



SOUTHEAST GAP ANALYSIS PROJECT



Species Modeling Report

Meadow Vole

Microtus pennsylvanicus

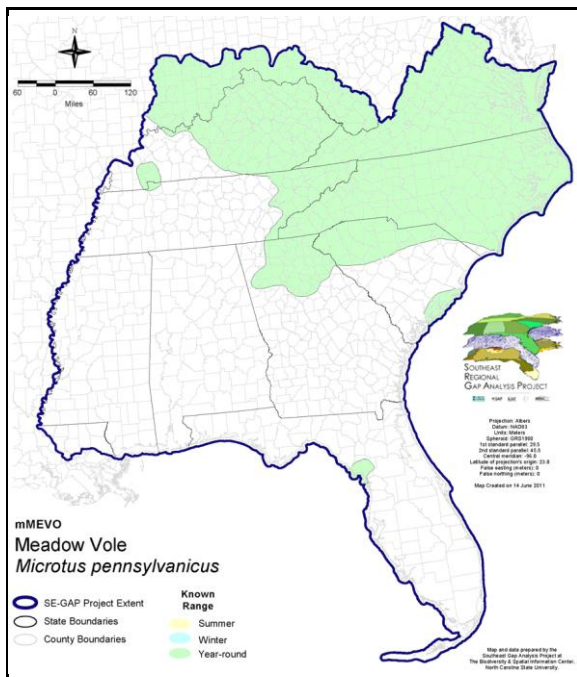
Taxa: Mammalian
 Order: Rodentia
 Family: Cricetidae

SE-GAP Spp Code: **mMEVO**

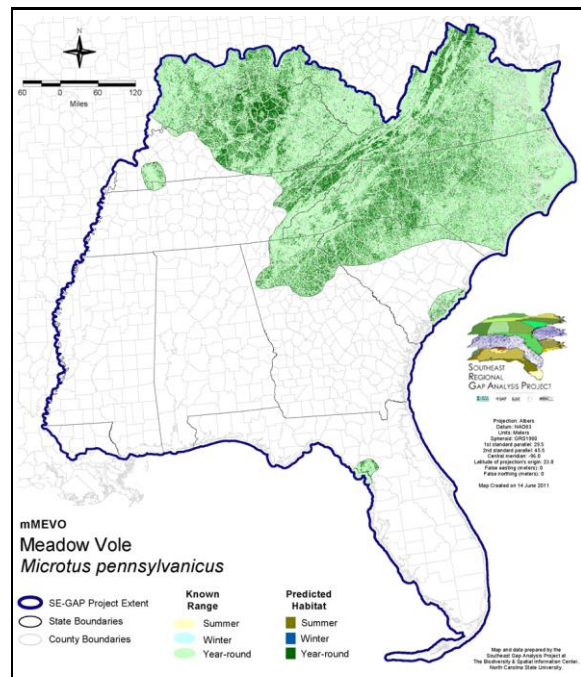
ITIS Species Code: 180297

NatureServe Element Code: AMAFF11010

KNOWN RANGE:



PREDICTED HABITAT:



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

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

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

Data Download: http://www.basic.ncsu.edu/segap/datazip/region/vert/mMEVO_se00.zip

PROTECTION STATUS:

Reported on March 14, 2011

Federal Status: ---

State Status: KY (N), NJ (S), NY (U), RI (Not Listed), UT (None), WA (M-Part), BC (4 (2005)), QC (Non suivie)

NS Global Rank: G5

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

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	27,604.1	< 1	321.8	< 1	0.0	0	0.0	0
Status 2	29,050.2	< 1	5,275.5	< 1	0.0	0	469.9	< 1
Status 3	892.3	< 1	54,059.9	< 1	11,909.8	< 1	46,607.5	< 1
Status 4	7.7	< 1	0.0	0	0.0	0	95.1	< 1
Total	57,554.3	< 1	59,657.2	< 1	11,909.8	< 1	47,172.5	< 1
	US Dept. of Energy		US Nat. Park Service		NOAA		Other Federal Lands	
	ha	%	ha	%	ha	%	ha	%
Status 1	0.0	0	6,078.7	< 1	339.7	< 1	0.0	0
Status 2	0.0	0	12,871.8	< 1	6,070.2	< 1	0.0	0
Status 3	1,946.5	< 1	16,916.0	< 1	0.0	0	2,206.5	< 1
Status 4	0.0	0	0.0	0	0.0	0	0.0	0
Total	1,946.5	< 1	35,866.4	< 1	6,409.9	< 1	2,206.5	< 1
	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	408.4	< 1	25,995.3	< 1	53.1	< 1
Status 3	1,774.9	< 1	20,405.8	< 1	17,292.6	< 1	5,039.0	< 1
Status 4	0.0	0	0.0	0	3,331.4	< 1	0.0	0
Total	1,774.9	< 1	20,814.2	< 1	46,619.4	< 1	5,092.1	< 1
	State Coastal Reserve		ST Nat.Area/Preserve		Other State Lands		Private Cons. Easemt.	
	ha	%	ha	%	ha	%	ha	%
Status 1	0.0	0	164.9	< 1	0.0	0	0.0	0
Status 2	10,828.4	< 1	7,442.1	< 1	1.5	< 1	0.0	0
Status 3	0.0	0	845.4	< 1	84.9	< 1	2,738.9	< 1
Status 4	0.0	0	0.0	0	251.6	< 1	0.0	0
Total	10,828.4	< 1	8,452.4	< 1	338.0	< 1	2,738.9	< 1
	Private Land - No Res.		Water		Overall Total			
	ha	%	ha	%	ha	%		
Status 1	0.0	0	0.0	0	34,509.2	< 1		
Status 2	0.0	0	0.0	0	98,466.6	< 1		
Status 3	0.0	0	0.0	0	182,719.8	2		
Status 4	10,045,474.0	96	8,365.3	< 1	10,060,849.0	96		
Total	10,045,474.0	96	8,365.3	< 1	10,376,544.5	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: This species is associated with tall grass, sedge and forb habitats of all kinds and at all elevations within its range (Whitaker and Hamilton 1998). It inhabits everything from tidal marshes along the Carolina coast to alpine meadows above treeline in the northern Appalachian and Adirondack mountains of New England. However, it becomes less abundant at the southern limits of its range in North Carolina, South Carolina and Georgia. Best associated with moist, densely vegetated fields of grasses and sedges (Whitaker and Hamilton 1998). It is less adapted to short-grass communities or actively managed fields that are maintained at short-grass levels. High-grass lowland and upland meadows and fields, pastures with areas of tall dense grasses and forbs, fresh and salt water marshes, and to a lesser extent open glades in woodlands are all used by this vole. Dense grassy areas in open woods, orchards and along roadsides are also well suited to the meadow vole.

Meadow voles build above ground nest of grass and other available herbaceous vegetation and require tall, dense herbaceous cover to adequately conceal these structures (Whitaker and Hamilton 1998).

Quoted from NC habitat notes - K.Cook 5-30-05

Selected Map Units:

Functional Group	Map Unit Name
Anthropogenic	Developed Open Space
Anthropogenic	Pasture/Hay
Anthropogenic	Successional Grassland/Herbaceous
Anthropogenic	Successional Grassland/Herbaceous (Other)
Anthropogenic	Successional Grassland/Herbaceous (Utility Swath)
Bald	Central Appalachian Montane Rocky Bald - Herbaceous Modifier
Bald	Central Appalachian Montane Rocky Bald - Shrub Modifier
Bald	Southern Appalachian Grass and Shrub Bald - Herbaceous Modifier
Bald	Southern Appalachian Grass and Shrub Bald - Shrub Modifier
Brackish Tidal Marsh & Wetland	Atlantic Coastal Plain Central Salt and Brackish Tidal Marsh
Brackish Tidal Marsh & Wetland	Atlantic Coastal Plain Embayed Region Tidal Salt and Brackish Marsh
Brackish Tidal Marsh & Wetland	Atlantic Coastal Plain Indian River Lagoon Tidal Marsh
Brackish Tidal Marsh & Wetland	Atlantic Coastal Plain Northern Tidal Salt Marsh
Brackish Tidal Marsh & Wetland	Florida Big Bend Salt-Brackish Tidal Marsh
Coastal Dune & Freshwater Wetland	Atlantic and Gulf Coastal Plain Interdunal Wetland
Coastal Dune & Freshwater Wetland	Atlantic Coastal Plain Northern Dune and Maritime Grassland
Coastal Dune & Freshwater Wetland	Atlantic Coastal Plain Southern Dune and Maritime Grassland
Coastal Dune & Freshwater Wetland	East Gulf Coastal Plain Dune and Coastal Grassland
Forest/Woodland	Appalachian Shale Barrens
Forest/Woodland	Central Appalachian Alkaline Glade and Woodland
Forest/Woodland	Central Interior Highlands Calcareous Glade and Barrens
Forest/Woodland	Central Interior Highlands Dry Acidic Glade and Barrens
Forest/Woodland	Cumberland Sandstone Glade and Barrens
Forest/Woodland	East Gulf Coastal Plain Black Belt Calcareous Prairie and Woodland - Woodland Modifier
Forest/Woodland	Nashville Basin Limestone Glade
Forest/Woodland	Ridge and Valley Calcareous Valley Bottom Glade and Woodland
Forest/Woodland	Southern and Central Appalachian Mafic Glade and Barrens
Forest/Woodland	Southern Piedmont Glade and Barrens
Freshwater Tidal Marsh & Wetland	Atlantic Coastal Plain Central Fresh-Oligohaline Tidal Marsh
Freshwater Tidal Marsh & Wetland	Atlantic Coastal Plain Embayed Region Tidal Freshwater Marsh
Freshwater Tidal Marsh & Wetland	Atlantic Coastal Plain Northern Fresh and Oligohaline Tidal Marsh
Freshwater Tidal Marsh & Wetland	Florida Big Bend Fresh-Oligohaline Tidal Marsh
Prairie	Bluegrass Basin Savanna and Woodland
Prairie	East Gulf Coastal Plain Black Belt Calcareous Prairie and Woodland
Prairie	East Gulf Coastal Plain Black Belt Calcareous Prairie and Woodland - Herbaceous Modifier
Prairie	East Gulf Coastal Plain Jackson Plain Prairie and Barrens

Prairie	East Gulf Coastal Plain Jackson Prairie and Woodland
Prairie	Eastern Highland Rim Prairie and Barrens
Prairie	Eastern Highland Rim Prairie and Barrens - Dry Modifier
Prairie	Florida Dry Prairie
Prairie	Panhandle Florida Limestone Glade
Prairie	Pennyroyal Karst Plain Prairie and Barrens
Prairie	Southern Ridge and Valley Patch Prairie
Prairie	Western Highland Rim Prairie and Barrens
Wetlands	Atlantic Coastal Plain Depression Pondshore
Wetlands	Atlantic Coastal Plain Large Natural Lakeshore
Wetlands	Atlantic Coastal Plain Northern Pondshore
Wetlands	Atlantic Coastal Plain Northern Wet Longleaf Pine Savanna and Flatwoods
Wetlands	Atlantic Coastal Plain Sandhill Seep
Wetlands	Atlantic Coastal Plain Southern Wet Pine Savanna and Flatwoods
Wetlands	Southern Appalachian Seepage Wetland
Wetlands	Southern Coastal Plain Herbaceous Seepage Bog

CITATIONS: Allen, G.M. 1942. Extinct and vanishing mammals of the Western Hemisphere. Am. Comm. Int. Wild. Prot., Spec. Prob. No. II. 620 pp.

Ambrose, H.W. 1973. An experimental study of some factors affecting the spatial and temporal activity of *Microtis pennsylvanicus*. J. Mamm. 54:79-110.

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.

Chamberlain, J.L. 1954. THE BLOCK ISLAND MEADOW MOUSE, *MICROTUS PROVECTUS*. J. MAMMAL. 35:587-589.

Clark, B. K., and D. W. Kaufman. 1990. Short-term responses of small mammals to experimental fire in tallgrass prairie. Can. J. Zool. 68:2450-2454.

Conner, P. F. 1971. The mammals of Long Island, New York. New York. State Mus. Science Serv., Bull. No. 416. 78 pp.

Frey, J. K. 1992. Response of a mammalian faunal element to climatic changes. J. Mamm. 73:43-50.

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.

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.

Krebs, C.J. and J.H. Myers. 1974. Population cycles in small mammals. Adv. Ecol. Res. 8:267-399.

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.

Modi, W. S. 1986. Karyotypic differentiation among two sibling species pairs of New World microtine rodents. J. Mammalogy 67:159-165.

Moore, D. W., and L. L. Janecek. 1990. Genic relationships among North American *MICROTUS* (Mammalia:Rodentia). Ann. Carnegie Mus. 59:249-259.

Moyer, C. A., G. H. Adler, and R. H. Tamarin. 1988. Systematics of New England *MICROTUS*, with emphasis on *MICROTUS BREWERI*. J. Mammalogy 69:782-794.

Ostfeld, R. S., and C. D. Canham. 1993. Effects of meadow vole population density on tree seedling survival in old fields. Ecology 74:1792-1801.

Plante, Y., P. T. Boag, and B. N. White. 1989. Macrogeographic variation in mitochondrial DNA of meadow voles (*MICROTUS PENNSYLVANICUS*). Can. J. Zool. 67:158-167.

Reich, L.M. 1981. *Microtus pennsylvanicus*. Am. Soc. Mamm., Mammalian Species No. 159. 8pp.

Schwartz, Charles W., and Elizabeth R. Schwartz. 1981. The wild mammals of Missouri. University of Missouri Press, Columbia. 356 pp.

Sullivan, T. P., and D. S. Sullivan. 1988. Influence of alternative foods on vole populations and damage in apple orchards. *Wildl. Soc. Bull.* 16:170-175.

Swihart, R. K. 1990. Quebracho, thiram, and methiocarb reduce consumption of apple twigs by meadow voles. *Wildl. Soc. Bull.* 18:162-166.

Tamarin, R. H., editor. 1985. *Biology of New World MICROTUS*. American Soc. Mamm. Special Publication (8):1-893.

Tobin, M. E., and M. E. Richmond. 1993. Vole management in fruit orchards. U.S. Fish and Wildlife Service Biological Report 5. ii + 18 pp.

Trani, M. K., W. M. Ford, and B. R. Chapman (eds.) 2007. *The Land Manager's Guide to Mammals of the South*. The Nature Conservancy, Southeastern Region, Durham, NC, USA. 546 pp.

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.

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.

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