Alpine Forest

Vermont Fish and Wildlife Habitat Fact Sheet

True alpine areas, where the conditions and vegetation are Arctic-like, are few and small in Vermont. They include two different kinds of places: small tundra areas on the summits of only two high peaks, and a few cliffs where the ecosystems differ from tundra. Both kinds of alpine areas in Vermont are clinging to a precarious existence.

The largest expanse of tundra in the state-close to 250 acres-occurs on the long ridge of Mount Mansfield. The summit of Camel's Hump, 15 miles south of Mount Mansfield along the main ridge of the Green Mountains, supports the only other tundra, of but 10 acres. Although true Arctic tundra is one of the largest vegetation zones on the North American continent, the Arctic-like areas of Vermont should be considered endangered communities, since they are so uncommon here and almost all the plants are either threatened with extinction or else extremely rare. Ironically, these regions are probably among the most appreciated place in the state, visited by thousands upon thousands of people, who come to look at the views or else hike across the areas. This very appreciation threatens the tundra plants.

Where the arctic plants live in these mountainous regions the climate is much like that of the true Arctic, far to the north. The frost-free growing season is only 90 days or shorter. The sun beats down directly, the winds whip across steadily. The year-round temperatures are colder than at lower elevations (the highest recorded temperature to date on Mount Mansfield is 85 degrees Fahrenheit). The soils are sparse, acidic, sterile, and prone to erosion on the steep slopes. Though water is plentiful from frequent rain, snow, and clouds, most of it the plants cannot make use of, since quick runoff and high soil acidity render it unavailable to them. Thus, these 4,000-foot peaks are in many ways near-deserts. Nevertheless, the plants that do exist above the tree line are well prepared to survive these arctic conditions.

Plants

The alpine plants are low-lying and creeping, taking advantage of the more protected recesses where the winds cannot tear at them. Most are evergreen, perennial, and early bloomers, all adaptations that permit them to "get under way" as early in the spring as possible and not waste precious time or energy in such a short season. Most are able to retain water or restrict its loss much in the way desert plants do; in fact, many superficially resemble desert succulents. Mountain cranberry, for example, has thick, fleshy leaves coated with wax, which effectively store water and reduce evaporation. Alpine bilberry, a close relative of blueberries, has hard, leathery leaves that in another way resist water loss. Many of the plants-such as mountain sandwort, Bigelow's sedge, and black crowberry-grow in dense mats and have tiny, narrow leaves: these colonies soak up water like a sponge, at the same time offering little total leaf surface exposed to the sun and wind.

Animals

A few insects are true tundra inhabitants. One species of ground beete, Nebria suturalis, is found only above 4,000 feet in mountains, and in Vermont is restricted to a few yards on Mount Mansfield.

The occasional tundra mammal is small and secretive, inhabiting tunnels through the vegetation. In a study of small mammals on Camel's Hump a researcher found only three species above the tree line: the hardy boreal red-backed vole, the deer mouse, and the meadow vole. The red-backed vole is a mouselike rodent that one would expect in the tundra, since all across the continent it lives in wet, northern environments and high elevations-it is even known to breed under snow. The deer mouse is a widespread, adaptable seed eater, and so not a surprise in the mountains. The presence of the meadow vole is somewhat perplexing, however, because it is normally a field mammal of low elevations and not even found in the forests of Camel's Hump. It is likely that it reached the mountaintop following a fire that

cleared a path through the forest to the summit.

No mammal is exclusive to these tundra regions. All live at lower elevations and some, such as the meadow vole, are more accustomed to grasslands than the to tundra. An infrequent visitor such as the snowshoe hare wanders in to nibble on leaves and twigs, or to take the seeds and berries as they ripen. Even a moose has been seen, clomping across the ridge under the light of a full moon.

Birds

Even the more mobile birds are scarce in Vermont's alpine peaks.

Both Mount Mansfield and Camel's Hump have small flocks of nesting ravens, which remain through the winter. This large scavenging bird, native to the Arctic from Greenland to Alaska, is impressive in its size, shining coat of black, and graceful riding of the air above the mountains. It is heard often in flight around the mountain, with a sonorous, metallic "grawk-grawk." Most hikers to these regions have seen ravens, but few people have managed a glimpse of their nests, tucked in the ledges or in the crowns of the denser, trackless forest below.

The dark-eyed junco and white-throated sparrow are small seed eating finches that nest directly among the tundra plants but migrate south before winter sets in. Hikers often see their young hopping about the rocks or attempting to fly from some low perch nearby.

In addition, the peaks are good place to watch for hawks, especially during the fall migration period, from late August to early November. Though these mountaintops do not rival other more famous places in New England and the East as vantage points for the hawk spectacle, they do let one observe these fascinating and graceful bids as they glide and fly south, flashing parallel to the ranges or spiraling up the thermal currents.

Stretching across North America, Europe, and Russia is an immense forest of evergreens-coniferous trees, which are also called softwoods because their wood is generally not so hard as that of broad-leaved trees. It is a forest primarily as spruce and fir, and is quite similar the world over. In North America this circumboreal forest occurs between the tundra to the north and the prairies and broad-leaved (deciduous) forest to the south. It comes into Vermont, but its distribution here is controlled by two factors: latitude and altitude.

Excerpted from Charles Johnson’s book
Nature of Vermont