

WILDLIFE CROSSING STUDY EXECUTIVE SUMMARY

Cape Fear River Basin



Culvert at Big Branch Creek (2026)

Executive Summary

Overview

Wildlife-vehicle crashes (WVC) are a significant and growing public safety issue, resulting in substantial fatal and serious injury crashes nationwide. This study, conducted by the North Carolina Capital Area Metropolitan Planning Organization (CAMPO), evaluated WVC risks across the portions of Wake, Chatham, and Harnett Counties within the Cape Fear River Basin. Its purpose is to identify priority locations where infrastructure improvements can reduce collisions while maintaining wildlife habitat connectivity. This is a planning-level study preceded by CAMPO's Blueprint for Safety Plan and Triangle West Transportation Planning Organization's (TWTPO) Wildlife Crossings Plan, which included the portion of Chatham County that is within their planning boundary.

Goal

The goal of the Cape Fear River Basin Wildlife Crossing Study is to eliminate human fatalities and serious injuries resulting from WVCs through infrastructure design. Where data-driven contributing factors exist – i.e. crash history, road geometry, adjacent land uses, and Southeast Conservation Blueprint High Priority Areas – roadway treatment can meaningfully reduce the likelihood of collisions. This study pursues that outcome by identifying where the risk is greatest and where the transportation system presents realistic opportunities for mitigation.

Objective

The objective of this study is to identify locations where wildlife-vehicle conflict is likely and where future infrastructure projects or retrofitting existing structures may present opportunities for mitigation. This is achieved through the following three-step process:

1. Evaluate the transportation network in relation to recorded WVC data to determine where crashes are concentrated in hot spots.
2. Assess the North Carolina Department of Transportation's (NCDOT) maintained structures – existing bridges, culverts, and pipes – within hot spots that are within Southeast Conservation Blueprint High Priority Areas.
3. Review high-crash locations outside Southeast Conservation Blueprint High Priority Areas that fall within CAMPO's High Injury Network (HIN).
4. Conduct site assessments to verify on-the-ground conditions of each location which will provide further justification for the installation of wildlife crossing treatment during project development, when appropriate.

Methodology

The methodology for this study was developed with stakeholders at the October 2025 kick-off meeting. The analysis proceeds in three steps: 1) a crash-based hot spot analysis to identify where wildlife-vehicle conflicts are concentrated; 2) a structure screening to identify NCDOT-maintained infrastructure within those hot spots in addition to being within Southeast Conservation Blueprint High Priority Areas, which suggests structures may be appropriate for wildlife crossing treatment; and 3) a supplemental review of hot spot locations outside Southeast Conservation Blueprint High Priority Areas that fall within CAMPO's High Injury Network (HIN).

Stakeholder Engagement

Stakeholder engagement was conducted throughout the study to ensure that the analysis methodology, site assessment process, and findings reflect the collective expertise of the agencies and organizations with the greatest stake in the study's outcomes. Stakeholders included representatives from the following:

- Towns of Angier, Apex, Cary, Coats, Fuquay-Varina, Holly Springs, Lillington, and Morrisville
 - NCDOT Divisions 5, 6, and 8
 - U.S. Army Corps of Engineers
 - N.C. Wildlife Resources Commission
 - Non-profit N.C. Conservation Network
 - Non-profit Wildlands Network
 - Chatham, Harnett, and Wake Counties
 - Triangle Connectivity Collaborative

A formal kick-off meeting was held on October 3, 2025. This meeting established shared goals, confirmed the study area and data inputs, and introduced the methodological framework for identifying priority locations for wildlife crossing treatment. This was documented in a technical memorandum and distributed to the stakeholder group in December 2025 and then revised and finalized in January 2026. Stakeholders were invited to accompany CAMPO staff during site assessments of identified structures conducted in February and March 2026. A final meeting was held in May 2026 to discuss feedback and confirm findings before the report was finalized.

Key Findings

Site assessments were conducted following stakeholder approval of the revised structure list and the HIN hot spot segments. Formal site assessments were performed at each identified structure, collecting inventory data on existing physical conditions relevant to crossing suitability. The hot spot segment assessments were conducted along each HIN hot spot segment to document road and landscape characteristics.

Following stakeholder approval of the revised structure list and HIN hot spot segments, formal site assessments were conducted at each identified structure and drive-through assessments along each HIN hot spot segment.

There were a total of six (6) sites with structures identified during the site assessment process. The six (6) sites with structures identified are at the following locations:

- White Oak Creek; N.C. 540 Bridge over White Oak Creek, between Roberts Road and Green Level West Road in Cary, Wake County (Division 5).
- Little Branch Creek; N.C. 540 culvert over Little Branch Creek, between N.C. 55 and Veridea Parkway, near the toll facility at 3445 Apex Road, Wake County (Division 5).
- Big Branch Creek; U.S. 1 culvert over Big Branch Creek, located at the southwest corner of the U.S. 1/N.C. 540 interchange in Wake County (Division 5).
- Deep River; U.S. 1 bridge over the Deep River, located in the Moncure area of Chatham County (Division 8).
- Haw River; U.S. 1 bridge over the Haw River, located in Chatham County and near the western boundary of both the CAMPO planning area and the Cape Fear River Basin study area (Division 8).
- Kit Creek; encompasses three culvert structures in proximity to each other at the N.C. 540 crossing of Davis Drive: the Davis Drive culvert over Kit Creek (911062), the NC 540 culvert (911063), and the NC 540 northbound ramp culvert to I-885 (911064). All three structures are located in Wake County, within or immediately adjacent to the Research Triangle Park. A fourth structure on Davis Drive south of N.C. 540 was observed but detailed data were not recorded as part of this assessment (Division 5).

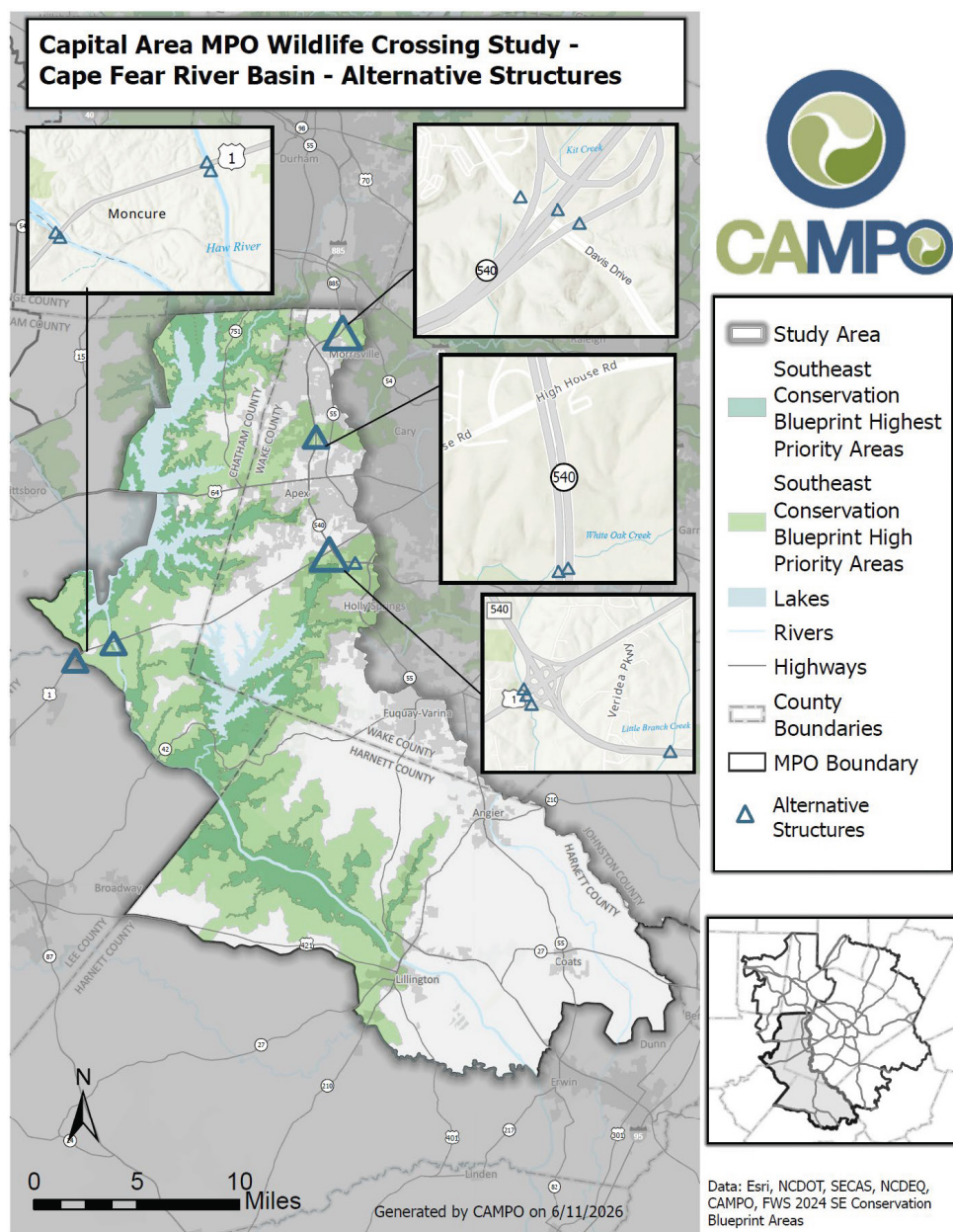


Figure 1: Alternate Structures

Each location is an NCDOT-maintained roadway that crosses a stream or river. Some locations have one or several structures associated with it. For each structure, staff documented physical crossing conditions relevant to wildlife passage suitability, including structure type and size, bank and channel substrate, barrier conditions, evidence of wildlife use, traffic volumes, structure age, and structural condition. Not all structures included in this study are suitable for improvement; site conditions vary significantly which influences feasibility.

There were a total of 11 HIN hot spot segments identified during the site assessment process. The 11 hot spot segments identified are at the following locations:

- Chalybeate Springs Rd. / U.S. 401; unincorporated community of Chalybeate Springs in Harnett County, between the Towns of Holly Springs, Angier, and Lillington.
- Titan Roberts / Ross Rd.; Harnett County, between the Towns of Lillington and Erwin, along the Cape Fear River.
- N.C. 27 E. / Fairground Rd.; Harnett County, between the Towns of Benson and Coats.
- N.C. 27 W. / Delma Grimes Rd.; Town of Coats, Harnett County.
- Old Stage Rd.; Town of Coats, Harnett County.
- Sheriff Johnson Rd.; Harnett County, near the Buies Creek community.
- U.S. Hwy 421 / Sloan Rd.; Harnett County, roughly 12 miles from the Town of Lillington.
- U.S. 1 N. (Multiple hot spots); 7 hot spots (between Chatham & Wake Counties), between Old. U.S. 1 and Friendship Road near the unincorporated community of New Hill, Wake County.
- U.S. 751; in the Town of Apex, Wake County.
- O'Kelly Chapel / U.S. 751; Chatham County.
- Carpenter Fire Station / U.S. 55; Town of Cary, Wake County.

The common characteristics are that the sites generally have high vehicle speeds, limited visibility (horizontal curves and grades), lack street lighting and animal crossing signage, and are located in rural and forested areas.

Limitations

This study is a planning-level analysis that identifies locations where wildlife crossing treatments may be appropriate and provides justification grounded in crash data, corridor designation, and field-observed conditions. It is intended to inform future decision-making and does not replace the detailed technical work required for project development.

The study does not include ecological surveys, wildlife population assessments, or species-specific movement analyses. Site assessments documented observable conditions during field visits and did not involve short or long-term monitoring methods to determine which species use or attempt to use each crossing. Advancing any location to construction will require additional ecological analysis, design considerations, and coordination related to permitting and right-of-way constraints.

This study is also limited by available data. It focuses on NCDOT-structures and does not systematically evaluate locally owned structures. Wildlife-vehicle crash data likely underrepresents the number of collisions, and identified hot spots should be interpreted as areas of elevated risk rather than precise boundaries. Further detailed investigations will be needed to determine appropriate countermeasures for each

location.

Conclusion

The CAMPO Cape Fear River Basin Wildlife Crossing Study identifies six (6) NCDOT structures and 11 HIN hot spot segments as priority locations for wildlife crossing treatment consideration. The study does not recommend specific treatments. Its purpose is to assemble and document the evidence — 10 years of crash data, U.S. Fish and Wildlife Service (USFWS) Southeast Blueprint 2025 Priority Conservation Corridor designations, field-documented physical conditions, traffic volumes, structure age, and condition ratings — necessary for NCDOT and NCWRC to evaluate treatment feasibility at each identified location as projects and maintenance opportunities arise.

The Haw River / U.S. 1 crossing represents the most time-sensitive opportunity among the assessed structures, given fair structural condition, 1997–1998 construction, and roadkill observed at the time of assessment. The Carpenter Fire Station Road / US 55 hot spot in Cary is the only assessed HIN hot spot location with a currently programmed STIP project, U-6227, making it the most immediate opportunity to incorporate wildliferelated countermeasures into project design. The remaining sites represent longer-term opportunities that this study's findings can support as appropriate windows arise through NCDOT's project development and prioritization processes.

Hot spots identified in this study align with CAMPO's Blueprint for Safety by highlighting where wildlife-vehicle crash (WVC) concentrations overlap with the HIN. These locations indicate where wildlife-related countermeasures should be prioritized within HIN implementation. The findings can also inform the 2060 Metropolitan Transportation Plan by adding identified sites to the long-range project pipeline, and supporting local agency decisions on land use and trail development planning. The goal of this study — eliminating human fatalities and serious injuries resulting from wildlife-vehicle crashes through infrastructure design — will not be achieved through any single project. It requires sustained planning, consistent engagement with transportation partners, and early identification of opportunities so that wildlife passage can be incorporated into the transportation system when the cost and timing are right. This study is a step in that direction. As the region continues to grow, coordination between CAMPO and its stakeholders will continue to raise awareness and address regional wildlife crossing needs as they arise.



Culvert at Kit Creek (2026)