

NATURAL COMMUNITIES OF THE CENTRAL APPALACHIAN RED SPRUCE ECOSYSTEM AND THEIR CONSERVATION SIGNIFICANCE

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Natural communities within the red spruce ecosystem of the central Appalachians are characterized by exceptionally high biodiversity and conservation value. This ecosystem stretches in a southwest – northeast trending band for 250 km along the high elevations of the Allegheny Mountains, from Greenbrier County, WV to Garrett County, MD. The region contains some of the highest concentrations of globally rare plant and animal species within the northeastern states. At the state level, a remarkable 240 rare species have been documented within West Virginia's red spruce ecosystem. Its high conservation value stems from a) its location south of the maximum extent of Pleistocene glaciations; b) its complex topography and geology; and c) the relatively large remaining tracts of natural vegetation compared to other areas in the northeast. Spruce forests are estimated to have originally covered more than half a million acres in West Virginia. Logging and burning from 1880-1920 reduced the spruce forest to a fraction of its former size. Now the region is a patchwork of red spruce, northern hardwoods, and cleared habitats in various stages of succession. Nestled in among the uplands are flat-lying headwater basins that accumulate moisture to form wetland habitats. These wetlands function as frost pockets, catching and pooling both water and cold air that drains from the surrounding uplands. The red spruce ecosystem as a whole occupies the highest, coldest, and wettest environmental niche in the central Appalachians. It is extremely vulnerable to the expected stresses of global climate change.

The National Vegetation Classification has been recently updated to include the full range of red spruce upland forest, woodland, and wetland communities, including six upland associations and 41 wetland associations. Twelve of these associations are new to the national system. More than half of the 47 types have high global conservation priority, and the remaining types have high state conservation priority. The highest conservation priorities at both the global and state levels are forested conifer and mixed swamps, upland spruce-dominated forests, ancient peatlands, and an ice-scour community.

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