

Swamp Rabbit

Sylvilagus aquaticus

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DESCRIPTION

Taxonomy and Basic Description

The swamp rabbit, *Sylvilagus aquaticus*, was first described by Bachman in 1837. Swamp rabbits, or cane-cutters, are the largest species of rabbit in the southeastern United States. These rabbits range in total length from 452 to 552 mm (17.8 to 21.7 inches) and range from 1900 to 2700 g (4.5 to 6 pounds) in weight (Chapman and Feldhamer 1981; Webster et al. 1985). Weights of South Carolina specimens in the Campbell Museum of Natural History at Clemson University range from 1700 to 2300 g (3.74 to 5.07 pounds).



The fur of swamp rabbits is rusty-brown with black hairs, giving the animals a grizzled appearance. Similar to the eastern cottontail (*Sylvilagus floridanus*) and the Appalachian cottontail (*Sylvilagus obscurus*), the underside of the tail is white. This differs from the bluish gray tail of the marsh rabbit (*Sylvilagus palustris*).

There are two recognized subspecies of swamp rabbit: *Sylvilagus aquaticus aquaticus* and *Sylvilagus aquaticus littoralis*. The former is the only subspecies found in South Carolina and the latter is restricted to the Gulf Coast (Hall and Kelson 1959; Chapman and Feldhamer 1981).

Status

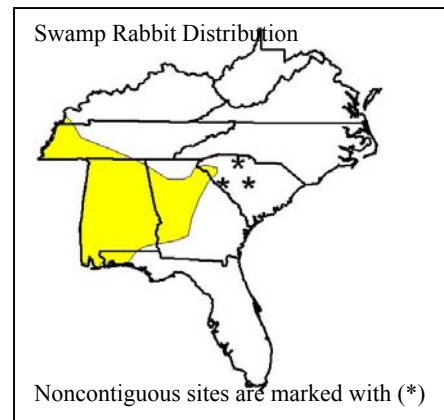
In South Carolina, these rabbits are considered rare or imperiled (S2/S3) due to habitat loss and limited habitat availability. In Alabama and neighboring Georgia, the swamp rabbit is ranked as secure, while in Tennessee the species is apparently secure. The Global Heritage Rank is secure or G5 (NatureServe 2004), yet data from several states, including Arkansas, Missouri and Kentucky, indicate populations are imperiled due to loss of habitat (Platt and Bunch 2000) and range shrinkage (Sealander and Heidt 1990; Schwartz and Schwartz 1981; Sole 1994).

POPULATION SIZE AND DISTRIBUTION

Swamp rabbits are distributed from the Gulf of Mexico, northward along the Mississippi River to Illinois and Indiana, eastward to the western piedmont of South Carolina and westward to east Texas and Oklahoma (Chapman and Feldhamer 1981). In South Carolina, most occurrences are in Anderson, Oconee and Pickens Counties in the Savannah River drainage of the western piedmont region. A few isolated records have been reported from McCormick County, York County and Richland County (Platt and Bunch 2000). It is unclear whether these disjunct records represent naturally occurring populations or are the result of translocations by hunters.

Unverified reports of swamp rabbits exist for Greenville, Kershaw, Chesterfield and Marlboro Counties (Golley 1966).

Swamp rabbit population size and density estimates are unavailable for South Carolina. In a Georgia floodplain, swamp rabbits had an average maximum home range of 7.6 hectares (18.9 acres) and a density of 0.14 animals per hectare (0.05 animals per acre)(Lowe 1958). Home ranges in Missouri average 1.82 to 2.43 hectares (4.5 to 6 acres) (Schwartz and Schwartz 1981).



HABITAT AND NATURAL COMMUNITY REQUIREMENTS

As indicated by their common name, swamp rabbits tend to be found in close proximity to water. The home range of swamp rabbits in Indiana is limited to within two kilometers (1.24 miles) of water (Terrel 1972); this is likely to hold true throughout the entire range for this species. In South Carolina, habitat varies from swamps and wet scrub/shrub land to forested bottomlands. Swamp rabbits are often associated with, but not restricted to canebreaks dominated by switchcane (*Arundinaria gigantea*) (Platt et al. 2001).

Korte and Fredrickson (1977) reported that viable swamp rabbit populations require contiguous habitat in areas exceeding 100 ha (247.1 acres); however, Sole (1994) suggests that this figure needs to be re-evaluated. Sole found that in Kentucky, about one third of the occupied habitat was in woodlots less than 100 ha in size that were sometimes isolated or connected by narrow bands to other suitable habitat.

Logs, stumps and tree falls are an important component of swamp rabbit habitat. These structures are used for latrine sites, resting cover and nesting (Zollner et al. 2000a; Platt and Rainwater 2001). Like all of South Carolina's rabbits, swamp rabbits prefer dense thickets that provide suitable cover.

CHALLENGES

Hydrologic changes that result from flooding associated with dam construction and filling, channelization, ditching and draining of wetlands are well-recognized challenges to swamp rabbit populations throughout their range. In South Carolina, a significant portion of swamp rabbit habitat was inundated by the construction of Lake Hartwell. Habitat is also lost as a result of pond construction, urban development, road construction and land clearing for agricultural activities. Two sites reported by Platt and Bunch (2000) along US 123 have since been destroyed by urban development.

Because swamp rabbits inhabit floodplains and wetlands, they are vulnerable to flooding. Floods during the breeding season can be especially deleterious to populations. Although flooding is a natural phenomenon, urban development tends to alter natural floodplains, resulting in more frequent and, often, more severe flooding than is usually expected (C. Gawne and Lee Mitchell, Personal Communication, 2004). As stated above, hydrologic changes will result from urban

development. An unpublished study conducted by SCDNR demonstrated a four-fold increase in development for every one-fold increase in population between 1983-1998 (Richard Lacy, personal communication, 2004). For this study, development was measured by impermeable surfaces such as pavement and buildings. This increase in flow to rivers and streams often results in erosion of streambeds. Once this erosion begins, the streams and rivers become vulnerable to flash flooding.

The impact of hunting on swamp rabbits has not been determined. Swamp rabbit populations on small tracts of land and those isolated by development or well-traveled roads tend to preclude the use of hunting dogs, thereby reducing the threat of hunting. Current data collected from rabbit hunting does not require hunters to distinguish the rabbit species that was taken.

Most of the suitable swamp rabbit habitat in South Carolina is on private land. Therefore, the future of the species in South Carolina and throughout much of its range (Sole 1994) largely depends on the stewardship of private lands. It is important that the landscape and local flooding history be a consideration in site protection design (Zollner et al. 2000b).

CONSERVATION ACCOMPLISHMENTS

The U.S. Army Corps of Engineers designed and constructed Lake Hartwell. Because their boundary line follows the approximate 204 m (670 foot) contour around Lake Hartwell, some swamp rabbit habitat along creeks and rivers flowing into the lake was protected during development of the lake. Other public lands that offer protection for the swamp rabbit include SCDNR and Clemson University properties.

CONSERVATION RECOMMENDATIONS

- Partner with private and public landowners to maintain swamp rabbit habitat via whatever means are available, including but not limited to acquisitions, conservation easements, designations of green spaces and encouragement of stewardship by private landowners.
- Partner with federal agencies, such as the Army Corps of Engineers, the Natural Resources Conservation Service and the US Fish and Wildlife Service, to protect more wetland habitat.
- Evaluate the impact of hunting on swamp rabbit populations and improve collection of harvest data from rabbit hunters.
- Partner with hunters to collect habitat information for the swamp rabbit.
- Estimate the amount of habitat necessary to sustain a viable population of swamp rabbits.
- Conduct ecoregion-wide surveys of suitable habitat; those sites with previously unconfirmed records should be given priority.
- Revisit sites previously documented as occupied by swamp rabbits to verify if populations remain extant.
- Determine swamp rabbit density within selected study populations and determine population size estimates based on available habitat.
- Re-examine current state rankings for swamp rabbits and adjust those rankings based on new survey data, if appropriate.

- Monitor suitable swamp rabbit habitat by aerial photography over regular intervals.
- Produce brochures and web links to better educate South Carolinians on this unique species of rabbit.
- Where possible, restore wetlands that exist within the range of the swamp rabbit. The restoration work could be used for public outreach, giving school groups or community organizations hands-on experience in wetland restoration. The Natural Resource Conservation Service and US Army Corps of Engineers would be important partners in these efforts.

MEASURES OF SUCCESS

Surveys and monitoring will allow the re-evaluation of the status of the species in South Carolina. Density estimates, paired with habitat information, will allow evaluation of the amount of potential habitat and remote assessment of habitat levels. The effectiveness of partnerships protecting wetlands and other properties that contain swamp rabbits can be assessed when paired with the monitoring of those populations.

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