



SOUTHEAST GAP ANALYSIS PROJECT



Species Modeling Report

Southern Flying Squirrel

Glaucomys volans

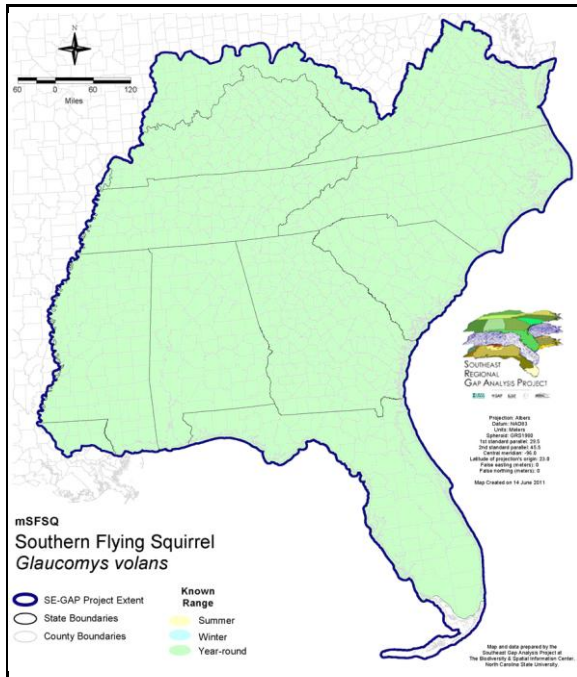
Taxa: Mammalian
 Order: Rodentia
 Family: Sciuridae

SE-GAP Spp Code: **mSFSQ**

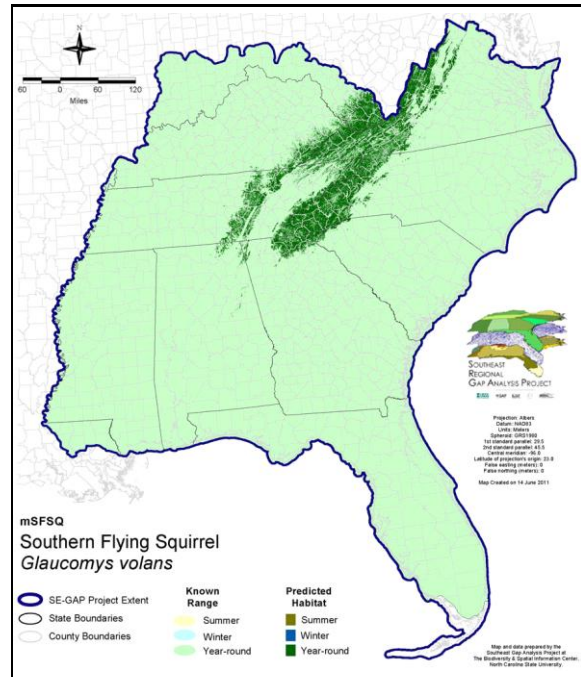
ITIS Species Code: 180170

NatureServe Element Code: AMAFB09010

KNOWN RANGE:



PREDICTED HABITAT:



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

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

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

Data Download: http://www.basic.ncsu.edu/segap/datazip/region/vert/mSFSQ_se00.zip

PROTECTION STATUS:

Reported on March 14, 2011

Federal Status: ---

State Status: IA (S), KS (C), KY (N), MS (Non-game species in need of management), NE (T), NJ (U), NY (U), RI (Not Listed), ON (NAR), QC (Susceptible)

NS Global Rank: G5

NS State Rank: AL (S5), AR (S5), CT (S5), DC (S5), DE (S5), FL (SNR), GA (S5), IA (S4), IL (S5), IN (S4), KS (S3), KY (S5), LA (S5), MA (S5), MD (S5), ME (SU), MI (S5), MN (SNR), MO (SNR), MS (S5), NC (S5), ND (SNA), NE (S1), NH (S5), NJ (S4), NY (S5), OH (SNR), OK (S3), PA (S5), RI (S5), SC (SNR), TN (S5), TX (S4), VA (S5), VT (S4), WI (S5), WV (S5), NS (S2S3), ON (S4), QC (S3)

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	407.4	< 1	28,628.6	< 1	0.0	0	0.0	0
Status 2	657.3	< 1	255,636.2	4	0.0	0	0.0	0
Status 3	0.0	0	1,115,498.8	15	616.9	< 1	1,534.2	< 1
Status 4	26.8	< 1	0.0	0	0.0	0	0.0	0
Total	1,091.5	< 1	1,399,763.5	19	616.9	< 1	1,534.2	< 1
	US Dept. of Energy		US Nat. Park Service		NOAA		Other Federal Lands	
	ha	%	ha	%	ha	%	ha	%
Status 1	0.0	0	230,503.1	3	0.0	0	0.0	0
Status 2	0.0	0	7,942.3	< 1	0.0	0	0.0	0
Status 3	0.0	0	35,179.1	< 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	273,624.5	4	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	149.2	< 1	0.0	0	0.0	0
Status 2	0.0	0	11,106.0	< 1	139,409.9	2	675.2	< 1
Status 3	18,036.3	< 1	28,687.5	< 1	27,249.3	< 1	10,341.0	< 1
Status 4	0.0	0	0.0	0	7,192.4	< 1	0.0	0
Total	18,036.3	< 1	39,942.7	< 1	173,851.7	2	11,016.2	< 1
	State Coastal Reserve		ST Nat.Area/Preserve		Other State Lands		Private Cons. Easemt.	
	ha	%	ha	%	ha	%	ha	%
Status 1	0.0	0	5,448.0	< 1	0.0	0	0.0	0
Status 2	0.0	0	22,987.6	< 1	0.0	0	95.9	< 1
Status 3	0.0	0	420.0	< 1	83.4	< 1	0.0	0
Status 4	0.0	0	0.7	< 1	231.5	< 1	0.0	0
Total	0.0	0	28,856.3	< 1	314.9	< 1	95.9	< 1
	Private Land - No Res.		Water		Overall Total			
	ha	%	ha	%	ha		%	
Status 1	0.0	0	0.0	0	265,136.2		4	
Status 2	0.0	0	0.0	0	438,510.3		6	
Status 3	0.0	0	0.0	0	1,237,646.5		32	
Status 4	4,183,756.1	58	211.9	< 1	4,198,585.1		58	
Total	4,183,756.1	58	211.9	< 1	6,139,878.1		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 highest abundance of southern flying squirrels are found in mast-producing forests (oak or hickory as constituents), but seeds from many other trees, including conifers, are suitable forage (Brown 1997, Whitaker and Hamilton 1998). They are found in mature hardwood & mixed conifer-hardwood forests, including in urban and rural areas, and they will also use old orchards. In south Florida, they also use pinelands, hammock, swamp, coastal shrub, and bayhead (Fernald 1989; Layne 1984; Moore 1947). They primarily nest in tree cavities, but will use birdhouses, attics, and abandoned leaf nests. Burt (1940) found that flying squirrels ranged over 3.72 acres of a wood plot. Gestation lasts about 40 days and births peak in late February-March and September-October. Litter size usually is about 2-3 with two litters per year (Stapp and Mautz 1991). Stacy Smith, 22June05

Elevation Mask: > 457m and < 1432m

Selected Map Units:

Functional Group	Map Unit Name
Anthropogenic	Developed Open Space
Anthropogenic	Low Intensity Developed
Anthropogenic	Medium Intensity Developed
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	Atlantic Coastal Plain Central Maritime Forest
Forest/Woodland	Atlantic Coastal Plain Dry and Dry-Mesic Oak Forest
Forest/Woodland	Atlantic Coastal Plain Mesic Hardwood and Mixed Forest
Forest/Woodland	Atlantic Coastal Plain Northern Maritime Forest
Forest/Woodland	Atlantic Coastal Plain Northern Mixed Oak-Heath Forest
Forest/Woodland	Atlantic Coastal Plain Southern Maritime 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	Central Appalachian Pine-Oak Rocky Woodland
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 Interior Upland Longleaf Pine Woodland - Open Understory Modifier
Forest/Woodland	East Gulf Coastal Plain Interior Upland Longleaf Pine Woodland - Scrub/Shrub Modifier
Forest/Woodland	East Gulf Coastal Plain Limestone Forest
Forest/Woodland	East Gulf Coastal Plain Maritime Forest
Forest/Woodland	East Gulf Coastal Plain Northern Dry Upland Hardwood Forest
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 Loess Plain Oak-Hickory Upland - Juniper 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	Florida Longleaf Pine Sandhill - Open Understory Modifier
Forest/Woodland	Florida Longleaf Pine Sandhill - Scrub/Shrub Understory Modifier
Forest/Woodland	Mississippi Delta Maritime 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	South-Central Interior Mesophytic Forest
Forest/Woodland	Southeast Florida Coastal Strand and Maritime Hammock
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
Forest/Woodland	Southwest Florida Coastal Strand and Maritime Hammock
Wetlands	Atlantic Coastal Plain Blackwater Stream Floodplain Forest - Forest Modifier
Wetlands	Atlantic Coastal Plain Blackwater Stream Floodplain Forest - Herbaceous Modifier
Wetlands	Atlantic Coastal Plain Brownwater Stream Floodplain Forest
Wetlands	Atlantic Coastal Plain Small Blackwater River Floodplain Forest
Wetlands	Atlantic Coastal Plain Small Brownwater River Floodplain Forest
Wetlands	Central Appalachian Floodplain - Forest Modifier
Wetlands	Central Appalachian Floodplain - Herbaceous Modifier
Wetlands	Central Appalachian Riparian - Forest Modifier
Wetlands	Central Appalachian Riparian - Herbaceous Modifier
Wetlands	East Gulf Coastal Plain Jackson Plain Dry Flatwoods - Open Understory Modifier
Wetlands	East Gulf Coastal Plain Jackson Plain Dry Flatwoods - Scrub/Shrub Understory Modifier
Wetlands	East Gulf Coastal Plain Large River Floodplain Forest - Forest Modifier
Wetlands	East Gulf Coastal Plain Large River Floodplain Forest - Herbaceous Modifier
Wetlands	East Gulf Coastal Plain Near-Coast Pine Flatwoods - Offsite Hardwood Modifier
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	Lower Mississippi River Bottomland Depressions - Herbaceous Modifier
Wetlands	Mississippi River Low Floodplain (Bottomland) Forest
Wetlands	Mississippi River Riparian Forest
Wetlands	South-Central Interior Large Floodplain - Forest Modifier
Wetlands	South-Central Interior Large Floodplain - Herbaceous 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 Piedmont Large Floodplain Forest - Forest Modifier
Wetlands	Southern Piedmont Large Floodplain Forest - Herbaceous Modifier
Wetlands	Southern Piedmont Small Floodplain and Riparian Forest

CITATIONS: 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.

Bendell, P. R., and J. E. Gates. 1987. Home range and microhabitat partitioning of the southern flying squirrel (GLAUCOMYS VOLANS). J. Mamm. 68:243-255.

Braun, J. K. 1988. Systematics and biogeography of the southern flying squirrel, GLAUCOMYS VOLANS. J. Mamm. 69:422-426.

- Brown, L. N. 1997. A guide to the mammals of the southeastern United States. University of Tennessee Press, Knoxville. xiv + 236 pp.
- Burt, W.H., 1940. Territorial behavior and populations of some small mammals in southern Michigan. Misc. Publications of the Museum of Zoology, Univ. of Michigan. Number 45: 1-58.
- Dolan, Pub., and D.C. Carter. 1977. *Glaucomys volans*. Am. Soc. Mamm., Mammalian Species No. 78, pp. 1-6.
- Fernald, R. T. 1989. Coastal Xeric Scrub Communities of the Treasure Coast Region, Florida. Tallahassee, FL: Florida Game and Fresh Water Fish Commission.
- Fridell, R. A., and J. A. Litvaitis. 1991. Influence of resource distribution and abundance on home-range characteristics of southern flying squirrels. Can. J. Zool. 69:2589-2593.
- Gilmore, R. M., and J. E. Gates. 1985. Habitat use by the southern flying squirrel at a hemlock-northern hardwood ecotone. J. Wildl. Manage. 49:703-710.
- Godin, A.J. 1977. Wild Mammals of New England. Johns Hopkins University Press, Baltimore. 304 pp.
- 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.
- Harlow, R. F., and A. T. Doyle. 1990. Food habits of southern flying squirrels (*Glaucomys volans*) collected from red-cockaded woodpecker (*Picoides borealis*) colonies in South Carolina. American Midland Naturalist 124:187-191.
- 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.
- Layne, J. N. 1984. The land mammals of South Florida. Environments of South Florida, Past and Present II. P. J. Gleason ed. Coral Gables, Florida: Miami Geological Society; pp. 269-295.
- Lee, D. S., L. B. Funderburg Jr., and M. K. Clark. 1982. A distributional survey of North Carolina mammals. Occasional Papers of the North Carolina Biological Survey, No. 1982-10. North Carolina State. Mus. Nat. Hist., Raleigh, North Carolina. 72 pp.
- Linzey, D. W. 1995a. Mammals of Great Smoky Mountains National Park. Blacksburg, Virginia: The McDonald & Woodward Publishing Company, Inc.
- Madden, J.R. 1974. Female territoriality in a Suffolk County Long Island population of *Glaucomys volans*. J. Mamm. 55(3):647-652.
- Moore, J. C. 1947. Nests of the Florida flying squirrel. The American Midland Naturalist. 38:248-253.
- Muul, I. 1968. Behavior and physiological influences on the distribution of the flying squirrel, *Glaucomys volans*. Univ. MI Mus. Zool., Misc. Publ. No. 134. 66 pp.
- Sawyer, S. L., and R. K. Rose. 1985. Homing and ecology of the southern flying squirrel *Glaucomys volans* in southeastern Virginia. Am. Midl. Nat. 113:238-244.
- Schwartz, Charles W., and Elizabeth R. Schwartz. 1981. The wild mammals of Missouri. University of Missouri Press, Columbia. 356 pp.
- Sollberger, D.E. 1943. Notes on the breeding habits of the eastern flying squirrel. (*Glaucomys volans volans*). J. Mamm. 24(2):163-173.
- Stapp, P., and W. M. Mautz. 1991. Breeding habits and postnatal growth of the southern flying squirrel (*Glaucomys volans*) in New Hampshire. Am. Midl. Nat. 126:203-208.
- Stone, K. D., G. A. Heidt, P. T. Caster, and M. L. Kennedy. 1997. Using geographic information systems to determine home range of the southern flying squirrel (*GLAUCOMYS VOLANS*). American Midland Naturalist 137:106-111.
- 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.
- Wells-Gosling, N. 1985. Flying squirrels:gliders in the dark. Smithsonian Institution Press, Washington, D.C. 128 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.