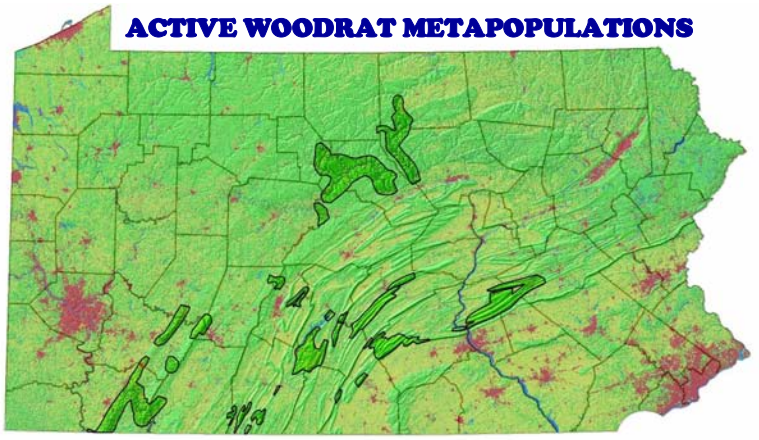
CURRENT STATUS: In Pennsylvania, the Allegheny woodrat is listed as threatened and protected under the Game and Wildlife Code. It is a Priority Species in the state Wildlife Action Plan. Considered vulnerable nationally, this species warrants federal prelisting consideration.

POPULATION STATUS: The Allegheny woodrat (*Neotoma magister*) was once considered a common resident of Pennsylvania's mountains. The species, first described from a specimen taken in a cave near Carlisle in 1858, has disappeared from the southeastern portion of the state and has declined in much of the rest of the state. The reason for the decline is not well-understood and likely results of a combination of factors. At present, sustainable populations remain in Pennsylvania's southwestern, south-central and north-central counties, with a few remnant populations in eastern counties. Our state has an important position in the biology of this species, holding both the diminishing northeastern range margin and a core of still-healthy populations. At one time, its range extended from southwestern Connecticut west to Indiana and south to northern Alabama. The Allegheny woodrat is now extirpated from Connecticut and New York, studies in remaining northern states document decline, and its status in southern states is unknown because of a shortage of recent surveys.

IDENTIFYING CHARACTERISTICS: The Allegheny woodrat is a relative of the better-known packrats of the West. Although this animal is referred to as a "rat" it is more mouse-like in appearance and has a bicolor, furred tail – unlike the naked tail of the Norway rat. It also is distinguished by noticeably larger ears and eyes, a larger, heavier head, and much longer whiskers. It is gray above with white underparts and paws. The average adult weighs less than a pound and is about 17 inches in total length, including an eight-inch tail.

BIOLOGY-NATURAL HISTORY: Allegheny woodrats are largely solitary, tolerating each other's presence briefly during the breeding season. Individual woodrats build a nest of plant material within a rock outcrop and may surround the nest with dry leaves and twigs, possibly as an alarm system. They emerge at dusk to forage for food, which includes a variety of leaves, fruit, nuts, seeds, fungi and twigs. Radio-telemetry studies indicate that woodrats may change den locations during summer, but after mid-autumn they retain one den for winter. Woodrats do not hibernate. Beginning in mid-summer, they store food for winter by stuffing leaves and other materials into rock crevices and protected ledges. They also collect non-food items such as wasp nests, bones, molted snakeskins, candy wrappers, and shotgun shells. Another distinctive behavior is their tendency to establish latrines for defecation, usually a flat rock surface protected by an overhang, separate from their living quarters. Reproductive success is difficult to measure because the Allegheny woodrat places its nests deep within rock outcrops. The most common litter size is probably two or three young. Some females may have two litters per year. This supposition is supported by captures of juvenile woodrats during each month from May to October in West Virginia. Variability in the length of the reproductive season may be influenced by variability in mast crops, severity of winter, and availability of secure cover. Predators of the Allegheny woodrat include the great horned owl, raccoon, coyote, weasel, fisher and black rat snake.



Cal Butchkoski/PGC Map

PREFERRED HABITAT: Ideal habitat for woodrats appears to be extensive expanses of abundant, closely-spaced surface rock surrounded by un-fragmented forest. Outcrops, cliffs, ledges, boulder fields, and caves are essential, providing protection and locations for nests and food caches. Vegetation may be deciduous, coniferous or mixed forest. Mast-producing trees are important; in some areas woodrats accumulate large nut caches. One study found that woodrats increased the size of their home range in years of poor mast production, which may increase their vulnerability to predators. In Pennsylvania, appropriate sandstone and limestone are typically distributed in patches interspersed with forest, where woodrats are usually found in population groups of fewer than 20 individuals, each centered on one rock patch.

REASONS FOR BEING THREATENED: No single factor has been identified to explain the decline of Allegheny woodrat populations. Instead, it's likely a wide variety of factors interact. While woodrats are general herbivores, they are not indiscriminate consumers. Reports from the early 1900s indicate that the American chestnut may have been an important food source - until chestnut blight removed all the mature trees of that species. Later, gypsy moth infestations that damaged oaks affected acorn production. The raccoon roundworm parasite affects a wide range of wildlife species; infected woodrats may die in a matter of weeks or succumb to predators as they become disabled. A study during the mid-1990s proposed that as the interface between forest and agricultural fields spread in Pennsylvania, the number of great horned owls increased, and this may have put woodrat populations under greater pressure. Porcupines, which also den in rock crevices and caves, are becoming more abundant and may preempt favorable den sites. Timbering, road building, utility lines, ridge-top telecommunications towers and wind farms, and conversion of land to agricultural or residential use have all affected forests surrounding rock habitat and created barriers that reduce the woodrat's ability to travel between rock patches, increasing isolation and reducing recolonization. Another mid-1990s study found that woodrat populations within one kilometer (0.62 mile) of forest edge were 15 times as likely to disappear as those more than two kilometers (1.24 miles) from forest edge.

MANAGEMENT PRACTICES: The conservation objective for Allegheny woodrats is to maintain viable breeding populations in three Pennsylvania regions: Appalachian Plateau, Ridge and Valley Province, and upper Susquehanna River drainage. To help achieve that goal, a series of three federal State Wildlife Grants Program projects produced an adaptive conservation-management plan; developed a model for predicting population viability, determined age-specific demographics, characterized habitat, and tested supplemental feeding; and funded training workshops for 92 biologists, foresters and land managers statewide. Implementation of management practices for the Allegheny woodrat will be tracked and evaluated. The Pennsylvania Game Commission's Wildlife Diversity Section is assisting a Purdue University

Joe Kosack/PGC Photo

study of genetic diversity of woodrat populations and captive breeding program. Research and survey priorities include continuing surveys for the presence of woodrats, assessment of the level of raccoon roundworm infestation, radio telemetry to gather additional data on population dynamics and specific habitat requirements, and studies to determine impacts of human encroachment and forest fragmentation.

Cal Butchkoski/PGC Photo

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