

SHOWCASE SPECIES: NORTHEAST

KARNER BLUE BUTTERFLY IN NEW YORK AND NEW HAMPSHIRE

The Issue

The Karner blue butterfly depends for survival on wild lupine plants, which once thrived in pine barrens and oak savannahs in 12 northern states from New England to Minnesota and in Ontario, Canada. Loss of this habitat to development and fire suppression has driven the butterfly almost to extinction.

Natural History

Today the Karner blue is found only in New York, New Hampshire, Indiana, Michigan, Wisconsin and Minnesota. In the Northeast the main population survives in the sand belt between the Albany pine bush and the foothills of the Adirondack Mountains in New York State, with a population undergoing restoration in the Concord pine barrens of southeastern New Hampshire.

Both male and female have a wingspan of about an inch. The upper side of the female's wings are bluish brown to blue with orange crescents along the lower part of the hind wing, while the male's are violet blue with unmarked narrow black borders.

In April, caterpillars hatch from eggs laid on wild lupine plants the previous year. The caterpillars feed only on wild lupine leaves. In mid May they form a cocoon-like chrysalis from which they emerge as butterflies by the end of May or early June. The adults mate and in June lay eggs on or near wild lupine. The eggs hatch in about a week, and the caterpillars enter the chrysalis stage about three weeks later, appearing as a second generation of butterflies in July. These adults mate and lay a second brood of eggs that does not hatch until the following April. Adults feed on the nectar of a variety of plant species.

Wild lupine grows in open pine barrens and oak savannahs, where sunlight reaches the ground. These habitats often depend on fire to keep them open. When fire is suppressed, as is often the case in areas managed under traditional forestry techniques, the canopies can close, and the lupine dies off. Clearing for agriculture also has destroyed these habitats. For



USFWS

example, development has reduced the Albany pine barrens from a minimum of 25,000 acres to less than 6,000—most of which is seriously degraded.

Listing

The Karner blue butterfly was federally listed in 1992 as endangered throughout its entire range.

Management

In 2000, the New Hampshire population—which 20 years ago numbered an estimated 2,000 to 3,000 butterflies—vanished for reasons biologists do not fully understand. Lack of sufficient wild lupine to get the adults through the spring breeding season was likely a factor. Efforts are under way in New Hampshire to restore 300 acres of habitat near the Concord Municipal Airport. Existing habitat has been repopulated with butterflies from New York State. New Hampshire now has 500 to 2,000 Karner blue butterflies, mostly around the airport but also in two other areas to which the butterflies have dispersed.

The healthiest of the New York butterfly habitats is around the Saratoga Airport. Airports and power-line rights of way often provide habitat for this species by keeping wooded areas open and suitable for wild lupine.

The Karner blues in both states suffered in 2005 and 2006 from heavy spring rainfall that reduced breeding activity. However, habitat restoration—including prescribed burns to keep land clear and

KARNER BLUE BUTTERFLY

planting wild lupine—has proceeded vigorously, offering promise for the butterflies in the future. Some indications suggest that the butterfly will soon survive there in good numbers.

The Roger Williams Park Zoo in Providence, Rhode Island, as a participant in the American Zoo and Aquarium Association's Butterfly Conservation Initiative, has helped the project by breeding both butterflies and wild lupine in captivity for reintroduction in the Concord, New Hampshire, area. A school program sponsored by the National Wildlife Federation teaches children about wild lupine and provides them with seeds to plant in appropriate habitat. Other key players in Karner blue recovery are the New York State Department of Environmental Conservation and the Albany Pine Bush Preserve Commission, a legislatively created organization that focuses on recovery and protection of the species and its habitat. More than 20 other species benefit from this work, including the frosted elfin butterfly, spade-foot toad, woodcock, prairie warbler and rufous-sided towhee.

Funding

Funding from all government sources for Karner blue butterfly recovery nationwide ranks the insect at 97 out of 1,311 species, according to the U.S. Fish and Wildlife Service fiscal year 2004 report (the most recent available) to Congress, *Federal and State Endangered and Threatened Species Expenditures*.^{*} Total recovery funding for the butterfly from all government sources that year was about \$1 million, with \$365,000 coming from the Service. "Cooperation, innovation and a stream of dedicated resources have put the Karner blue butterfly on the road to recovery," says John Kostyack, director of Wildlife Conservation Campaigns at the National Wildlife Federation. "Congress should provide Fish and Wildlife with sufficient resources so they can apply this formula for success to other imperiled species."

Funding for Karner blue recovery in the Northeast has come recently from the U.S. Fish and Wildlife Service Private Stewardship program, from U.S. Forest Service fire-management funds, from U.S. Fish and Wildlife Service state grants to the New York State Department of Environmental Conservation and from

The Nature Conservancy, which has purchased habitat for protection.

One critical source of funds is the New Hampshire Army National Guard, which is providing about \$1 million for butterfly recovery over the course of a decade. These funds are provided in mitigation for a Blackhawk helicopter hanger that the guard built on 27 acres at the Concord Municipal Airport. This land, too damaged for use by the butterflies, will be replaced with 300 acres of restored land. The funds will also allow the New Hampshire Department of Fish and Game to hire two full-time Karner blue butterfly staff biologists.

Local Contacts

Monty Fischer, National Wildlife Federation Northeastern Natural Resource Center, 802-229-0650; Fish and Wildlife Region Five Office, Endangered Species Division, 413-253-8615; Roger Williams Park Zoo, 401-785-3510; Neil Gifford, Albany Pine Bush Preserve Commission, 518-456-0655.

Other Threats

Habitat continues to be lost to industrial, residential and commercial development, to encroachment of forest on pine barrens and oak savannahs, and to agricultural development.

* The U.S. Fish and Wildlife *Federal and State Endangered and Threatened Species Expenditures* report incorporates subjective estimates provided by regulated entities without any independent verification and without effort to segregate Endangered Species Act expenditures from other related expenditures. However, for most listed species, no other funding data is available.

THREATS FROM GLOBAL WARMING

Global warming poses a threat across the species' range. Unusually mild or virtually snowless winters lower the survival rate of the second brood of eggs, which need a protective layer of snow to mature. Global warming also will bring changes to local weather that could affect the fire regimen indispensable to maintaining this species' habitat and could cause a decline in the lupine plant species essential to Karner blue survival.

