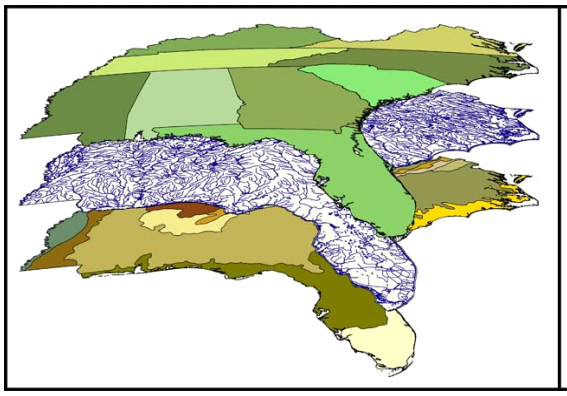


SOUTHEAST GAP ANALYSIS PROJECT

Species Modeling Report

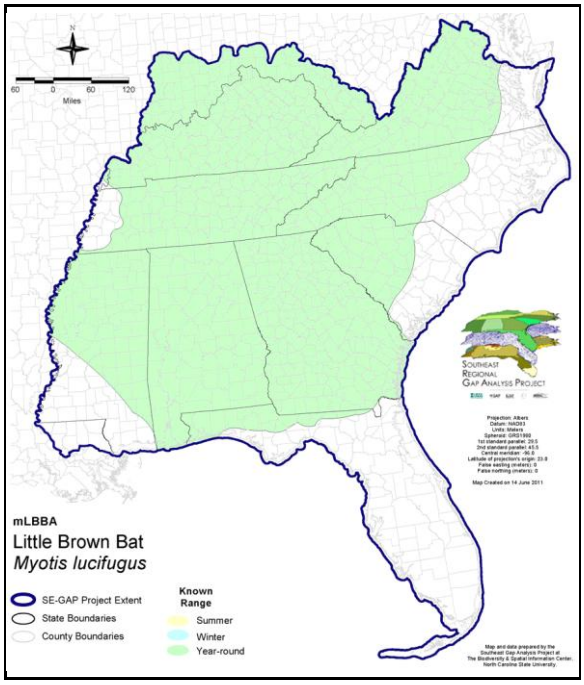
Little Brown Bat

Myotis lucifugus

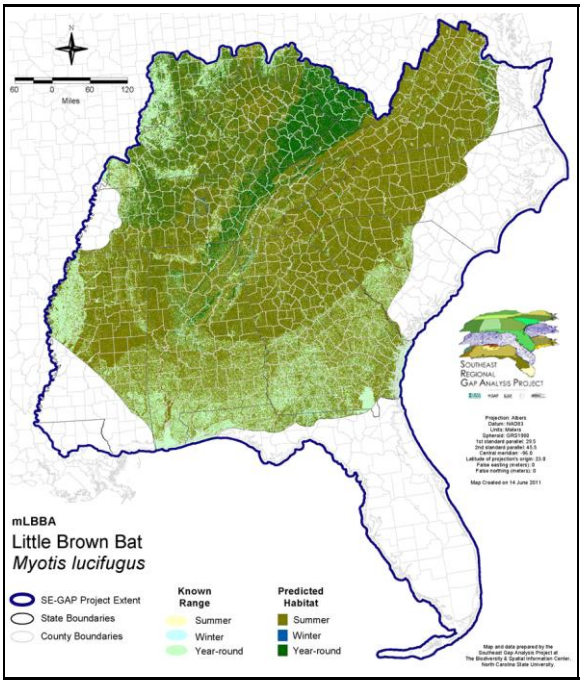
Taxa: Mammalian
Order: Chiroptera
Family: Vespertilionidae

SE-GAP Spp Code: **mLBBA**
ITIS Species Code: 179988
NatureServe Element Code: AMACC01010

KNOWN RANGE:



PREDICTED HABITAT:



Range Map Link: http://www.basic.ncsu.edu/segap/datazip/maps/SE_Range_mLBBA.pdf
Predicted Habitat Map Link: http://www.basic.ncsu.edu/segap/datazip/maps/SE_Dist_mLBBA.pdf
GAP Online Tool Link: http://www.gapserve.ncsu.edu/segap/segap/index2.php?species=mLBBA
Data Download: http://www.basic.ncsu.edu/segap/datazip/region/vert/mLBBA_se00.zip

PROTECTION STATUS:

Reported on March 14, 2011

Federal Status: ---

State Status: AR (M), CA (None), ID (P), IN (SSC), KY (N), ME (SC), MS (Non-game species in need of management), MS (Non-game species in need of management), NJ (S), NY (U), RI (Not Listed), UT (None), WI (THR), BC (4 (2005)), QC (Non suivie)

NS Global Rank: G5

NS State Rank: AK (S4), AL (S3), AR (S3), CA (S2S3), CO (S5), CT (S5), DC (S4), DE (S5), FL (SNR), GA (S3), IA (S4), ID (S5), IL (S5), IN (S4), KS (S3S4), KY (S5), MA (S5), MD (S5B,S5N), MD (S5B,S5N), ME (S5), MI (S5), MN (SNR), MO (S4), MS (S2), MS (S2), MT (S4), NC (S4), ND (SNR), NE (S4), NH (S5), NJ (S5), NM (S5), NV (S3), NY (S5), OH (SNR), OK (S1), OR (S4), PA (S1), RI (S5), SC (S3?), SD (S5), TN (S5), UT (S4), VA (S5), VT (S5), WA (S4S5), WI (S4), WV (S5), WY (S5), AB (S5), BC (S5), LB (S4), MB (S2N,S5B), MB (S2N,S5B), NB (S4), NF (S4), NS (S4), NT (SNR), ON (S5), PE (S5), QC (S5), SK (S5B,S5M), SK (S5B,S5M), YT (S4S5)

SUMMARY OF PREDICTED HABITAT BY MANAGMENT AND GAP PROTECTION STATUS:

	US FWS		US Forest Service		Tenn. Valley Author.		US DOD/ACOE	
	ha	%	ha	%	ha	%	ha	%
Status 1	25,760.0	< 1	30,517.7	< 1	0.0	0	0.0	0
Status 2	77,119.1	< 1	342,493.7	< 1	0.0	0	5,629.3	< 1
Status 3	3,047.4	< 1	1,964,597.1	3	75,379.8	< 1	431,258.0	< 1
Status 4	85.5	< 1	0.0	0	0.0	0	45.0	< 1
Total	106,012.0	< 1	2,337,608.5	4	75,379.8	< 1	436,932.4	< 1

	US Dept. of Energy		US Nat. Park Service			NOAA	Other Federal Lands	
	ha	%	ha	%	ha	%	ha	%
Status 1	0.0	0	287,828.5	< 1	0.0	0	0.0	0
Status 2	0.0	0	13,303.4	< 1	277.7	< 1	0.0	0
Status 3	56,930.5	< 1	120,731.8	< 1	0.0	0	831.4	< 1
Status 4	0.0	0	0.0	0	0.0	0	0.0	0
Total	56,930.5	< 1	421,863.7	< 1	277.7	< 1	831.4	< 1

	Native Am. Reserv.		State Park/Hist. Park		State WMA/Gameland		State Forest	
	ha	%	ha	%	ha	%	ha	%
Status 1	0.0	0	1,372.5	< 1	78.4	< 1	0.0	0
Status 2	0.0	0	17,675.8	< 1	510,063.9	< 1	1,470.2	< 1
Status 3	28,186.6	< 1	180,042.6	< 1	169,384.4	< 1	65,385.5	< 1
Status 4	0.0	0	0.0	0	107,777.6	< 1	10.0	< 1
Total	28,186.6	< 1	199,090.9	< 1	787,304.3	1	66,865.6	< 1

	State Coastal Reserve		ST Nat.Area/Preserve		Other State Lands		Private Cons. Easemt.	
	ha	%	ha	%	ha	%	ha	%
Status 1	0.0	0	13,535.3	< 1	0.0	0	0.0	0
Status 2	0.0	0	54,912.0	< 1	6.8	< 1	1,580.0	< 1
Status 3	0.0	0	6,917.9	< 1	7,564.1	< 1	16,051.2	< 1
Status 4	0.0	0	2.1	< 1	4,086.5	< 1	0.0	0
Total	0.0	0	75,367.2	< 1	11,657.5	< 1	17,631.3	< 1

	Private Land - No Res.		Water		Overall Total	
	ha	%	ha	%	ha	%
Status 1	0.0	0	0.0	0	359,092.4	< 1
Status 2	0.2	< 1	0.0	0	1,024,532.2	2
Status 3	782.3	< 1	0.0	0	3,127,090.5	8
Status 4	57,428,435.5	90	29,702.8	< 1	57,677,837.1	90
Total	57,429,218.0	90	29,702.8	< 1	62,188,552.2	100

GAP Status 1: An area having permanent protection from conversion of natural land cover and a mandated management plan in operation to maintain a natural state within which disturbance events (of natural type, frequency, and intensity) are allowed to proceed without interference or are mimicked through management.

GAP Status 2: An area having permanent protection from conversion of natural land cover and a mandated management plan in operation to maintain a primarily natural state, but which may receive use or management practices that degrade the quality of existing natural communities.

GAP Status 3: An area having permanent protection from conversion of natural land cover for the majority of the area, but subject to extractive uses of either a broad, low-intensity type or localized intense type. It also confers protection to federally listed endangered and threatened species throughout the area.

GAP Status 4: Lack of irrevocable easement or mandate to prevent conversion of natural habitat types to anthropogenic habitat types. Allows for intensive use throughout the tract. Also includes those tracts for which the existence of such restrictions or sufficient information to establish a higher status is unknown.

PREDICTED HABITAT MODEL(S):

Summer Model:

Habitat Description: Little Brown Bats can be found in a various habitats close to lakes or streams (Harvey et al 1999), including forest wetlands, bogs, fens, shrubs, mixed or hardwood forests, grasslands and old fields (NatureServe 2005). This myotis will utilize buildings, attics, and other manmade structures around farms, and towns for roosting and maternity sites as well as hollow trees, underside of loose bark on trees, and to a lesser extent the males and non-breeding females will use rock crevices and caves for roosting. Little Brown bats are classed as short-ranged feeders (Brock & Fenton 1980), foraging by night over nearby water or clearings for insects. Amy Silvano 10jun05

Ecosystem Classifiers: EXCLUDED- Evergreen, Maritime, Disturbed Bare, AG, Coastal Dune, Brackish marshes & Wetlands, Tidal Marshes, Savannas, All emergent vegetation, Prairie (due to typical dry environment) & Bald (b/c non-treed) as well as other non-wooded veg. Amy Silvano 10jun05

****Did not use underlying geology (i.e. Bedrock or Limestone) as a restrictor (as did GA-GAP) b/c not breeding habitat. Little myotis only use caves for winter hibernaculum. Amy Silvano 10jun05

Hydrography Mask:

Utilizes flowing water features with buffers of 500m from and 60m into selected water features.

Utilizes open water features with buffers of 500m from and 60m into selected water features.

Utilizes wet vegetation features with buffer of unlimited into selected vegetation features.

Selected Map Units:

Functional Group	Map Unit Name
Anthropogenic	Deciduous Plantations
Anthropogenic	Developed Open Space
Anthropogenic	Evergreen Plantations
Anthropogenic	Low Intensity Developed
Anthropogenic	Medium Intensity Developed
Anthropogenic	Pasture/Hay
Anthropogenic	Successional Grassland/Herbaceous
Anthropogenic	Successional Grassland/Herbaceous (Other)
Anthropogenic	Successional Grassland/Herbaceous (Utility Swath)
Anthropogenic	Successional Shrub/Scrub (Clear Cut)
Anthropogenic	Successional Shrub/Scrub (Other)
Anthropogenic	Successional Shrub/Scrub (Utility Swath)
Brackish Tidal Marsh & Wetland	Atlantic Coastal Plain Southern Tidal Wooded Swamp
Brackish Tidal Marsh & Wetland	East Gulf Coastal Plain Tidal Wooded Swamp
Forest/Woodland	Alabama Ketona Glade and Woodland
Forest/Woodland	Allegheny-Cumberland Dry Oak Forest and Woodland
Forest/Woodland	Allegheny-Cumberland Dry Oak Forest and Woodland - Hardwood Modifier
Forest/Woodland	Appalachian Hemlock-Hardwood Forest
Forest/Woodland	Appalachian Serpentine Woodland
Forest/Woodland	Atlantic Coastal Plain Dry and Dry-Mesic Oak Forest
Forest/Woodland	Atlantic Coastal Plain Fall-line Sandhills Longleaf Pine Woodland - Offsite Hardwood Modifier
Forest/Woodland	Atlantic Coastal Plain Mesic Hardwood and Mixed Forest
Forest/Woodland	Atlantic Coastal Plain Northern Mixed Oak-Heath Forest
Forest/Woodland	Central and Southern Appalachian Montane Oak Forest
Forest/Woodland	Central and Southern Appalachian Northern Hardwood Forest
Forest/Woodland	Central Appalachian Alkaline Glade and Woodland
Forest/Woodland	Central Appalachian Oak and Pine Forest
Forest/Woodland	Central Appalachian Pine-Oak Rocky Woodland
Forest/Woodland	Central Interior Highlands Calcareous Glade and Barrens
Forest/Woodland	Central Interior Highlands Dry Acidic Glade and Barrens
Forest/Woodland	East Gulf Coastal Plain Interior Shortleaf Pine-Oak Forest - Hardwood Modifier

Forest/Woodland	East Gulf Coastal Plain Interior Shortleaf Pine-Oak Forest - Mixed Modifier
Forest/Woodland	East Gulf Coastal Plain Interior Upland Longleaf Pine Woodland - Offsite Hardwood Modifier
Forest/Woodland	East Gulf Coastal Plain Limestone Forest
Forest/Woodland	East Gulf Coastal Plain Northern Dry Upland Hardwood Forest
Forest/Woodland	East Gulf Coastal Plain Northern Dry Upland Hardwood Forest - Offsite Pine Modifier
Forest/Woodland	East Gulf Coastal Plain Northern Loess Bluff Forest
Forest/Woodland	East Gulf Coastal Plain Northern Loess Plain Oak-Hickory Upland - Hardwood Modifier
Forest/Woodland	East Gulf Coastal Plain Northern Mesic Hardwood Forest
Forest/Woodland	East Gulf Coastal Plain Southern Loess Bluff Forest
Forest/Woodland	East Gulf Coastal Plain Southern Mesic Slope Forest
Forest/Woodland	Northeastern Interior Dry Oak Forest - Mixed Modifier
Forest/Woodland	Northeastern Interior Dry Oak Forest-Hardwood Modifier
Forest/Woodland	Northern Atlantic Coastal Plain Dry Hardwood Forest
Forest/Woodland	Ridge and Valley Calcareous Valley Bottom Glade and Woodland
Forest/Woodland	South-Central Interior Mesophytic Forest
Forest/Woodland	Southern and Central Appalachian Cove Forest
Forest/Woodland	Southern and Central Appalachian Oak Forest
Forest/Woodland	Southern and Central Appalachian Oak Forest - Xeric
Forest/Woodland	Southern Appalachian Montane Pine Forest and Woodland
Forest/Woodland	Southern Coastal Plain Dry Upland Hardwood Forest
Forest/Woodland	Southern Coastal Plain Oak Dome and Hammock
Forest/Woodland	Southern Interior Low Plateau Dry-Mesic Oak Forest
Forest/Woodland	Southern Interior Low Plateau Dry-Mesic Oak Forest - Evergreen Modifier
Forest/Woodland	Southern Piedmont Dry Oak-(Pine) Forest - Hardwood Modifier
Forest/Woodland	Southern Piedmont Dry Oak-(Pine) Forest - Mixed Modifier
Forest/Woodland	Southern Piedmont Dry Oak-Heath Forest - Hardwood Modifier
Forest/Woodland	Southern Piedmont Dry Oak-Heath Forest - Mixed Modifier
Forest/Woodland	Southern Piedmont Dry Oak-Heath Forest - Virginia/Pitch Pine Modifier
Forest/Woodland	Southern Piedmont Mafic Hardpan Woodland
Forest/Woodland	Southern Piedmont Mesic Forest
Forest/Woodland	Southern Piedmont Northern Triassic Basin Dry Forest
Forest/Woodland	Southern Ridge and Valley Dry Calcareous Forest
Forest/Woodland	Southern Ridge and Valley Dry Calcareous Forest - Hardwood Modifier
Rock Outcrop	Allegheny-Cumberland Sandstone Box Canyon and Rockhouse
Rock Outcrop	Central Interior Acidic Cliff and Talus
Rock Outcrop	Central Interior Calcareous Cliff and Talus
Rock Outcrop	East Gulf Coastal Plain Dry Chalk Bluff
Rock Outcrop	North-Central Appalachian Acidic Cliff and Talus
Rock Outcrop	North-Central Appalachian Circumneutral Cliff and Talus
Rock Outcrop	Southern Appalachian Montane Cliff
Rock Outcrop	Southern Appalachian Spray Cliff
Rock Outcrop	Southern Interior Acid Cliff
Rock Outcrop	Southern Interior Calcareous Cliff
Rock Outcrop	Southern Piedmont Cliff
Water	Open Water (Fresh)
Wetlands	Atlantic Coastal Plain Blackwater Stream Floodplain Forest - Forest Modifier
Wetlands	Atlantic Coastal Plain Brownwater Stream Floodplain Forest
Wetlands	Atlantic Coastal Plain Clay-Based Carolina Bay Forested Wetland
Wetlands	Atlantic Coastal Plain Nonriverine Swamp and Wet Hardwood Forest - Taxodium/Nyssa Modifier
Wetlands	Atlantic Coastal Plain Nonriverine Swamp and Wet Hardwood Forest - Oak Dominated Modifier
Wetlands	Atlantic Coastal Plain Northern Basin Peat Swamp
Wetlands	Atlantic Coastal Plain Northern Basin Swamp and Wet Hardwood Forest
Wetlands	Atlantic Coastal Plain Peatland Pocosin
Wetlands	Atlantic Coastal Plain Small Blackwater River Floodplain Forest
Wetlands	Atlantic Coastal Plain Small Brownwater River Floodplain Forest
Wetlands	Atlantic Coastal Plain Streamhead Seepage Swamp, Pocosin, and Baygall

Wetlands	Central Appalachian Floodplain - Forest Modifier
Wetlands	Central Appalachian Riparian - Forest Modifier
Wetlands	Central Interior Highlands and Appalachian Sinkhole and Depression Pond
Wetlands	Cumberland Riverscour
Wetlands	East Gulf Coastal Plain Interior Shrub Bog
Wetlands	East Gulf Coastal Plain Large River Floodplain Forest - Forest Modifier
Wetlands	East Gulf Coastal Plain Near-Coast Pine Flatwoods - Offsite Hardwood Modifier
Wetlands	East Gulf Coastal Plain Northern Seepage Swamp
Wetlands	East Gulf Coastal Plain Small Stream and River Floodplain Forest
Wetlands	East Gulf Coastal Plain Southern Loblolly-Hardwood Flatwoods
Wetlands	Lower Mississippi River Bottomland and Floodplain Forest
Wetlands	Lower Mississippi River Bottomland Depressions - Forest Modifier
Wetlands	Mississippi River Low Floodplain (Bottomland) Forest
Wetlands	Mississippi River Riparian Forest
Wetlands	North-Central Appalachian Acidic Swamp
Wetlands	North-Central Appalachian Seepage Fen
Wetlands	North-Central Interior and Appalachian Rich Swamp
Wetlands	South-Central Interior Large Floodplain - Forest Modifier
Wetlands	South-Central Interior Small Stream and Riparian
Wetlands	Southern and Central Appalachian Bog and Fen
Wetlands	Southern Coastal Plain Hydric Hammock
Wetlands	Southern Coastal Plain Nonriverine Basin Swamp
Wetlands	Southern Coastal Plain Nonriverine Cypress Dome
Wetlands	Southern Coastal Plain Seepage Swamp and Baygall
Wetlands	Southern Piedmont Large Floodplain Forest - Forest Modifier
Wetlands	Southern Piedmont Seepage Wetland
Wetlands	Southern Piedmont Small Floodplain and Riparian Forest
Wetlands	Southern Piedmont/Ridge and Valley Upland Depression Swamp
Wetlands	Western Highland Rim Seepage Fen

Winter Model:

Habitat Description: In winter, a relatively constant temperature of about 40 F and 80% relative humidity is required; uses caves, tunnels, abandoned mines, and similar sites (NatureServe 2005). Amy Silvano 10jun05

***quoted directly from state hab notes.

Ecosystem Classifiers: Since we do not have a geology layer for the south I choose all systems with an underlying substrate of limestone or calcarous bedrock (as identified through the natureserve definitions). If geology layer is developed, it would take precedence by modeling within limestone regions. Amy Silvano 10jun09

???I know the geology layers are of several different scales for each state, but we may want to look at just trying to develop a karst/limestone layer for the bats???? I can look at in more detail after completing models. Amy Silvano 10jun09

Selected Map Units:

Functional Group	Map Unit Name
Anthropogenic	Quarry/Strip Mine/Gravel Pit
Forest/Woodland	Allegheny-Cumberland Dry Oak Forest and Woodland
Forest/Woodland	Allegheny-Cumberland Dry Oak Forest and Woodland - Hardwood Modifier
Forest/Woodland	Atlantic Coastal Plain Mesic Hardwood and Mixed Forest
Forest/Woodland	Central and Southern Appalachian Northern Hardwood Forest
Forest/Woodland	Central Interior Highlands Calcareous Glade and Barrens
Forest/Woodland	East Gulf Coastal Plain Limestone Forest
Forest/Woodland	East Gulf Coastal Plain Northern Mesic Hardwood Forest
Forest/Woodland	Nashville Basin Limestone Glade

Forest/Woodland	Ridge and Valley Calcareous Valley Bottom Glade and Woodland
Forest/Woodland	South-Central Interior Mesophytic Forest
Forest/Woodland	Southern and Central Appalachian Mafic Glade and Barrens
Forest/Woodland	Southern Piedmont Mesic Forest
Rock Outcrop	Allegheny-Cumberland Sandstone Box Canyon and Rockhouse
Rock Outcrop	Central Interior Acidic Cliff and Talus
Rock Outcrop	Central Interior Calcareous Cliff and Talus
Rock Outcrop	East Gulf Coastal Plain Dry Chalk Bluff
Rock Outcrop	North-Central Appalachian Acidic Cliff and Talus
Rock Outcrop	North-Central Appalachian Circumneutral Cliff and Talus
Rock Outcrop	Southern Appalachian Montane Cliff
Rock Outcrop	Southern Appalachian Spray Cliff
Rock Outcrop	Southern Interior Acid Cliff
Rock Outcrop	Southern Interior Calcareous Cliff
Rock Outcrop	Southern Interior Sinkhole Wall
Rock Outcrop	Southern Piedmont Cliff
Wetlands	Atlantic Coastal Plain Northern Basin Swamp and Wet Hardwood Forest
Wetlands	Central Interior Highlands and Appalachian Sinkhole and Depression Pond
Wetlands	Cumberland Riverscour
Wetlands	South-Central Interior/Upper Coastal Plain Wet Flatwoods
Wetlands	Southern Coastal Plain Hydric Hammock
Wetlands	Southern Piedmont/Ridge and Valley Upland Depression Swamp
Wetlands	Western Highland Rim Seepage Fen

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Compiled: 15 September 2011

This data was compiled and/or developed by the Southeast GAP Analysis Project at The Biodiversity and Spatial Information Center, North Carolina State University.