

The Pitch Pine Community of Mount Everett: Ecological Context and Importance

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As a forest ecologist with over 15 years of experience working and teaching in a variety of eastern forest types, I offer here some perspectives on the value of the unusual dwarfed pitch pine community of the summit of Mount Everett.

OLD GROWTH FORESTS WITH SMALL TREES

While simplistic definitions of old growth forest call for old trees, some long-established forest types represent intact, natural associations whose trees are not terribly old. The top of Mount Everett appears to support just such an ancient community that is well worthy of protection.

Other old forest ecosystems whose trees are not ancient include the jack pine (*Pinus banksiana*) forests of Minnesota. A fire frequency of 30-90 years keeps the flammable, serotinous-coned jack pine trees young; however, my research shows that jack pine communities harbour extremely high diversity of lichens, wildflowers, and other vascular and nonvascular plants. A long history of forest presence on these sites has provided continuity for accumulation of great diversity including rare species. Likewise, other fire-adapted pines such as lodgepole pines (*Pinus contorta*) of western North America can form long-standing, ancient forests even though the natural disturbance regime of wildfires prevents individual trees from attaining large sizes or old ages.

It is very important that “old growth” not be defined so narrowly as to exclude such forests. This issue of protecting old forests with young trees was much discussed at last year’s Old Growth Definitions Symposium at the Harvard Forest, and is also raised in Mary Byrd Davis’s book “Eastern Old Growth Forests.” Natural disturbance regimes must be accommodated in our efforts to preserve examples of natural ecological communities.

PITCH PINE: WHY SPECIAL ON MOUNT EVERETT

The pitch pine (*Pinus rigida*), like jack pine and lodgepole pine, evolved with fire and yet forms forests unusual and rich in biodiversity. Consider the ecology of this pine. In the heart of its range, pitch pine grows in two types of habitats: the pine barrens of southern New Jersey and Long Island, vast plains of flat sandy soils where pitch pine predominates (even in wetlands within these

regions!), and the ridgetops of northwestern New Jersey and southern New York state (including the Shawangunk Mountains). The ridgetop habitat is what Mount Everett represents. In some places, ridgetops favor pitch pine communities because of frequent lightning strikes and resulting fires. Thus as with jack pine and lodgepole pine forests, individual trees may not be old even where the community has been intact and undisturbed by people for centuries. Note that the mixed ages of the Mount Everett pines suggest origins without fire.

Ridgetop “islands” like Mount Everett have great ecological importance, particularly toward the edge of species’ ranges. The value of outlying communities was recognized by Kentucky which designated pitch pine forests as endangered ecosystems. The genetic changes in isolated populations can prove invaluable to the species at a whole during times of climate change. Moreover, the presence on Mount Everett of both serotinous and non-serotinous pitch pines demonstrates genetic diversity within the local population, as serotiny in pitch pine has a genetic basis. The serotinous pitch pines grow slowly and are otherwise well adapted to the very high fire frequencies (5-10 year return times) of special habitats known as pygmy pine plains. Some believe this race of pitch pines is also highly tolerant of acidic, aluminum-rich soils. In contrast, the non-serotinous pitch pines have faster growth rates and predominate where fire frequencies are lower (10-30 years). As fire frequency decreases yet more across the landscape, oaks increasingly enter into the forest community.

There is little question that the Mount Everett summit includes other plants of biogeographic and ecological interest for the region. The lack of a closed canopy will promote a biota unlike that of denser forests farther down the mountain slopes. Thus, beyond the obvious aesthetic values of this site, the summit also represents a locally unusual, long-standing ecological community of somewhat isolated and naturally evolving populations.

IN SUM, the Mount Everett summit encompasses unusual vegetation communities with a high degree of “naturalness” and with significant ecological and genetic value. Although the gnarled trees are not ancient, pitch pines rarely grow much older in even the most pristine and well-established localities of this vegetation type unless unusual circumstances reduced the frequency of natural wildfire. In my judgement, such an unusual ecosystem deserves the most stringent of protection from development, disruption, and fragmentation.

REFERENCES

The bibliography provided by Charles Cogbill is highly relevant to this discussion, particularly references to Collins and Anderson’s “Plant Communities of New Jersey,” Richard Formann’s “Pine Barrens: Ecosystems and Landscapes,” John McPhee’s book “The Pine Barrens,” Mary Byrd Davis’s book “Eastern Old Growth Forests” and articles therein.