpass structures and wildlife fencing to reduce WVCs and provide habitat connectivity for species including the critically endangered Red Wolf, black bear, white-tailed deer, other smaller animals, reptiles, and amphibians. This grant would fund the first phase of RESCUER and include 2.5 miles along US 64 from just east of the community of East Lake to just west of Robertson Landing Road (SR 1169) on the Albemarle Peninsula in Dare County, NC which has been identified as one of the most problematic areas.

The majority of the Dare County mainland peninsula is occupied by the ARNWR (approximately 158,750 acres), with another 46,000 acres encompassed by the US Air Force Dare Bombing Range. The same remoteness that provides intact habitats for Red Wolves and bears also creates limited transportation connectivity across the peninsula; closing portions of US 64 and requiring an off-site detour would be over 90 miles long. A detour of this length is not practicable for motorists, especially since US 64 serves as an evacuation route for hurricanes and other disasters. To avoid off-site detours, NCDOT proposes staged construction of the wildlife crossing underpasses with an on-site detour to maintain both travel lanes and regional connectivity.

NCDOT is the lead applicant and will administer the grant. NCDOT is closely partnered with the USFWS Red Wolf Recovery Program and ARNWR as well as the NCWRC regarding the scope, schedule, and budget for this first phase of RESCUER. Both resource agencies are partners in this application.

The total project cost of this first phase of RESCUER is \$31.25 million with NCDOT requesting \$25 million in WCPP funds and NCDOT providing \$6.25 million in matching non-federal funds through a combination of NCDOT General Funds and private donations.

*1 The capitalization of Red Wolf is an acknowledgement of the cultural importance of the species to some Native American Tribes and their belief that Red Wolves are our equal.*



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## BASIC PROJECT INFORMATION

The North Carolina Department of Transportation (NCDOT), with support from US Fish and Wildlife Service (USFWS) – [Red Wolf Recovery Program](#) and Alligator River National Wildlife Refuge (ARNWR), and North Carolina Wildlife Resources Commission (NCWRC), seeks \$25 million in USDOT funding under the Wildlife Crossings Pilot Program (WCPP) for Wildlife Crossings on US 64 within the ARNWR in Dare County, NC to support the Red Wolf Recovery Program, and reduce wildlife vehicle collisions while increasing habitat connectivity across the refuge. These agencies are also partnered with numerous stakeholders and non-government organizations (NGOs) to help deliver a project that balances the transportation, safety, and wildlife interests of all involved parties.

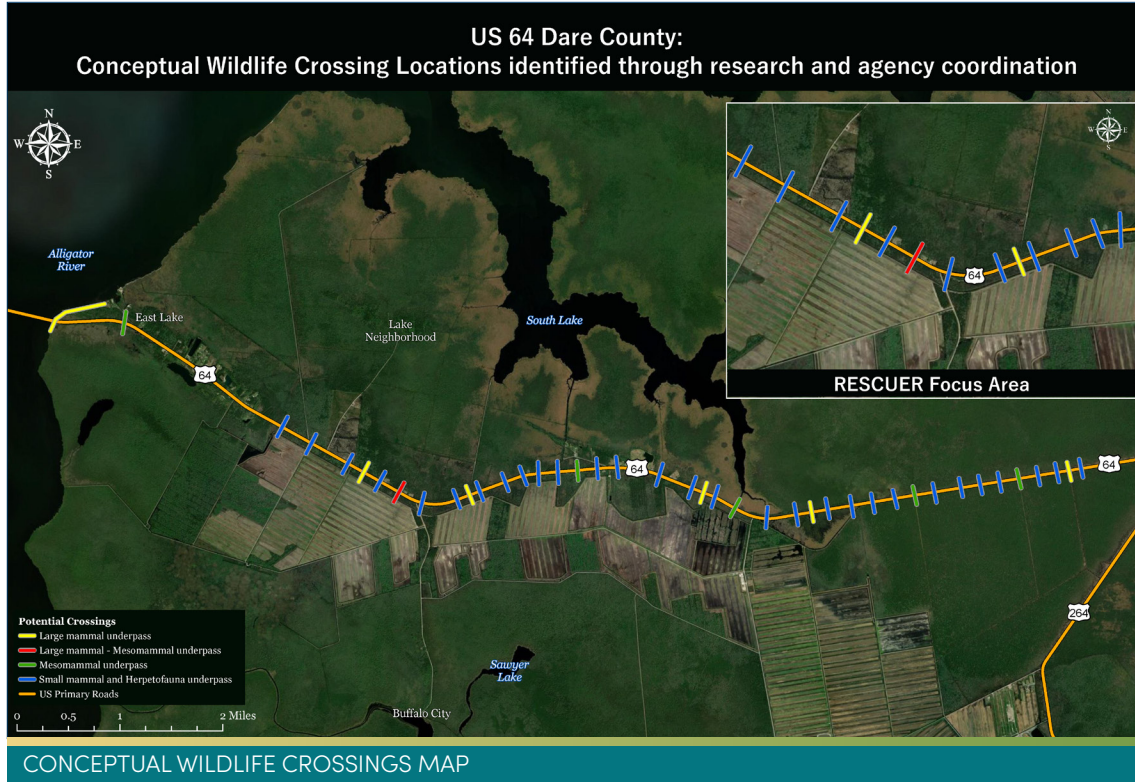


### Project Description

The Red Wolf Essential Survival Crossings Under Evacuation Route (RESCUER) project proposes to reduce wildlife vehicle collisions (WVC) and improve habitat connectivity for the entire length of US 64 within the ARNWR. This project is critical for the continued existence of the only wild population of the critically endangered Red Wolves<sup>1</sup> in the world. Over the last 10 years vehicle strike mortalities are the leading cause of mortality in Red Wolves. Installing wildlife fencing to reduce WVCs along with multiple wildlife underpass structures to provide habitat connectivity for species including the critically endangered Red Wolf, black bear, white-tailed deer, mesomammals, 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.

<sup>1</sup> The capitalization of Red Wolf is an acknowledgement of the cultural importance of the species to some Native American Tribes and their belief that Red Wolves are our equal.





## Project History

The USFWS established the ARNWR in 1984 to “protect the rare pocosin wetlands and their associated wildlife”. There is a long history of wildlife conservation in northeastern North Carolina. ARNWR was the 7th refuge established by USFWS in the current 9-refuge Coastal North Carolina National Wildlife Refuges Complex; the first 3 refuges in the region were established in the early 1930’s. Prior to 1984, the land occupied by ARNWR was privately owned for nearly 200 years, with most of the interest in timber production, farming, and peat mining. Development of the peninsula has generally been unsuccessful due to a variety of factors, including its remoteness, high water table, and difficult organic soils. Fortunately, these same environmental conditions allow a wide variety of wildlife to thrive.

The east-west road corridor across the peninsula now known as US 64 predates 1938; at that time, the corridor relied on toll ferries to cross the Alligator River and Croatan Sound, and the road was likely built to support regional trade like moonshine and timber. The first bridge over the Alligator River opened in 1962, connecting the mainland to the Albemarle peninsula and the Outer Banks via what is now US 64.

In 1999, NCDOT initiated a feasibility study to address widening 27 miles of US 64 between Columbia and Manns Harbor, including a new bridge over the Alligator River in Tyrrell and Dare counties (NCDOT R-2544 and R-2545). The study included the section of US 64 included in this project proposal as well as the entire US 64 corridor within the peninsula (which will be part of future phases of RESCUER). In 2002, NCDOT prepared a Feasibility Study, but the project was postponed pending a revised hurricane evacuation



model. In 2007, NCDOT reinitiated the project and held an environmental resource and regulatory agency Scoping Meeting as well as conducted a Public Officials Meeting and a Citizens Informational Workshop. The workshop was attended by approximately 40 persons, primarily from the East Lake community who commented that animal collisions were a problem. Next, the project went through NCDOT's Merger Process with the US Army Corps of Engineers (USACE) as the lead federal agency, and a Draft Environmental Impact Statement (EIS) was completed in 2012. From 2012 to 2018, when the Final EIS was finalized, many additional NEPA-related activities were achieved including: agreement on a Least Environmentally Damaging Practicable Alternative (LEDPA), consultation with the USFWS and National Marine Fisheries Service (NMFS) on impacts to federally listed species, additional public outreach, and development of a wildlife crossing program to mitigate wildlife impacts through the creation of a Wildlife Crossing Planning Team.

The Wildlife Crossing Planning Team met numerous times between August 2012 and May 2014. Agencies on the team included USFWS, NCWRC, and the USACE, as well as numerous NCDOT technical experts (Roadway Design, Environmental Analysis, Right-of-Way, and Hydraulics). This Team met to discuss the crossing locations/sizes, but also general wildlife crossing issues including fencing, canal crossings, and minimization efforts to reduce impacts to coastal wetlands and Refuge resources.

USACE, in association with NCDOT, completed formal consultation under Section 7 of the Endangered Species Act (ESA) for the Red Wolf and red-cockaded woodpecker. The primary conservation measure associated with the Red Wolf was the Wildlife Crossing Program.

While NCDOT was completing the NEPA process for R-2544 and R-2545, the NC General Assembly passed the Strategic Transportation Investments law, establishing the Strategic Mobility Formula for data-driven scoring and local input to prioritize program needs. The process, known as Strategic Prioritization, is used to develop our 10-year State Transportation Improvement Program (STIP) funding. Based on the constraints of this process and other needs within this region, these projects were not funded through several iterations and have since been removed from the STIP entirely.

Therefore, the only way for NCDOT to begin building these crucial wildlife underpasses along US 64 in the near future is through this funding opportunity.

## *Project Location*

This first phase of RESCUER is approximately 2.5 miles along US 64 from just east of the community of East Lake to just west of Robertson Landing Road (SR 1169) on the Albemarle Peninsula in Dare County, NC, which is a rural area. The majority, approximately 160,000 acres, of the peninsula is occupied by the ARNWR. The remainder of the peninsula is held privately and occupied by communities such as East Lake or is held in public trust, like the Dare County Bombing Range. The Albemarle Peninsula is bounded on three sides by the Alligator River, Albemarle Sound, and Croatan Sound.

US 64 offers direct west to east access across the peninsula to Manns Harbor and the



Outer Banks. The US 64 bridge over the Alligator River (2022 MPDG award) is the only access to US 64 from the west. US 264 follows a south to north route along the east side of the peninsula intersecting US 64 just west of Manns Harbor. While there are other private and public roads within the peninsula, US 64 and US 264 are the only public roads connecting the peninsula to other locations. Consequently, US 64 is a primary travel route for residents, commuters and tourists to the Outer Banks and is a designated Hurricane Evacuation route. Per 2023 Average Annual Daily Traffic (AADT), counts for the project length are 5,300 vehicles per day (vpd) on weekdays. During the summer months (June to August), when tourists flock to the area, weekday traffic counts increase to approximately 6,600 vpd (2023, Streetlight Data). On the weekends, these numbers increase to 7,300 vpd and 11,800 vpd during the summer months.

## TRIBAL LAND

This project is not located on land belonging to a federally recognized Indian Tribe. However, the Tuscarora Nation of North Carolina, a federally recognized tribe, has provided a strong letter of support for the project (Appendix B).

The Red Wolf was and is an animal of cultural importance to many Native American Tribes. For example, the Red Wolf is one of the most important cultural icons of the Cherokee Nation and the Cherokee People. Foundational to origin stories and the clan system, the Red Wolf is considered an equal who lived in symbiotic relationship with Cherokee People. The Cherokee Nation and USFWS have collaborated on a film titled “Wayas: Saving Our Red Grandfather” to be released in 2024.

## RURAL OR URBAN DESIGNATION

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

## COMMUNITY DEVELOPMENT ZONE

RESCUER is located in Census Tract 9705.01, a federally designated Opportunity Zone. North Carolina’s federally designated Opportunity Zone eligibility is based on 2011–2015 Census American Community Survey (ACS) data. Eligibility is determined by a Census Tract having either Median Family Income at or below 80 percent of Area Median Income or a Poverty Rate of 20 percent or greater. Census Tract 9705.01 is a low-income community, with a median household income of \$40,972 (2011–2015 ACS data).

This project is not located in any other 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. Both 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 Strategic Plan and the North Carolina Division Business Plan. Based on 2023 data, [NCDOT manages approximately \\$1.4 billion per year in Federal-Aid Funds](#).

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

The NCDOT has worked very closely with the USFWS Red Wolf Recovery Program and ARNWR as well as the NCWRC regarding the scope, schedule, and budget for RESCUER as well as this phase of RESCUER. Both resource agencies are partners in this application.

As documented in the Project History, NCDOT has worked closely with both agencies regarding wildlife crossings on this section of US 64 dating back to the 1990's. The agencies have also worked closely on other Red Wolf related issues and activities such as mobile electronic message boards, expedited roadkill removal and dispersal, and permanent signage.

NCDOT has a strong commitment to agency coordination as documented in the: [2019 NCDOT-FHWA CE Agreement](#), [2023 Section 404/NEPA Merger Process](#), [NCDOT NCWRC MOU](#), the [2020 Section 106 Programmatic Agreement](#) as well as four [Endangered Species Act Section 7 Programmatic Agreements](#) that cover a combined total of eight federally protected species.

## BUDGET NARRATIVE

### *Total Project Costs*

The total project cost of this phase of RESCUER is \$31,250,000 with NCDOT requesting \$25,000,000 from the WCPP and the non-federal matching funds of \$6,250,000 will be provided through a combination of General Funds and private donations. NCDOT has determined the project will have the following phases and costs: design plans and NEPA documentation (\$250,000), construction (\$26,700,000), education and outreach (\$100,000), and monitoring and reserach (\$100,000) for a total cost of \$27,150,000. Adding 15% for construction engineering and inspections as well as contingencies results





in a total project cost of \$31,222,500.

## NON-FEDERAL SHARE

On May 30, 2024, the Center for Biological Diversity, Wildlands Network, and coalition partners launched a public fundraising campaign to raise \$2 million dollars to match an anonymous donor pledge of \$2 million dollars to fund wildlife crossings across US 64 for critically endangered Red Wolves. Based on information provided by the Center, almost \$1 million dollars in donations and funding commitments have been received from 5,818 gifts. The project has been widely supported from a broad constituency with over 5,800 donations of \$100 or less, over 540 donations between \$101 and \$1,000, and 24 donations greater than \$1,000. While donors from across the U.S. have supported the campaign, 7% of the campaign's donors and 58% of the funding secured so far is from North Carolina donors. The campaign has several larger proposals under consideration by North Carolina as well as nationally based foundations. The Center has extended the campaign past the current deadline and plans for additional future campaigns to assist in leveraging the full potential of this grant opportunity to help save the critically endangered Red Wolf (see Appendix B for NGO LOSs).

The NCDOT Executive Grants Committee has committed to providing the remaining 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 directed allocated for this project.

However, the USFWS Red Wolf Recovery Program will be providing in-kind contributions through continuing extensive monitoring of Red Wolves and coyotes within the project area through conducting trapping, radio collaring and using radio telemetry tracking before, during, and post-construction. The Red Wolf Recovery Program will also continue to employ multiple remote sensing cameras on ARNWR within the project area to monitor all wildlife use. Additionally, the Red Wolf Recovery Program will continue to contribute to the final planning and construction of this project as well as the implementation of an appropriate post construction monitoring plan that will assess the success of the wildlife crossing structures.

An additional project that will have in-kind contribution aspects involves a partnership between the USFWS Red Wolf Recovery Program and the U.S. Geological Survey on a project designed to quantify potential effects of socio-environmental conditions and configuration on red wolf movement and connectivity in a mosaic landscape. To support



species recovery, Red Wolf populations require access to sufficient habitat, and in doing so, they navigate a diverse landscape of anthropogenic and environmental risks and resources. Among other factors, such as continued urbanization, this project would consider additional human-related risk factors, such as proximity to roads for vehicle strike risk. The project is currently scheduled to begin in 2025 and end in 2028, which could provide valuable pre-construction information as well as the effects during and potentially after construction.

## PROJECT MERIT CRITERIA

### *Criterion 1.1: Reduction of Wildlife Vehicle Collisions*

This project is critical for the continued existence of the only wild population of Red Wolves in the world. The section of US 64 prioritized in this proposal is immediately adjacent to some of the best and most important habitat for Red Wolves on ARNWR, particularly as the Red Wolf population grows. On their assessment of the impact of roads and traffic on the Red Wolf, Huijser and Begley (2023) noted that from 1987 through 2022, there were 91 recorded Red Wolf road mortalities. Of those, 78 could be tied to the locations of paved roads. The section of US 64 that bisects the ARNWR in Dare County accounted for over 24 percent of the total Red Wolf road mortalities. There have been 3 additional Red Wolf vehicle strike mortalities along this section of US 64 since that report.

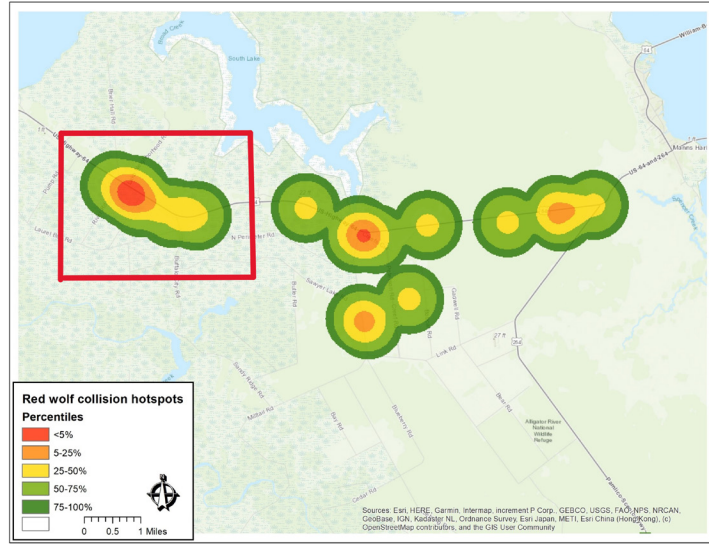


RED WOLF VEHICLE STRIKE ON US 64 (USFWS)

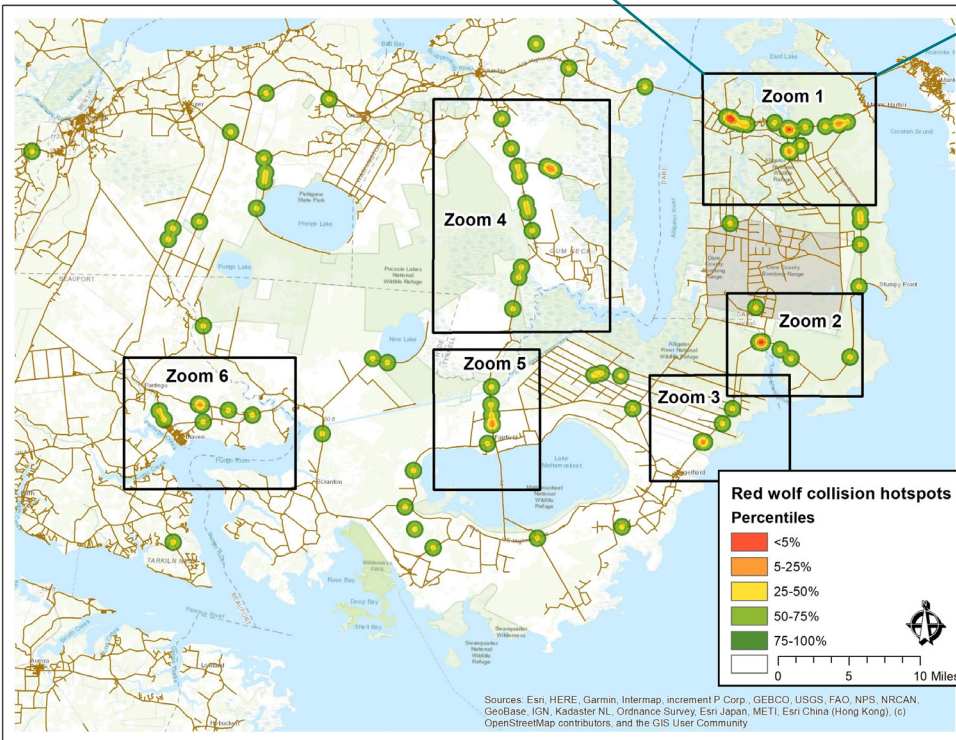
The USFWS Red Wolf Recovery Program routinely monitors all known wild Red Wolves through the use of radio collars (VHF and GPS), remote sensing cameras, ground tracking, aerial telemetry, etc. Mortalities are detectable during monitoring as radio collars are equipped to send mortality signals. Additionally, radio collars are equipped with a metal tag for the Red Wolf Hotline to report a mortality directly. Consequently, the mortalities of all known Red Wolves are detected. Mortality reports are completed for all Red Wolf mortalities. The majority of mortalities and all mortalities of the last 5 years were necropsied to confirm the cause of death. USFWS documented 19 Red Wolf mortalities from vehicle strikes on the section of Highway 64 running through ARNWR. Six of the 19 vehicle strike mortalities or 32 percent, occurred in the last 5 years, and three of those occurred within the last year (2023-2024). Two of the three mortalities in the last year were breeding males actively assisting in raising litters at the time of mortality. One litter was subsequently lost following the death of the breeding male.

Additionally, based on monitoring of the Red Wolf population over the last 5 years, a minimum of 15 Red Wolves have been detected on US 64 or north of US 64 indicating

that they had crossed it. Of those 15 Red Wolves, 7 are known WVC mortalities on US 64 and another is a suspected WVC on US 64. Four of the 15 were intentionally captured by USFWS while north of US 64 and relocated from the area. One of the Red Wolves that has been tracked north of US 64 during Summer 2024 is still alive on the landscape and their existing home range is in very close proximity to the section of US 64 proposed for wildlife crossings in this proposal.



ZOOM 1: HUIJSER & BEGLEY



US 64 THROUGH ARNWR KERNEL DENSITY HOTSPOT PERCENTILES FOR RED WOLF-VEHICLE COLLISIONS, 1987-2022 (HUIJSER AND BEGLEY 2023). THE AREA WITHIN THE "ZOOM 1" RECTANGLE ENCOMPASSES THIS PHASE OF THE PROJECT.

WVC on US 64 are not limited to those involving Red Wolves. Black bear and white-tailed deer are the most commonly reported WVC species, resulting in significant harm to humans and vehicles. Based on reported crash data from NCDOT, 45 WVC on this



section of US 64 were reported between 1990 and 2024. Of the 45 crashes, 43 involved bears, one involved a deer, and one the officer did not specify.

A previous study examining the potential wildlife effects of widening US 64 conducted a roadkill survey, which reported 15 black bears, 8 white-tailed deer, and 1 Red Wolf mortality from 2008 to 2011. The survey also recorded 57 opossums, 49 raccoons, and eight other mid-sized mammals and 82 small mammals, including three star-nosed moles, which are a North Carolina Species of Concern. The survey noted over 7,000 amphibian and 4,000 reptile mortalities. In [May 2014](#), police reported that a minivan heading west on US 64 near East Lake struck and killed an alligator. The male alligator weighed over 670 pounds and was almost 12 feet long.

Data from neighboring Virginia Department of Transportation (VDOT) found that a correction of up to 8.5 was needed to correctly estimate the number of WVC in a given area (VDOT, 2017). Therefore, actual WVC occurring on this section of US 64 are likely significantly higher.

Huisjer and Begley stated that properly installed wildlife fencing could reduce direct roadway large mammal mortality by at least 80 percent, and “immediate wildlife fencing along US Hwy 64 and parts of US Hwy 264 may be what is needed for the immediate survival of the few remaining Red Wolves (situation in 2022–2023).” However, wildlife fencing alone would not allow for habitat connectivity and the natural dispersal of multiple wildlife species. The addition of suitable crossing structures within the fenced area would further reduce wildlife mortality by enhancing critical habitat connectivity.

The US 64 corridor is home to numerous species, including Red Wolf, black bear, white-tailed deer, bobcat, and coyote, as well as many other mesomammals, small mammals and herpetofauna. A roadkill survey in adjacent Tyrrell County in 2011 found over 130 species. Improvements will benefit not only larger mammals but many smaller animals as well.

## ***Criterion 1.2: Terrestrial and Aquatic Habitat Connectivity***

The Albemarle peninsula of North Carolina has immense conservation value that can be seen in the vast investment in land conservation. There are four National Wildlife Refuges, multiple National Park Service units (national seashore, national monument, etc.), one state park, multiple tracts of state owned NCWRC game lands, and multiple tracts in private conservation along the US 64 corridor.

US 64 provides the only direct east west access in this region. Since the early 1990’s, studies in the three eastern most counties (Washington, Tyrrell, and Dare) have looked at highway improvements and the potential impacts the highway would have on fisheries and wildlife in the region. That continued investment has included eight research projects and years of monitoring wildlife movements, wildlife interactions along the highway corridor, and wildlife use of existing underpass structures. Through that research and monitoring the need for improved highway permeability has been documented in all three counties.





The RESCUER project focuses on US 64 in Dare County through the ARNWR. This portion of the US 64 corridor has been the subject of several of the aforementioned research projects. In reviewing vast amounts of data (including successful crossings and roadkill), NCDOT and our partners have identified 41 locations and structure types to improve highway permeability.

As an existing two-lane facility, a percentage of wildlife are successfully able to cross this portion of US 64. However, a few key aspects in this region show why, as a two-lane facility, connectivity improvements are needed. This region has been shown to have the highest black bear densities on the east coast leading to multiple WVC involving black bear every year. The substantial wetlands and open water provide excellent habitat for many species of reptiles and amphibians with nesting or wintering habitat potentially on the other side of the roadway. Alarming numbers of roadkill herpetofauna have been documented in US 64 research projects. Several of those species are Species of Greatest Conservation Need as identified in the [NC Wildlife Action Plan](#).

Connectivity is a useful lens for understanding how the landscape facilitates or impedes Red Wolf movement. Connections across different land uses provide opportunities for individuals to access resources and adapt to changing conditions; functionally connected areas can also support dispersal and gene flow that are necessary for healthy populations. Characterizing the network of physical connectivity among different land uses can help determine where there is sufficient area available for Red Wolves, as Red Wolves navigate a mosaic of land uses within their range. Environmental changes to the landscape, such as increased human development including roads, are potential risks to fragment the habitat and affect connectivity. Red Wolves also live in a highly varied anthropogenic landscape, with different risk factors associated with people. The spatial distribution of social and environmental features on the landscape, therefore, are important considerations for Red Wolf movement connectivity.

There are currently 16 known Red Wolves in the wild. In recent years, WVC have been the number one cause of mortality and the need to reduce that mortality factor is addressed in the [Revised Recovery Plan for the Red Wolf](#) (September 2023). The most effective means to reduce vehicle strike mortality of Red Wolf is to install appropriate wildlife fence along US 64; however, installation of wildlife fencing alone would increase the level of habitat fragmentation to an unacceptable degree in such a conservation rich area. Fencing without crossing structures is rarely a sound conservation measure and this is reiterated in the Huijser and Begley report. The report states: "However, if wildlife crossing structures are not an integral part of the mitigation measures, other species may suffer, and for the long-term conservation of the Red Wolf, habitat connectivity is essential..."

By incorporating multiple underpass structures of various sizes that accommodate large mammals, NCDOT and its partners will improve safe wildlife passage to adjacent habitats, but more importantly maintain habitat connectivity that is complemented by wildlife fencing.

One problem is the scale to which these mitigation measures need to be implemented. Fencing with crossing structures is not an inexpensive mitigation measure, and these



need to be installed throughout US 64 in Dare County. This is a complex landscape with wetlands, canals, refuge access points, rural land uses, and the need to maintain regional mobility; NCDOT has considered these aspects when designing and estimating our project costs. The unfortunate conclusion is only a portion of US 64 can be funded through a single grant application. What is proposed only represents a fraction of the mitigation need. However, NCDOT and our partners concur that it represents the most immediate needs based on our collective research and monitoring.

### ***Criterion 2.1: Leveraging Investments***

NCDOT's investment in reducing WVC and increasing habitat connectivity in this region of NC began in 2005 when a section of US 64 in Washington County was constructed on new location and included three wildlife underpasses to improve habitat connectivity along the corridor. ([NCDOT STIP R-2548](#)). Additionally, the [Bridge replacement](#) (NCDOT STIP HB-0001) is expected to begin construction in 2025 and includes two large mammal underpasses as well two mesomammal underpasses (See Appendix A). This bridge replacement was originally part of a larger US 64 planning effort (NCDOT STIP R-2544 and R-2545) that included 3 research projects and coordination that resulted in the identification and agreement to incorporate 73 wildlife crossing structures into those future projects, including those that will be installed under this phase of RESCUER.

Additionally, as previously mentioned, Wildlands Network, the Center for Biological Diversity, and coalition partners launched a public campaign to raise \$2 million dollars to match an anonymous donor pledge of \$2 million dollars to fund wildlife crossings across US 64 for critically endangered Red Wolves. Based on information provided by the Center, almost \$1 million dollars in donations and funding commitments have been received from 5,818 gifts. The project has been widely supported from a broad constituency with over 5,800 donations of \$100 or less, over 540 donations between \$101 and \$1,000, and 24 donations greater than \$1,000. The Center has extended this campaign past the current deadline and plans for additional future campaigns to assist in leveraging the full potential of this grant opportunity to help save the critically endangered Red Wolf.

### ***Criterion 2.2: Economic Development and Visitation Opportunities***

Several Dare County Census Tracts (# 37055970601 and 37055970602) as well as neighboring Tyrrell County Tract #37177960100, Hyde County Tract #37095920100, and Washington County Tract #37187950100 are identified as overburdened and underserved disadvantaged populations per the Council for Environmental Quality (CEQ) Climate and Economic Justice Screening Tool (CEJST).

Tourism is a key to the Dare County economy, accounting for 45% of the County's employment, with the Outer Banks beaches and wildlife refuges being two of the primary tourist attractions. In 2023, visitor spending contributed [\\$2.15 billion](#) to the Dare





County economy. ARNWR staff and volunteers offer regular wildlife tours, educational programs and wildlife dependent recreation. Wildlife dependent recreation includes hunting, fishing, environmental education, interpretation, photography and wildlife observation. Most of the visitation to the Refuge, which totaled over 1/2 million this fiscal year, is focused primarily on wildlife observation and photography. One of the most popular programs/trips during the annual Wings Over Water Festival is to ARNWR to see black bears and hear the howl of Red Wolves; the festival draws thousands of birders and wildlife watchers each year to this prime stretch of the Atlantic Flyway. USFWS data shows expenditures on wildlife watching alone nationwide in 2022 was over 250 billion dollars with trip related expenses such as food, gas, lodging, charters, transportation and guides comprising over 42 billion dollars (US DOI, USFWS 2022). The refuge and its wildlife are regularly features in local media such as the Coastland Times, regional publications such as [Our State](#) magazine, national media such as the Washington Post and international websites like the [International Wolf Center](#).

As the Red Wolf population stabilizes and grows, it will continue to have a positive economic impact on the region. Several studies (USFWS, 1994, USFWS, 2000, Duffield et al., 2006, Duffield & Neher, 2019 and Huijser et al., 2022) note the value of preserving endangered large animals. As stated in Huijser and Begley, *“For large mammals that are endangered and considered charismatic by the public, an individual animal may be valued at several tens of thousands up to several million dollars.”* The passive value of Red Wolves could be comparable to the value of gray wolves in Yellowstone National Park where they were valued at about \$2 million per individual (Duffield et al 2006).

Since the announcement on social media of the wild litter of Red Wolves born on ARNWR in April 2022, the first wild litter in 4 years, there has been a marked increase in the amount of visitation to the ARNWR for the purpose of viewing Red Wolves. Visitation to ARNWR has increased in general post-COVID as well. Increased visitors to ARNWR would be expected to increase economic benefit to the local communities with services such as gas, lodging, groceries, restaurants and local outfitters and guides. A survey conducted by USFWS in 2011, asked visitors about the time and money they spent when visiting ARNWR. On average, visitors spent \$38 per person each time they visited. By substantially aiding the stabilization and growth of the Red Wolf population and maintaining safe access to ARNWR, while also increasing the safety of all wildlife and visitors, RESCUER is a cost-effective way to directly benefit the economy of eastern North Carolina.

### **Criterion 2.3: Innovation**

As mentioned earlier this is a complex landscape. Minimizing project impacts, limiting traffic disruptions, and minimizing cost to effectively improve as many miles of US 64 as possible is the goal of all parties. Therefore, additional innovative strategies such as using structural plate arch pipes that can be installed faster, provide the necessary vertical clearance but with less fill material than a bridge structure will be utilized.

Additionally, NCDOT intends to perform a [Value Management Study](#) immediately post-award to find the most cost-effective and expedited construction methods that meet the



HIGHWAY SIGN PLACED BY RED WOLF RECOVERY PROGRAM ON US 64 THROUGH ARNWR

needs of the project.

With vehicle strike mortalities being the primary cause of mortality for Red Wolves over the last 10 years, the Red Wolf Recovery Program and its many partners, in lieu of the preferred wildlife crossings, have implemented various methods to try and reduce vehicle strike mortalities. In 2021 and through a permit with NCDOT, the Red Wolf Recovery Program along with the Red Wolf Coalition and North Carolina Wildlife Federation purchased 6 large, mobile, electronic highway messages boards to place along highways

in areas where monitoring indicates Red Wolf use in close proximity to the highway and/or places where they routinely cross. The highway signs display a message of “Endangered Red Wolf Crossing, Drive With Caution”. The intention is to effectively place the signs as Red Wolf movements shift and remove the signs once there is no active Red Wolf use in a particular area. However, it is important to note that based on monitoring, the highway signs on the section of Highway 64 through ARNWR have not been moved since placement approximately 3 years ago due to continuous use of that area by Red Wolves and the ongoing threat of WVC in that area.

The Red Wolf Recovery Program also started placing orange reflective material on the radio collars of Red Wolves to make them more visible along roadways at night. Evidence suggests based on our own monitoring and including information from local law enforcement that it has made them more visible. The Red Wolf Recovery Program is also working with engineering students and professors at North Carolina State University to develop a radio collar that could have flashing LED lights when they are in close proximity to the highway. The Red Wolf Recovery Program is also exploring the potential for installing cameras in known crossing areas that will trigger flashing lights along the highway when wildlife is about to cross in coordination with several NGOs.

It should also be noted that there are indications based on comments made directly to USFWS personnel and on social media posts that some amount of Red Wolf vehicle strike mortalities may be intentional based on opportunity. In those cases, appropriate wildlife crossings as proposed in this phase of RESCUER that allow Red Wolves to avoid the road surface will likely be the only effective way at reducing vehicle strike mortalities.



## Criterion 2.4: Education and Outreach

Once funding is awarded, NCDOT, USFWS, and NCWRC will collaborate on education and outreach. The USFWS Red Wolf Recovery Program and ARNWR have several long-established avenues for education and outreach within the local communities and in the tourism industry. While wildlife conservation is the basis for the National Wildlife Refuge System, leadership on the recovery and conservation of our nation’s imperiled species through Endangered Species Act implementation is a primary initiative of the USFWS Ecological Service Program.



**U.S. Fish & Wildlife Service**

### Welcome to Red Wolf Country

The only population of the world's most endangered wolf lives right here in eastern North Carolina

*Running Wild Media*

**Enjoy your stay in red wolf country. For their safety and for yours when driving, please follow these important tips:**

**Watch for Red Wolves!**  
Most are wearing orange collars.

**Watch the Road!**  
Vehicle strikes are a major threat to red wolves. Look for highway signs, this means that red wolves are in the area. However, red wolves can potentially cross roads throughout the area at any time.

**Help keep red wolves safe**  
Please always be aware when driving, especially on Highways 64, 264, and 94.

**Ways You Can Help**  
*Eve Turek*

**Learn about red wolves at any of the three Visitor Centers in the area**  
Wolves are often misunderstood. Educating yourself, and others, about the uniquely wonderful red wolf – the only wolf endemic to the U.S. – can be very rewarding.  
On your trip, please visit the Red Wolf Center and Pocosin Lakes Visitor Center in Columbia, NC, or the Gateway Visitors Center in Manteo, NC. Don't forget to share what you learned!

**Visit the area's National Wildlife Refuges**  
Visiting Alligator River National Wildlife Refuge or Pocosin Lakes National Wildlife Refuge is a great way to get a chance see a rare red wolf in the only existing wild population while also supporting the local communities and counties (e.g., lodging, food, and other area businesses).

**Share your photos and report any unusual sighting**  
Help spread the love of this incredible species by sharing photos and videos you responsibly take of them in the wild! Photos can help us in our outreach and are also a good way for us to assess the health of individuals and determine pairings. However, please keep in mind that the enthusiasm of seeing or photographing a rare species can put them at risk. Keeping a minimum of 100 yards from red wolves helps keep them wild. Never pursue red wolves for up close photos. Please do not remain with an animal for a long time, as your presence may disrupt their normal behavior.

**Help keep red wolves safe:** please report any suspected or unusual sightings, an injured or dead red wolf, or any suspicious behavior to the Red Wolf Hotline at the number or e-mail address provided below.

**Contact us!**  
Red Wolf Hotline: 1-855-4WOLVES  
redwolf@fws.gov  
fws.gov/project/red-wolf-recovery-program  
facebook.com/redwolfrecoveryprogram

USFWS RED WOLF COUNTRY BROCHURE (USFWS)

The ARNWR mission includes an acknowledgement of the “growing responsibility to reach out to local and national communities about the refuge’s importance as a valuable piece of the puzzle that connects all wildlife habitats together”. Additionally, the Recovery Vision, per the Revised Recovery Plan for the Red Wolf (2023), states that



“wild and free Red Wolves will coexist with humans... through conservation activities, the public’s trust and engagement, and aligned policies among all involved with Red Wolf recovery”.

This grant award funding for education and outreach will assist with accomplishing ARNWR’s mission as well as with progress towards the Red Wolf Recovery Vision by improving public engagement through increased public understanding and eventually public trust in both the USFWS and the recovery effort.

The Red Wolf Recovery Program has an extensive outreach program in eastern North Carolina including public meetings, direct contacts with landowners throughout the Eastern North Carolina Red Wolf Population (ENC RWP), brochures, public displays, etc. regarding Red Wolves and their management. Outreach includes ways to decrease human caused mortality, particularly gunshot and vehicle strike mortalities. In 2023, the Red Wolf Recovery Program produced a brochure titled “Welcome to Red Wolf Country” with the focus of the brochure geared towards reducing vehicle strike mortalities. The brochure is available online and printed versions are supplied by the USFWS to all rest areas and visitor centers within the ENC RWP area. Additionally, attempts are being made for the brochure to be included with all vacation rental reservation materials for the Outer Banks since a large percentage of Outer Banks visitors reach their destination via US 64.



The Red Wolf Center located just off US 64 outside of Columbia, NC, is a public education center that houses Red Wolf displays, provides programs on Red Wolves, and has a live Red Wolf pair in a viewing enclosure open to the public. The Red Wolf Center is a collaborative effort between the USFWS, the North Carolina Wildlife Federation and the National Wildlife Refuge Association. The Red Wolf Center also offers Red Wolf educational talks to school and other groups. In 2023, through collaboration between the Red Wolf Recovery Program, Pocosin Lakes National Wildlife Refuge, multiple NGOs led by Champions for Wildlife, local civic groups, volunteers and supported by the Town of Columbia and Tyrrell County, a mural of Red Wolves was painted on the entire outside of the Red Wolf Center. Visitation has continued to increase, it has become a regular environmental education destination for people traveling through Columbia on US 64, and the town has talked about adding it to the bus route for visitors coming off a potential new passenger ferry to the town.



Additionally, there are Red Wolf displays at the Pocosin Lakes National Wildlife Refuge (PLNWR) Visitor Center in Columbia, NC and the Coastal North Carolina National Wildlife Refuges Visitor Center in Manteo, NC. Rest areas in Manteo, NC, Plymouth, NC and Washington, NC also have Red Wolf outreach displays. Throughout the summer months, ARNWR leads Friday night Red Wolf talks that end with visitors driving with staff through ARNWR to look for red wolves and other wildlife.

In the last couple of years, the USFWS has renewed its effort to recover the Red Wolf and revitalized the program. While USFWS will continue to rely on proven wildlife management techniques that have demonstrated success and explore innovative approaches to challenges the program and species face, this revitalization focuses on collaborative conservation, emphasizing the need for and importance of community and partner engagement, including increasing communications and transparency in all USFWS actions. This approach is critical to building trust, reducing anthropogenic threats, and addressing values so that USFWS can obtain the social acceptance needed so that biological targets can be met.

The USFWS is improving community engagement and advancing the integration of social science into conservation of the Red Wolf while working to change the way it operates and engages with both internal and external partners and the community.

Part of this change is being implemented through a conflict transformation effort being led by [Constructive Conflict LLC](#). The USFWS Red Wolf Recovery Program contracted Constructive Conflict (Francine Madden) to address the destructive conflict (same-side and oppositional) surrounding Red Wolves and transform that energy to collaboration and progress. This includes engaging multiple dialogue and decision-making processes to reconcile relationships, align individuals and groups toward shared goals and begin shared problem-solving and decision-making at multiple levels.

Once awarded funding, NCDOT and its partners will begin working to educate the public on the RESCUER project's wildlife underpasses and associated fencing. RESCUER will be featured prominently in future outreach materials and tours provided on ARNWR, PLNWR, as well as at the Red Wolf Center and during outreach conducted by the Red Wolf Recovery Program. The public will be provided with an excellent opportunity to understand the importance of wildlife fencing, wildlife underpasses, the need to ensure habitat connectivity, and respect for wildlife corridors, as well as the significant role they play in reducing mortalities of one of the most endangered species in the U.S.

Additionally, due to the ongoing collaboration and coordination with several non-profit organizations including the North Carolina Wildlife Federation, Red Wolf Coalition, Defenders of Wildlife, Center for Biological Diversity, Wildlands Network, and the larger coalition that has formed, there will be many other avenues explored regarding both education and outreach.

### ***Criterion 2.5: Monitoring and Research***

Once awarded funding, NCDOT, USFWS, and NCWRC will collaborate on monitoring and research efforts that will be associated with this grant. However, the project



partners are engaged in on-going monitoring and research in the region. The USFWS Red Wolf Recovery Program collars all adult and subadult Red Wolves with orange collars and actively tracks their movements on a routine basis using GPS and VHF radio collars. Additionally, the Red Wolf Recovery Program tracks their movements, health and other general information, such as pairings, using over 50 remote sensing cameras throughout the ENC RWP on both public lands and private lands with landowner permission. All mortalities are documented and sent for necropsy to officially determine the cause of death.



RED WOLF BEING FITTED WITH RADIO COLLAR BY USFWS

The Red Wolf Recovery Program, its many partners, researchers and academia have conducted an extensive amount of past and ongoing research studies to better understand Red Wolves, their life history, causes of mortality and the ecosystem in eastern North Carolina. Research and intensive monitoring of the Red Wolf population will continue after implementation of this project.

Multiple studies on ARNWR have tracked the movements of bears and other wildlife pre-construction. Additionally, researchers have regularly documented wildlife that

have been killed on US 64. Years of WVC data will allow a definitive evaluation of the degree to which the installed fencing and wildlife crossings decrease WVCs in this area. Post construction, a formal monitoring plan will be implemented to determine wildlife underpass usage. These efforts will provide an in-depth evaluation of how wildlife utilize the crossings.

### ***Criterion 2.6: Survival of Species***

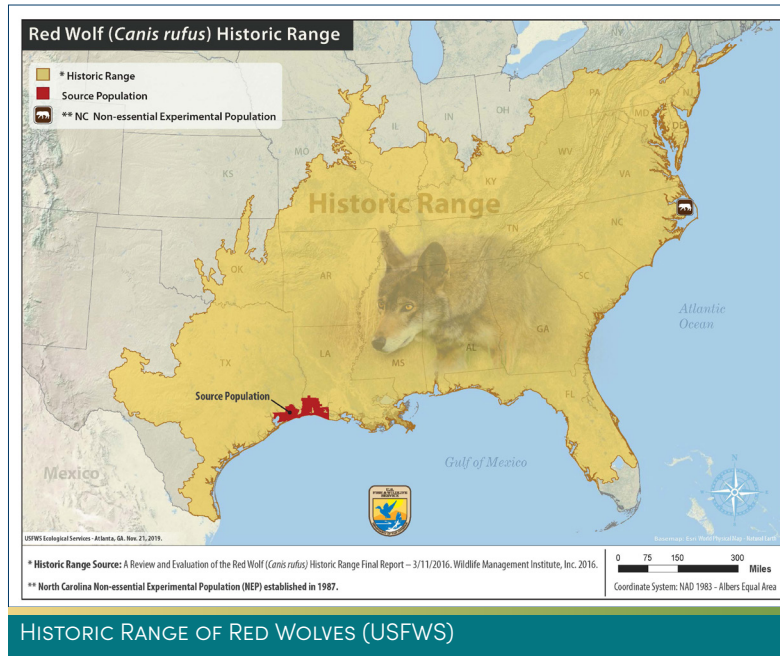
This project will substantially improve safe highway crossing opportunities for the critically endangered Red Wolf within the area with the only wild population of Red Wolves in the world. Red Wolves are the only wolf species endemic to the United States and were once common throughout the entire southeast.

The Red Wolf was first listed in 1967 as “threatened with extinction” under the Endangered Species Preservation Act of 1966 and is currently listed as an “endangered species” under the Act. It is a distinct canid species (National Academies of Sciences, Engineering, and Medicine 2019) native to North America. Historically, it ranged from southeastern United States, westward to the Edwards Plateau in Texas, north to the lower Midwest (i.e., southeastern Missouri and southern Illinois) and east into southern Pennsylvania and extreme southeastern New York (Wildlife Management Institute 2016).

Though once common throughout its range, Red Wolf populations were decimated by the early 20th Century as a result of intensive predator control programs and habitat

degradation and alteration (USFWS 1990). By 1972, the range of the Red Wolf was limited to a small coastal area in southeast Texas and southwest Louisiana (Riley and McBride 1972).

To prevent extinction of the species, the USFWS established a formal recovery program in 1973 and began trapping individuals along the coastal region of the Texas-Louisiana border to establish a Red Wolf captive breeding program, with the intention of returning the species to areas within its historic range (USFWS 1990). In 1980, Red Wolves were officially declared extinct in the wild.



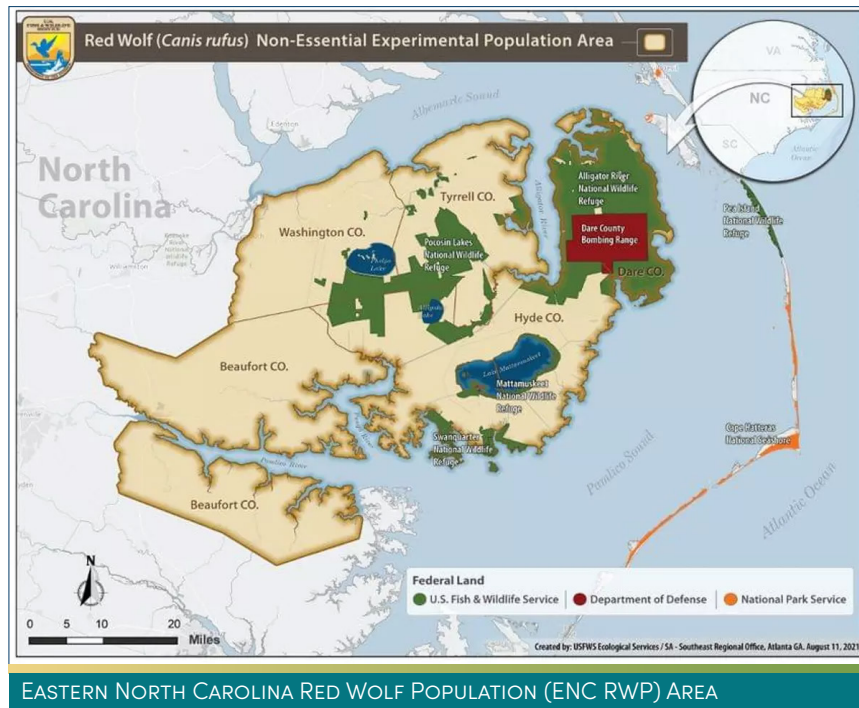
The captive breeding program, known today as the Red Wolf SAFE (Savings Animals From Extinction) Program operating under the Association of Zoos and Aquariums (AZA), currently consists of 52 zoos and wildlife conservation centers across the country with a population of approximately 292 wolves. The Red Wolf SAFE program focuses the collective expertise and leverages their massive audiences to save species. The Red Wolf SAFE program's goal is to support conservation efforts for this species by maintaining a healthy and viable population of Red Wolves under human care, growing education and awareness efforts, and aiding research vital to supporting recovery and management.

Captive breeding saved the Red Wolf from extinction and is an essential component of Red Wolf recovery at great financial expense and effort by the zoo and wildlife conservation centers involved. Although captive Red Wolves are located throughout the country at different Red Wolf SAFE facilities, they are managed as a single population. They are routinely transferred among the facilities to breed according to genetic management objectives to help maintain the health and diversity of an increasing population. The Red Wolf Center, discussed above, is one of the Red Wolf SAFE facilities.

In the mid-1980's and once there was a growing Red Wolf population in these facilities, it was decided that it was time to reintroduce Red Wolves to the wild. The Albemarle Peninsula region of northeastern North Carolina was chosen for many reasons,

including the presence of the newly established ARNWR, the rural nature of the area, the somewhat limited road densities, the peninsula nature of the area that would potentially naturally limit migration in and out of the area and the lack of the presence of coyotes at that time.

In 1987, 4 pairs of Red Wolves were released into the wild on ARNWR. As the population grew, the area now known as the Eastern North Carolina Red Wolf Population (ENC RWP) was expanded and includes public and private lands across 5 counties (Beaufort, Dare, Hyde, Tyrrell and Washington) for a total of approximately 1.7 million acres. By 2012, the population had grown to about 120 Red Wolves spread throughout that area. However, due to multiple reasons, including the increased presence of coyotes leading to increased conflicts between landowners and canids in the area leading to increased gunshot mortality, court challenges, a suspension of many Red Wolf management activities by the USFWS (e.g., releases, pup fostering, translocation, coyote sterilization) while reviews of the Red Wolf Recovery Program were ongoing, and many other reasons, the population began to drop until it reached a low of 7 known Red Wolves in the wild in 2020 with no breeding pairs.



In 2019, Red Wolf management activities were resumed within the ENC RWP with the translocation of a male Red Wolf from the St. Vincent National Wildlife Refuge, a Red Wolf island propagation site off the Gulf Coast of Florida. In 2022 the Department of the Interior and the USFWS officially announced a recommitment to the recovery of Red Wolves in eastern North Carolina and other areas in the southeast within the historic range. In 2021, releases of Red Wolves into the wild born in the SAFE population resumed. And in 2022, the first Red Wolf litter was born in the wild since 2018. The population is beginning to grow and there have been litters born in the wild each of the last 3 years.





Since 2019, management actions have slowed the decline, and the population has experienced an increase. However, the population is at risk of extirpation due to low resiliency associated with high mortality rates, risks due to demographic stochasticity characteristic of small population size, and low redundancy and representation associated with a single wild population. The population is currently 16 known Red Wolves in the wild, which is the number of adult and subadult Red Wolves that are radio-collared and monitored on a regular basis and known to be alive out on the landscape. The estimated total population is approximately 17-19 Red Wolves in the ENC RWP. Annual release plans focus on continuing to pup foster whenever possible to increase the population numbers and genetic diversity by placing pups born in the SAFE population into a wild den when they are less than 2 weeks old, and attempting to create additional breeding pairs in the wild by pairing unpaired wild Red Wolves with each other or pairing a wild Red Wolf with a Red Wolf from the SAFE population.

In September 2023, the USFWS published the Revised Recovery Plan for the Red Wolf which includes recovery actions to be taken in North Carolina to recover the species. Recovery Action 15 says to “Implement and monitor strategies to reduce vehicle strikes in the ENC RWP to achieve the target 50% reduction of mortality, as detailed in Miller et al. 2023 PVA, to facilitate an increase in the Red Wolf population.” Parties listed to collaborate with to achieve this recovery action include NCDOT and NCWRC. The next step in the recovery planning process is the development of the Recovery Implementation Strategy which is currently underway and includes specific actions and activities for the ENC RWP, including activities related to reducing vehicle strike mortalities, such as pursuing opportunities for infrastructure changes.

In the 37 years since reintroduction, human caused mortality (primarily gunshot and vehicle strikes) has been the largest cause of mortality in the wild. The average age of mortality for Red Wolves that die of natural cause is around 9 years old, but when human caused mortality is factored in the average age of mortality is less than 4 years old. Human caused mortality, particularly to one of the breeding pair of Red Wolves or from an established pack, is highly disruptive and can lead to a significant loss of reproduction success and the ability of a pack to maintain a territory. This is exacerbated at low population numbers, such as currently exist, because the availability of a suitable Red Wolf mate to replace the Red Wolf that died is extremely limited.

Vehicle strike mortalities are the second leading cause of mortality since reintroduction. However, over the last 10 years, vehicle strike mortalities have increased and are the leading cause of mortality of Red Wolves. Highway 64 runs through a large portion of the ENC RWP and is the site of the majority of Red Wolf vehicle strike mortalities, especially in recent years. The stretch of Highway 64 that runs through Alligator River National Wildlife Refuge is particularly problematic for Red Wolves because it is a narrow, two-lane highway with limited shoulders, canals on one or both sides and is immediately adjacent to the best Red Wolf habitat on the refuge. Because of its proximity to an area that represents one of the strongholds of the Red Wolf population and releases, as well as the physical nature of that stretch of highway, it has resulted in a significant number of red wolf mortalities over the years, including 19 total, 6 within the last 5 years and 3 within the last year. Two of the ones within the last year were of



breeding males that were raising a litter of pups, one of which the litter was abandoned after the mortality of the male on Highway 64.

Given the status regarding the recovery of Red Wolves, their management and the current threats to this highly endangered species, including vehicle strike mortalities as a primary cause of mortality, the RESCUER project is a critical component of ensuring their continued long-term survival and persistence on the landscape for the only wild population of Red Wolves.

## PROJECT READINESS

### *Technical Feasibility*

The project area was included in earlier planning for a larger US 64 improvement and widening project. Those planning efforts identified the location and general sizing for the wildlife mitigation measures included in this phase of RESCUER. This project has continued earlier coordination with detailed discussions about the construction approach and complexities found in the project area. With multiple constructed wildlife underpasses in eastern NC, it is a known that the necessary fill material is a significant factor in the cost of the overall project. Additionally, with no off-site detour and as a 2-lane main arterial route for tourist and hurricane evacuation it is necessary to maintain traffic with limited lane closure; therefore, constructing onsite detours was also included. Project cost estimates were derived from an express design completed to attain material quantities (see Appendix A). Taking quantities from the express design, NCDOT used regional expertise (Division 1 staff) to estimate total project construction cost. The cost proposal also includes an additional 15 percent for contingencies including but not limited to construction engineering and inspection costs. 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. No right of way acquisition is anticipated. NCDOT, in coordination with USFWS's Red Wolf Recovery Program and ARNWR and the NCWRC, have worked together on the development of the scope of this phase of RESCUER and do not anticipate any delays regarding implementation. The final design and NEPA compliance and documentation phases are anticipated to begin within 1 month of receiving funding and would be complete within 1 year.

### *State and Local Approvals*

RESCUER is not programmed in the State Transportation Improvement Program, Albemarle Rural Planning Organization (ARPO) Long-Range Transportation Plan, or





the State Long Range Transportation Plan. However, NCDOT has the ability to process a STIP amendment prior to obligation of funds.

NCDOT and its partners have provided ample interagency coordination that will help to expedite any state-level permitting. No local approvals will be necessary at a city/county level.

## *Assessment of Project Risks and Mitigation Strategies*

NCDOT does not anticipate any risks due to the partnership with the USFWS Red Wolf Recovery Program and ARNWR; our longstanding partnership with the NCWRC will also help to mitigate any concerns with stakeholders.

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. (See Appendix B for MOU)

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](#) (See Appendix B). 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.

Additionally, NCDOT intends to perform a [Value Management Study](#) immediately post-award to find the most cost-effective and expedited construction methods that meet the needs of the project.

## *Environmental Permits and Reviews*

### **NATIONAL ENVIRONMENTAL POLICY ACT**

NCDOT has already begun environmental review and regulatory coordination for RESCUER as part of this application. The NEPA process for the project will begin within 1 month of receiving funding and will be completed within 1 year. NCDOT anticipates that this project will be classified as a Categorical Exclusion (CE) based on NCDOT's current Programmatic Agreement with Federal Highway Administration (FHWA) and will provide NEPA compliance for all applicable federal agencies.

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 right of way or within the ARNWR. It is unlikely that there are utility conflicts in the project area, however, coordination can begin as soon as funding is announced if any are found to exist. 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. NCDOT does not anticipate any right-of-way acquisitions for this phase of RESCUER. NCDOT intends to work with the ARNWR to acquire the necessary easements for construction access as well as wildlife fencing and crossing installations.

## 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 of our projects. Following our [Statewide Public Involvement Plan](#) 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.

The USFWS's Red Wolf Recovery Program focuses on collaborative conservation, emphasizing the need for and importance of community and partner engagement, including increasing communications and transparency in all our actions, particularly with respect to reducing anthropogenic threats. The Red Wolf Recovery Program is continuing to conduct direct communications with landowners and stakeholders, including routinely calling landowners when Red Wolves are known to be using their property during monitoring and engaging with the public in a variety of ways, including public meetings to discuss Red Wolves and their management. Discussions related to reducing vehicle strike mortalities of Red Wolves have been and will continue to be a topic of discussion during interactions with the public.

The Red Wolf Recovery Program is also currently working with [Constructive Conflict LLC](#) on conservation conflict transformation, as discussed in Section 2.4, using them as a third-party neutral to engage with the community and other groups involved with Red Wolves to reconcile relationships, align individuals and groups toward shared goals and begin shared problem-solving and decision-making at multiple levels. As part of the initial stages of the process, Constructive Conflict has held several public meetings throughout the ENC RWP to discuss Red Wolves and their management without USFWS personnel present. Those meeting discussions are attendee driven but human-caused mortalities of Red Wolves, including vehicle strike mortalities and wildlife crossings, have been discussed.

There is extensive public support not just locally but nationwide to save the critically endangered Red Wolves from going extinct in or disappearing from the wild. In recent years, USFWS has received more than 90,000 comments regarding the species.



## SELECTION CONSIDERATIONS

### *Safety*

This project is completely aligned with the National Roadway Safety Strategy, given the project’s strong focus on reducing the number of dangerous, potentially lethal crashes between vehicles and bear, Red Wolves, and deer. (See Criteria 1.1) The combination of cost-effective underpass 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. NCDOT intends to build off of our 20+ year history of design, construction and installation of crossings and fencing to ensure a successful safety strategy.

### *Climate Change and Sustainability*

The project would promote the resilience of the entire Dare County mainland peninsula. Installation of the wildlife underpasses will require raising the grade of the road which will be beneficial for both motorists and wildlife during extreme weather events. According to the USDOT Equitable Transportation Community Explorer, anticipated changes in extreme weather is 100% for the project area. Improving habitat connectivity 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 the associated increased greenhouse gas emissions.

### *Equity*

The proposed work on the US 64 corridor will promote urban-rural equity by marking a substantial investment in highway safety in rural Dare County. By reducing crashes, the proposed wildlife crossings and fencing 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 medium to large-bodied animals such as Red Wolves, bear, and deer.

The project area was evaluated using the Climate and Economic Justice Screening Tool (CEJST). It should be noted that a large part of the project area is made up of the Alligator River National Wildlife Refuge. Census Tract 37055970501 in Dare County has a population of just over 1,070 people and is not listed as an Historically Disadvantaged Community (HDC). However, there are noted environmental risk factors. The project area is rated in the top 95th percentile for agriculture loss rate, the top 98th percentile for building loss rate, and the top 98th percentile for population loss rate. The area is also at substantial risk from fires and floods, ranking in the top 98th percentile for projected flood risk and in the top 86th percentile for projected wildfire risk. These risks highlight the need for increased habitat connectivity to escape emergency situations. Additionally, the Centers for Disease Control’s (CDC) [Social Vulnerability Index](#) rates



mainland Dare County in the highest quartile for social vulnerability due primarily to the residents' socioeconomic status and household characteristics.

There are also workforce development concerns in the area. The project area is in the top 63rd percentile for linguistic isolation and 18 percent of the population lacks a high school diploma. These factors highlight the need for workforce development in the area and their reliance on safe and dependable regional transportation for employment.

## *Workforce Development, Job Quality, and Wealth Creation*

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, [NCDOT reported](#) 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.

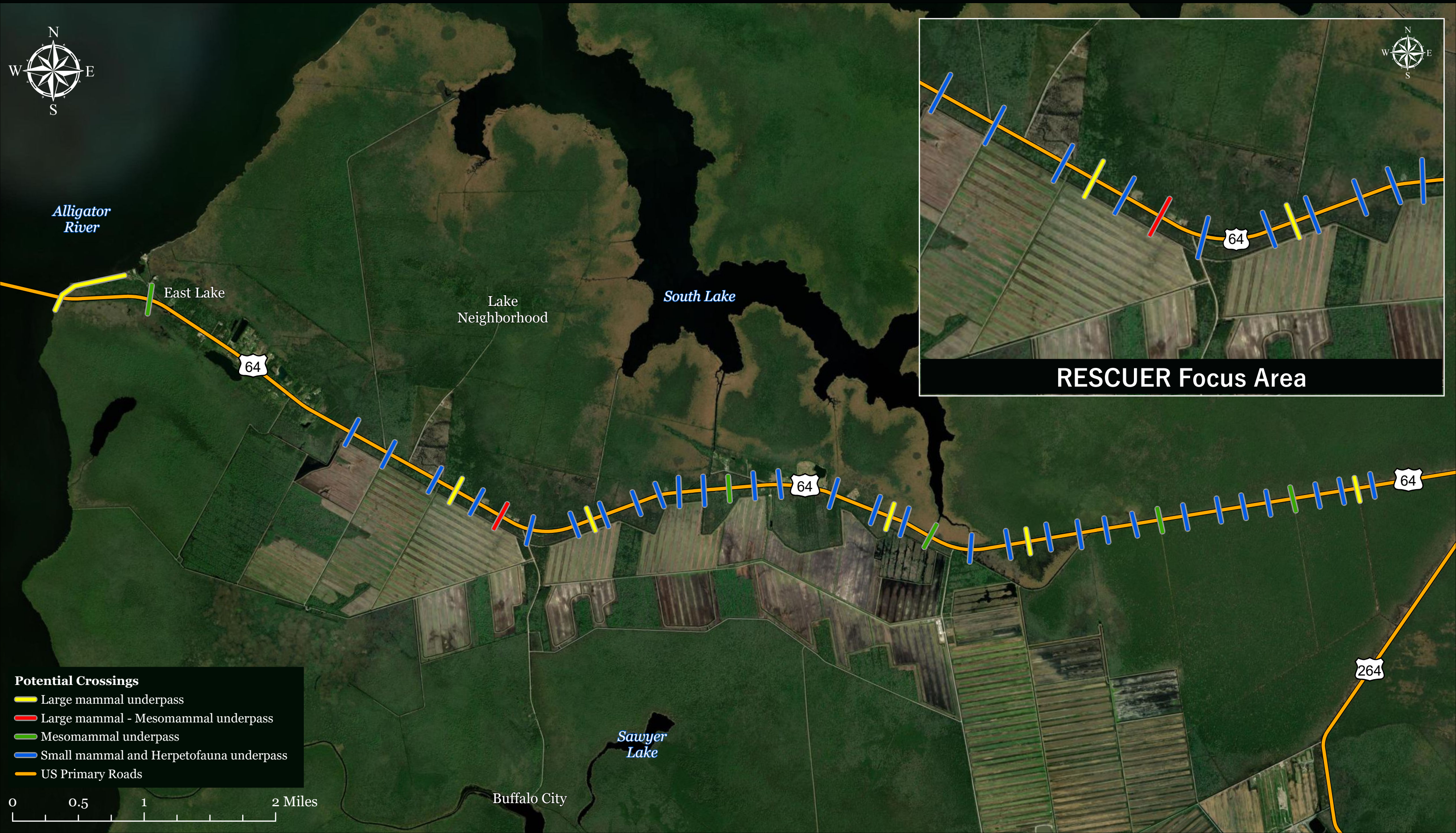
NCDOT's OCR will explore the possibility of providing HCTA, ACTs, and/or AdTs in the Division during construction. The Department will encourage the use of DBE firms as part of the letting/administration process.

## **Appendix A**

### Wildlife Crossing Map and Preliminary Estimate



# US 64 Dare County: Conceptual Wildlife Crossing Locations identified through research and agency coordination





North Carolina Department of Transportation  
Preliminary Estimate

TIP No. **US-64 ARNWR Wildlife Crossing**  
Route US-64  
From  
Typical Section 2 Lane Shoulder Section

**Conceptual**

County: Dare

**CONSTR. COST**  
\$0

**Date** 8/2/2024

Prepared By: HNTB  
Requested By: NCDOT  
Priced By:

Line Item	Des	Sec No.	Description	Quantity	Unit	Price	Amount
			Mobilization	1	LS	\$ -	\$ -
			Construction Surveying	1	LS	\$ -	\$ -
			Clearing and Grubbing	11	Acre	\$ -	\$ -
			Supplemental Clearing and Grubbing	2	Acre	\$ -	\$ -
			<b><u>Earthwork</u></b>				
			Unclassified Excavation	17,150	CY	\$ -	\$ -
			Borrow Excavation	280,950	CY	\$ -	\$ -
			Removal of Existing Pavement (Asphalt or Concrete)	34,200	SY	\$ -	\$ -
			<b><u>Drainage</u></b>				
			Drainage -L-	2.70	Miles	\$ -	\$ -
			Drainage -Y- lines	0.20	Miles	\$ -	\$ -
			<b><u>Pavement (Asphalt or Concrete)</u></b>				
			Fine Grading	64,300	SY	\$ -	\$ -
			New Pavement	64,300	SY	\$ -	\$ -
			Pavement Resurfacing	3,600	SY	\$ -	\$ -
			Guardrail	26,931	LF	\$ -	\$ -
			Guardrail End Units	8	EA	\$ -	\$ -
			Removal of Existing Guardrail	14,700	LF	\$ -	\$ -
			<b><u>Fencing</u></b>				
			Woven Wire Wildlife Fence	28,100	LF	\$ -	\$ -
			<b><u>Erosion Control</u></b>	52.00	Acres	\$ -	\$ -
			<b><u>Signing</u></b>				
			Signing -L-	2.7	Miles	\$ -	\$ -
			Signing -Y- lines	0.2	Miles	\$ -	\$ -
			Thermo and Pavement Marking -L-	2.7	Miles	\$ -	\$ -
			Thermo and Pavement Marking -Y-lines	0.2	Miles	\$ -	\$ -
			<b><u>Traffic Control</u></b>				
			Traffic Control -L-	2.7	Miles	\$ -	\$ -
			Traffic Control -Y-lines	0.2	Miles	\$ -	\$ -
			Portable Concrete Barrier	23,900	LF	\$ -	\$ -
			<b><u>Culverts</u></b>				
			Exist Culvert Extension -L- 16+00	12	LF	\$ -	\$ -
			Exist Culvert Extension -L- 33+75	66	LF	\$ -	\$ -
			Exist Culvert Extension -L- 54+40	48	LF	\$ -	\$ -
			Exist Culvert Extension -L- 97+20	138	LF	\$ -	\$ -
			Exist Culvert Extension -L- 139+25	36	LF	\$ -	\$ -
			New 3.4' Arch-pipe, Wildlife, -L- 28+15	85	LF	\$ -	\$ -
			New 3.4' Arch-pipe, Wildlife, -L- 47+36	88	LF	\$ -	\$ -
			New 3.4' Arch-pipe, Wildlife, -L- 72+05	94	LF	\$ -	\$ -
			New 3.4' Arch-pipe, Wildlife, -L- 91+75	95	LF	\$ -	\$ -
			New 3.4' Arch-pipe, Wildlife, -L- 101+85	88	LF	\$ -	\$ -
			New 3.4' Arch-pipe, Wildlife, -L- 118+95	88	LF	\$ -	\$ -
			New 3.4' Arch-pipe, Wildlife, -L- 128+45	95	LF	\$ -	\$ -
			New 3.4' Arch-pipe, Wildlife, -L- 135+15	88	LF	\$ -	\$ -
			New 7.6' Arch-pipe, Wildlife, -L- 59+05	126	LF	\$ -	\$ -
			New 10' Arch-pipe, Wildlife, -L- 37+58	158	LF	\$ -	\$ -
			New 10' Arch-pipe, Wildlife, -L- 97+25	170	LF	\$ -	\$ -



North Carolina Department of Transportation  
Preliminary Estimate

		<u>Utility Construction</u>				
		Relocate Existing Water Line		LF	\$ -	\$ -
		Relocate Existing Sewer Line		LF	\$ -	\$ -
		Miscellaneous (10% Strs & Util)				\$ -
		Miscellaneous (40% Roadway)				\$ -

**Lgth**            **2.7 Miles**

<b>Contract Cost</b> .....	\$	-
<b>E. &amp; C. 16%</b> .....	\$	-
<b>Construction Cost</b> .....	\$	-
<b>Construction Cost</b> .....	\$	-

## **Appendix B**

Letters of Support, NCDOT/NCWRC  
Wildlife Passage Guidance, and  
NCDOT/NCWRC MOU



August 25, 2024

Dear Wildlife Crossings Program Committee:

The Tuscarora Nation of North Carolina emphatically supports the honorable efforts to preserve the surviving red wolf population in North Carolina by building wildlife crossings along Highway 64.

For millennia, we Tuscarora have lived on the land now known as North Carolina. We have shared a parallel path with the red wolf and when we often say, "We are the land." The animal people and plant species who have shared this land with us are also included in that sentiment. As the red wolves' population has been hacked into decline, so has that of the Tuscarora, but as we struggle for survival, we have drawn a circle around us large enough to include our brother, the red wolf. Like the red wolf, we are a vanishing breed, but if we survive, we wish to survive with the red wolf. We have all confidence in the ability to preserve the red wolves and lead them back from the edge of extinction.

The thoughtfully considered plans for wildlife crossings in the red wolves' natural habitat will not only save the lives of red wolves, but that of many other animals as well. Even further, wildlife crossings would certainly save human lives. Here in North Carolina, ten counties alone had a combined 16,049 animal crashes over the last three years, according to the NC DOT. Those crashes caused a nearly combined \$51 million in damage, 743 injuries and five deaths. Dr. Patricia Cramer of the Wildlife Connectivity Institute has determined that wildlife crossings will reduce wildlife collisions by 75% to 90% in just a few years.

In the span of eight months, four of the surviving red wolves were killed in car collisions, the last occurring in April 2024. Two of these red wolf fatalities were a father and son, killed nearly in the same spot. Wildlife crossings could have saved them.

We humans have the power to save our red wolf family from extinction. We Tuscarora have an old saying: "We will be known by the tracks we leave." In the end, how will our descendants of the seventh generation know us? What were our values? Will our descendants know we had the power to save these red wolves and chose not to or will our descendants know us as virtuous champions who saved these sacred red wolves from the abyss of extinction?

We may not have the power and funding to save the world, but we do have the determination, knowledge, ability and—with your favorable decision—the power via funding to save these

sacred red wolves. We Tuscarora do believe this is how we may begin to save the world; one species, one community at a time.

Healthy ecosystems depend on plant and animal species as their foundations. When a species becomes endangered, it is a sign that the ecosystem is slowly falling apart. Each species that is lost triggers the loss of other species within its ecosystem. Humans depend on healthy ecosystems to purify our environment.

In our Tuscarora language, we have an ancient term we call “Ēθa?nēhá·?nē?θ.” While there is no exact translation into English, it generally means, “It will deaden your life.” It applies when one wantonly kills the animal people. We live in an age where animal extinctions increase by the year. We Tuscarora apply this ancient term to this modern tragedy of animal extinction.

The United Nations Convention on Biological Diversity estimates that up to 150 species are lost each day, which could be as much as 10% per decade. The Center for Biological Diversity has a proven history of effective preservation of animal species, and the Save Red Wolves coalition has dedicated itself to raising funds for red wolf wildlife crossings along Highway 64. NC DOT has become a champion for wildlife crossings as well. The Tuscarora Nation unconditionally supports the efforts to build wildlife crossings along Highway 64.

Humankind did not weave the web of life, but rather, we are merely a strand in it. What we do to and allow to happen to the web of life, we do to ourselves. We are inseparable from the natural world.

We implore you to grant funding to the red wolf wildlife crossings along Highway 64 to allow NC DOT to do their sacred work of preserving life, particularly the red wolf.

Sincerely,

Runēkwá?čhę? Duane Brayboy, Bear Clan, Prospect Longhouse Public Relations:

[Skarure.language@gmail.com](mailto:Skarure.language@gmail.com)

Rahnà·wakę·w Donnie McDowell, Beaver Clan, Maxton Longhouse, Tuscarora Nation Public Relations: [Tuscaroranationpublicrelations@gmail.com](mailto:Tuscaroranationpublicrelations@gmail.com)





# United States Department of the Interior



FISH AND WILDLIFE SERVICE  
1875 Century Boulevard  
Atlanta, Georgia 30345

In Reply Refer To:  
FWS/R4/ES/DCN081495

August 20, 2024

Wildlife Crossing Pilot Program  
U.S. Department of Transportation  
Federal Highway Administration  
1200 New Jersey Avenue, SE  
Washington, D.C. 20590

Subject: Alligator River National Wildlife Refuge Red Wolf Essential Survival Crossing Under Evacuation Route (RESCUER)

Dear Grant Selection Committee Members:

The U.S. Fish and Wildlife Service's (Service) Southeast Region strongly supports the North Carolina Department of Transportation's (NCDOT) proposed RESCUER wildlife crossing project on Highway 64 through Alligator River National Wildlife Refuge (NWR). Funding from the Federal Highway Administration's Wildlife Crossing Pilot Program is being sought to support the installation of various sized culverts to accommodate safe crossing for multiple species, including the endangered Red Wolf, and associated fencing along a 12-mile stretch of Highway 64 from the Alligator River Bridge east to the junction with Highway 264. The first phase of the project would focus on a 2.5-mile section of the highway that has been shown to be a prominent wildlife crossing area and the site of numerous wildlife mortalities due to wildlife vehicle collisions (WVCs). This proposal was developed in partnership between the NCDOT, North Carolina Wildlife Resources Commission, and the Service.

Highway 64 is one of the busiest roads in Eastern North Carolina, ushering beach traffic to the Outer Banks through the north end of Alligator River NWR, an area of significant conservation importance, and is a commuter route for people traveling to the Outer Banks for work. This section of highway is somewhat narrow with limited shoulders in places and canals on one or both sides of the highway, making it more susceptible to WVCs. The need for wildlife crossings in this region was identified over 20 years ago, and this need has become increasingly pressing. The area in question has the highest black bear density east of the Mississippi River, with bears in this region being particularly large. Between 1990 and 2024, 43 of 45 reported WVCs involved bears; the others involved a deer and an unspecified large mammal. However, the actual number of WVCs is likely significantly higher based on data from Virginia DOT that found a correction factor of 8.5 was needed to correctly estimate the number of WVCs in a given area. Collisions with large mammals, particularly black bear, can cause significant damage and result in catastrophic outcomes for both wildlife and the traveling public.

Between 2008 and 2011, a roadkill survey conducted along a portion of Highway 64 recorded 15 black bears, 8 white-tailed deer, 1 Red Wolf, 57 opossums, 49 raccoons, 8 other mid-sized

mammals, 82 small mammals, including three star-nosed moles, which are a North Carolina Species of Concern, and over 7,000 amphibian and 4,000 reptile mortalities. In May 2014, a vehicle struck and killed an adult alligator along the subject section of Highway 64. This project will provide significant benefits to both the public and wildlife, by providing safe passage for these wildlife species and habitat connectivity to adjacent habitats.

Of particular concern to the Service is the impact of Highway 64 and the large volume of traffic on the endangered Red Wolf. The section of Highway 64 targeted for this project has a documented history of Red Wolf crossings, with associated high-density road mortalities that have had a devastating impact on this critically endangered species. Since 1989, there have been 19 documented Red Wolf mortalities along this section. Alarming, since 2021, vehicle strikes have accounted for 43% of all Red Wolf deaths, with 50% of those occurring along this very roadway. In comparison, gunshot mortalities and deaths due to natural causes or health issues each account for only 19% of Red Wolf deaths during the same period. The subject area of Highway 64 is also a known concentration zone for Red Wolf births, making it a vital region for the species' survival, and has been identified as one where mitigation efforts would be most efficient and effective. The section being targeted for the initial phase is immediately adjacent to some of the best habitat for Red Wolves on Alligator River NWR, particularly as the Red Wolf population grows, and is a hotspot area for Red Wolf and other WVCs.

Given the critically low population of Red Wolves, each mortality is a significant setback to species' recovery efforts, making it clear that immediate mitigation measures are necessary. The proposed wildlife crossing project offers a unique opportunity to not only enhance public safety by reducing the risk of vehicle-wildlife collisions but will also offer critical protection to the world's most endangered wolf, reducing mortality rates and contributing to the species' recovery. The Service strongly supports this project and urges the Wildlife Crossing Pilot Program to allocate the necessary funds to bring this project to fruition.

Thank you for your consideration and for your commitment to preserving our nation's wildlife.

Sincerely,



Mike Oetker  
Regional Director



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

ROY COOPER  
GOVERNOR

J.R. "JOEY" HOPKINS  
SECRETARY

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

The [Wildlife Crossings Pilot Program | FHWA \(dot.gov\)](#) 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 our joint Wildlife Stewardship [MOU](#) with the NC Wildlife Resource Commission, the NCDOT requests your support for the following projects:

**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.

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

*Mailing Address:*  
NC DEPARTMENT OF TRANSPORTATION  
ENVIRONMENTAL POLICY UNIT  
1598 MAIL SERVICE CENTER  
RALEIGH, NC 27699-1598

*Telephone:* (919)7076153  
*Customer Service:* 1-877-368-4968  
*Website:* [www.ncdot.gov](http://www.ncdot.gov)

*Location:*  
1000 BIRCH RIDGE DR.  
RALEIGH, NC 27610

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.

Gary Jordan  
US Fish and Wildlife Service  
Eastern NC Ecological Services Field Office  
3916 Sunset Ridge Rd  
Raleigh, NC 27607

**GARY  
JORDAN**

Digitally signed by  
GARY JORDAN  
Date: 2024.08.28  
14:57:05 -04'00'





# 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 [Wildlife Crossings Pilot Program | FHWA \(dot.gov\)](#) 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  
YOUNGMAN** Digitally signed by  
HOLLAND YOUNGMAN  
Date: 2024.08.29  
14:25:13 -04'00'



## ◊ North Carolina Wildlife Resources Commission ◊

---

Cameron Ingram, Executive Director

August 29, 2024

Grant Selection Committee Members  
Wildlife Crossing Pilot Program  
US 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 US 64 project in Dare 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 application for US 64 wildlife crossing project that was developed with the NCDOT in accordance with a recently signed Memorandum of Understanding (MOU). The MOU formalized the inter-agency coordination on wildlife conservation, highway safety, and mitigation needs on existing and developing highway projects in North Carolina.

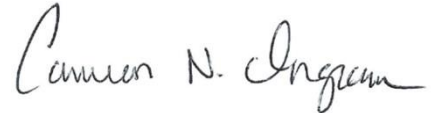
As noted in the application, a WCPP grant is being sought to reduce wildlife vehicle collisions (WVCs) and improve habitat connectivity within the Alligator River National Wildlife Refuge (ARNWR). The US 64 corridor is home to numerous species, including red wolf, black bear, white-tailed deer, bobcat, as well as many other mesomammals, small mammals and herpetofauna. In fact, vehicle strike mortalities are the leading cause of mortality for the critically endangered red wolf over the last 10 years.

The installation of wildlife fencing to reduce wildlife vehicle collisions (WVCs) in conjunction with the placement of multiple wildlife underpass structures to provide habitat connectivity will directly benefit not only larger mammals but many smaller animals as well, as an alarming number of herpetofauna roadkill have been documented in US 64 research projects. Several of the animals that have been killed as a result of WVCs are Species of Greatest Conservation Need as identified in the NC Wildlife Action Plan.

The need to reduce WVCs and improve habitat connectivity is well documented for much of the US 64 corridor in eastern NC. Specifically, the section of US 64 outlined in this grant application is a WVC hotspot and critical in the effort to reduce vehicle-related mortalities for the red wolf and a main area of concern for other important wildlife species. The NCWRC fully supports this grant application to improve habitat connectivity and reduce WVCs on this portion of US 64.

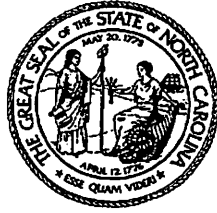
Thank you for the opportunity to provide comments in support of this project.

Sincerely,

A handwritten signature in black ink that reads "Cameron N. Ingram". The signature is written in a cursive style with a large initial 'C'.

Cameron N. Ingram, Executive Director





**North Carolina Department of Natural and Cultural Resources  
Office of the Secretary**

Governor Roy Cooper

Secretary D. Reid Wilson

August 29, 2024

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

Subject: Alligator River National Wildlife Refuge Red Wolf Survival Crossing Under  
Evacuation Route (RESCUER)

Dear Grant Selection Committee Members:

The North Carolina Department of Natural and Cultural Resources (DNCR) strongly supports the North Carolina Department of Transportation's (NCDOT) proposed RESCUER wildlife crossing project on Highway 64 through Alligator River National Wildlife Refuge. Funding from the Federal Highway Administration's Wildlife Crossing Pilot Program is being sought to support the installation of culverts to accommodate safe crossing for multiple species, including the endangered American Red Wolf, and associated fencing along a 12-mile stretch of Highway 64 from the Alligator River Bridge east to the junction with Highway 264.

Over the last ten years, vehicle strikes have been the leading cause of mortality among American Red Wolves in the wild. Construction of wildlife crossings in the wolves' prime habitat will significantly reduce vehicle strikes and make a tremendous difference to the long-term survival of the species in northeastern North Carolina.

DNCR has been a collaborative partner in the ongoing efforts to reintroduce and support the critically endangered American Red Wolf, working closely with the US Fish and Wildlife Service, the NC Wildlife Resources Commission, NCDOT, and other agencies to support captive breeding programs to provide wolves for reintroduction and to develop strategies for mitigating barriers to the species' survival in the wild, including the threat of vehicle strikes.

**MAILING ADDRESS:**  
4601 Mail Service Center  
Raleigh, NC 27699-4600

**Telephone:** (919) 814-6750  
**Fax:** (919) 733-1564

**LOCATION:**  
109 East Jones Street  
Raleigh, NC

Wildlife Crossing Pilot Program  
Grant Selection Committee Members  
August 29, 2024  
Page 2

DNCR is the home agency of the North Carolina Zoo, which has played a leadership role since the inception of the red wolf recovery program. The NC Zoo houses the second largest population of captive red wolves in the country, and multiple wolves born at the NC Zoo have been released into the wild. NC Zoo staff previously led the Association of Zoos and Aquariums' Species Survival Plan (SSP, now Saving Animals From Extinction, or SAFE Program) for red wolves. Zoo staff currently serve as research and husbandry advisors to the SAFE Program and are pioneering new techniques to ensure wolves bred in captivity will be well-prepared for adapting to life in the wild.

Maintaining a healthy and viable population of red wolves under human care is essential for the long-term success of the recovery program. The NC Zoo is pursuing a significant expansion of its red wolf breeding facility, including a large new "off-view" area which will nearly double the number of wolves that can be housed onsite. It will also include much larger, more remote wolf holding spaces designed to acclimate wolves to life in the wild in advance of their release. While these acclimation efforts are critical, they will go for naught if vehicle strikes continue to drive the wild population downward.

In addition to the NC Zoo's engagement with and management of the captive red wolf population, it also conducts education and outreach focused on this species. Each year over one million visitors to the NC Zoo have the opportunity to learn about red wolves and their conservation both by observing the group of red wolves on public display and through an onsite education station dedicated to the species. We envision an opportunity to expand that conservation message by highlighting the important role that wildlife crossings play in the protection of wildlife such as the American Red Wolf.

Again, the North Carolina Department of Natural and Cultural Resources strongly supports NCDOT's proposal to the Wildlife Crossing Pilot Program. If funded, the project will make a huge difference in the American Red Wolf's long-term viability in the wild. Thank you for your consideration and for your commitment to preserving our nation's wildlife.

Sincerely,



D. Reid Wilson  
Secretary  
NC Department of Natural & Cultural Resources



# Animal Welfare Institute

900 PENNSYLVANIA AVENUE, SE, WASHINGTON, DC 20003 · 202-337-2332 · AWIONLINE.ORG

September 3, 2024

## Via Electronic Mail

Marissa Cox  
Environmental Program Manager  
Environmental Policy Unit  
North Carolina Department of Transportation  
1000 Birch Ridge Drive  
Raleigh, North Carolina 27610  
[mrcox2@ncdot.gov](mailto:mrcox2@ncdot.gov)

**Re: Letter of Support for Red Wolf Essential Survival Crossings Under Evacuation Route – 2024  
FHWA-WCPP Grant Application**

Dear Ms. Cox:

The Animal Welfare Institute (AWI), on behalf of our members, submits this letter in support of NCDOT's and USFWS's application for the Red Wolf Essential Survival Crossings Under Evacuation Route project to be funded through the Wildlife Crossings Pilot Program. We view this project as an essential component of a larger strategy to address the multiple causes of red wolf mortality in the Red Wolf Recovery Area.

AWI is a nonprofit organization founded in 1951 whose mission is to alleviate the suffering caused to animals by people. We seek better treatment of animals everywhere—in the wild, in research, in agriculture, in commerce, and in our communities. We advance our mission through strategically crafted political and legal advocacy, educational programs, litigation, research, and engagement with industry, policymakers, scientists, and other NGOs. AWI has been dedicated to recovering the red wolf through litigation, scientific research efforts, and community education since 2012.

Vehicle mortality is currently the leading cause of human-induced death for the wild red wolf population. It represents a threat to the welfare and genetic integrity of the small, but steadily increasing population of wild red wolves, which in recent years has been bolstered by the release of captive-born wolves, which in turn has led to the re-start of wild breeding. Road mortality undermines the success of these releases and of the wild breeding that is vital to the recovery of the species. Therefore, AWI supports NDOT's and USFWS's efforts to reduce vehicle collisions in the areas inhabited by wild red wolves, including along the section of U.S. Highway 64 that borders Alligator River National Wildlife Refuge.

Improving this section of the highway with wildlife crossing infrastructure, such as extensive fencing and possible underpasses, would benefit not only red wolves but also other species that inhabit the area along U.S. Highway 64 as well. A road mortality survey conducted by Wildlands Network between August 1 and August 23, 2024, partially funded by AWI, documented 1,073 animal car strike victims, including 44 live animals 1029 dead animals. This includes 334 snakes of 18 species, 467 turtles of 9 species, and 214 frogs of 11 species, in addition to 16 birds, one black bear, 3 coyotes, one bobcat, one mink, and one star-nosed mole. These totals are from surveys of the full stretch of Dare County (including approximately 6 miles of U.S. Highway 264) plus the Tyrrell County US 64 portion from Columbia to Alligator River itself.

Considering these findings, we are especially pleased that the efforts to improve wildlife crossings without an accompanying widening of Highway 64, which would undermine the goal of reducing wildlife vehicle collisions and harm Alligator River National Wildlife Refuge.

Thank you for submitting this important project for consideration for funding through the Wildlife Crossings Pilot Program. We enthusiastically support this application.

Sincerely,



Johanna Hamburger

Director and Senior Attorney  
Terrestrial Wildlife Program  
Animal Welfare Institute  
900 Pennsylvania Ave, SE  
Washington, DC 20003  
Phone: 202-446-2136  
Email: [johanna@awionline.org](mailto:johanna@awionline.org)



# BLUE RIDGE outdoors

M A G A Z I N E

August 29, 2024

Dear Wildlife Crossings Pilot Program Grant Selection Committee Members:

Blue Ridge Outdoors Magazine supports the proposed wildlife crossings project along Highway 64 to benefit red wolves and dozens of other species of wildlife.

Blue Ridge Outdoors reaches an audience of 350,000 from Maryland to Georgia, and we are based in North Carolina. Wildlife is deeply important to our audience,

That's why we support North Carolina Department of Transportation's grant application to the Federal Highways Administration's Wildlife Crossings Program to build wildlife crossings along Highway 64 in eastern North Carolina.

The wildlife crossings proposed for Highway 64 will improve habitat connectivity for red wolves—the most endangered wolves in the world, with fewer than 20 remaining in the wild. The Highway 64 wildlife crossings project will also benefit more than 25 other species documented to be crossing this highway, including black bears, river otters, bobcat, and spotted turtles.

Wildlife crossings along U.S. Highway 64 will also improve the safety of motorists and wildlife. They will also provide quality jobs and wealth creation opportunities to one of the economically disadvantaged counties in North Carolina.

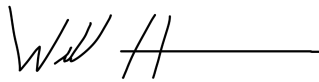
This area of pocosins and wetlands near the North Carolina coast is also threatened by climate change and sea level rise. This project will help mitigate the impacts of climate change and sea level rise on red wolves and other wildlife in the Alligator River and Pocosin Lakes National Wildlife Refuges.

In North Carolina, stakeholders came together to form the Save Red Wolves coalition to raise funds and awareness for wildlife crossings. Blue Ridge Outdoors Magazine is proud to be part of this coalition that includes local, regional, national

and Tribal partners. The Tuscarora Nation of North Carolina is a key partner and supporter of wildlife crossings in eastern North Carolina.

Blue Ridge Outdoors Magazine has published stories and helped raise funds and awareness for wildlife crossings along U.S. Highway 64, and we are committed long-term to the success of this project and the health and welfare of local communities and wildlife. We support this application for the Wildlife Crossings Program to fund wildlife crossings along U.S. Highway 64.

Sincerely,

A handwritten signature in black ink, appearing to read 'Will Harlan', followed by a horizontal line extending to the right.

Will Harlan  
Senior Editor  
Blue Ridge Outdoors Magazine  
will@blueridgeoutdoors.com  
Blueridgeoutdoors.com



August 28, 2024

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

Dear Wildlife Crossings Program Grant Committee:

On behalf of its 1.7 million members, the Center for Biological Diversity enthusiastically supports the application for wildlife crossings along Highway 64 in eastern North Carolina. This project will protect endangered red wolves, improve habitat connectivity for dozens of other species, improve motorist safety, promote workforce development, and address climate change and sustainability.

Fewer than 20 red wolves remain in the wild, making them the most endangered canids on the planet. Vehicle collisions have become the leading cause of mortality for red wolves. Five red wolves have been killed by vehicle collisions in the past 14 months. Nearly all the vehicle strikes have occurred along or near Highway 64, which runs through the heart of the red wolves' last remaining refuges. Wildlife crossings along Highway 64 are key to ensuring that red wolves have a fighting chance at survival. Highway 64 wildlife crossings can keep red wolves from sliding closer to extinction and help them thrive and recover.

Wildlife crossings along Highway 64 will benefit more than two dozen other species, including black bears, white-tailed deer, bobcats, turkey, bobwhite quail, gray fox, mink, yellow-rumped warblers, and river otters. Spotted turtles, a threatened species according to the World Conservation Union, are among the most frequently killed species along this stretch of highway, according to previous road mortality studies conducted by the North Carolina Department of Transportation.

Since the Wildlife Crossing Pilot Program was established, no project in the Southeast has been the recipient of this critical pool of funding. The wildlife crossings project for Highway 64 is a timely opportunity to protect some of the country's most endangered wildlife and improve motorist safety along an increasingly popular coastal tourist highway.

North Carolina is considered by insurance companies to be a high-risk state for wildlife collisions, and 7% of all vehicle crashes statewide involve animal strikes. Wildlife crossings along U.S. Highway 64 will improve the safety of motorists and wildlife. They will also provide

quality jobs and wealth creation opportunities to one of the economically disadvantaged counties in North Carolina.

In addition, this area of pocosins and wetlands near the North Carolina coast is also threatened by climate change and sea level rise. This project will help mitigate the impacts of climate change and sea level rise on red wolves and other wildlife in the Alligator River and Pocosin Lakes National Wildlife Refuges.

Since May the Center for Biological Diversity has devoted more than 600 hours in staff time to launch a fast-moving fundraising campaign to raise matching funds for wildlife crossings along Highway 64. Our social media outreach promoting the need for wildlife crossings along US Highway 64 has reached more than 6,778,750 unique views on Facebook and Instagram. We delivered more than 140 proposals for support to the philanthropic community, and we advertised and hosted an informational webinar along with partners from Wildlands Network, Wolf Conservation Center and the National Parks Conservation Association that garnered more than 400 registrations.

Throughout the summer the Center focused on building support from the ground up in communities where the wildlife crossings would be constructed. The Center met with prominent community members in Dare County including with the Outer Banks Community Foundation, the Outer Banks Visitors Bureau, the Outer Banks ASPCA and Outer Banks Humane Society to build community support and momentum for wildlife crossings.

The project has been widely supported nationally, regionally, and locally. While donors from across the U.S. have supported the campaign, 7% of the campaign's donors and 57% of the funding secured is from North Carolina donors.

In addition, wildlife crossings along Highway 64 have been supported by a mix of major donors, grassroots supporters, and community members. More than 6,000 people have donated to the project, which includes more than 5,800 grassroots supporters donating \$100 or less.

Tribal leaders, NGOs, donors and foundations, and local communities have rallied around the Highway 64 wildlife crossings project. The Tuscarora Nation of North Carolina has expressed strong support for the wildlife crossings along Highway 64. They are a leading voice and proponent for Highway 64 wildlife crossings. Nationally, Beth Pratt's Wildlife Crossing Fund has identified Highway 64 wildlife crossings project as one of their top priorities for funding.

With many proposals still under consideration by the philanthropic community, the Center intends to extend fundraising through October to leverage its full potential. Upon successful completion of the \$2 million match challenge fundraising effort, we are planning future community outreach to elevate the need for wildlife crossings along Highway 64 ranging from co-hosting film screenings with our partners in the Cherokee Tribe to securing a shout-out from Bonnie Raitt's at her concert in Asheville, N.C. this November.

The Center and the Save Red Wolves coalition are committed to supporting wildlife crossings along Highway 64 long-term. The Center for Biological Diversity will contribute at least



\$174,000 in in-kind services over the next year as continued outreach and education for the Highway 64 wildlife crossings project, and we plan to support future phases of the project in years to come.

Protecting critically endangered wildlife and the increasing numbers of motorists along Highway 64 is a national priority, especially given the significance of the world's last remaining wild red wolves. We are eager to support this opportunity to safeguard critically endangered red wolves, dozens of other wildlife species, and motorists and communities in eastern North Carolina through the construction of lifesaving wildlife crossings along Highway 64.

For the wild,



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Kieran Suckling  
Executive Director  
kieran@biologicaldiversity.org



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P.O. Box 1808 Manteo, North Carolina 27954

September 4, 2024

To Whom It May Concern

Please accept this letter as documented support from the Coastal Wildlife Refuge Society for grant assistance for the Wildlife Crossings Pilot Program proposed by NC DOT along Highway 64 on Alligator River National Wildlife Refuge (NWR) in eastern North Carolina. The Society is the single Refuge Friends Group (501 c 3) created and functioning to provide support for the nine refuges in the Coastal NC National Wildlife Complex including Alligator River NWR. This organization is grass-roots and represents thousands of individuals who love and treasure the national wildlife refuges in eastern North Carolina and the wildlife they support.

Though our mission is to support projects specifically on or directly related to these national wildlife refuges, it is clear that the knowledge gained from all of the NCDOT projects will benefit future wildlife across North Carolina and the nation. The RESCUER project on Highway 64 through Alligator River NWR is essential to providing a safe corridor for wildlife crossing the highway and will increase habitat connectivity. Highway 64 is one of the busiest roads in Eastern North Carolina and runs through an area of signification conservation importance, including Alligator River NWR.

I retired several years ago, having worked on these refuges for 40+ years. Discussions about the need for some sort of wildlife crossings on US 64/264 were on-going most of my career. The need for wildlife crossings in this region was identified over 20 years ago. The area has the highest black bear density in the east and is home to the endangered Red Wolf. The need for a crossing for these and other wildlife species including reptiles and amphibians has only grown since that time.

Please feel free to contact me if you need further information. Thank you for the opportunity to support these most worthy projects to protect our wildlife populations.

Sincerely,

A handwritten signature in black ink, appearing to read "Bonnie Strawser", with a long horizontal line extending to the right.

Bonnie Strawser  
President  
Coastal Wildlife Refuge Society

September 3, 2024

**Sent via E-mail**

Marissa Cox

Environmental Program Manager

Environmental Policy Unit

[mrcox2@ncdot.gov](mailto:mrcox2@ncdot.gov)

**Re: Letter of Support for Red Wolf Essential Survival Crossings Under Evacuation Route – 2024 FHWA-WCPP Grant Application**

Dear Ms. Cox:

Defenders of Wildlife is pleased to support NCDOT and USFWS's application for the Red Wolf Essential Survival Crossings Under Evacuation Route project to be funded through the Wildlife Crossings Pilot Program. This project will be essential in helping to restore the wild population of red wolves in Eastern North Carolina.

Defenders of Wildlife has long advocated for conservation and recovery of the critically endangered red wolf. An ongoing and pernicious threat to the red wolf population is the human-caused mortality from vehicle collisions in the recovery area. For this reason, we wholeheartedly support efforts to reduce vehicle collisions in the areas inhabited by the wild red wolf population. We support the North Carolina Department of Transportation's proposal for funding to construct one or more wildlife crossings and guide fencing on US 64, making the busy beach highway safer, as it cuts through Alligator River National Wildlife Refuge.

We are especially pleased to endorse the wildlife crossing project to improve wildlife permeability of US-64 without any accompanying widening of Highway 64, which would undermine the goal of reducing wildlife vehicle collisions and harm Alligator River National Wildlife Refuge.

Thank you for submitting this important project for consideration for funding through the Wildlife Crossings Pilot Program. We are glad to support this application.

Sincerely,



Ben Prater

Southeast Program Director

Defenders of Wildlife



August 27, 2024

Dear Grant Selection Committee Members:

Forest Keeper is excited to express their support of the Wildlife Crossings Project proposed for U.S. Highway 64 in eastern North Carolina in red wolf territory. We wholeheartedly support North Carolina Department of Transportation's grant application, submitted in response to the Notice of Funding Opportunity for the Federal Highways Administration's Wildlife Crossings Program.

The Wildlife Crossings Program prioritizes projects that reduce wildlife-vehicle collisions and improve habitat connectivity for terrestrial and aquatic species. The wildlife crossings proposed for Highway 64 will improve habitat connectivity for more than two dozen species, including red wolves—the most imperiled canids in the world, with fewer than 20 remaining in the wild. The Highway 64 wildlife crossings project will also benefit more than 25 other species documented to be crossing this highway, including black bears, river otters, bobcat, and spotted turtles.

Projects will also be evaluated by USDOT using selection criteria that prioritize improving safety, climate change and sustainability, equity, workforce development, job quality, and wealth creation.

Wildlife crossings along U.S. Highway 64 will improve the safety of motorists and wildlife. They will also provide quality jobs and wealth creation opportunities to one of the economically disadvantaged counties in North Carolina.

This area of pocosins and wetlands near the North Carolina coast is also threatened by climate change and sea level rise. This project will help mitigate



the impacts of climate change and sea level rise on red wolves and other wildlife in the Alligator River and Pocosin Lakes National Wildlife Refuges.

In North Carolina, stakeholders came together to form the Save Red Wolves coalition to raise funds and awareness for wildlife crossings. Forest Keeper is part of a coalition that includes local, regional, national and Tribal partners. The Tuscarora Nation of North Carolina is a key partner and supporter of wildlife crossings in eastern North Carolina.

Forest Keeper has helped raise funds and awareness for wildlife crossings along U.S. Highway 64, and we are committed long-term to the success of this project and the health and welfare of local communities and wildlife. We support this application for the Wildlife Crossings Program to fund wildlife crossings along U.S. Highway 64.

Sincerely,

A handwritten signature in black ink that reads "Emily Diznoff". The signature is written in a cursive, flowing style.

Dr. Emily Diznoff  
Executive Director  
Forest Keeper  
[info@forestkeeper.org](mailto:info@forestkeeper.org)

LAND OF SKY

# RURAL PLANNING RURAL ORGANIZATION

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

The [Wildlife Crossings Pilot Program | FHWA \(dot.gov\)](#) 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.

LAND OF SKY

# RURAL PLANNING RURAL ORGANIZATION

**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  
**Wildlife Federation**

*Affiliated with the National Wildlife Federation*

1346 St. Julien St.  
Charlotte, NC 28205  
(704) 332-5696

1024 Washington St.  
Raleigh, NC 27605  
(919) 833-1923

**28 August 2024**

Wildlife Crossing Pilot Program  
U.S. Department of Transportation  
Federal Highway Administration  
1200 New Jersey Avenue, SE  
Washington, D.C. 20590

***US-64 Dare County: Red Wolf Essential Survival Crossings Under  
Evacuation Route (RESCUER)***

**Dear US DOT FHWA Staff,**

The North Carolina Wildlife Federation (NCWF) represents the interests of the state's fish and wildlife species and supports using the best available science to determine projects and policies that sustain healthy and plentiful terrestrial and aquatic resources. Wildlife-vehicle collisions (WVCs) are extremely concerning for human safety and result in unnecessary wildlife mortality. Thus, we submit this letter in support of North Carolina receiving funds to implement wildlife crossing structures on US-64 through Alligator River National Wildlife Refuge (ARNWR) in Dare County to reduce WVCs, their associated costs and risks to wildlife and human safety, and to promote habitat connectivity for all species.

While WVCs are a nationwide issue that must be addressed through collaborative efforts and ample funding, we believe North Carolina is in a unique place to accomplish the goals of this grant opportunity while setting an example of how crossing structures can improve population numbers of state and federally listed species. North Carolina is composed primarily of private lands which poses its own challenges to resource conservation and



protection, all while the state continues to endure steady human population growth and development; further complicating habitat connectivity due to fragmentation and the ability to implement large scale projects to support biodiversity and resiliency. Therefore, we believe time is of the essence to incorporate crossing structures into our state's transportation systems to showcase what partnerships can accomplish for our natural resources, local communities, and human health.

The area of US-64 through ARNWR that is proposed to receive wildlife crossing structures includes public lands that are biologically rich and composed of unique habitat types that deserve further attention and protection. NCWF believes that our state's federal wildlife refuges and state gamelands are vital to sustaining public trust resources for economic and educational purposes as well as for future generations. While eastern North Carolina's wildlife refuges in the proposed area are internationally known for migratory waterfowl and recreational opportunities, many people are unaware of the wildlife mortality crisis occurring on local roadways. This area of the state has the only known wild population of Red Wolves, as well as alligators, bobcats, white-tailed deer, and numerous other fish and wildlife species.

Additionally, eastern North Carolina has the largest black bears in the world. Black bears in the region have been harvested at weights of 700-800 pounds, which may pose a risk to motorists on local roads. High resource availability combined with temperatures that do not require hibernation during the winter allows bears to stay active and move at all times of the year. Also, many females have multiple cubs, helping to maintain consistently high numbers of individuals in the region, creating further risk to human safety from the impact of WVCs. While North Carolina's wildlife is a source of pride for residents and promotes local tourism, there is work to be done to create safer roads for both animals and humans.

US-64 bisects numerous wetland areas through ARNWR that contain fish, reptiles, and amphibians, among other wildlife, that would directly benefit from crossing structures. Whether connecting canals, wetlands, or dry land, wildlife numbers can be boosted simply through mortality reduction; further resulting in decreased isolation between individuals or populations, creating avenues to sustain biological processes and genetic exchange. We believe this type of connection is critical to the livelihood of many wildlife species in the Albemarle Peninsula, including the endangered Red Wolf.

NCWF has worked directly with US Fish and Wildlife Service (USFWS) to support the only known wild population of Red Wolves in the world by staffing and renovating the Red Wolf Center in Columbia, hosting Red Wolf educational programs for refuge guests and local schoolchildren, purchasing acclimation pens and electronic road signs to alert drivers to wildlife, and participating in the USFWS Partners Program to implement a local habitat improvement program for Red Wolves and other wildlife. These efforts have been tremendous for our partners and local communities; however, WVCs are currently the number one cause of mortality for the endangered Red Wolf.

While we remain positive that our efforts are not fruitless, it's becoming ever clearer that the success of the Red Wolf program hinges on a handful of challenges, one being mortality events directly linked to WVCs. Each Red Wolf lost to a WVC likely constitutes a financial loss in the millions after accounting for the care and protection of Red Wolves in the SAFE Program and USFWS' efforts to trap, move, vaccinate, and monitor Red Wolves in the wild. Not to mention the emotional and physical toll to people of continuously experiencing dead wildlife on roadways or the unintentional harming or killing of wildlife. Therefore, implementation of wildlife crossing structures in this area represents a commonsense approach to mitigating wildlife mortality for Red Wolves, hence providing the best chance for long-term establishment and sustainability of this species in the wild.

The Albemarle Peninsula was once a relatively remote travel corridor for many wildlife species; however, it's now a travel corridor for many in and out-of-state tourists seeking to explore the Outer Banks of North Carolina, resulting in high traffic volumes that come with beautiful beaches and numerous outdoor recreation opportunities. While this stretch of highway leading to a tourist destination increases wildlife mortality and human safety concerns, it also presents an opportunity for education and protection. We believe this portion of eastern North Carolina through ARNWR will benefit immensely from implementation of wildlife crossing structures, but is also in need of roadway fencing projects, research, monitoring, and educational activities to build human awareness of impacted species and how our public lands serve our common good.

North Carolina state and federal agency staff, NGOs, academic institutions, and others have been pro-active at forming collaboratives, working groups,

collecting research data, and seeking out matching funds to address the millions of wildlife mortalities occurring on our roadways. However, large-scale wildlife crossing projects are extensive in planning and funding needs, and we acknowledge that a substantial financial contribution is the missing link to making the proposed project on US-64 through ARNWR a reality.

NCWF has been advocating for wildlife crossings for many years, while our state agencies (NC Dept. of Transportation and NC Wildlife Resources Commission) have made the necessary steps to form a Memorandum of Understanding to further their collaboration for incorporating wildlife crossings, fencing, and other related items into standard transportation planning processes. The proposed portion of US-64 through ARNWR was also deemed of high priority for wildlife crossing structures by a group of biologists representing agencies, NGOs, academic institutions, and others. This proposed area for a large-scale wildlife crossing project is a hotspot for Red Wolf mortality. While crossing structures can require large amounts of funding for design and implementation, we know the long-term ecosystem and human health benefits and financial savings from reducing WVCs outweigh the costs.

As an NGO with a mission to protect, conserve, and restore North Carolina wildlife and habitat for all, NCWF stands firm in our support of our state and federal agency partners in their ability to implement the wildlife crossing projects and related objectives outlined in their proposal to US DOT FHWA. Additionally, NCWF, along with many other partners, is ready to assist with project implementation and the long-term goal of making our roads safer for wildlife and people.

Sincerely,

A handwritten signature in black ink that reads "Tim Gestwicki". The signature is written in a cursive, flowing style.

Tim Gestwicki  
CEO NC Wildlife Federation



August 26, 2024

Wildlife Crossing Pilot Program  
U.S. Department of Transportation  
Federal Highway Administration  
1200 New Jersey Avenue, SE  
Washington, D.C. 20590

To Whom It May Concern:

The Red Wolf Coalition, Inc. (RWC) is in support of the Red Wolf Essential Survival Crossings Under Evacuation Route (RESCUER) project. This project proposes to reduce wildlife vehicle collisions (WVCs) and improve habitat connectivity for the entire length of US 64 within Alligator River National Wildlife Refuge (ARNWR). This project is critical for the continued existence of the only wild population of the critically endangered Red Wolves in the world.

Over the last 10 years vehicle strike mortalities are 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, mesomammals, 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 Red Wolf Coalition, Inc. believes that making a wildlife crossing along US Highway 64 should be a priority and expect it will aid in the reduction of wildlife mortalities and for safer vehicle travel on this busy highway.

Best Regards,

Kim Wheeler  
Director

**212 Main Street, P.O. Box 96, Columbia, NC 27925, Phone: 252.796.5600**

**[www.redwolves.com](http://www.redwolves.com)**

U.S. Department of Transportation/Wildlife Crossing Pilot Program  
Federal Highway Administration  
1200 New Jersey Avenue, SE  
Washington, D.C. 20590



Re: Red Wolf Essential Survival Crossings Under Evacuation Route (RESCUER) at Alligator River NWR

Dear Grant Selection Committee Members:

I am writing today on behalf of the Association of Zoo's and Aquariums American Red Wolf SAFE (Saving Animals from Extinction). RWSAFE has been a partner with the U.S. Fish and Wildlife Service's (Service) for over 50 years in an effort to save the world's most endangered canid, the Red Wolf (*Canis rufus*) (RWSAFE was the Red Wolf Species Survival Plan in the past). RWSAFE is a partnership of over 50 zoological organizations, from the North Carolina Zoo, the Smithsonian's National Zoo, the Saint Louis Zoo and more. These organizations and our partners are working together to help save the Red Wolf through breeding and reintroduction, creating public awareness and empathy and conducting vital research to help us understand how to make effective management decisions for this species.

The RW SAFE Program strongly supports the North Carolina Department of Transportation's (NCDOT) proposed RESCUER wildlife crossing project on Highway 64 through Alligator River National Wildlife Refuge (NWR). As we can see from other innovative wildlife crossings, in locations across the country, these crossings significantly reduce the negative impact of human vehicular collisions on wildlife.

The Red Wolf is critically endangered, solely native to the United States. In an area like northeastern North Carolina, which is the only place you can currently find the Red Wolf, it is paramount for the survival of this species to use all of the tools we have in our toolbox regarding protecting this and other wildlife.

In addition, as someone who has driven Highway 64 quite a bit, wildlife crossings will be a positive impact for the local community too. These crossings will help reduce collisions; this in turn will help protect human property and human safety as well by reducing accidents. This wildlife crossing will be a win-win for the community. This is a high tourist location, and the crossings will highlight North Carolina's commitment to protecting wildlife and maintaining this beautiful and diverse ecosystem for the community, and the guests visiting this area of North Carolina, to enjoy.

The Red Wolf is a national treasure, and we know we have lost dozens of this critically endangered species to vehicle collisions. Knowing this tool is out there gives us hope for the conservation efforts for [Red Wolves](#), and improving the roads for all wildlife, as well as improve safety for the humans living in and visiting this area.

Thank you for your consideration of this important project and your efforts on behalf of North Carolina's wildlife

A handwritten signature in black ink, appearing to read "Regina Mossotti", written over a horizontal line.

**Regina Mossotti**  
Vice President of Animal Care  
Red Wolf SAFE Program Leader  
Saint Louis Zoo  
One Government Drive, St. Louis, MO 63110  
(314) 646-4629



September 3, 2024

**Via E-mail**

Marissa Cox  
Environmental Program Manager  
Environmental Policy Unit  
N.C. Dept. of Transportation  
[mrcox2@ncdot.gov](mailto:mrcox2@ncdot.gov)

**Re: Letter of Support for Red Wolf Essential Survival Crossings Under Evacuation Route – 2024 FHWA-WCPP Grant Application**

Dear Ms. Cox:

The Southern Environmental Law Center is pleased to support NCDOT and USFWS's application for the Red Wolf Essential Survival Crossings Under Evacuation Route project to be funded through the Wildlife Crossings Pilot Program. This project could play a key role in helping to restore the wild population of red wolves in Eastern North Carolina.

The Southern Environmental Law Center has long advocated for the conservation and recovery of the critically endangered red wolf. The current wild red wolf population, while still exceedingly small, has steadily grown over the past four years with regular releases of red wolves from captivity. In addition to continuing proactive conservation efforts through actions like releases of captive-born wolves and coyote management, anthropogenic causes of mortality must be reduced in order to keep the wild red wolf population on the path to recovery.

Vehicle mortalities have been a steady source of human-caused mortality throughout the North Carolina red wolf reintroduction, especially at the start of the reintroduction and again in recent years when the transfer and survival of captive-born wolves has been paramount to re-starting wild breeding and ensuring the future growth of the wild red wolf population. As such, we support efforts to reduce vehicle collisions in the areas inhabited by the wild red wolf population, including along the section of U.S. Highway 64 that runs through Alligator River National Wildlife Refuge. Improving this section of the highway with wildlife crossing infrastructure, like extensive fencing and possible underpasses, would benefit red wolves and other wildlife species that inhabit the Refuge.

We are especially pleased to support the standalone wildlife crossing project to improve wildlife permeability of US-64 without any accompanying widening of Highway 64, which would undermine the goal of reducing wildlife-vehicle collisions and harm Alligator River National Wildlife Refuge.

Thank you for submitting this important project for consideration for funding through the Wildlife Crossings Pilot Program. We are glad to support this application.

Sincerely,



Ramona H. McGee  
Senior Attorney and Wildlife Program Leader



P.O. Box 243  
Salt Lake City, UT 84110  
Tel: 385-229-4849  
[www.wildlandsnetwork.org](http://www.wildlandsnetwork.org)

August 29, 2024

U.S. DEPARTMENT OF TRANSPORTATION  
**Federal Highway Administration**  
1200 NEW JERSEY AVENUE, SE  
WASHINGTON, DC 20590

Dear Federal Highway Administration Representatives,

I am writing to express strong support for NCDOT's "RESCUER" proposal for the Wildlife Crossing Pilot Program to build wildlife crossings and fencing on US Highway 64 in Dare County, North Carolina.

I serve as the Chief Scientist for Wildlands Network, a tri-national nonprofit organization dedicated to reconnecting, restoring, and rewilding nature across North America. Based on my decades of road ecology, habitat connectivity mapping, and carnivore conservation expertise, and my unique perspective at the continental-scale, I am well-qualified to place this project into the context of the vast number of worthy wildlife road crossing projects that exist in the United States.

For three key reasons, I assert that the RESCUER project easily rises to the level of an urgent national priority for funding consideration by your WCPP grants program: 1. Wildlife road crossings on US 64 at this location would directly and immediately promote the recovery of a critically endangered species, the red wolf, of which only 20 or fewer remain in the wild anywhere in the world, 2. The same crossing system would allow the flow of an incredibly dense population of black bears across the highway, promoting the safety of motorists and enhancing habitat connectivity for the bears, and 3. The US 64 crossings would also serve to mitigate the massive numbers of other wildlife species that are hit and killed on the roadway each year at this location due to the presence of rich and productive wetland ecosystems.

By my estimation, and based on total wild population size, red wolves can be considered the most endangered terrestrial vertebrate species in the continental United States, rivaled only by the possible existence of ivory-billed woodpeckers (and obviously, no road-killed ivorybills have been found in recent decades). Only 17 wolves are confirmed to still live in the wild, all found in a small region in northeastern NC centered on Alligator River National Wildlife Refuge. Since at least 2020, vehicle strikes have been the number one source of mortality for red wolves, with significant impacts on the US Fish and Wildlife Service's attempts to recover the species. These vehicle strikes are concentrated on US 64 through Alligator River NWR, in large part due to the presence of an extensive array of field habitats (preferred by the wolves) in the north side of the



## Wildlands Network

refuge, in immediate proximity to the steady beach traffic on US 64. It has been heartbreaking to watch as the USFWS continues to release red wolves from captivity at Alligator River to try to regrow the population, only to see those animals quickly killed by vehicle strikes on the highway. Addressing the red wolf road mortality crisis is absolutely essential for the future of this endangered species.

The same stretch of highway also passes through one of the densest populations of black bears anywhere in North America, rivaled perhaps only by sites in Canada and Alaska. I personally have seen as many as 42 individual black bears in a 48-hour period of checking trail cameras at Alligator River NWR. Our trail camera research (published as Murray et al. 2023, Animal Conservation) recorded over 20,000 independent bear detection events in 7 years, with the bear detection rate almost doubling the detections for white-tailed deer (which remained abundant themselves). Federal Highways reviewers are encouraged to see for themselves what this level of bear density looks like, by viewing our trail camera photos at [www.flickr.com/photos/redwolfreality/albums](http://www.flickr.com/photos/redwolfreality/albums), each album is a separate camera site.

As Vaughn et al. documented in their 2011 [research report](#) for NCDOT using a variety of survey techniques, black bears cross the Dare County portion of US 64 literally hundreds of times each year, going back and forth between the tracts of wildlife refuge bisected by the highway. These are not small bears, either - due to abundant food supplies and quality habitats, eastern NC is known for possessing the largest black bears in the country, with many male bears exceeding 600 pounds. Such impressive animals pose a serious safety risk to passing motorists, and numerous bear-vehicle collisions happen every year. At the same time, the high flow of vehicle traffic clearly poses an important barrier to the connectivity of black bear habitats on either side of the highway.

Looking beyond the charismatic megafauna, even in the absence of bears and endangered red wolves, a strong case could still be made for the need to mitigate the thousands of smaller wildlife that are killed on this stretch of US 64 each year. Alligator River NWR includes over 150,000 acres of productive wetland habitats, and when such a productive ecosystem is crossed by a major highway in a warm coastal environment, intense levels of road-killed wildlife are the result. Wildlands Network initiated a new daily study of roadkill patterns on US 64 on August 1, 2024. In just the first 3 weeks of the study, we have documented over 1000 dead vertebrates from Columbia, NC to Manns Harbor, NC (the study also includes a small portion of US 264 on the east side of Alligator River NWR). This total includes hundreds of turtles, snakes, and frogs, plus notable mammals such as a black bear, a bobcat, and a star-nosed mole. Our results help update the previous roadkill surveys conducted on US 64/Dare County during 2008-2011 by Vaughn et al. (2011), who also found thousands of herps and mammals being killed each year. The system of underpasses and culverts (plus herp-specific fencing) contemplated by NCDOT's RESCUER proposal will be instrumental in reducing this dramatic level of wildlife carnage.

In light of these 3 core factors, Wildlands Network's recent report, [Prioritizing Wildlife Road Crossings in North Carolina](#), identified US-64 through the Alligator River National Wildlife Refuge as tied for first place as the top-ranking priority site for new wildlife crossings across North Carolina. This report, developed with input from over 40 wildlife experts, lists 179 priority



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sites for enhancing wildlife movement over and under North Carolina highways, highlighting the immense overall need but also the urgent priority posed by US 64.

Based on the above considerations, Wildlands Network enthusiastically recommends that Federal Highways fully fund the installation of wildlife crossings and fencing on US 64. As a demonstration of our support for the project, we solicited a \$2 million pledge from an anonymous philanthropist to help NCDOT meet the matching funds requirements for the proposal. We also recruited partner groups including the Center for Biological Diversity to help raise private funds for the project, and over the course of the summer over 6500 individuals and foundations have given to the cause, illustrating the broad public support that exists for saving red wolves and preventing wildlife roadkill at this location.

After the project is funded, Wildlands Network will continue to help communicate to the public the value of installing crossings on US 64 through a variety of outreach platforms. In particular, we have a track record of successfully promoting red wolf conservation stories to the Associated Press, the Washington Post, and other national media outlets, and we look forward to securing positive press coverage about the installation of wildlife crossings for the wolves. We estimate that our in-kind contribution of outreach and communication activities will total at least \$108,000 in value over 3 years.

Thank you for your attention and we look forward to the advancement of this vital project.

Sincerely,

Ron Sutherland, Ph.D.  
Wildlands Network  
[ron@wildlandsnetwork.org](mailto:ron@wildlandsnetwork.org)  
919-641-0060

Information provided by Wildlands via email in August 2024:

Wildlands Network has recently launched a new roadkill survey covering the Dare and Tyrrell County portions of US 64. The survey will provide updated baseline information about the number of wildlife vehicle collisions (across species) that are occurring daily. The intent of the data collection is to complement the large body of previous research. By including Tyrrell County, which has similar habitats but where crossings will not be immediately built, the surveys may help improve the quality of future monitoring projects when evaluating the success of the Dare County wildlife crossings, if funded.

After we started on August 1, as of Friday August 23, the research team documented over 1000 animals (44 live and 1029 dead, total 1073).

This includes 334 snakes (17 species), 467 turtles (9 species), and 214 frogs (11 species). Plus a bear, 3 coyotes, a bobcat, a mink, 16 birds, and a star-nosed mole! An 18th snake species (rainbow snake) came in over the weekend.

These totals include both the full stretch of Dare County (and ~6 miles of US 264) plus the Tyrrell County US 64 portion from Columbia to the Alligator River.

This data shows the continued presence of extreme levels of vertebrate roadkill on the target stretch of highway, highlighting the immediate need for wildlife crossing installation (and the need for culverts and underpasses that will work for the diverse array of reptile and amphibian species in addition to the red wolves and bears).



*Photo taken 8/29/24 by Alexandra Blunt, research technician for Wildlands Network*





*Photo taken August 2024 by Ashwin Narayanan, research technician for Wildlands Network*

## **Methods for US 64 Roadkill Survey project 2024**

**Contact:** Ron Sutherland, [ron@wildlandsnetwork.org](mailto:ron@wildlandsnetwork.org), 919-641-0060

**Study area:** US Highway 64 from edge of Columbia, NC to junction with US 264 near Manns Harbor, NC. Also US 264 from to the jct. with US 64 to the jct. with Borrow Pit Rd (Alligator River NWR). The Alligator River bridge itself will be excluded from road-kill surveys due to the lack of any safe place to stop.

**Duration:** August 1, 2024 to July 31, 2025, or longer if funding allows (and depending on the timeframe for construction of wildlife road crossings and fencing). The same type of study should also be conducted post-construction for several years.

**Survey Protocol:** Two technicians will drive together in a regular personal vehicle outfitted with yellow caution signs and an orange flashing light on top. They will drive at approximately 35 MPH and will stop for any live or dead vertebrate animals. In some parts of the road they will be able to stop immediately, in others sections with narrow shoulders, canals, guardrails too close to the road, etc., they may have to continue until they reach a safe place to stop, and then walk back to the animal. They will not stop on US 64 or block traffic. If traffic builds up behind them they will pull over periodically to let vehicles pass.

For each animal, at least one technician will leave the car (wearing a DOT-approved orange safety vest) and inspect the animal, identifying to species if possible, taking one or more photos (more if the ID is uncertain), and marking the location with a GPS. Time spent on the roadway will be minimized and will only occur in large breaks in traffic. Whichever technician is not venturing into the roadway will act as the safety spotter to warn for oncoming traffic.

If possible, the animal will be removed from the road surface or immediate road shoulder using a shovel, or dragged away using gloves if too big to lift with a shovel. Any animal that cannot be moved (due to size or overly deteriorated condition) will be marked with orange paint to avoid double counting, with the exception of freshly killed white-tailed deer and raccoons, which will not be marked in case they can be used by the USFWS red wolf field team as food for the wolves.

Dead red wolves and coyotes will be photographed in situ and then moved off the road surface if needed to avoid further damage to the carcass. The red wolf field team will be immediately notified if any canids are found, and if possible, the roadkill survey team will remain with any dead wolves until USFWS staff arrive.

Large black bears or other road-killed wildlife (alligators?) that are simply too big to move will be immediately reported to NCDOT maintenance staff (need to get their number). If NCDOT cannot remove them we will report the animal to the USFWS red wolf field team. Bears will also be reported to NCWRC (the order of who we contact here is flexible, just let us know).

The team will stop for any wildlife observed (in either lane) on the way out on a given stretch of road, and then again on the way back to the starting point, to avoid leaving it to chance whether an animal will still be visible/there.

If overwhelming numbers of roadkill are observed (frogs or toads most likely) that would take too long to safely process, the survey technicians will resort to an estimation method, measuring the density of dead animals in what is deemed a representative sample of the road (e.g. a square with sides equal to

the width of one lane of traffic), and then multiplying that by the total road surface area that has the dead animals. Photos will also be taken of representative animals and of the road surface.

**Key attributes to be recorded for each animal in our records:** species (or genus or family if species cannot be assigned), location (gps), direction of travel lane, approximate size in inches, sex if it can be determined, condition of carcass (in terms of freshness and intactness), and any relevant notes about the animal (reproductive condition, etc.). We will also record information associated with each driving survey (start and stop times, driving route, weather, road and roadside conditions).

**Start time:** trying to decide between 7/8 am or 9/10 am, depending on whether there is a strong pulse of commuter traffic heading to the outer banks at 8:30/9 or if it is earlier or later.

**Days of Week:** The plan is to focus on weekdays given the higher traffic loads over the weekend that would reduce the safety of the effort. We may test weekend surveys though to see if an early morning approach could be feasible.

**Start location:** Vultures and other scavengers can remove dead animals quickly from the road surface, especially as the day warms up and flight conditions for vultures improve. Therefore, to avoid bias we will alternate between 4 starting locations/directions: 1. From Columbia headed east on 64, 2. From Borrow Pit Rd heading north on 264, 3. From Alligator River bridge heading east on 64, 4. From Alligator River bridge heading west on 64.

On survey days where to get back to Columbia (where the technicians will be based) a given stretch of road would need to be driven a third time in a morning, the team will not stop for any roadkill, freshly killed or otherwise, except to report any red wolves or other endangered species.

**Walking Surveys:** Once the driving surveys are proceeding smoothly, the team will also attempt to conduct walking surveys of the Dare County portion of US 64, likely in the afternoons or mid-day immediately after the road surveys. The goal of the walking surveys will be to document smaller animals that are inevitably missed while driving, to document larger animals that may be hard to see due to their position on the road shoulder/tall grass, to provide data for comparison with the ca 2009 roadkill surveys which were done by foot in Dare County, and to allow for methodological comparison with the driving surveys. If done correctly, the walking surveys will hopefully allow for a correction factor to be estimated in terms of how many animals are typically missed during the driving surveys.

That section of US 64 runs for 12 miles, a length which poses a challenge to efficiently survey by foot. One possible method could include parking two cars 6 miles apart covering either the west or east half of the target stretch of road, in the process ferrying both technicians to one end of the survey route. Then the technicians could walk together, on opposite sides of the road, recording roadkill on the road itself as well as on the road shoulder. Once complete the team would ferry back to pick up the other car, and this process would be repeated with the other half of the 12-mile road on a separate day.

Several safety factors would need to be considered for the walking surveys. The team would wear DOT-approved orange safety vests, and minimize time on the road surface. They would stay close to each other in the event of any accidents/injuries and to ward off any harassment from passing strangers while away from their vehicles. They would also each carry bear spray for safety reasons (bears and humans!). The technicians would walk as far away from the road surface as possible, except when a dead animal was encountered. Because this could involve walking in tall grass near canals, the

technicians will be provided with knee-high snake-proof boots. They will be advised to keep watch out for alligators along the canals. And the technicians will need to carefully monitor the weather, to avoid scheduling walking surveys on afternoons when the risk of thunderstorms is high, and to prepare for/avoid extreme heat conditions as well.

**Live and Injured Animals:** Live animals are not the primary focus of the study, but their presence on or immediately adjacent to the road surface will be interesting and relevant to record. We will not record animals that are merely using the roadside canals (e.g. herons, turtles, alligators) – to be recorded the animal must be walking on dry land within 15 feet/5m of the road edge. If it is possible to safely move live animals from the roadway (for example, turtles), the survey technicians will attempt to do so. They will be furnished with a snake hook to allow for moving/wrangling venomous snakes quickly off the roadway. Live bears, wolves, large alligators, and other similar wildlife that cannot be easily coaxed off the road will be quickly reported to appropriate enforcement and resource agencies.

Injured animals will be moved from the road surface if possible, but apart from reporting endangered species such as red wolves to USFWS, we will generally not have the capacity or funding to attempt to secure veterinary care for injured wildlife.

**Animal Handling Safety:** We will avoid any direct skin contact with dead animals. Primarily we will use a shovel to remove animals from the road, and we will clean the shovel on a regular basis. For animals that cannot be moved with a shovel, we will wear disposable gloves. This will assist in preventing the spread of zoonotic diseases and parasites. The technicians will also be instructed to watch out for animals that suddenly revive and may bite, scratch, or claw. This would especially include venomous snakes, which will be handled with a snake stick or shovel as if they were alive and potentially dangerous.





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 [epu@ncdot.gov](mailto:epu@ncdot.gov) or [bsg@ncdot.gov](mailto:bsg@ncdot.gov) and WRC's Eastern Habitat Coordinator, Travis Wilson at [travis.wilson@ncwildlife.org](mailto:travis.wilson@ncwildlife.org) or the Western Habitat Coordinator, Dave McHenry at [david.mchenry@ncwildlife.org](mailto:david.mchenry@ncwildlife.org). (Note, this guidance also complements and should be used in conjunction with existing guidance for aquatic organism passage included in *NCDOT Guidelines for Drainage Studies and Hydraulic Design*.)

## Background

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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 multi-disciplinary 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 projects<sup>1</sup>. 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

<sup>1</sup> 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.

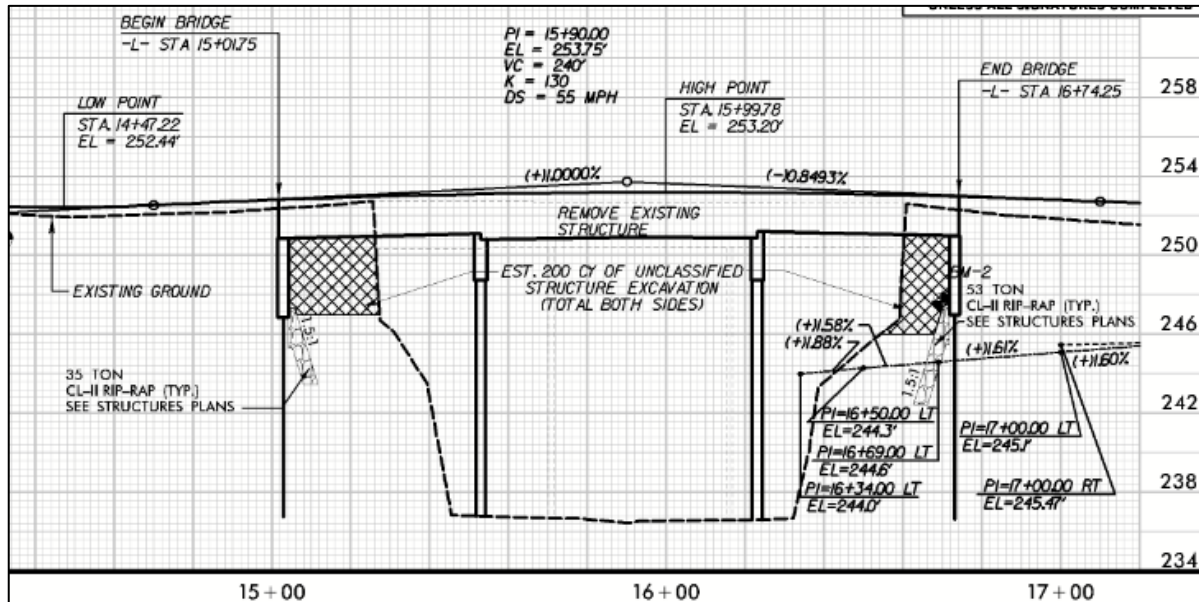


Figure 6. Unarmored slopes on proposed Anson bridge #030217 over Lanes Creek.



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).

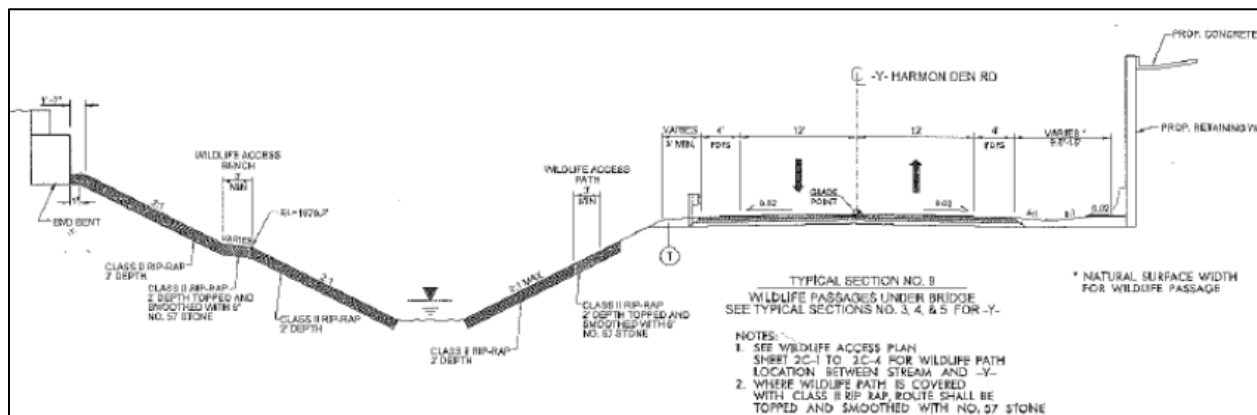


Figure 9. Wildlife pathway detail over rip rap (B-6054A, Haywood #430057)





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



Figure 11 Eno River bench, Orange County, NC.

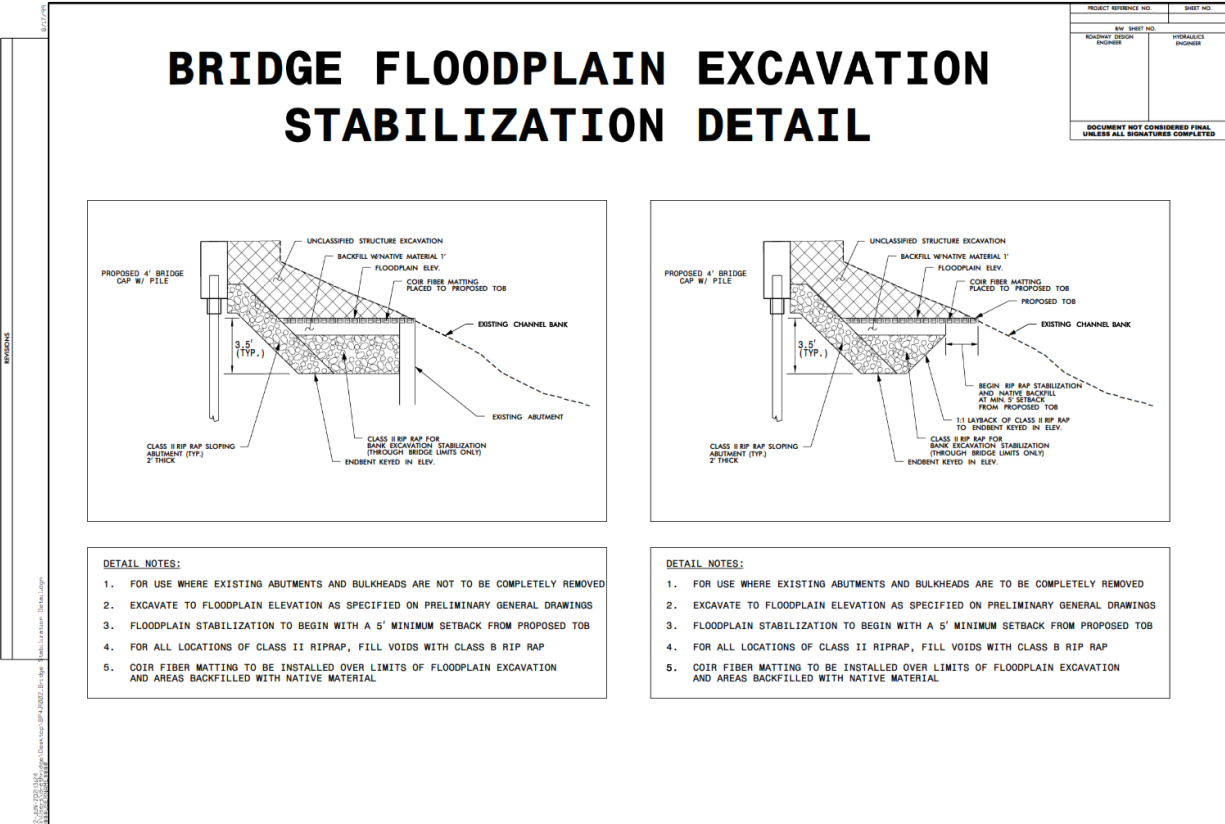


Figure 12. Rip rap embedment detail for floodplain stabilization.



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

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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. Cost-benefit 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.*



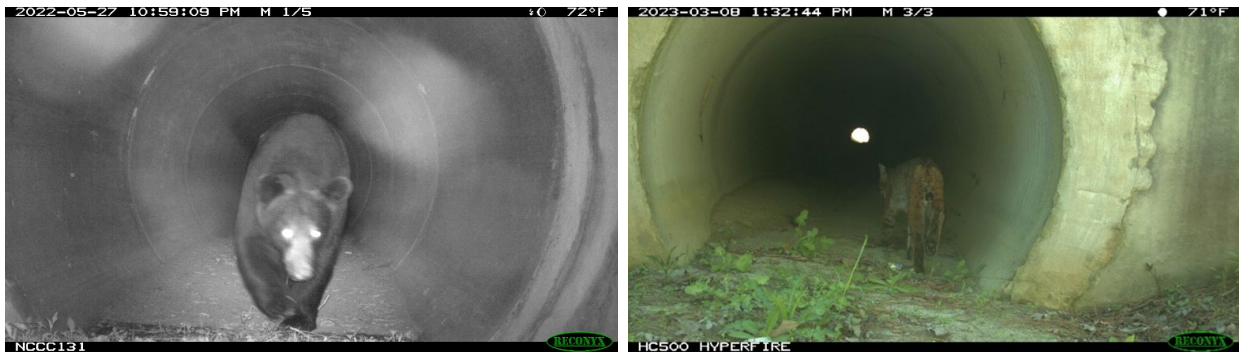
*Figure 17. Culvert designed for small and medium animal passage on EF Middleton Blvd. Brunswick County.*



## 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), (Arizona 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.

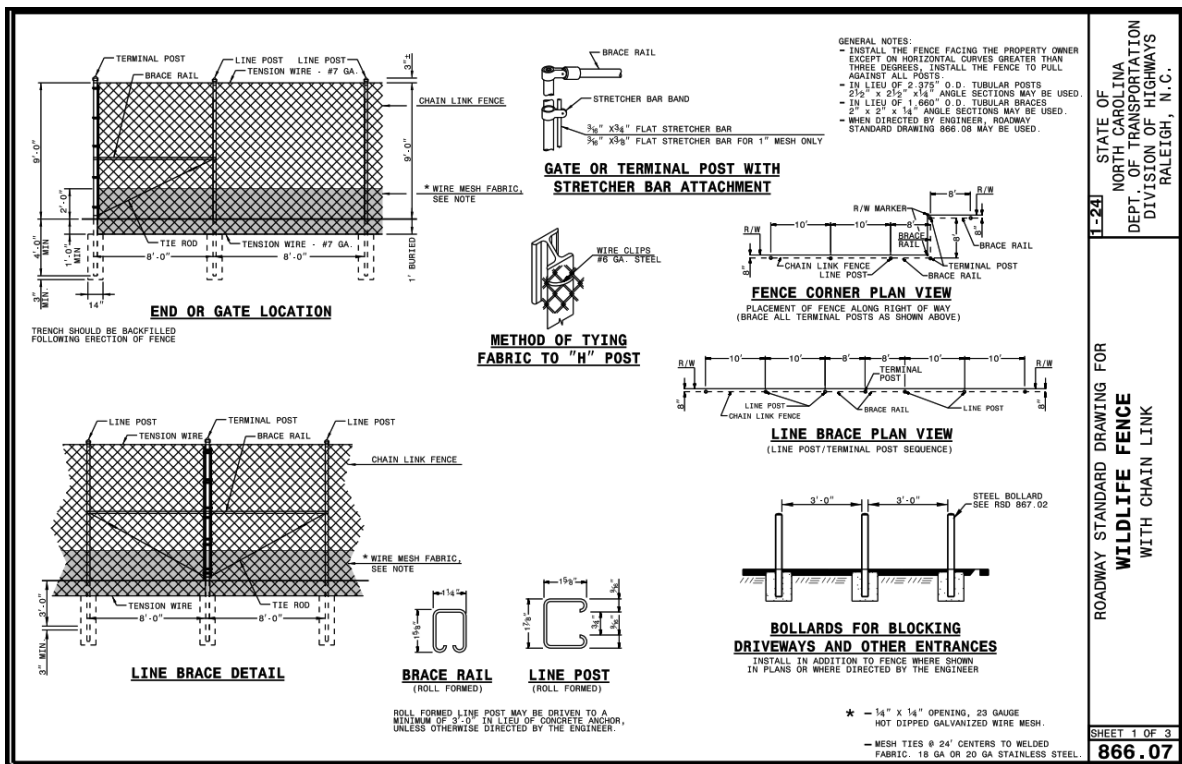


Figure 22. Wildlife fence standard detail (866.07).

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

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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

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**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. Termination Generally:

- 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](mailto: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](mailto: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. Non-discrimination: 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. Records Retention: 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. Compliance with Applicable Law: All work performed pursuant to this MOU shall be in compliance with all applicable State and Federal laws and regulations.
5. Integration: 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. Severability: 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:

DATE:

J. C. Dwyer  
SECRETARY NCDOT  
03-30-2023

NC WILDLIFE RESOURCES COMMISSION

BY:

TITLE:

DATE:

Carren Deane  
Executive Director  
4/6/2023