



SOUTHEAST GAP ANALYSIS PROJECT



Species Modeling Report

Gray Myotis

Myotis grisescens

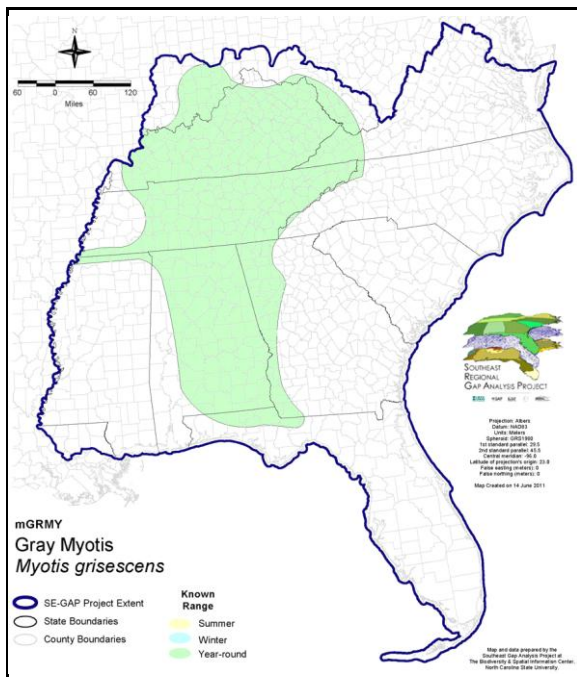
Taxa: Mammalian
 Order: Chiroptera
 Family: Vespertilionidae

SE-GAP Spp Code: **mGRMY**

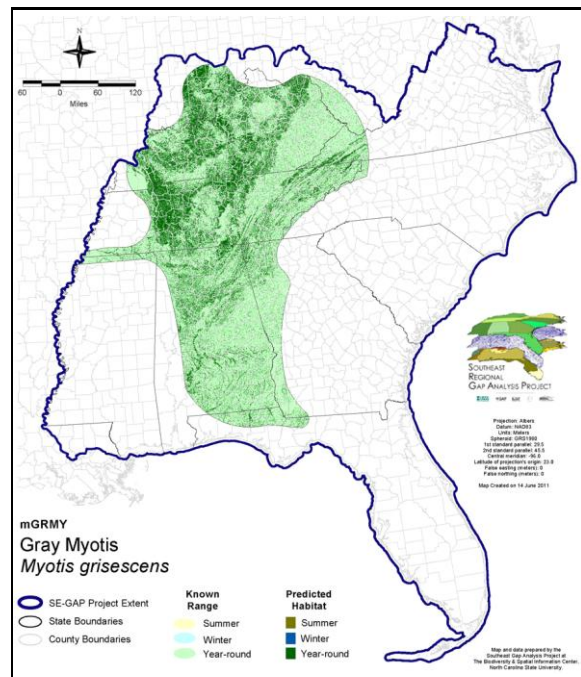
ITIS Species Code: 179997

NatureServe Element Code: AMACC01040

KNOWN RANGE:



PREDICTED HABITAT:



Range Map Link: http://www.basic.ncsu.edu/segap/datazip/maps/SE_Range_mGRMY.pdf

Predicted Habitat Map Link: http://www.basic.ncsu.edu/segap/datazip/maps/SE_Dist_mGRMY.pdf

GAP Online Tool Link: <http://www.gapservice.ncsu.edu/segap/segap/index2.php?species=mGRMY>

Data Download: http://www.basic.ncsu.edu/segap/datazip/region/vert/mGRMY_se00.zip

PROTECTION STATUS:

Reported on March 14, 2011

Federal Status: LE

State Status: AL (SP), FL (FE), GA (E), IL (LE), IN (SE), KS (E), KY (T), MO (E), MS (LE), NC (E), TN (E), VA (LE)

NS Global Rank: G3

NS State Rank: AL (S2), AR (S2S3), FL (S1), GA (S1), IL (S1), IN (S1), KS (S1B), KY (S2), MO (S3), MS (SNA), NC (S1), OK (S2), SC (S1), TN (S2), VA (S1), WV (SNA)

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 | 7,271.8 | < 1 | 2,858.0 | < 1 | 0.0 | 0 | 0.0 | 0 |
| Status 2 | 9,046.4 | < 1 | 44,891.0 | < 1 | 0.0 | 0 | 0.0 | 0 |
| Status 3 | 2,478.9 | < 1 | 267,556.2 | 3 | 37,997.4 | < 1 | 104,114.9 | 1 |
| Status 4 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 |
| Total | 18,797.0 | < 1 | 315,305.2 | 3 | 37,997.4 | < 1 | 104,114.9 | 1 |
| | US Dept. of Energy | | US Nat. Park Service | | NOAA | | Other Federal Lands | |
| | ha | % | ha | % | ha | % | ha | % |
| Status 1 | 0.0 | 0 | 30,110.0 | < 1 | 0.0 | 0 | 0.0 | 0 |
| Status 2 | 0.0 | 0 | 1,630.1 | < 1 | 0.0 | 0 | 0.0 | 0 |
| Status 3 | 6,256.7 | < 1 | 18,578.3 | < 1 | 0.0 | 0 | 160.8 | < 1 |
| Status 4 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 0 |
| Total | 6,256.7 | < 1 | 50,318.5 | < 1 | 0.0 | 0 | 160.8 | < 1 |
| | Native Am. Reserv. | | State Park/Hist. Park | | State WMA/Gameland | | State Forest | |
| | ha | % | ha | % | ha | % | ha | % |
| Status 1 | 0.0 | 0 | 873.4 | < 1 | 53.0 | < 1 | 0.0 | 0 |
| Status 2 | 0.0 | 0 | 3,547.3 | < 1 | 119,077.2 | 1 | 161.0 | < 1 |
| Status 3 | 0.0 | 0 | 40,157.3 | < 1 | 33,960.9 | < 1 | 12,971.3 | < 1 |
| Status 4 | 0.0 | 0 | 0.0 | 0 | 21,113.7 | < 1 | 8.6 | < 1 |
| Total | 0.0 | 0 | 44,577.9 | < 1 | 174,204.8 | 2 | 13,140.9 | < 1 |
| | State Coastal Reserve | | ST Nat.Area/Preserve | | Other State Lands | | Private Cons. Easemt. | |
| | ha | % | ha | % | ha | % | ha | % |
| Status 1 | 0.0 | 0 | 6,330.2 | < 1 | 0.0 | 0 | 0.0 | 0 |
| Status 2 | 0.0 | 0 | 17,936.6 | < 1 | 5.0 | < 1 | 880.4 | < 1 |
| Status 3 | 0.0 | 0 | 1,724.2 | < 1 | 2,324.5 | < 1 | 252.7 | < 1 |
| Status 4 | 0.0 | 0 | 1.6 | < 1 | 15.3 | < 1 | 0.0 | 0 |
| Total | 0.0 | 0 | 25,992.6 | < 1 | 2,344.8 | < 1 | 1,133.1 | < 1 |
| | Private Land - No Res. | | Water | | Overall Total | | | |
| | ha | % | ha | % | ha | % | | |
| Status 1 | 0.0 | 0 | 0.0 | 0 | 47,496.4 | < 1 | | |
| Status 2 | 0.0 | 0 | 0.0 | 0 | 197,174.8 | 2 | | |
| Status 3 | 0.0 | 0 | 0.0 | 0 | 528,534.1 | 8 | | |
| Status 4 | 8,871,933.5 | 89 | 13,812.9 | < 1 | 8,927,999.5 | 90 | | |
| Total | 8,871,933.5 | 89 | 13,812.9 | < 1 | 9,701,204.8 | 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):

Year-round Model:

Habitat Description: Gray Myotis are cave dependent species, utilizing them year-round for roosting and maternity colonies. They occur primarily in karst areas with underlying limestone caverns (Wilson and Ruff 1999) and choose warmer caves and mines usually located <1-2 km from rivers or other open bodies of water (Decher & Choate 1995). This species forages primarily over open water in riparian areas and may use even the smallest of streams, but prefer broader stretches (LaVal et al. 1977). Amy Silvano 10jun05

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). Also choose open water and bottomland hardwoods for foraging. Amy Silvano 10jun09 If geology layer is developed, it would take precedence by modeling within limestone regions. Amy Silvano 10jun09

Hydrography Mask:

Utilizes flowing water features with buffers of 2000m from and 60m into selected water features.

Utilizes open water features with buffers of 2000m 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 | Quarry/Strip Mine/Gravel Pit |
| 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 | East Gulf Coastal Plain Southern Mesic Slope 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 Mafic Glade and Barrens |
| Forest/Woodland | Southern Interior Low Plateau Dry-Mesic Oak Forest |
| Forest/Woodland | Southern Piedmont Glade and Barrens |
| Forest/Woodland | Southern Piedmont Mesic 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 | 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 Rocky Summit |
| 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 |
| Water | Open Water (Fresh) |
| 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 Large River Floodplain Forest - Forest Modifier |
| Wetlands | East Gulf Coastal Plain Small Stream and River Floodplain Forest |
| Wetlands | South-Central Interior Large Floodplain - Forest Modifier |
| Wetlands | South-Central Interior Small Stream and Riparian |
| Wetlands | South-Central Interior/Upper Coastal Plain Wet Flatwoods |

| | |
|----------|---|
| Wetlands | Southern Coastal Plain Blackwater River Floodplain Forest |
| Wetlands | Southern Coastal Plain Hydric Hammock |
| Wetlands | Southern Piedmont Large Floodplain Forest - Forest Modifier |
| Wetlands | Southern Piedmont Small Floodplain and Riparian Forest |
| Wetlands | Southern Piedmont/Ridge and Valley Upland Depression Swamp |

- CITATIONS:** Barbour, R. W., and W. H. Davis. 1969. *Bats of America*. The University of Kentucky Press, Lexington, Kentucky.
- Brack, V., Jr., R. E. Mumford, and V. R. Holmes. 1984. The gray bat (*Myotis grisescens*) in Indiana. *American Midland Naturalist* 111:205.
- Brady, J., T. Kunz, M. D. Tuttle, and D. Wilson. 1982. *Gray Bat Recovery Plan*. U.S. Fish Wildlife Service 140 pp.
- Caire, W., J. D. Tyler, B. P. Glass, and M. A. Mares. Z. Marsh (illustrator). 1989. *Mammals of Oklahoma*. University of Oklahoma Press, Norman. Oklahoma. 567 pp.
- Decher, J., and J. R. Choate. 1995. *Myotis grisescens*. *Mammalian Species* (510):1-7. Am. Soc. Mammal., New York.
- Figg, D. E. 1993. Missouri Department of Conservation wildlife diversity report, July 1992-June 1993. 75 pp.
- Figg, D. E., and C. M. Bessken. 1995[?]. Missouri Department of Conservation wildlife diversity report: July 1994 - June 1995. v + 104 pp. [perhaps date is 1996].
- Figg, D.E. 1991. Missouri Department of Conservation annual nongame and endangered species report July 1990 - June 1991. ii + 35 pp.
- Hall, E. R. 1981. *The Mammals of North America*. Second edition. 2 Volumes. John Wiley and Sons, New York, New York. 1181 p.
- Hall, J. S., and N. Wilson. 1966. Season population movements of the gray bat in the Kentucky area. *American Midland Naturalist* 75:317-24.
- Hamilton, William J., Jr., and John O. Whitaker, Jr. 1979. *Mammals of the eastern United States*. Cornell Univ. Press, Ithaca, New York. 346 pp.
- Handley, C. O., Jr. 1991. *Mammals*. Pages 539-616 in K. Terwilliger, coordinator. *Virginia's endangered species: proceedings of a symposium*. McDonald and Woodward Publishing Company, Blacksburg, Virginia.
- Herkert, J. R., editor. 1992. *Endangered and threatened species of Illinois: status and distribution*. Vol. 2: Animals. Illinois Endangered Species Protection Board. iv + 142 pp.
- Lacki, M. J., L. S. Burford, and J. O. Whitaker, Jr. 1995. Food habits of gray bats in Kentucky. *Journal of Mammalogy* 76:1256-1259.
- Layne, J. N., editor. 1978. *Rare and endangered biota of Florida*. Vol. 1. Mammals. State of Florida Game and Freshwater Fish Commission. xx + 52 pp.
- Matthews, J. R., and C. J. Moseley (editors). 1990. *The Official World Wildlife Fund Guide to Endangered Species of North America*. Volume 1. Plants, Mammals. xxiii + pp 1-560 + 33 pp. appendix + 6 pp. glossary + 16 pp. index. Volume 2. Birds, Reptiles, Am
- Ransome, R. 1990. *The natural history of hibernating bats*. Christopher Helm, London. xxi + 235 pp.
- Schwartz, Charles W., and Elizabeth R. Schwartz. 1981. *The wild mammals of Missouri*. University of Missouri Press, Columbia. 356 pp.
- Tuttle, M. D. 1975. Population ecology of the gray bat (*Myotis grisescens*): factors influencing early growth and development. *University of Kansas Museum of Natural History Occasional Papers* (36):1-24.
- Tuttle, M. D. 1976. Population ecology of the gray bat (*Myotis grisescens*): philopatry, timing, and patterns of movement, weight loss during migration, and seasonal adaptive strategies. *University of Kansas Museum of Natural History Occasional Papers* (54):
- Tuttle, M. D. 1979. Status, causes of decline, and management of endangered gray bats. *Journal of Wildlife Management* 43:1-17.
- U.S. Fish and Wildlife Service (USFWS). 1990. *Endangered and threatened species recovery program: report to Congress*. 406 pp.
- White, D. H., and J. T. Seginak. 1987. Cave gate designs for use in protecting endangered bats. *Wildlife Society Bull.* 15:445-449.
- Wilson, D.E. and S. Ruff. 1999. *The Smithsonian book of North American mammals*. Washington, DC, Smithsonian Inst. Press. 750 p.