Driftless Area National
Wildlife Refuge
P.O. Box 460
McGregor, Iowa 52157
563/873 3423

Federal Relay Service
1 800/877 8339

U.S. Fish & Wildlife Service
1 800/344 WILD
www.fws.gov

Celebrating a Century of Conservation!

Northern monkshood,
Bill Fitzgerald
2003

U.S. Fish & Wildlife Service

Driftless Area
National Wildlife Refuge

A tiny snail, a relict from the ice age, finds home on a cool rocky slope, near the cold-water streams, cliffs, valleys, and sinkholes that make up the Driftless Area National Wildlife Refuge.

Iowa Pleistocene snail,
Bob Clearwater

Driftless Area (dark highlight)

Take a Trip to an Ice Age Refuge

Portions of Iowa, Wisconsin, Minnesota and Illinois contain unusual geology. The karst region, referred to as the "Driftless Area," escaped the last glaciers leaving the Paleozoic-age bedrock subject to erosion. In addition to the curious topography of steep slopes and cliffs, there are unique habitats called algific (al-ji-fic) talus slopes. These slopes remain cool throughout the year and are home to rare species of plants and animals.

Established in 1989, Driftless Area National Wildlife Refuge is helping to recover two federally listed species: the endangered Iowa Pleistocene snail and threatened Northern monkshood. Although the refuge was established to protect the snail and flower, an entire rare community of plants and animals is preserved on these sites. The U.S. Fish and Wildlife Service manages the refuge as part of the National Wildlife Refuge System.

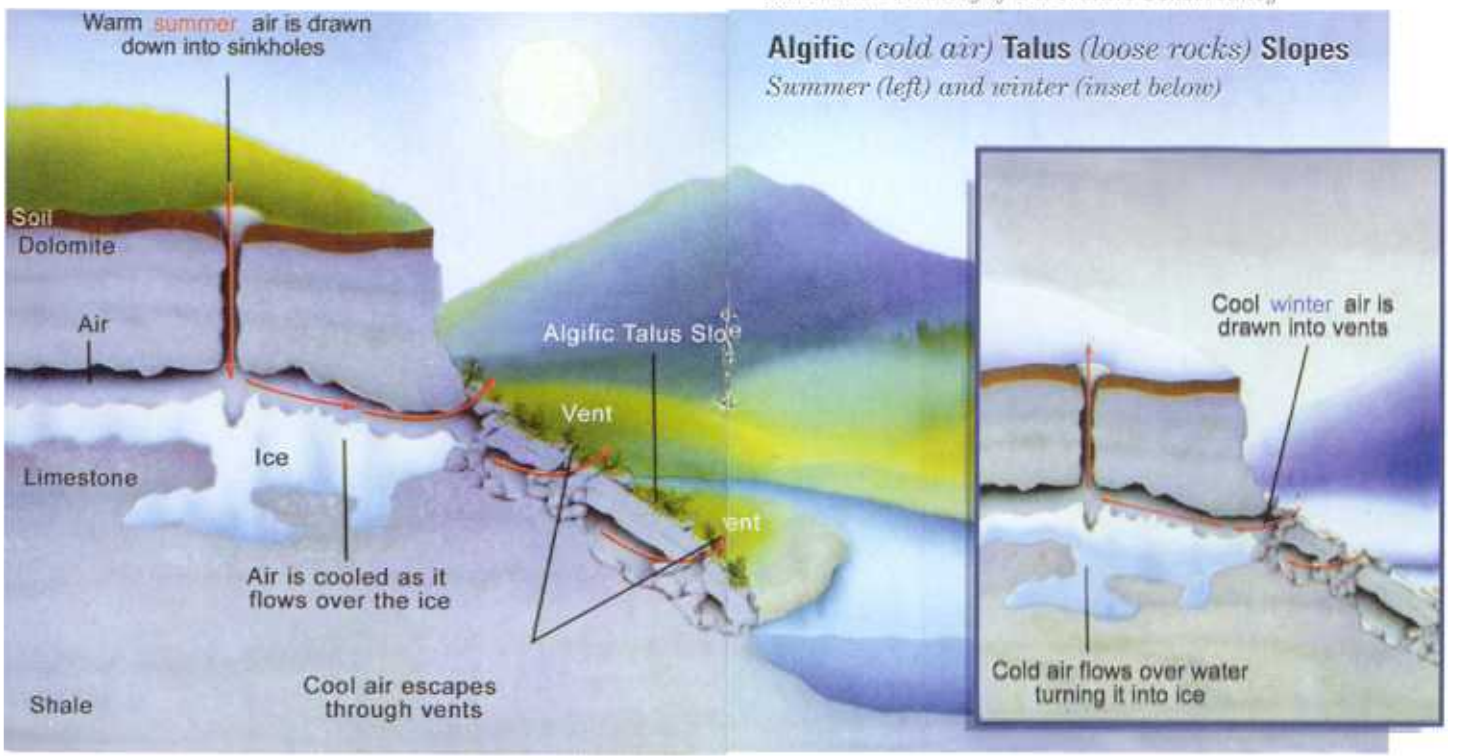
Nature's Air Conditioning

In the summer, air is drawn down through sinkholes, flows over frozen groundwater and is released out vents on the slopes. Summer temperatures on the slopes range from just above freezing to 55°F. In winter, the air is drawn into the vents, and the groundwater again freezes.


Cold air vent on algific slope, with golden saxifrage, *USFWS*

Because of the cool temperatures and moist conditions, unusual plants for this part of the country grow on the slopes. Typically growing in a colder more northern climate, yews, balsam fir, showy lady's slipper and golden saxifrage can be found on the cool slopes. These cold microclimates of the slopes allow the rare plants and animals to survive.

Illustration courtesy of The Nature Conservancy



Northern monkshood, *Bob Haehnlein*

Surviving on the Slopes

A tiny land snail, the Iowa Pleistocene snail, is smaller than a shirt button, at about 5 millimeters (1/4 inch) in diameter. Considered a glacial relict species, it has survived only on these small areas where temperature, moisture and food are suitable. In fact, the snail was known only from fossil records and thought to be extinct until 1955, when a scientist discovered it alive in leaf litter in northeast Iowa, eating birch and maple leaves.

Because of the fragile nature of the habitat and the small size of the total population, this snail was placed on the federal endangered species list. The primary recovery option for the tiny snail is permanent protection of remaining colonies. Thirty-six known colonies are currently in northeast Iowa with one population occurring in northwest Illinois.

The threatened Northern monkshood, belonging to the buttercup family, grows on 114 algific talus slopes and similar cool moist habitats in Iowa, Wisconsin, Ohio and New York. The majority of the sites are in Iowa. The purple hood-shaped flower, an adaptation for bumble bee pollination, was listed as threatened in 1978. Its options for recovery are similar to the snail.

And the Count Goes On

Both species are monitored to ensure that populations are healthy and viable. While the monkshood plants can be carefully counted, tiny snails are much more of a chore. Only estimates and trends can be determined for snail populations. Snails are sampled with the aid of boards placed on the algific talus slopes to act as "traps." They are attracted to the cool, moist undersides of the boards and can then be measured, marked and counted.

Algific slope on Nature Conservancy preserve, *USFWS*

Algific slope on the refuge, *USFWS*

Threats to the Slopes

There are over 300 algific talus slopes but some are in poor condition. Anything disrupting the air flow through sinkholes and out the vents can affect the habitat. In the past, the impacts of logging, grazing, road building, quarries, agricultural runoff, and sinkhole filling reduced the number of algific talus slopes. Today, these habitats are still threatened by logging, grazing, agricultural runoff, and sinkhole filling activities and invasive species like garlic mustard.

Protecting Habitats

The nearly 800-acre refuge currently consists of scattered tracts in northeast Iowa ranging from a few acres to a few hundred acres. Land acquisition from willing sellers is ongoing. Restoration of forest or prairie habitat is conducted on the land surrounding algific talus slopes and provides habitat for a variety of wildlife including white-tailed deer, wild turkeys, bald eagles, American woodcock, woodpeckers and a variety of songbirds. States, counties, and private organizations like The Nature Conservancy also help protect algific talus slopes. Private landowners are perhaps the most significant stewards of remaining algific talus slopes. The Fish and Wildlife Service contacts landowners whose properties have these habitats and offers assistance in managing them.

Conservation Partners

The Fish and Wildlife Service and The Nature Conservancy have programs to assist with protection of these habitats and endangered species. Funding is available for excluding cattle, cleaning out sinkholes, creating conservation easements and planting buffer strips near algific talus slopes.