







Species Modeling Report

Norway Rat

Rattus norvegicus

Taxa: Mammalian Order: Rodentia Family: Muridae

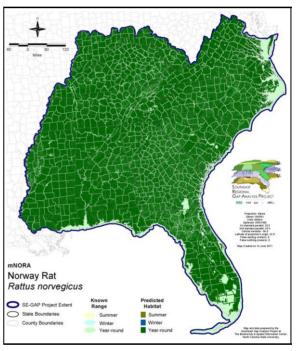
SE-GAP Spp Code: mNORA ITIS Species Code: 180363

NatureServe Element Code: AMAFF21020

KNOWN RANGE:

Norway Rat Rattus norvegicus

PREDICTED HABITAT:



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

GAP Online Tool Link: http://www.gapserve.ncsu.edu/segap/segap/index2.php?species=mNORA Data Download: http://www.basic.ncsu.edu/segap/datazip/region/vert/mNORA_se00.zip

PROTECTION STATUS:

Reported on March 14, 2011

Federal Status: ---

State Status: KY (N), NJ (I), NY (U), RI (Not Listed), UT (None), BC (7 (2005)), QC (Non suivie)

NS Global Rank: G5

NS State Rank: AK (SNA), AL (SNA), AR (SNA), AZ (SNA), CA (SNA), CO (SNA), CT (SNA), DC (SNA), DE (SNA), FL (SNA), GA (SNA), IA (SNA), ID (SNA), IL (SNA), IN (SNA), KS (SNA), KY (SNA), LA (SNA), MA (SNA), MD (SNA), ME (SNA), MI (SNA), MN (SNA), MO (SNA), MS (SNA), MT (SNA), NC (SNA), ND (SNA), NE (SNA), NH (SNA), NJ (SNA), NM (SNA), NV (SNA), NY (SNA), OH (SNA), OK (SNA), OR (SNA), PA (SNA), RI (SNA), SC (SNA), SD (SNA), TN (SNA), TX (SNA), UT (SNA), VA (SNA), VT (SNA), WA (SNA), WI (SNA), WV (SNA), WY (SNA), AB (SNA), BC (SNA), LB (SNA), MB (SNA), NB (SNA), NF (SNA), NS (SNA), ON (SNA), PE (SNA), QC (SNA), SK (SNA)

mNORA Page 1 of 8

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	9
Status 1	141,091.9	< 1	35,572.4	< 1	0.0	0	0.0	(
Status 2	278,123.5	< 1	423,504.2	< 1	0.0	0	5,908.4	<
Status 3	3,403.8	< 1	3,061,724.4	3	79,047.5	< 1	931,414.1	< 1
Status 4	122.3	< 1	< 0.1	< 1	0.0	0	535.2	< :
Total	422,741.5	< 1	3,520,801.1	3	79,047.5	< 1	937,857.8	< 1
	US Dept. of	Energy	US Nat. Park	Service		NOAA	Other Federa	ıl Land
	ha	%	ha	%	ha	%	ha	9
Status 1	0.0	0	321,577.4	< 1	408.5	< 1	23,393.8	<
Status 2	0.0	0	53,249.6	< 1	39,694.3	< 1	114.6	< 1
Status 3	86,846.4	< 1	259,019.2	< 1	0.0	0	6,737.9	< 1
Status 4	0.0	0	4.0	4	0.0	0	0.0	(
Total	86,846.4	< 1	633,850.8	< 1	40,102.8	< 1	30,246.3	< 1
	Native Am.	Reserv.	State Park/His	st. Park	State WMA/Gar	meland	State	Fores
	ha	%	ha	%	ha	%	ha	9
Status 1	0.0	0	1,741.4	< 1	79.1	< 1	0.0	(
Status 2	0.0	0	20,830.3	< 1	1,024,929.7	< 1	1,449.3	<
Status 3	28,672.7	< 1	913,599.5	< 1	270,106.9	< 1	462,911.4	< :
Status 4	0.0	0	< 0.1	< 1	145,982.3	< 1	49.1	< 1
Total	28,672.7	< 1	936,171.3	< 1	1,441,098.0	1	464,409.7	<
	State Coastal F	Reserve	ST Nat.Area/Pi	reserve	Other State	e Lands	Private Cons. E	asemi
	ha	%	ha	%	ha	%	ha	9
Status 1	0.0	0	16,660.8	< 1	0.0	0	0.0	(
Status 2	33,008.2	< 1	113,079.7	< 1	6.6	< 1	4,452.8	< 1
Status 3	0.0	0	30,834.0	< 1	35,116.3	< 1	173,968.0	< :
Status 4	0.0	0	2.1	< 1	5,259.2	< 1	< 0.1	< 1
Total	33,008.2	< 1	160,576.6	< 1	40,382.1	< 1	178,420.9	<
	Private Land - I	No Res.		Water			Overa	ıll Tota
	ha	%	ha	%			ha	9
Status 1	0.0	< 1	0.0	0			540,525.5	< 1
Status 2	1.0	< 1	0.0	3			1,998,352.4	
Status 3	1,220.5	< 1	1.2	< 1			6,344,623.8	
Status 4	90,394,823.6	88	100,770.8	< 1			90,793,409.5	8
Total	90,396,045.3	88	100,772.4	< 1			99,676,911.2	10

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.

mNORA Page 2 of 8

PREDICTED HABITAT MODEL(S):

Year-round Model:

Habitat Description:

The Norway rat is believed to have been introduced to North America from Europe after its old world cousin, the black rat (Webster et al. 1985). However, the Norway rat has been more successful at colonizing the continent and now is found in most metropolitan areas.

Like the black rat, the Norway rat is primarily found in human dominated landscapes but can also be found in rural settings (Webster et al. 1985). It occupies buildings and subterranean infrastructure of inner cities as well as farmsteads, garbage dumps, and hedgerows and shrubby areas bordering grain fields of rural areas, and even salt marshes along the coast. Largest numbers occur wherever food is plentiful. To nest, the Norway rat will make use of secluded nooks or chambers in buildings or rubble piles, or will use another animal's burrow or dig their own (Whitaker and Hamilton 1998). They are found in herbaceous tidal marshes and herbaceous zone above tidal (Hamilton 1946). Distribution closely associated with human habitations, uUrban, suburban areas, and farms. Contrasts with distribution of R. rattus (Cothran 1991). Ranges from areas commensal with humans to sylvatic conditions. In Maryland, in and around human habitations and in parklands (Glass 1988). In Kansas, most typically found in urban situations and about barns, corncribs and occasionally along creeks adjacent to grain fields. Rarely traveled more than a few yards from their burrow, but may have traveled from 900 feet to 0.25 miles to establish colony (Fitch 1958). # Mean home ranges are 0.25 +\- 0.029 ha for males and 0.23 +\- 0.022 ha for females (Berger and Negus 1981).

Quoted from state habitat notes - K. Cook - 6-9-05

Additional information:

Again not much habitat survey data could be found for the US. So the model is the same as that for rattus rattus although theses species may exclude each other locally through competition. Also the Norway rat inhabits ground level habitats, whereas the black rat has climbing abilities. K. Cook - 6-9-05

lected Map Units:		
Functional Group	Map Unit Name	
Anthropogenic	Developed Open Space	
Anthropogenic	High Intensity Developed	
Anthropogenic	Low Intensity Developed	
Anthropogenic	Medium Intensity Developed	
Anthropogenic	Pasture/Hay	
Anthropogenic	Row Crop	

Selected Secondary Map Units within 2000m of Primary Map Units:

Functional Group	Map Unit Name
Wetlands	Central Interior Highlands and Appalachian Sinkhole and Depression Pond
Forest/Woodland	Southern Piedmont Dry Oak-Heath Forest - Hardwood Modifier
Forest/Woodland	Southern Piedmont Dry Oak-Heath Forest - Virginia/Pitch Pine Modifier
Forest/Woodland	Southern Piedmont Dry Oak-Heath Forest - Mixed Modifier
Forest/Woodland	Ridge and Valley Calcareous Valley Bottom Glade and Woodland
Forest/Woodland	Central and Southern Appalachian Spruce-Fir Forest
Forest/Woodland	Central and Southern Appalachian Northern Hardwood Forest
Forest/Woodland	Southern Piedmont Mafic Hardpan Woodland
Bald	Southern Appalachian Grass and Shrub Bald - Shrub Modifier
Bald	Southern Appalachian Grass and Shrub Bald - Herbaceous Modifier
Wetlands	Southern Piedmont Seepage Wetland
Wetlands	Southern and Central Appalachian Bog and Fen
Wetlands	Southern Appalachian Seepage Wetland
Forest/Woodland	Southeastern Interior Longleaf Pine Woodland
Wetlands	Southern Piedmont Small Floodplain and Riparian Forest
Wetlands	Southern Piedmont Large Floodplain Forest - Forest Modifier
Rock Outcrop	Southern Appalachian Rocky Summit

mNORA Page 3 of 8

Forest/Woodland Southern Piedmont Glade and Barrens

Forest/Woodland Southern Appalachian Montane Pine Forest and Woodland

Forest/Woodland Southern Appalachian Low Mountain Pine Forest

Forest/Woodland Nashville Basin Limestone Glade

Wetlands Southern Piedmont/Ridge and Valley Upland Depression Swamp

Forest/Woodland **Cumberland Sandstone Glade and Barrens** Forest/Woodland Alabama Ketona Glade and Woodland

Forest/Woodland Southern Piedmont Dry Oak-(Pine) Forest - Hardwood Modifier Forest/Woodland Southern Piedmont Dry Oak-(Pine) Forest - Loblolly Pine Modifier Forest/Woodland Southern Piedmont Dry Oak-(Pine) Forest - Mixed Modifier

Forest/Woodland Southern Piedmont Mesic Forest Wetlands Western Highland Rim Seepage Fen Forest/Woodland Appalachian Serpentine Woodland

Forest/Woodland Southern and Central Appalachian Mafic Glade and Barrens

Prairie Western Highland Rim Prairie and Barrens Prairie Eastern Highland Rim Prairie and Barrens

Prairie Eastern Highland Rim Prairie and Barrens - Dry Modifier

Prairie Pennyroyal Karst Plain Prairie and Barrens

Forest/Woodland Allegheny-Cumberland Dry Oak Forest and Woodland

Forest/Woodland Allegheny-Cumberland Dry Oak Forest and Woodland - Pine Modifier Forest/Woodland Allegheny-Cumberland Dry Oak Forest and Woodland - Hardwood Modifier

Forest/Woodland Southern and Central Appalachian Cove Forest Prairie Southern Ridge and Valley Patch Prairie

Forest/Woodland Southern Ridge and Valley Dry Calcareous Forest

Forest/Woodland Southern Ridge and Valley Dry Calcareous Forest - Pine Modifier Forest/Woodland Southern Ridge and Valley Dry Calcareous Forest - Hardwood Modifier

Forest/Woodland Southern Piedmont Northern Triassic Basin Dry Forest

Forest/Woodland Central Appalachian Oak and Pine Forest

Forest/Woodland Northeastern Interior Dry Oak Forest-Hardwood Modifier

Northeastern Interior Dry Oak Forest - Virginia/Pitch Pine Modifier Forest/Woodland

Forest/Woodland Northeastern Interior Dry Oak Forest - Mixed Modifier

Forest/Woodland Appalachian Hemlock-Hardwood Forest

Forest/Woodland Central and Southern Appalachian Montane Oak Forest Bald Central Appalachian Montane Rocky Bald - Shrub Modifier Bald Central Appalachian Montane Rocky Bald - Herbaceous Modifier

Forest/Woodland Appalachian Shale Barrens

Forest/Woodland Central Appalachian Pine-Oak Rocky Woodland North-Central Appalachian Acidic Cliff and Talus **Rock Outcrop** Forest/Woodland Central Appalachian Alkaline Glade and Woodland **Rock Outcrop** North-Central Appalachian Circumneutral Cliff and Talus

Wetlands North-Central Appalachian Acidic Swamp

Wetlands North-Central Interior and Appalachian Rich Swamp

Wetlands North-Central Appalachian Seepage Fen

Wetlands Central Appalachian Floodplain - Forest Modifier Wetlands Central Appalachian Riparian - Forest Modifier

Rock Outcrop Central Interior Acidic Cliff and Talus Central Interior Calcareous Cliff and Talus Rock Outcrop

Forest/Woodland Central Interior Highlands Calcareous Glade and Barrens Forest/Woodland Central Interior Highlands Dry Acidic Glade and Barrens Wetlands South-Central Interior Large Floodplain - Forest Modifier Wetlands South-Central Interior Small Stream and Riparian

Forest/Woodland Southern and Central Appalachian Oak Forest Forest/Woodland Southern and Central Appalachian Oak Forest - Xeric

Forest/Woodland South-Central Interior Mesophytic Forest Prairie Bluegrass Basin Savanna and Woodland

Forest/Woodland Southern Interior Low Plateau Dry-Mesic Oak Forest

mNORA

Forest/Woodland Southern Interior Low Plateau Dry-Mesic Oak Forest - Evergreen Modifier

Wetlands Atlantic Coastal Plain Large Natural Lakeshore

Forest/Woodland Florida Peninsula Inland Scrub

Wetlands Floridian Highlands Freshwater Marsh

Wetlands Southern Coastal Plain Herbaceous Seepage Bog
Forest/Woodland Atlantic Coastal Plain Northern Mixed Oak-Heath Forest

Wetlands Mississippi River Riparian Forest

Wetlands East Gulf Coastal Plain Treeless Savanna and Wet Prairie
Wetlands Mississippi River Low Floodplain (Bottomland) Forest

Brackish Tidal Marsh & Wetland Atlantic Coastal Plain Northern Sea-Level Fen

Brackish Tidal Marsh & Wetland Atlantic Coastal Plain Southern Tidal Wooded Swamp

Forest/Woodland Atlantic Coastal Plain Dry and Dry-Mesic Oak Forest

Forest/Woodland Atlantic Coastal Plain Mesic Hardwood and Mixed Forest

Wetlands Atlantic Coastal Plain Clay-Based Carolina Bay Forested Wetland

Wetlands Atlantic Coastal Plain Clay-Based Carolina Bay Herbaceous Wetland

Wetlands Atlantic Coastal Plain Blackwater Stream Floodplain Forest - Forest 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 Southern Coastal Plain Nonriverine Cypress Dome

Wetlands Atlantic Coastal Plain Streamhead Seepage Swamp, Pocosin, and Baygall

Wetlands Atlantic Coastal Plain Sandhill Seep

Forest/Woodland Atlantic Coastal Plain Fall-line Sandhills Longleaf Pine Woodland - Open Understory Modifier

Forest/Woodland Atlantic Coastal Plain Fall-line Sandhills Longleaf Pine Woodland - Scrub/Shrub Understory Modifier

Forest/Woodland Atlantic Coastal Plain Fall-Line Sandhills Longleaf Pine Woodland - Loblolly Modifier

Forest/Woodland Atlantic Coastal Plain Fall-line Sandhills Longleaf Pine Woodland - Offsite Hardwood Modifier

Brackish Tidal Marsh & Wetland Atlantic Coastal Plain Indian River Lagoon Tidal Marsh
Coastal Dune & Freshwater Wetland Atlantic and Gulf Coastal Plain Interdunal Wetland

Freshwater Tidal Marsh & Wetland Atlantic Coastal Plain Embayed Region Tidal Freshwater Marsh

Brackish Tidal Marsh & Wetland Atlantic Coastal Plain Embayed Region Tidal Salt and Brackish Marsh

Forest/Woodland Atlantic Coastal Plain Central Maritime Forest
Wetlands Atlantic Coastal Plain Depression Pondshore

Coastal Dune & Freshwater Wetland Atlantic Coastal Plain Northern Dune and Maritime Grassland

Wetlands Atlantic Coastal Plain Northern Wet Longleaf Pine Savanna and Flatwoods

Beach Florida Panhandle Beach Vegetation
Wetlands Atlantic Coastal Plain Peatland Pocosin

Brackish Tidal Marsh & Wetland Atlantic Coastal Plain Central Salt and Brackish Tidal Marsh

Coastal Dune & Freshwater Wetland Atlantic Coastal Plain Southern Dune and Maritime Grassland

Forest/Woodland Atlantic Coastal Plain Upland Longleaf Pine Woodland

Brackish Tidal Marsh & Wetland Atlantic Coastal Plain Northern Tidal Wooded Swamp

Forest/Woodland Florida Longleaf Pine Sandhill - Open Understory Modifier

Forest/Woodland Florida Longleaf Pine Sandhill - Scrub/Shrub Understory Modifier

Brackish Tidal Marsh & Wetland

Beach

Atlantic Coastal Plain Northern Sandy Beach

Forest/Woodland

Atlantic Coastal Plain Northern Maritime Forest

Brackish Tidal Marsh & Wetland

Mississippi Sound Salt and Brackish Tidal Marsh

Wetlands Atlantic Coastal Plain Nonriverine Swamp and Wet Hardwood Forest - Oak Dominated Modifier

Wetlands Atlantic Coastal Plain Nonriverine Swamp and Wet Hardwood Forest - Taxodium/Nyssa Modifier

Prairie East Gulf Coastal Plain Jackson Plain Prairie and Barrens

Wetlands East Gulf Coastal Plain Near-Coast Pine Flatwoods - Open Understory Modifier

Wetlands East Gulf Coastal Plain Near-Coast Pine Flatwoods - Scrub/Shrub Understory Modifier

Wetlands East Gulf Coastal Plain Near-Coast Pine Flatwoods - Offsite Hardwood Modifier

Freshwater Tidal Marsh & Wetland Atlantic Coastal Plain Central Fresh-Oligonaline Tidal Marsh

Prairie Florida Dry Prairie

Wetlands Central Florida Pine Flatwoods

Beach Atlantic Coastal Plain Sea Island Beach

Wetlands Southern Coastal Plain Nonriverine Basin Swamp

Wetlands East Gulf Coastal Plain Interior Shrub Bog

Forest/Woodland Northern Atlantic Coastal Plain Dry Hardwood Forest

Forest/Woodland East Gulf Coastal Plain Southern Mesic Slope Forest

Forest/Woodland East Gulf Coastal Plain Northern Mesic Hardwood Forest

Prairie East Gulf Coastal Plain Black Belt Calcareous Prairie and Woodland

Prairie East Gulf Coastal Plain Black Belt Calcareous Prairie and Woodland - Herbaceous Modifier
Forest/Woodland East Gulf Coastal Plain Black Belt Calcareous Prairie and Woodland - Woodland 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 South-Central Interior/Upper Coastal Plain Wet Flatwoods

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 Dry Upland Hardwood Forest

Forest/Woodland East Gulf Coastal Plain Northern Dry Upland Hardwood Forest - Offsite Pine Modifier

Wetlands East Gulf Coastal Plain Large River Floodplain Forest - Forest Modifier
Wetlands Lower Mississippi River Bottomland Depressions - Forest Modifier

Wetlands Central Florida Herbaceous Seep

Wetlands Southern Coastal Plain Blackwater River Floodplain Forest

Forest/Woodland Southern Coastal Plain Oak Dome and Hammock

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 Interior Upland Longleaf Pine Woodland - Loblolly Modifier

Forest/Woodland East Gulf Coastal Plain Interior Upland Longleaf Pine Woodland - Offsite Hardwood Modifier

Wetlands Atlantic Coastal Plain Xeric River Dune

Coastal Dune & Freshwater Wetland East Gulf Coastal Plain Dune and Coastal Grassland

Wetlands Southern Coastal Plain Hydric Hammock
Forest/Woodland East Gulf Coastal Plain Limestone Forest
Forest/Woodland East Gulf Coastal Plain Maritime Forest

Wetlands East Gulf Coastal Plain Southern Depression Pondshore
Wetlands Southern Coastal Plain Seepage Swamp and Baygall

Forest/Woodland East Gulf Coastal Plain Interior Shortleaf Pine-Oak Forest - Mixed Modifier

Forest/Woodland East Gulf Coastal Plain Interior Shortleaf Pine-Oak Forest - Hardwood Modifier

Forest/Woodland East Gulf Coastal Plain Interior Shortleaf Pine-Oak Forest - Pine Modifier

Freshwater Tidal Marsh & Wetland Florida Big Bend Fresh-Oligohaline Tidal Marsh
Brackish Tidal Marsh & Wetland Florida Big Bend Salt-Brackish Tidal Marsh

Wetlands Lower Mississippi River Bottomland and Floodplain Forest

Forest/Woodland Mississippi Delta Maritime Forest

Freshwater Tidal Marsh & Wetland Atlantic Coastal Plain Northern Fresh and Oligohaline Tidal Marsh

Wetlands Atlantic Coastal Plain Northern Pondshore

Brackish Tidal Marsh & Wetland Atlantic Coastal Plain Northern Tidal Salt Marsh

Wetlands Atlantic Coastal Plain Northern Basin Swamp and Wet Hardwood Forest

Wetlands Atlantic Coastal Plain Northern Basin Peat Swamp

Prairie Panhandle Florida Limestone Glade
Beach Atlantic Coastal Plain Southern Beach

Wetlands Atlantic Coastal Plain Southern Wet Pine Savanna and Flatwoods

Forest/Woodland Atlantic Coastal Plain Southern Maritime Forest
Wetlands East Gulf Coastal Plain Northern Seepage Swamp
Prairie East Gulf Coastal Plain Jackson Prairie and Woodland
Forest/Woodland East Gulf Coastal Plain Southern Loess Bluff Forest

Wetlands East Gulf Coastal Plain Southern Loblolly-Hardwood Flatwoods
Wetlands East Gulf Coastal Plain Northern Depression Pondshore

Wetlands East Gulf Coastal Plain Small Stream and River Floodplain Forest

Forest/Woodland Southern Coastal Plain Dry Upland Hardwood Forest

Wetlands Central Florida Herbaceous Pondshore

mNORA

Page 6 of 8

Beach South Florida Shell Hash Beach Beach Southeast Florida Beach Beach Southwest Florida Beach

Brackish Tidal Marsh & Wetland South Florida Everglades Sawgrass Marsh

South Florida Hardwood Hammock Brackish Tidal Marsh & Wetland South Florida Mangrove Swamp

Wetlands South Florida Dwarf Cypress Savanna

Wetlands South Florida Cypress Dome Wetlands South Florida Bayhead Swamp Forest/Woodland South Florida Pine Rockland

Forest/Woodland Southwest Florida Coastal Strand and Maritime Hammock Forest/Woodland Southeast Florida Coastal Strand and Maritime Hammock

Wetlands South Florida Wet Marl Prairie Wetlands South Florida Pine Flatwoods Wetlands South Florida Willow Head

Wetlands South Florida Pond-Apple/Popash Slough

Brackish Tidal Marsh & Wetland Southwest Florida Perched Barriers Salt Swamp and Lagoon - Marsh Modifier Brackish Tidal Marsh & Wetland Southwest Florida Perched Barriers Salt Swamp and Lagoon - Mangrove Modifier

Anthropogenic Bare Sand Anthropogenic Bare Soil

Beach Unconsolidated Shore (Beach/Dune)

Deciduous Plantations Anthropogenic Anthropogenic **Evergreen Plantations**

Anthropogenic Successional Shrub/Scrub (Clear Cut) Anthropogenic Successional Shrub/Scrub (Utility Swath) Anthropogenic Successional Shrub/Scrub (Other)

CITATIONS:

Wetlands

Baker, Rollin H. 1983. Michigan mammals. Michigan State University Press. 642

Banfield, A.W.F. 1974. The mammals of Canada. University of Toronto Press,

Berger, P.J. and N.C. Negus. 1981. Population dynamics of Rattus rattus and R. norvegicus in a riparian habitat. Journal of Mammalogy 63:151-154.

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.

Calhoun, J. B. 1962. The ecology and sociology of the Norway rat. U.S. Dept. of Health, Educ. and Welfare Publ. Health Serv. Publ. 1008.

Cothran, E.G., M.H. Smith, J.O. Wolff and J.B. Gentry. 1991. Mammals of the Savannah River Site. Savannah River Site National Environmental Research Park Program. SRO-NERP-21. SREL, Aiken, SC. 191 pp.

Fitch, H. S. 1958. Home ranges, territories, and seasonal movement of vertebrates of the Natural History Reservation. University of Kansas Publication Museum of Natural History 11:63-326

Glass, G. E., et al. 1989. Comparative ecology and social interactions of Norway rat (RATTUS NORVEGICUS) populations in Baltimore, Maryland. Occas. Pap. Mus. Nat. Hist. Univ. Kansas No. 130:1-33.

Glass, G. E.; G. W. Korch, and J. E. Childs. 1988. Seasonal and Habitat Differences in Growth Rates of Wild Rattus Norvegicus. Journal of Mammalogy. 69(3):587-592.

Godin, A.J. 1977. Wild Mammals of New England. Johns Hopkins University Press, Baltimore. 304

Hall, E. R. 1981. The Mammals of North America. Second edition. 2 Volumes. John Wiley and Sons, New York, New York. 1181

Hamilton, W. J. 1946. Habitats of the swamp rice rat, Orysomys palustris. The American Midland Naturalist. 36:730-

Hamilton, William J., Jr., and John O. Whitaker, Jr. 1979. Mammals of the eastern United States. Cornell Univ. Press, Ithaca, New York. 346 pp.

Kramer, R. J. 1971. Hawaiian land mammals. Charles E. Tuttle Co., Rutland, Vermont, and Tokyo,

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

Tomich, P. Q. 1970. Movement patterns of field rodents in Hawaii. Pacific Sci. 24:195-234.

mNORA Page 7 of 8 Tomich, P. Q. 1986. Mammals in Hawai'i. A synopsis and notational bibliography. Second edition. Bishop Museum Press, Honolulu. 375

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

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.

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.

mNORA Page 8 of 8