



SOUTHEAST GAP ANALYSIS PROJECT



Species Modeling Report

Northern Flying Squirrel

Glaucomys sabrinus

Taxa: Mammalian

Order: Rodentia

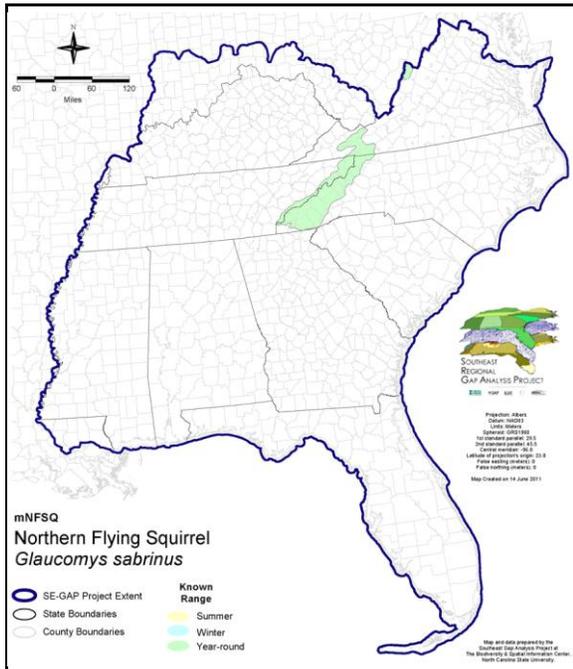
Family: Sciuridae

SE-GAP Spp Code: **mNFSQ**

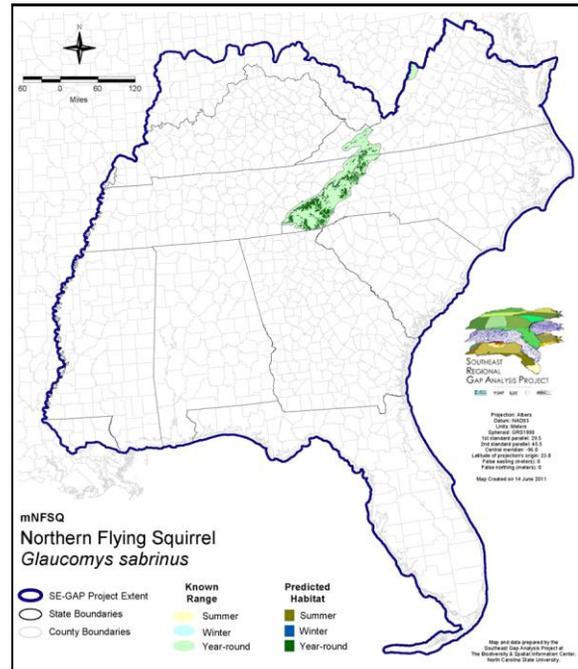
ITIS Species Code: 180169

NatureServe Element Code: AMAFB09020

KNOWN RANGE:



PREDICTED HABITAT:



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

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

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

Data Download: http://www.basic.ncsu.edu/segap/datazip/region/vert/mNFSQ_se00.zip

PROTECTION STATUS:

Reported on March 14, 2011

Federal Status: ---

State Status: ID (P), MI (SC), NJ (U), NV (YES), NY (U), PA (PE), UT (None), VA (LE), WI (SC/P), BC (4 (2005)), QC (Non suivie)

NS Global Rank: G5

NS State Rank: AK (S4), CA (S5), CT (SNA), ID (S4), MA (S2?), ME (S5), MI (S5), MN (SNR), MT (S4), NC (S2), ND (SNR), NH (S5), NJ (SU), NV (S3), NY (S5), OH (SNR), OR (S4), PA (SU), SD (S2), TN (SNR), UT (S3), VA (S1), VT (S4), WA (S4S5), WI (S3S4), WV (S2), WY (S4), AB (S4), BC (S5), LB (S5), MB (S5), NB (S5), NS (S5), NT (SNR), ON (S5), PE (S4S5), QC (S4), SK (S5), 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	0.0	0	6,588.5	< 1	0.0	0	0.0	0
Status 2	0.0	0	19,240.5	3	0.0	0	0.0	0
Status 3	0.0	0	183,292.1	24	0.0	0	0.0	0
Status 4	0.0	0	0.0	0	0.0	0	0.0	0
Total	0.0	0	209,121.0	28	0.0	0	0.0	0
	US Dept. of Energy		US Nat. Park Service		NOAA		Other Federal Lands	
	ha	%	ha	%	ha	%	ha	%
Status 1	0.0	0	95,648.9	13	0.0	0	0.0	0
Status 2	0.0	0	0.0	0	0.0	0	0.0	0
Status 3	0.0	0	7,632.1	1	0.0	0	0.0	0
Status 4	0.0	0	0.0	0	0.0	0	0.0	0
Total	0.0	0	103,281.0	14	0.0	0	0.0	0
	Native Am. Reserv.		State Park/Hist. Park		State WMA/Gameland		State Forest	
	ha	%	ha	%	ha	%	ha	%
Status 1	0.0	0	0.0	0	0.0	0	0.0	0
Status 2	0.0	0	0.0	0	4,904.0	< 1	0.0	0
Status 3	5,648.0	< 1	2,307.8	< 1	2,347.5	< 1	108.9	< 1
Status 4	0.0	0	0.0	0	0.0	0	0.0	0
Total	5,648.0	< 1	2,307.8	< 1	7,251.5	< 1	108.9	< 1
	State Coastal Reserve		ST Nat.Area/Preserve		Other State Lands		Private Cons. Easemt.	
	ha	%	ha	%	ha	%	ha	%
Status 1	0.0	0	0.0	0	0.0	0	0.0	0
Status 2	0.0	0	1,426.1	< 1	0.0	0	0.0	0
Status 3	0.0	0	0.0	0	0.0	0	0.0	0
Status 4	0.0	0	0.0	0	0.0	0	0.0	0
Total	0.0	0	1,426.1	< 1	0.0	0	0.0	0
	Private Land - No Res.		Water		Overall Total			
	ha	%	ha	%	ha	%	ha	%
Status 1	0.0	0	0.0	0	102,237.4 13			
Status 2	0.0	0	0.0	0	25,570.5 3			
Status 3	0.0	0	0.0	0	201,336.3 51			
Status 4	246,923.0	33	0.6	< 1	246,923.6 33			
Total	246,923.0	33	0.6	< 1	576,067.9 100			

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: The northern flying squirrel is associated with older forests of spruce-fir-birch and hemlock-birch located in the upper elevations of the southern Appalachian mountains, but can be found in mid-elevation hardwoods (Linzey and Linzey 1971, Whitaker and Hamilton 1998). They prefer coniferous and mixed forest, but will utilize deciduous and riparian woods. Population sizes are greatly limited by the availability of old, cavity-filled trees in which they find shelter and nest, but they will also use leaf nests, underground burrows, and bluebird boxes. They breed in February-May and July. Gestation lasts 37-42 days. One or two litters of 2-6 young (average 4-5) are born March-early July and late August to early September (apparently one litter in spring or summer in the southern Appalachians). Sexual maturity is reached at 6-12 months. Stacy Smith, 22June05

Elevation Mask: > 1035m and < 2500m

Selected Map Units:

Functional Group	Map Unit Name
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	Central and Southern Appalachian Montane Oak Forest
Forest/Woodland	Central and Southern Appalachian Northern Hardwood Forest
Forest/Woodland	Central and Southern Appalachian Spruce-Fir Forest
Forest/Woodland	Central Appalachian Oak and Pine Forest
Forest/Woodland	Northeastern Interior Dry Oak Forest - Mixed Modifier
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 Piedmont Dry Oak-Heath Forest - Virginia/Pitch Pine Modifier
Wetlands	Central Appalachian Floodplain - Herbaceous Modifier
Wetlands	Central Appalachian Riparian - Forest Modifier
Wetlands	Central Appalachian Riparian - Herbaceous Modifier
Wetlands	North-Central Appalachian Acidic Swamp
Wetlands	North-Central Interior and Appalachian Rich Swamp

- CITATIONS:** Austin, K., et al. No date. Northern flying squirrel draft recovery plan. U.S. Fish and Wildlife Service Region 5. 52 pp.
- Baker, Rollin H. 1983. Michigan mammals. Michigan State University Press. 642 pp.
- Banfield, A.W.F. 1974. The mammals of Canada. University of Toronto Press, Toronto.
- Ford W. M., S. L. Stephenson, J. M. Menzel, D. R. Black, and J. W. Edwards. 2004. Habitat characteristics of the endangered Virginia northern flying squirrel (*Glaucomys sabrinus fuscus*) in the central Appalachian Mountains. *American Midland Naturalist*. 15
- Hackett, H. M., and J. F. Pagels. 2003. Nest site characteristics of the endangered Northern Flying Squirrel (*Glaucomys sabrinus coloratus*) in southwest Virginia. *American Midland Naturalist*. 150: 321-331.
- Hall, E. R. 1981. The Mammals of North America. Second edition. 2 Volumes. John Wiley and Sons, New York, New York. 1181 p.
- Hamilton, William J., Jr., and John O. Whitaker, Jr. 1979. Mammals of the eastern United States. Cornell Univ. Press, Ithaca, New York. 346 pp.
- Howell, A. H. 1918. Revision of the American flying squirrels. *North American Fauna* 44:1-64.
- Jones, J. K., Jr., et al. 1992. Revised checklist of North American mammals north of Mexico, 1991. *Occas. Pap. Mus., Texas Tech Univ.* (146):1-23.
- Linzey, Alicia V., & Donald W. Linzey. 1971. Mammals of the Great Smoky Mountains National Park. The University of Tennessee Press, Knoxville, Tennessee. 114 p.
- Maser, C., and Z. Maser. 1988. Interactions among squirrels, mycorrhizal fungi, and coniferous forests in Oregon. *Great Basin Nat.* 48:358-369.

- 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
- Menzel J. M., W. M. Ford, J. W. Edwards, and L. J. Ceperlay. 2006. A habitat model for the Virginia northern flying squirrel (*Glaucomys sabrinus fuscus*) in the central Appalachian Mountains. United States Department of Agriculture, Forest Service Research
- Menzel, J.M. 2003. An examination of the habitat requirements of the endangered Virginia northern flying squirrel (*Glaucomys sabrinus fuscus*) by assessing nesting sites, habitat use and the development of a habitat model. Morgantown, WV: West Virginia Uni
- Payne, J. L., D. R. Young, and J. F. Pagels. 1989. Plant community characteristics associated with the endangered northern flying squirrel, *Glaucomys sabrinus*, in the southern Appalachians. *American Midland Naturalist* 121:285-292.
- Rosenberg, D. K., and R. G. Anthony. 1992. Characteristics of northern flying squirrel populations in young second- and old-growth forests in western Oregon. *Can. J. Zool.* 70:161-166.
- U.S. Department of Interior, Fish and Wildlife Service. 1990. Appalachian Northern Flying Squirrels Recovery Plan. Region 5, U.S. Fish and Wildlife Service, Newton Corner, MA.43 pages and Appendices.
- Webster, W. D., J. F. Parnell and W. C. Biggs Jr. 1985. Mammals of the Carolinas, Virginia, and Maryland. The University of North Carolina Press, Chapel Hill, NC.
- Weigl P. D. 2007. The northern flying squirrel (*Glaucomys sabrinus*): a conservation challenge. *Journal of Mammalogy.* 88:897-907.
- Weigl, P.D. and D.W. Osgood. 1974. Study of the northern flying squirrel, *Glacomys sabrinus*, by temperature tele- metry. *Am. Midl. Nat.* 92(2):482-486.
- Wells-Gosling, N. and L.R. Heaney. 1984. *Glaucomys sabrinus*. *Am. Soc. Mamm., Mammalian Species No.* 229. 8 pp.
- Whitaker, J.O. Jr. and W.J. Hamilton, Jr. 1998. *Mammals of the eastern United States.* Cornell Univ. Press, Ithaca, New York. 583 pp.
- Wilson, D. E., and D. M. Reeder (editors). 1993. *Mammal Species of the World:a Taxonomic and Geographic Reference.* Second Edition. Smithsonian Institution Press, Washington, DC. xviii + 1206 pp.
- Witt, J. W. 1992. Home range and density estimates for the northern flying squirrel, *GLAUCOMYS SABRINUS*, in western Oregon. *J. Mamm.* 73:921-929.

For more information:: SE-GAP Analysis Project / BaSIC
127 David Clark Labs
Dept. of Biology, NCSU
Raleigh, NC 27695-7617
(919) 513-2853
www.basic.ncsu.edu/segap

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.