

Bats inventoried across the

Northeast Region

Bats circling in the sky and swooping low over water are a familiar sight at many national parks in the Northeast. Until recently, however, natural resource managers did not always know what species were present at their parks or the habitat needs of these flying mammals. With the inception of the Inventory and Monitoring (I&M) Program and funding provided through the Natural Resource Challenge, bats have now been surveyed at 14 national parks, including a section of the Appalachian National Scenic Trail in Maine, in the four I&M networks of the Northeast Region (see table 1). Many dedicated individuals, universities, and agencies have been involved with the cooperative projects, some of which remain ongoing.

Among the species of special concern recorded in these surveys were the federally endangered Indiana myotis (*Myotis sodalis*) and the Virginia big-eared bat (*Corynorhinus townsendii virginianus*) (fig. 1, page 12), and other species considered rare, such as the eastern small-footed myotis (*Myotis leibii*) and Rafinesque's big-eared bat (*Corynorhinus rafinesquii*). Each of these species was confirmed at New River Gorge National River (table 1).

Investigators have developed special netting and sonar devices to detect bats, which “hang out” in places that are hard for humans to see, and are typically active at night. Mist nets, also used in bird studies, are fine nylon nets placed in front of an opening to a cave, over water, or other areas frequented by bats. As the bats fly through the area or return to their roosts at night, for example, they

Table 1. Bat species documented at northeastern national park units in 2006 surveys

Species	National Park System Unit*													
	BLUE	GARI	NERI	ALPO	FONE	FRHI	JOFL	DEWA	VAFO	HOFU	GETT	EISE	ASIS	APPA
Little brown myotis (<i>Myotis lucifugus</i>)	A, N	A, N	A, N	A, N	A, N	A, N	A, N	A, N	N	N	N	N		A, N
Eastern pipistrelle (<i>Pipistrellus subflavus</i>)	A, N	A, N	A, N	A, N	A, N	A, N	A		A, N		N	N		A
Big brown bat (<i>Eptesicus fuscus</i>)	A, N	A, N	A, N	A, N	A, N	A, N	A, N	A	N	N	N	N	A, N	A, N
Eastern red bat (<i>Lasiurus borealis</i>)	A	A, N	A	A	N	N	N	N	A, N	A, N				
Northern myotis (<i>Myotis septentrionalis</i>)	A	A, N	N	N	N			A, N						
Eastern small-footed myotis (<i>Myotis leibii</i>)	A	A, N		A, N										N
Silver-haired bat (<i>Lasionycteris noctivagans</i>)	A		A		A, N						A, N		A, N	
Hoary bat (<i>Lasiurus cinereus</i>)	A	A	A, N	A	A	A	A	A			N		A	A, N
Rafinesque's big-eared bat (<i>Corynorhinus rafinesquii</i>)		N												
Virginia big-eared bat (<i>Corynorhinus townsendii virginianus</i>)				N										
Indiana myotis (<i>Myotis sodalis</i>)	A		A		A, N									

Note: A = acoustically detected; N = Net capture.

*BLUE = Bluestone National Scenic River (W.Va.); GARI = Gauley River National Recreation Area (W.Va.); NERI = New River Gorge National River (W.Va.); ALPO = Allegheny Portage Railroad National Historic Site (Pa.); FONE = Fort Necessity National Battlefield (Pa.); FRHI = Friendship Hill National Historic Site (Pa.); JOFL = Johnstown Flood National Memorial (Pa.); DEWA = Delaware Water Gap National Recreation Area (Pa. & N.J.); VAFO = Valley Forge National Historical Park (Pa.); HOFU = Hopewell Furnace National Historic Site (Pa.); GETT = Gettysburg National Military Park (Pa.); EISE = Eisenhower National Historic Site (Pa.); ASIS = Assateague Island National Seashore (Md.); APPA = Appalachian National Scenic Trail (Me.).



Figure 1. Virginia big-eared bat, New River Gorge National River, West Virginia.
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become entangled in the almost invisible nets, where researchers disentangle them to identify species, and in some surveys record age, sex, body condition; take blood samples; and tag them before releasing them unharmed. Harp nets consist of two frames, each threaded vertically with an array of monofilament lines, and are typically placed over the opening to a cave, mine, or building containing bats. The bats become trapped between the two frames when exiting or entering the structure, where they flutter until they are removed by the researchers.

More interesting is the sonar equipment used to record the echolocation calls of the bats as they forage or swarm near the entrance to their roosts. A bat-detector microphone permits the recording of sounds beyond the reach of the human ear. It captures the sound of the bat activity, which can then be analyzed using computer software. The sonar data are matched with samples in a library of bats calls, and the recorded bat species can be identified. In this way, the presence of species that were not physically captured, but were present, can be ascertained by unique aspects of each species' call.

Several of the parks surveyed provide especially desirable sites for bat colonies. For example, New River Gorge National River has extensive cliff lines, abandoned mines, river and stream corridors, and mature forest, all important for a variety of bats. Allegheny Portage Railroad National Historic Site also has a variety of bat-friendly habitats and structures, and at Delaware Water Gap National Recreation Area, Cold Air Cave remains cold, but not freezing in the winter, providing good hibernation habitat. To protect the bats, researchers recommend placing gates across the portals of such sites to exclude people while allowing the bats to fly in and out unhindered. Knowing which species are resident at, or migrating through, their parks, the natural resource staffs are better able to manage habitat and provide protection appropriate to those bat species.

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