

## Woodland Jumping Mouse

### *Napaeozapus insignis*

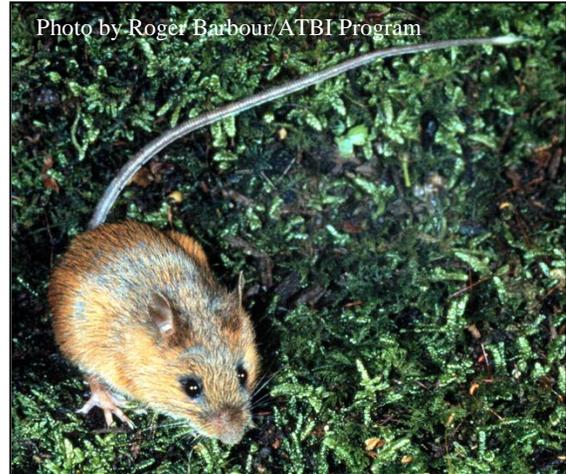
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#### DESCRIPTION

##### Taxonomy and Basic Description

The woodland jumping mouse (*Napaeozapus insignis*) is monotypic and was first named by Miller in 1891. The subspecies recognized in the southern Appalachians, based entirely on morphometric measurements, is *Napaeozapus insignis roanensis* (Whitaker and Wrigley 1972). Adults of this subspecies are 204 to 256 mm (8.0 to 10.1 in.) long, including the tail. The tail, which is longer than the body, is often white-tipped and bicolored; it is brown-gray on the top and whitish underneath and ranges in length from 115 to 160 mm (4.5 to 6.3 in.). Woodland jumping mice have large hind feet, 28 to 34 mm (1.1 to 1.3 in.), which are appropriate for jumping. The woodland jumping mouse is a colorful mammal: the fur on the sides a yellow-orange and a dark wide stripe down the back in a red-orange-brown hue. The belly is white. Adults weigh 15 to 30 g (0.53 to 1.06 oz.) (Whitaker and Wrigley 1972; Webster et al. 1985).

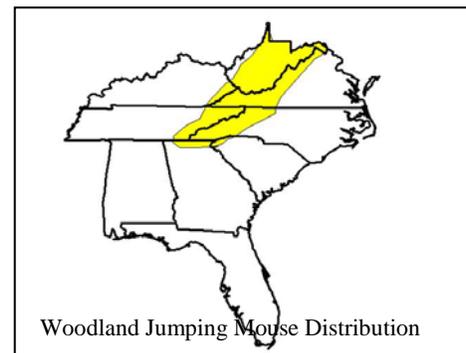


##### Status

Woodland jumping mice are apparently secure (S4) in North and South Carolina, Tennessee and Kentucky and are vulnerable (S3) in Georgia. Their global rank is secure (G5) (NatureServe 2013). They are not listed on the IUCN Red list as a species of concern, and their populations are considered stable (Hafner et al. 1988; IUCN 2012). This species is included as a species of concern in South Carolina due to the relatedness of these populations to those in neighboring states.

#### POPULATION SIZE AND DISTRIBUTION

Woodland jumping mice range from New Brunswick, Canada, southeastward through Ontario, Quebec, Nova Scotia and New Brunswick, south through Michigan, the New England states and Pennsylvania. As the range extends southward, it narrows to the confines of the Appalachian Mountains, ending in Georgia and South Carolina (Linzey 1995; Whitaker and Wrigley 1972; Webster et al. 1985).



Density estimates from the north vary at 0.64, 5.2 and 6.7 animals per hectare (0.26, 2.7, and 5.2 per acre, respectively), and home ranges are about 0.4 to 3.6 hectares (1 to 9 acres) (Whitaker and Wrigley 1972). It is not considered abnormal to have widely varying densities due to short life expectancies, high reproductive outputs and a life cycle prone to fluctuation with seasons, weather and predation cycles. No density estimates are available for the Southeast.

## HABITAT AND NATURAL COMMUNITY REQUIREMENTS

Within the Southern Appalachian Ecoregion, woodland jumping mice are restricted to high elevation sites in cool moist habitats such as hemlock stands, sheltered cove hardwood stands with northern species and Rhododendron draped streamside zones (Ford et al. 1994). In South Carolina, these animals have been found at elevations of 427 m (1,400 ft.) and above. Woodland jumping mice are true hibernators in the north (Merritt 1987); however, this behavior has not been studied or confirmed in the southeast. Hibernation requires reliably cold temperatures; this fact might explain their range restriction in the southeast.

The effects of logging or canopy removal on habitat selection by woodland jumping mice is not clearly understood, but there are indications that these mice prefer moist habitats with abundant herbaceous cover rather than thick woody regeneration (Ford et al. 2000). South Carolina priority listed species that are sometimes associated with these same habitat characteristics in the southern Appalachians include the southern red-backed vole (*Clethrionomys gapperi*), pygmy shrew (*Sorex hoyi*), star-nosed mole (*Condylura cristata*), and masked shrew (*Sorex cinereus*).

Woodland jumping mice have a varying diet of fungi, insect larvae, berries, seeds, nuts and vegetation (Whitaker and Wrigley 1972). Studies indicate that woodland jumping mice consume significant amounts of the *Endogone* spp. and *Glomus* spp. fungi in both mixed mesic forest and eastern hemlock habitats (Williams and Finney 1964, Orrock et al. 2003). The presence or abundance of deer mice (*Peromyscus maniculatus*) is negatively correlated with consumption of the *Endogone* spp. fungi; in those situations the jumping mice consume other fungal species (Orrock et al. 2003).

## CHALLENGES

Challenges to the woodland jumping mouse include habitat fragmentation due to development and barriers created by associated structures such as 4-lane divided highways (NatureServe 2004). Additionally, hemlock wooly adelgids (*Adelgas tsugae*), an invasive pest, may threaten some suitable habitat sites if the hemlocks and associated fungi are killed or reduced (Evans 2004). Finally, global warming could shift suitable habitat farther north and into higher elevations not found in South Carolina (W. Mark Ford, pers. comm.).

## CONSERVATION ACCOMPLISHMENTS

Some woodland jumping mouse habitat is protected on public lands such as the Jocassee Gorges and Caesars Head State Park.

## CONSERVATION RECOMMENDATIONS

- Consider land acquisitions or conservation easements that provide linkage of appropriate habitat within the Southern Appalachian Ecoregion. Investigate the possibility of promoting or participating in regional efforts to establish such linkages.
- Encourage land managers to avoid canopy removal of mesic, high elevation sites and provide corridors linking appropriate habitat.
- Estimate woodland jumping mouse density for habitats in the southern part of the species' range.
- Conduct genetic research to determine if southern woodland jumping mice are distinct from northern animals.
- Designate permanent monitoring sites on public land including a high elevation hardwood cove and a hemlock site.
- Work with partners to make information about the woodland jumping mouse available to the general public.

## MEASURES OF SUCCESS

As research and management needs are identified, projects should be proposed and prioritized for the greatest conservation applicability. Surveys and density estimates in the southern region should provide some population estimations, which will be used to more accurately rank the species and prioritize future management needs. Analysis of DNA and mtDNA will reveal the relatedness and genetic diversity of the northern versus southern woodland jumping mice.

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