

communities. Kaylan Kemink, this year's Menke scholarship winner will receive an award of \$1500. Kristin Powell, this year's Mickey Scudder scholarship winner will receive an award of \$1000. The money is to be used toward completion of their respective research projects.

We would like to thank the members of the scholarship committee, John Christensen, Emily Christensen, Anne McCormack, Ted MacRae, Mark Paradise, and Richard Thoma for the time they took to read all the applications and to decide who would be this year's scholarship winners.



Clubmoss along the Ozark Trail¹

By *Ted C. MacRae*

It has been a long, hard winter – one of the toughest I can remember during my years here in Missouri in terms of amount and frequency of precipitation and persistent cold temperatures. Tough winters, however, are no deterrent to my favorite wintertime activity – hiking. I've mentioned several times the goal of my friend Rich and I to hike all 350 miles of the [Ozark Trail](#). We're at ~250 miles now (more than 2/3 done), thanks to the two 10-mile stretches of the [Wappapello Section](#) that we did on the days after Thanksgiving and New Year's.

Hiking these trails is an opportunity to imagine the Ozark Highlands in their wild, pre-settlement state – expansive hardwood forests covering miles and miles of rugged up-and-down terrain. Of course, try as I might to pretend otherwise, the Ozarks have changed, and evidence of man's pervasive presence are everywhere. Some are overt, such as this [mass grave](#) of domestic cattle, dumped by their former owner for others to worry about when disease prevented them from realizing their economic potential. Others are much more subtle, but to the discriminating naturalist they are everywhere – even in the most pristine-looking of areas. A cedar-choked glade here, it's rich, tawny, native warm-season grasses pushed the margins and interspaces; a monotonous, stunted black oak

forest there, sprigs of herbaceous plants giving a hint of the diverse understory just waiting for a fire to bring back the more open woodland it needs to thrive. Settlement has brought with it not only direct impacts to the land, but also changes in its ecology and vegetational character. Once a fire-mediated landscape with shifting mosaics of bald ridges, grassy woodlands, and riparian forests, a century of logging, grazing, and fire suppression have turned much of the Ozark Highlands into homogenous stands of oak with depauperate mid- and understories.

While loss of diversity has been the overwhelming trend in response to settlement, additions to the state's flora are also being seen. The Wappapello Section is the southeastern most of all the Ozark Trail sections, lying almost entirely in Wayne County, and as we traversed the rugged terrain north to [Sam A. Baker State Park](#), we encountered this most unusual of plants – a clubmoss. Since they are vascular plants, clubmosses are not really moss (which are non-vascular). Clubmosses are not flowering plants either, nor do they even produce seeds, reproducing instead by spores – just like ferns, horsetails, and other 'primitive' (sorry, Alex!) vascular plants. Practicing botanists include them in a group known as "fern allies", meaning that they are not ferns (ferns have multiple branching veins in their delicate fronds, while clubmosses have a single vein in their small, scale-like leaves), but they are somewhat like them.



This particular clubmoss belongs to the genus *Lycopodium*, or ground cedars – the name obviously derived from the resemblance of their foliage to various gymnospermous plants known as cedars (though completely unrelated) but growing very low to the ground. There are three species of *Lycopodium* in Missouri (Yatskievich 1999), all

¹ Reprinted from an article posted March 17, 2010 on the author's website: <http://beetlesinthebush.wordpress.com>. All photos by the author.

confined to the Ozark Highlands and all considered species of conservation concern due to their rarity in the state (Missouri Natural Heritage Program 2010). Two of these species are highly restricted (designated S1 for “critically imperiled”), boreal species occurring only on moist sandstone bluffs in Ste. Genevieve County as Pleistocene relicts – holdovers from a time when glaciers advanced to within about 50 miles to the north and cool, wet conditions prevailed throughout the rest of the state. The third species, shown here, is *Lycopodium digitatum*. Although more widespread in the cool forests of the northeastern U.S. and Canada, it is apparently expanding its range and was first found in Missouri in 1993. While still considered uncommon (and accordingly designated S2, or “imperiled”), its range has since expanded to a core of several southeastern Missouri Ozark counties that include Carter, Iron, Madison, Reynolds, and Wayne Counties (Doolen and Doolen 2008). We found this colony at the base of a moist wooded slope amongst an invading stand of *Juniperus virginiana* (ironically, called “cedars” by local residents).



“Running ground cedar” has been used as a common name for *L. digitatum*, most likely due to its habit of spreading by rhizomes – or “runners” – along the soil surface. From a distance, the spore-producing strobili stood out in bright yellow contrast to the dark glossy green foliage that carpeted the ground – itself in stark contrast with the surrounding brown leaf litter. It is these club-like strobili from which the common name “clubmoss” is derived, and from a distance of 20 m away I knew instantly that this was something unusual and worthy of investigation. Despite the gray November skies and cool temperatures, the strobili were actively shedding spores – clouds of yellow dust swirling briefly with each knock of the finger before dissipating into the air.



Hundreds of millions of years ago, the Carboniferous earth was covered with vast forests of giant clubmosses – extinct relatives of this species that soared to heights of one hundred feet. These giants eventually gave way to new kinds of plants – first the seed-bearing conifers, and later the flowering angiosperms. The giant clubmosses are gone, but their descendents have survived the

vastness of time, represented today by these humble, diminutive forms – extant members of an ancient group hiding in the nooks and crannies of the modern flora. I don't know whether the recent appearance of *L. digitatum* in the Ozark Highlands is a result of the anthropogenic changes brought upon the area in recent years, but given its ancient, relictual qualities, it is one change in the flora of Missouri that I do not mind.

REFERENCES:

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Ozark Witch Hazel along the Ozark Trail¹

By Ted C. MacRae



Spring is beginning its “march” across the nation, and in typical fashion the month started out with the promise of pleasant weather but is throwing a few tantrums before giving way to April. For most folks in the lower Midwest, spring began a week or so ago when daffodils began popping up from nowhere and dotting the suburban and semirural

landscapes with their yellow smiles. Forsythia are also set to burst forth, their appearance temporarily put on hold by this latest cold/wet snap, but when they do most people here will be satisfied that spring has finally come. For me, spring comes much earlier, and it's not planted ornamentals that mark its beginning, but native trees. Silver maples (*Acer saccharinum*) and American elms (*Ulmus americana*) are first, bursting open in the very first warm days of early March. These are followed by the sugar maples (*A. saccharum*) and red maples (*A. rubrum*) that are in full bloom now, which will themselves give way to the redbuds (*Cercis canadensis*) and serviceberrys (*Amelanchier arborea*) that will close out the month before flowering dogwood (*Cornus florida*) dominates the area's understories in April.

There is one tree in this part of the country, however, that shows its amazing blooms in January and February while winter's grip is still strong. Ozark witch hazel (*Hamamelis vernalis*) is restricted to the Ozark Highlands of Missouri and Arkansas, where it grows along the rocky creeks and streams that dissect this ancient landscape. I have long wanted to see its striking blooms, but despite my many wintertime hikes throughout the Ozarks, I have never found myself in the right place at the right time – until a few weeks ago when I hiked the Mina Sauk Trail at [Taum Sauk Mountain State Park](#). I found these plants growing below Mina Sauk Falls and along Taum Sauk Creek below, and even though it was the first weekend of March (and the very first warm day of the season), many of the plants had already passed their peak bloom. Fortunately, I was able to find these several plants with flowers still in good shape.



¹ Reprinted from an article posted March 26, 2010 on the author's website: <http://beetlesinthebush.wordpress.com>. All photos by the author.