

What Makes High Knob Special – Part III

***Wayne Browning**

To celebrate the 12th Annual High Knob Naturalist Rally, and the 20th Anniversary of The Clinch Coalition, a series of articles throughout the month of September will describe and highlight the natural environment and biological diversity of the wondrous High Knob Massif.

Across the frozen wetland a huge mound seems strangely out of place as ice crystals swirl through the high country air on a bitter day, yet nary a cloud is in the sky! Mountain ridges and slopes are ablaze with reflected light from an unbroken forest whose blinding beauty can only be tempered by bone-chilling winds blowing in wake of engulfing nocturnal clouds.

High country lakes are frozen, streams ice-packed, and although no living creature is in immediate sight the landscape abounds with activity. Moles, voles, shrews, and various species of fuzzy little mice are busily at work beneath the snow, amid protective warmth of the subnivean zone, while tens of thousands of hexapods (called springtails) equipped with their own anti-freeze go about daily chores completely oblivious to the Ole Man of Winter.

And yes, beneath this strange mound, under layers of frozen water, a communal gathering inside a lodge welcomes the arrival of new life, complete with open eyes and little teeth to bear. This is the season for adaptation and survival.

Months later, rays being to glow as the sun slips low on the high country horizon, a chorus of sound is suddenly punctuated by the most heavenly sounds of all. Coming in segments of three, from deep recesses of the darkening forest, is a flute-like chorus so beautiful that the only obvious reason for separated pauses is that to hear it all at once would be more than the senses could bear! The mixed-forest canopy has now closed but the air remains relatively cool, the forest floor lush and wet. This is the season for propagation of life.

Ice crystals described above are from rime being blown off trees following a night of water capturing in Big Cherry Lake basin. The new life is baby Beavers, born in mid-winter inside lodges which often include other community members such as Muskrats, Minks, and Otters. The American Beaver is not only nature's master engineer, reshaping and creating habitats for new species, it is also a foundational cornerstone of diverse wetland settings throughout high valleys within the High Knob Massif.

Heavenly sounds, also described from my field journal notes, are those of Hermit Thrushes which too live in Big Cherry Lake basin; although, by all official authorities they should not be there since both the elevation and the habitat are "not suitable." They are high mountain, spruce-fir members.

What I describe above can not be obtained from books, it comes from being out in the field where the ultimate teacher is Mother Nature. If not nature, then I consider the ultimate teacher to be one whom has lived by nature, one like my friend Phil Shelton, professor emeritus of UVA-Wise, who wrote these prophetic words about the habitat requirements of Hermit Thrushes more than 38 years ago:

"In our area these birds have not been found except in association with spruce or spruce and fir, and densest populations are in the densest stands of spruce and fir on Mount Rogers. In the northern states and Canada they are not always so closely tied to conifers, and if the population continues to expand in southwest Virginia, they may be expected to invade mixed hardwood-conifer stands, and perhaps even hardwoods without conifers, if they can successfully compete with Veeries in such habitats."

(Status of birds and mammals at or near the extremes of their ranges in the high mountains of Southwestern Virginia National Forests, Philip C. Shelton, 9 February, 1980).

All species living within a place come to adapt to its environmental conditions, those which can not have limited choices. They can either migrate to a more suitable habitat, or they can die.

Regardless of the impacts of humans, the climate of planet Earth is changing and putting increasing pressure on species with northern affinities. Upper elevations in the High Knob Massif, and the cold air drainages they feed, have become critical locations for flora and fauna requiring northern habitats.

While latitude and associated sun angle is a basic controlling factor of mean annual temperature, a most interesting fact is that higher mountains within the southern Appalachians tend to be cooler amid the summer growing-breeding season than mountains farther north. This is due to increased moisture, with an abundance of clouds and precipitation over the southern Appalachians (less to the north).

The High Knob Massif is a special stand-out in this regard, as it tends to run anomalously cool for a mountain of its elevation, with exposure to prevailing winds, wetness, and a mountain top which is atypically wide and dissected all being important factors. Even before any man-made lakes were built, the low gradient of high valley floors would have supported extensive wetland habitats. Wetlands are important to biodiversity, and high elevation wetlands in frost pockets are of particular importance.

Data from the High Knob Project for Undergraduate Research at UVA-Wise shows that 2018 maximum temperatures reached between 76.8 and 81.6 degrees across five different sensor locations within the Big Cherry Lake, High Knob Lake, and upper Benges Branch basins. A total of just 150 minutes at or above 80 degrees at High Knob Lake this year, for example, was in contrast to 30 days which broke 90 degrees in the Tri-Cities (96 degree max temperature at TRI).

The coolness of high basins embedded within the top of the High Knob Massif has long been obvious to any astute observer, with early color changes in autumn, freeze up of lakes and wetlands during winter, slower green-up during spring and chilly water temperatures all indicating this fact.

Annual temperatures in both Big Cherry Lake and High Knob Lake basins are running cooler than Burkes Garden, long considered to be the coolest mountain valley in western Virginia. Nights in the Big Cherry Lake wetland valley have been consistently colder, on average, than Burkes Garden using the same recording format and calibrated thermometers. This has been observed despite the much drier climate of Burkes Garden which should, in theory, allow mean nocturnal temps to be colder there.

The coldness of upper elevation basins within the massif supplies hollows and gorges draining them with cool air, such that species with northern affinities finger downward with the drainage of cool air into elevations much lower than they typically occur. Yellow Birch, typically a high country tree, can be found in cold air drainages of the massif to elevations below 2000 feet.

Gary Fleming, vegetation ecologist for the Virginia Department of Conservation and Recreation's Natural Heritage Program, points out that a rather unique situation occurs in the High Knob area where Yellow Birch grows in close proximity to Sweetgum (a lowland species). This occurs as cold air drains down from upper elevations of the High Knob Massif through Little Stony Creek Gorge toward its confluence with the Clinch River, bringing the Yellow Birch along with it. Cool air creates conditions favorable for Yellow Birch growth at anomalously low elevations (as merely one example).

Cool air draining out of upper elevations in the High Knob Massif is also a primary reason for such consistent nocturnal fog formation along the Clinch River, with the fog adding moisture to calcareous based soils to create one of the richest floral corridors in all of Virginia. The productivity of Mann's Farm, in Fort Blackmore, is in large part driven by these factors. A similar setting occurs on the Wise County side, with drainage of cool air downward into the Powell River basin (reaching Lee County on nights favorable for cold air drainage, with the indicator being a shift to light northeast winds).

So why is biodiversity important? What is all this fuss about protecting High Knob? Why not just log it out like back during the timber boom of 1890-1930? Why not level the mountain summit and build a resort? These questions will be addressed in Part IV in this series.

Meanwhile, plan to attend the 12th Annual High Knob Naturalist Rally to be held September 29 within majestic High Knob Lake Recreation Area. A family friendly event that welcomes everyone with open hands and a warm heart to celebrate our magnificent natural heritage.

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