

# WILD TIMES

FOR  
KIDS



## HERE TODAY - GONE TOMORROW

### Why Species Become Endangered

Extinction is not something new. Fossil records show that many plants and animals have become extinct since life first appeared on earth. Over the past three hundred years the passenger pigeon and heath hen, both once found in New Hampshire, became extinct. Some scientists estimate that the current extinction rate is more than 1,000 times the natural rate of extinction.

The primary reasons species become endangered are:

- *Habitat loss.* All animals and plants depend on the place they live (habitat) for food, water, shelter and living space. The plants and animals within a habitat also depend on each other. They interact in many ways.
- *Environmental contamination.* The use of some pesticides, fertilizers and chemicals led to a decline of certain species, such as bald eagles and peregrine falcons.
- *Competition* from introduced or non-native species.



© USFWS PHOTO

- *Overspecialization.* An example is the Karner blue butterfly, which feeds only on one kind of plant when it is in its caterpillar stage.
- *Commercial use and abuse* (exploitation). Animals are collected and sold for hides, food, feathers and shells.



# The Not-so-Barren Pine Barrens

## Pine Barrens- A Disappearing Natural Community

Pitch pine and scrub oak are two tree species that define pine barrens. In New Hampshire these species occur on sandy soils along the lower Merrimack River and in the Ossipee area. Certain kinds of butterflies and moths and other insects

have close ties to this plant community. These include the endangered Karner blue, Perisus dusky-wing and frosted elfin butterflies. Fire has been an important part of the life history of these communities; it prevents woody plants and leaves and fallen branches from building up so sun-loving plants can grow amongst the pines. Because fire and other disturbances no longer occur in these areas, the plant community has begun to change.

Very little of the Merrimack River pine barrens habitat remains from Concord to Nashua; it has been developed and fragmented for housing, industry and shopping malls. The Ossipee pine barrens still retain much of their original character, although the lack of occasional fire has caused the forest to mature.



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## Pine Barrens

Pitch pines are the most common trees that grow in pine barrens.

## Frosted Elfin Butterfly

This small butterfly is one of several life forms found only in New Hampshire's pine barrens.



© GEOFFREY NISWANDER PHOTO



## Karner Blue Butterfly

The pine barrens of Concord provide the only remaining home in New England for this tiny federally endangered butterfly. The Karner blue gets its name from the deep, purplish blue on the upper surface of its wings.

Wild blue lupine is found on dry, sandy soils in open to partially shaded habitat in pine barrens. (Lupine does not grow on the Ossipee pine barrens.) Lupine leaves are like tiny green umbrellas and lupine flowers are purplish blue, with touches of white. This plant is extremely important to the Karner blue, which eats only lupine leaves when it is a caterpillar.

The butterflies first appear in late May or early June. The females lay tiny greenish-white eggs, and one week later small caterpillars hatch from the eggs. Almost immediately the young Karners begin feasting on the lupine leaves. Each caterpillar has a tiny nectar-producing gland on its body. Ants attend the caterpillars, apparently protecting them from parasites. In return, the ants get sweet sips of the nectar.

About a month later the caterpillars are plump and spin a pad of silk in a sheltered place. As the butterfly develops in the chrysalis, it changes from green to salmon to deep blue-black. After



© THE NATURE CONSERVANCY PHOTO

## Karner Blue Butterfly

Only slightly larger than a dime, this tiny butterfly is the most endangered animal in New Hampshire

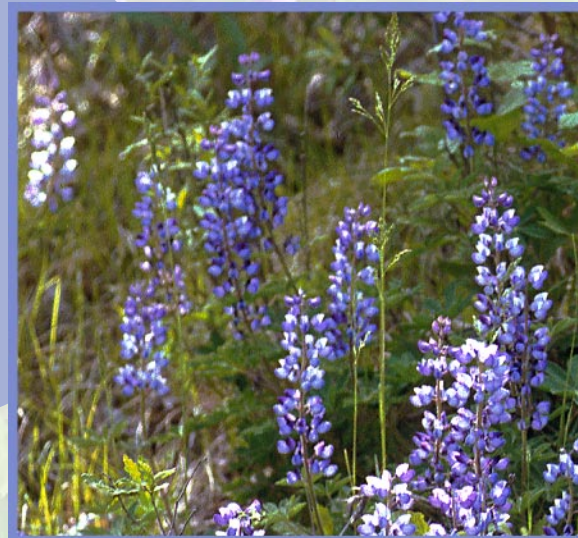
10 days, usually in late July and August, the adult emerges. The Karner blue butterfly must have a variety of flowering plants to serve as nectar sources. These adults also lay eggs, but they do not hatch. Instead, the eggs remain dormant through the winter, producing caterpillars the following spring.

The population of Karner blue butterflies in New Hampshire has declined from several thousand to 24. The U.S. Fish and Wildlife Service and the NH Nongame and Endangered Wildlife program are working to maintain Karner blue butterflies in New Hampshire by clearing away shade-producing trees and planting lupine. In addition,

biologists gather eggs and rear young Karners in captivity, for later release in the pine barrens.

## Wild Blue Lupine

The leaves of the wild blue lupine are the only food Karner blue caterpillars will eat.





## Biodiversity is Important

No one can say for certain what effect the loss of a plant or animal species might have on a whole ecosystem. But changes in the population level of one species can have far-reaching, and often unexpected, effects. It is also important to conserve the diversity of life for medical and economic reasons. Plants and animals might provide us with additional foods, medicines and other products that someday could save human lives and benefit society.

## Management Techniques

Biologists and other experts help maintain animal and plant populations in many ways. One of their biggest goals is to prevent animals and plants from becoming endangered in the first place. Improving and protecting habitat is a large part of their job, as is promoting passage of wildlife laws. If a population does become threatened or endangered, a variety of techniques including habitat protection, reintroduction, captive breeding and cross-fostering (using healthy adults of a similar kind to raise young) may be used to encourage population growth.



© DAVID VAN LUVEN PHOTO

## Endangered and Threatened Wildlife of New Hampshire

### ENDANGERED

#### Mammals

- \*Canada lynx, *Lynx canadensis*
- small-footed bat, *Myotis leibii*

#### Birds

- pied-billed grebe, *Podilymbus podiceps*
- \*bald eagle, *Haliaeetus leucocephalus*
- northern harrier, *Circus cyaneus*
- golden eagle, *Aquila chrysaetos*
- peregrine falcon, *Falco peregrinus*
- \*piping plover, *Charadrius melodus*
- upland sandpiper, *Bartramia longicauda*
- \*roseate tern, *Sterna dougallii*
- common tern, *Sterna hirundo*
- least tern, *Sterna antillarum*
- purple martin, *Progne subis*
- sedge wren, *Cistothorus platensis*

#### Fish

- Sunapee trout, *Salvelinus aureolus*
- \*shortnose sturgeon, *Acipenser brevirostrum*

#### Reptiles

- timber rattlesnake, *Crotalus horridus*

#### Amphibians

- marbled salamander, *Ambystoma opacum*

#### Invertebrates

- \*dwarf wedge mussel, *Alasmidonta heterodon*
- brook floater, *Alasmidonta varicosa*
- frosted elfin butterfly, *Incisalia irus*
- \*Karner blue butterfly, *Lycaeides melissa samuelis*
- Persius duskywing skipper, *Erynnis persius*
- banded bog skimmer, *Williamsonia lintneri*

\* These species are also on the federal endangered species list.



# Endangered and Threatened Wildlife of New Hampshire

## THREATENED

### Mammals

pine marten, *Martes americana*

### Birds

common loon, *Gavia immer*

osprey, *Pandion haliaetus*

Cooper's hawk, *Accipiter cooperii*

Arctic tern, *Sterna paradisaea*

common nighthawk, *Chordeiles minor*

three-toed woodpecker, *Picoides tridactylus*

grasshopper sparrow, *Ammodramus  
savannarum*

### Fish

(none currently listed)

### Reptiles

eastern hognose snake, *Heterodon platyrhinos*

### Amphibians

(none currently listed)

### Invertebrates

pine pinion moth, *Lithophane lepida lepida*

pine barrens zanclognatha moth,  
*Zanclognatha martha*

cobblestone tiger beetle, *Cicindela  
marginipennis*

## What Does That Word Mean?

**Extinct:** animals that no longer can be found anywhere on earth.

**Endangered:** animals that are in immediate danger of becoming extinct.

**Threatened:** animals that face serious problems and are likely to become endangered.

# eastern hognose snake



© JEFF LeCLERE PHOTO\*

The *hognose snake* is another animal of the Merrimack River pine barrens community that is in trouble. The reptiles are listed as threatened by New Hampshire law due to habitat loss. Found on sandy soils, this completely harmless snake often shows behavior that frightens people. When first disturbed, it will spread its head into a hood, hissing loudly and striking with its mouth closed. If the "attacker" doesn't back off, the hognose snake will roll over on its back and let its tongue hang out, appearing to be dead.

Hognose snakes are quite thick-bodied with a turned up nose. They rarely are longer than three feet. They range in color from all black to a pale beige and have dark blotches on their backs.

Although their primary food is toads, they occasionally will eat frogs and other small animals. They have enlarged teeth in the rear of their mouths that may aid in killing toads. They also have glands that secrete a mild, toxic substance that helps to kill their prey and aids in digestion. This substance is not harmful to humans.

The snakes lay eggs in the soil in June and July. The eggs hatch from late July through early September. Females lay as many as 60 eggs, but just over 20 is most common. Hognose snakes hibernate under debris on the forest floor, stumps or brush piles beginning in late September. They emerge from their winter slumber in April or May.

\*Visit [www.herpnet.net](http://www.herpnet.net) for more great information about reptiles and amphibians by Jeff LeClerc

# Math Teasers

## There's Strength In Numbers

Animals that require more time to become sexually mature and produce fewer offspring than other animals in the same family have an increased chance of becoming endangered when their habitat is altered.

### Activity:

Review the chart below and answer the questions that follow.

SPECIES	SEXUAL MATURITY (years)	NUMBER OF OFFSPRING	BREEDING INTERVALS (years)
Bald eagle	4	1-3	Annually
Timber rattlesnake	4	8	Biennially
Spotted turtle	8	3-4	Annually
Northern spring peeper	2	800-1,800 (10% survive)	Annually
Black-capped chickadee	1	6-8	Annually (1-2 broods)
Garter snake	4	12-18	Annually
Snapping turtle	8	40	Annually
Northern leopard frog	2	5,000-6,000 (10% survive)	Annually

1. How many spring peepers could survive to adulthood in one year?
2. How many leopard frogs could survive to adulthood in one year?
3. In a year, what is the maximum number of offspring a female chickadee can produce?
4. In a four-year time period, how many offspring can a female rattlesnake possibly bear?
5. What is the possible maximum number of offspring that a twelve year old female bald eagle could have produced since adulthood?
6. True or False: A six year old spotted turtle can produce four offspring?
7. How many offspring can four adult garter snakes produce in two years?
8. There are four snapping turtles and their ages are: 40, 24, 16 and 6 years old. How many total offspring could they have produced since adulthood?

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**New Hampshire Fish and Game Department**  
Conserving New Hampshire's wildlife  
and their habitats

Answers to Math Teasers (pg. 6):  
1: 80 to 180; 2: 500 to 600; 3: 16; 4: 16; 5: 27; 6: false; 7: 144; 8: 2,240

**ANSWERS**