

10.0 NATURAL RESOURCES

This chapter presents information about the natural resources located within the study area for the proposed LYNX Blue Line Extension Northeast Corridor Light Rail Project (LYNX BLE). It also discusses the potential effects of the alternatives under study in this Final Environmental Impact Statement (EIS) and identifies any needed mitigation.

10.1 Changes to this Chapter since the Draft EIS

This chapter has been revised to reflect the identification of the proposed Light Rail Alternative as the Preferred Alternative for the LYNX BLE. Additionally, since the Draft EIS, the design of the proposed LYNX BLE has been refined as described in Chapter 2.0: Alternatives Considered. These refinements, including the potential effects to natural resources, are also included in this chapter. Additionally, the Farmlands discussion has been relocated to Chapter 4.0: Land Use, Public Policy and Zoning) per agency comment on the Draft EIS.

10.2 Affected Environment

The affected environment includes aquatic and terrestrial ecosystems. Definitions of area descriptions used in this chapter are as follows:

- study area denotes the area bounded by the proposed construction limits and/or right-of-way limits and is the area studied for potential impacts; and,
- project corridor refers to the larger geographic description of the project location.

The proposed project corridor encompasses large amounts of developed, disturbed and maintained areas. Field surveys were conducted along the proposed LYNX BLE alignment on multiple dates between September 2008 and December 2008. Additional field surveys were conducted along the railroad right-of-way portion of the alignment in February 2009 and in additional areas of refinement in June, July, October and November 2009. Additional field surveys for threatened and endangered species were conducted in July 2010 and again in May 2011. The field investigators walked the following locations: the Preferred Alternative right-of-way, approximately 200 feet wide; the proposed station locations; and, the proposed park-and-ride facility locations. Additional technical information on natural resources within the study area may be found in the supporting *Natural Resources Technical Report* (July 2010).

This section describes the ecosystems encountered in the study area, as well as the relationship between flora and fauna within those ecosystems. Composition and distribution of biotic communities throughout the study area are reflective of topography, hydrologic influences and past and present land uses in the study area.

10.2.1 Plant Communities

Plant species were observed and recorded during field visits and are documented in the supporting *Natural Resources Technical Report* (July 2010). No formal sampling for fauna was undertaken. Published range distributions and habitat analysis are used in estimating fauna expected to be present in the project vicinity.

The land surrounding the proposed project is urban and suburban, and consequently, the wooded communities in the study area are generally highly disturbed. Based on the field reviews, two different terrestrial communities were identified in the study area: maintained/disturbed and mixed pine/hardwood forest. In accordance with the *Classification of the Natural Communities of North Carolina* by M.P. Schafale and A.S. Weakley (Schafale, 1990), a natural community is defined as a community “whose characteristics and functioning are shaped by the process of evolution and ecological interactions of long periods of time, without the overriding influence of modern human activities.” Based on this naturalness definition and for purposes of this discussion, areas that are roadsides, maintained or disturbed areas are not applicable for natural community classification.

As a result of their disturbed nature, the majority of the study area forested communities cannot be classified according to the North Carolina Natural Heritage Program's (NCNHP) Classification of the Natural Communities of North Carolina and are identified as Maintained/Disturbed.

Maintained/Disturbed Community

Since the proposed alignment generally follows the existing railroad corridor or streets, the majority of vegetative communities that would likely be impacted in the study area consist of disturbed (maintained) right-of-way and landscaped commercial/industrial properties. Commercial and industrial facilities are generally located directly adjacent to the proposed alignment and there are numerous road crossings and longitudinal encroachments. The vegetation displays the highly disturbed nature of the area, consistent with the urban locale.

Mixed Pine/Hardwood Forest

The natural, relatively undisturbed wooded areas that are located within a portion of the proposed Old Concord Road Station park-and-ride lot and the University of North Carolina at Charlotte (UNC Charlotte) campus are classified as a mixed pine/hardwood forest community. Groundcover is sparse or absent. Stunted vegetation and a mixed canopy characterized these areas.

Important Natural Areas

Important natural areas include those with plants and animals that are so rare, or the natural communities are so significant that they merit special consideration as land-use decisions are made. As defined by the NCNHP, there are no important natural areas along the proposed project corridor (NCNHP website, accessed 2009).

10.2.2 Wildlife

Observations of wildlife and signs of wildlife use were noted during field investigations conducted from September 2, 2008 through November 5, 2009 and on September 19-23, 2005. Additional field surveys were conducted along the railroad right-of-way portion of the alignment in February 2009 and in additional areas of refinement in June, July, October and November 2009, and in May 2011. Although highly disturbed, the proposed project corridor provides habitat for some bird populations. Birds seen or heard during the field visits included 24 species, with others expected but not seen or heard due to their nocturnal and/or secretive nature. The project study area was not found to contain nesting sites for migratory birds such as Canada goose and mallard ducks. Mammals common to urban environments can be expected to live in the proposed project corridor, including, but not limited to white-tailed deer (*Odocoileus virginianus*), opossum (*Didelphis virginiana*), gray squirrel (*Sciurus carolinensis*) and eastern cottontail (*Sylvilagus floridanus*). Ditches and vernal pools along the proposed project corridor may provide habitat for amphibians, while streams along the study area may support aquatic populations. Pollution has reduced the available habitat for most fish species, though some do occur. A detailed list of wildlife observed or expected in the proposed project corridor is included in the supporting *Natural Resources Technical Report* (July 2010).

10.2.3 Forests

The current forest resources in Mecklenburg County are primarily pine, mixed pines or hardwoods. The 1971 North Carolina Conservation Needs Inventory reported that approximately 51 percent, or 170,000 acres, of the county was forested (USDA, 1980), although this number is probably considerably less today due to the tremendous growth in the county since 1980. The majority of the forest communities located along the proposed project corridor are fragmented and reflect the highly disturbed history of the area.

Urban Forestry Opportunities

Urban forestry is the care and management of urban forests (i.e., tree populations in urban settings, for the purpose of improving the urban environment). Because of the patchy nature of the forest in the study area, the opportunities for urban forestry are limited. The USDA Soil Survey of Mecklenburg County suggests forest management and productivity based on soil type (USDA, 1980). However, the majority of the study area is classified as Cecil-Urban soils that are not rated for forestry potential due to the large amount of fill and other disturbance. The other major soil classes along the corridor have forestry

potential from moderate to very high. However, these soils occur in relatively small patches within the study area and there are no concentrations of large trees, with the exception of a portion of the UNC Charlotte campus.

10.2.4 Protected Species

Species with the federal classification of Endangered (E) or Threatened (T), Proposed (P) for such listing, or Threatened due to Similarity of Appearance (T [S/A]) are protected under the Endangered Species Act (ESA), as amended (16 United States Code (USC) 1531 *et seq.*). A review of the NCNHP Database and the U.S. Fish and Wildlife Service (USFWS) webpage for species and habitat descriptions was completed. Information was also provided by the USFWS during the scoping phase of this project (See Appendix B: Agency Correspondence). Within Mecklenburg County, there are currently four federally endangered species listed by the USFWS, protected under the ESA. These species are smooth coneflower (*Echinacea laevigata*), Schweinitz’s sunflower (*Helianthus schweinitzii*), Carolina heelsplitter (*Lasmigona decorata*), and Michaux’s sumac (*Rhus michauxii*). The USFWS also lists candidate species and species of special concern. Table 10-1 shows the federal and state-listed species in Mecklenburg County.

**Table 10-1
Federal and State-Listed Species in Mecklenburg County**

Common Name	Scientific Name	Federal Status	State Status
Vertebrates			
American eel	<i>Anguilla rostrata</i>	FSC	None
A carpsucker	<i>Carpoides sp. cf. velifer</i>	None	SC
Star-nosed mole	<i>Condylura cristata</i> pop. 1	None	SC
Timber rattlesnake	<i>Crotalus horridus</i>	None	S3
Carolina darter	<i>Etheostoma collis collis</i>	FSC	SC
Bald eagle	<i>Haliaeetus leucocephalus</i>	BGEPA	T
Loggerhead shrike	<i>Lanius ludovicianus</i>	None	SC
Invertebrates			
Carolina elktoe	<i>Alasmidonta robusta</i>	None	SX(extirpated)
Carolina heelsplitter	<i>Lasmigona decorata</i>	E	E
Creeper	<i>Strophitus undulatus</i>	None	T
Carolina creekshell	<i>Villosa vaughaniana</i>	FSC	E
Vascular Plants			
Tall larkspur	<i>Delphinium exaltatum</i>	FSC	E-SC
Smooth coneflower	<i>Echinacea laevigata</i>	E	E-SC
Piedmont aster	<i>Eurybia mirabilis</i>	FSC	SR-T
Schweinitz's sunflower	<i>Helianthus schweinitzii</i>	E	E
Shoals spiderlily	<i>Hymenocallis coronaria</i>	FSC	None
Carolina birdsfoot- trefoil	<i>Acmispon helleri</i>	FSC	SR-T

**Table 10-1 (continued)
Federal and State-Listed Species in Mecklenburg County**

Common Name	Scientific Name	Federal Status	State Status
Michaux's sumac	<i>Rhus michauxii</i>	E	E-SC
Georgia aster	<i>Symphotrichum georgianum</i>	C	T
Federal Protection Status <u>E=Endangered</u> – In danger of extinction through all or a significant portion of its range. Protected under the ESA. <u>T=Threatened</u> – Likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Protected under the ESA. <u>C=Candidate</u> – Under consideration for official listing for which there is sufficient information to support listing. No federal protection. <u>BGEPA=Bald and Golden Eagle Protection Act</u> – In the July 9, 2007 Federal Register, the bald eagle was declared recovered, and removed (de-listed) from the Federal List of Threatened and Endangered wildlife, effective on August 8, 2007. The bald eagle continues to be afforded protection pursuant to the Bald and Golden Eagle Protection Act. <u>FSC=Federal Species of Concern</u> – A species under consideration for listing, for which there is insufficient information to support listing at this time. No federal protection.			

Source: USFWS website, <http://nc-es.fws.gov/es/cntylist/mecklenburg.html>. Accessed December, 2008.

General surveys were conducted within the study area for the federally and state listed species with the exception of aquatic surveys. Charlotte-Mecklenburg Land Use and Environmental Services Agency (LUESA) regularly tests stream systems for fish, macroinvertebrates and benthos. The Carolina heelsplitter has not been located within Mecklenburg County within recent years and is believed to be extirpated from Mecklenburg County (North Carolina Natural Heritage Program website, 2009). Table 10-2 shows the Federally Endangered/Threatened Species in Mecklenburg County and summarizes the findings of the survey.

**Table 10-2
Federally Endangered/Threatened Species in Mecklenburg County**

Species		Federal Status	County Occurrence	Potential Habitat (y/n)	Biological Conclusion
Common Name	Scientific Name				
Bald Eagle	<i>Haliaeetus leucocephalus</i>	BGEPA	Current	n	No Effect
Carolina Heelsplitter	<i>Lasmigona decorata</i>	E	Current	y	No Effect
Michaux's Sumac	<i>Rhus michauxii</i>	E	Historic	y	No Effect
Schweinitz's Sunflower	<i>Helianthus schweinitzii</i>	E	Current	y	No Effect
Smooth Coneflower	<i>Echinacea laevigata</i>	E	Current	y	No Effect

Federal Protection Status

E=Endangered – A taxon in danger of extinction through all or a significant portion of its range.

T=Threatened – A taxon likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

BGEPA=Bald and Golden Eagle Protection Act – In the July 9, 2007 Federal Register, the bald eagle was declared recovered, and removed (de-listed) from the Federal List of Threatened and Endangered wildlife, effective on August 8, 2007. The bald eagle continues to be afforded protection pursuant to the Bald and Golden Eagle Protection Act.

Source: North Carolina Natural Heritage Program website, <http://www.ncnhp.org/Pages/guide.htm>. (Accessed December, 2008.)

Smooth Coneflower (*Echinacea laevigata*), State and Federal Listed Endangered

The study area may provide the proper habitat requirements preferred by this species. No individuals of smooth coneflower were observed during field surveys of the study area during the last week of September and the first week of October, 2007, or between September 2008 and November 2009. Additional field surveys were conducted in July 2010 during the blooming period of this species. No individuals were observed.

Schweinitz's sunflower (*Helianthus schweinitzii*), State and Federal Listed Endangered

The study area may provide the proper habitat requirements preferred by this species. Correspondence from the NCNHP indicates that one population was found in 1994-1995 northeast of the proposed project corridor about one and one-half miles southwest of the Charlotte Motor Speedway. NCNHP Program biologists searched for this population in 2003 and 2005, but were unable to locate the population, so it was assumed extirpated. Correspondence from the USFWS indicates that a historic population of Schweinitz's sunflower had been found near the Interstate 485 (I-485) interchange at North Tryon Street/US-29 and recommended a detailed botanical analysis be conducted for the project. Scientists

examined the proposed project corridor during the last week of September and the first week of October, 2007 and did not find any specimens. The area was searched again by scientists between September 2008 and November 2009, during the blooming period for Schweinitz's sunflower and no specimens were found.

Carolina heelsplitter (*Lasmigona decorata*), State and Federal listed Endangered

Potential habitat may exist within Toby Creek and Mallard Creek located within the proposed project corridor. Potential habitat characteristics such as undercut shaded banks with extensive root systems and buried logs and rocks within the channel were observed in both streams. However, existing water quality may be a limiting factor in the occurrence of Carolina heelsplitter within these streams. The general stagnant and apparent non-oxygenated conditions of the water make this habitat considerably less than optimal. No in-stream field investigations were made. Given the degraded habitat and the lack of any recent records of this mussel occurring in Mecklenburg County, the likelihood that this mussel occurs in the study area is concluded to be remote.

Michaux's sumac (*Rhus michauxii*), State and Federal listed Endangered

No individuals of Michaux's sumac were observed within the proposed project corridor. The NCNHP was contacted to provide the locations of the nearest populations of Michaux's sumac. The NCNHP determined that no populations were present within several miles of the study area. Field surveys of the study area were conducted during the last week of September and the first week of October, 2007, between September 2008 and November 2009 and again in July 2010 (during the blooming period for Michaux's sumac). No individuals of Michaux's sumac were observed during any of these field visits. The study area has the proper habitat requirements preferred by this species but there are no known populations within the proximity of the site, so it is unlikely that Michaux's sumac would be found in the study area.

Federal and State Candidate Species

As indicated on Table 10-1, there is one federal candidate species in Mecklenburg County (the Georgia aster). Direct surveys for this species were conducted during the last week of September and the first week of October 2007, and between September 2008 and November 2009 during the blooming period for Georgia aster. No specimens were found.

Federal Species of Concern and State-Listed Species

Federal Species of Concern (FSC) are not afforded federal protection under the ESA and are not subject to any of its provisions, including Section 7, until they are formally proposed or listed as "Threatened or Endangered." Federal species of concern are defined as those species that may or may not be listed in the future. These species were formally candidate species or are species under consideration for listing, but for which there is insufficient information to support a listing of "Endangered, Threatened, Proposed Endangered or Proposed Threatened." North Carolina protects state endangered and threatened species through state laws. The only state-listed species observed was the Carolina birdsfoot-trefoil (*Acemispom helleri*).

NCNHP correspondence indicates that a population of Federal Species of Concern and State-Significantly Rare Carolina birdsfoot-trefoil (*Acemispom helleri*) was found in 1994 in scattered locations north of the proposed project corridor, between the Charlotte Motor Speedway and the I-85 interchange. Carolina birdsfoot-trefoil was found by CATS' consultants at one site along the railroad right-of-way portion of the proposed project corridor during the last week of September and the first week of October, 2007. Carolina birdsfoot-trefoil is not rare in the southern Piedmont. Additional information about this population is covered in Sections 10.3.2.4 and 10.4.

Bald Eagle and Golden Eagle Protected Species

The bald eagle was removed from the Federal List of Threatened and Endangered Species, effective on August 8, 2007. However, the bald eagle continues to be afforded protection pursuant to the Bald and Golden Eagle Protection Act. Suitable habitat for bald eagle does not exist in the study area or within 660 feet (the buffer recommended under the *National Bald Eagle Management Guidelines*) of the study area. Field reviews were conducted between September 2008 and November 2009. No individuals of this species were observed during field surveys. The surveys revealed a lack of foraging habitat and large

bodies of water within the study area and within the immediate project vicinity. Therefore, based on the habitat requirements for bald eagle and the lack of preferred habitat within the study area and immediate vicinity, this species is not expected to be found within the study area.

10.3 Environmental Consequences

This section describes the potential environmental impacts to natural resources from the Preferred Alternative, as summarized in Table 10-3. Aquatic natural resource impacts are discussed in Chapter 11.0: Water Resources, and temporary construction impacts are described in Chapter 18.0: Construction Impacts.

**Table 10-3
Summary of Estimated Natural Resource Impacts**

Location	Type of Natural Resource Area	Permanent Impact (Y/N) - Type	Preferred Alternative Area of Impact (acres)
Old Concord Road Station and park-and-ride lot	Forested Area	Yes - Clearing	2.09
UNC Charlotte campus	Forested Area	Yes - Clearing	8.39
Forested Area Totals:			10.48

Source: 30% Preliminary Engineering Design Plans (March 2010), the Project Layout Approved for Development of 65% Design and the FEIS (March 21, 2011), and Mecklenburg GIS mapping data (2007).

10.3.1 No-Build Alternative

Since no construction would occur under No-Build Alternative, no impacts to plant communities, wildlife, forests and protected species would occur.

10.3.2 Preferred Alternative

Based on 30% Preliminary Engineering Design Plans (March 2010) and the Project Layout Approved for Development of 65% Design and the FEIS (March 21, 2011), the majority of the anticipated impacts would be to the maintained/disturbed vegetative community type. This would include roadways, commercial, industrial and residential properties.

10.3.2.1 Plant Communities

The vegetative communities likely to be cleared in the study area consist of disturbed (maintained) right-of-way and landscaped commercial/industrial properties.

10.3.2.2 Wildlife

Long term impacts to wildlife would result from the elimination and/or fragmentation of forested habitat. The majority of the wildlife species common to the corridor are typical of urban and/or disturbed environments and would adapt and recover quickly. It is expected that most wildlife capable of relocating would relocate to other existing habitat near the proposed project corridor, either temporarily or permanently. The loss of terrestrial forested habitat and fragmentation of forested habitat may result in the displacement and/or loss of some wildlife species. Migratory bird nesting areas are not present within the project study area and no migratory bird nesting areas will be impacted.

10.3.2.3 Forests

The Preferred Alternative would result in clearing impacts to an estimated 10.48 acres of mixed pine/hardwood forest community. The impacts to the forest resources would result from clearing associated with the construction of a park-and-ride lot and the alignment through UNC Charlotte.

The construction of the proposed Old Concord Road Station park-and-ride lot would result in forest resources impacts, as it would require the removal of a portion of the mixed pine/hardwood forest

community located at that site. It is estimated that approximately 2.09 acres of this wooded area would be cleared by the Preferred Alternative proposed Old Concord Road Station park-and-ride lot.

Also, the construction of the Preferred Alternative alignment through the UNC Charlotte campus and construction of the proposed UNC Charlotte Station would require the removal of a portion of the mixed pine/hardwood forest community located on that site. Approximately 8.39 acres of this wooded area would be cleared by the construction of the Preferred Alternative alignment and UNC Charlotte Station.

10.3.2.4 Protected Species

Literature and field reviews were performed to determine the presence of appropriate habitat and the likelihood of the occurrence of each species within the study area. A completed literature review coupled with the protected species habitat field reviews revealed that the four federally endangered species listed by the USFWS and the NCNHP databases for Mecklenburg County are not likely to occur in the study area, resulting in a biological conclusion of “No Effect.” USFWS concurrence for this biological conclusion was granted after the review of the Draft EIS (Appendix B: Agency Correspondence).

Federal Species of Concern and State-Listed Species

The review of Federal Species of Concern (FSC) and State-Listed Species and field reviews revealed one FSC, i.e., the Carolina birdsfoot-trefoil. The Carolina birdsfoot-trefoil is a federal species of concern. Federal species of concern are not afforded federal protection under the ESA and are not subject to any of its provisions, including Section 7, until the species is formally proposed or listed as Threatened or Endangered. A population of Carolina birdsfoot-trefoil would be destroyed by the fill that is proposed within this area of the alignment as part of the Preferred Alternative. Although Carolina birdsfoot-trefoil is a FSC, it is not rare in the southern Piedmont.

10.4 Mitigation

Anticipated impacts would be to the maintained/disturbed community type; therefore no mitigation would be required for the Preferred Alternative.

No mitigation is required for the plant communities within the study area. Replacement trees, shrubs and herbs may be provided where the width of the right-of-way will accommodate the space needed for these plants to properly grow. In addition, the park-and-ride facilities will be designed to accommodate 8 percent of tree cover in accordance with the City of Charlotte Tree Ordinance.

No mitigation is required for wildlife within the project area. The majority of the wildlife species that are common to the project corridor are typical of urban and/or disturbed environments and would adapt and recover quickly. As noted, the project study area was not found to contain nesting sites for migratory birds. If it becomes evident that migratory birds are utilizing the project area, additional surveys will be conducted as warranted. The elimination of forest resources may be mitigated in part by implementing urban forestry practices. During the construction phase, the contractor should be strongly encouraged to send any felled trees to a chipper, so the cleared material may be reused.

No mitigation is required for protected species within the study area. USFWS concurrence for the biological conclusion of “No Effect” was granted after the review of the Draft EIS (Appendix B: Agency Correspondence).

The Preferred Alternative would impact the Carolina birdsfoot-trefoil as noted. Based on comments received from the NCWRC, a field review was conducted in May 2011 to determine if Carolina birdsfoot-trefoil was still present within the project study area. The persistent remains of six Carolina birdsfoot-trefoil plants from the 2010 growing season were identified within the rail siding near the area where they were previously identified. No live specimens were identified.

In a meeting on December 16, 2010 to discuss the proposed project and anticipated impacts, the USFWS indicated no concern for this population of Carolina birdsfoot-trefoil per the interests of the agency. However, after a follow-up discussion with the North Carolina Wildlife Resources Commission (NCWRC),

the project team evaluated options for addressing the Carolina birdsfoot-trefoil population that is located within the railroad corridor prior to construction.

The LYNX BLE project team contacted a regional expert of Carolina birdsfoot-trefoil. Discussions revealed that this species would not be a candidate for relocation, as it is an annual and does not have an established root system that would allow successful transplant. However, it was suggested that seeds from the plant could be collected in the fall and subsequently sown/scattered in newly disturbed areas, such as along road/rail embankments associated with project construction.

In effect, new disturbances associated with construction would create new habitat and likely result in a short-term proliferation of this opportunistic, low growing, weedy plant. As such, prior to construction, the contractor will be required to first confirm the presence of the plant in the corridor, then have seeds collected by an experienced environmental professional in order to have them later scattered on newly disturbed areas within the proposed project corridor. Additionally, seeds will be donated to the North Carolina Botanical Garden for deep freeze purposes; and CATS will coordinate with the NCNHP to update their records. For more information about the agency discussions and this proposed mitigation, see Chapter 23.0: Draft EIS Review Comments and Responses (p 23-18 & 23-19); for agency correspondence, see Appendix B: Agency Correspondence.