

New Jersey Highlands Council **Letter 90**

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Attributes

Response Type:	1 - Letter
Delivery Type:	W - Web-based submission
IP Address:	██████████
Form Letter:	

Web Response

Date: April 29, 2015 To: Ms. Margaret Nordstrom, Executive Director New Jersey Highlands Water Protection and Planning Council From: Emile DeVito, PhD, Manager of Science and Stewardship New Jersey Conservation Foundation Re: Comments re Highlands Natural Resources Protection – Forest Resources For the Highlands RMP Monitoring Program and Recommendations Report Forest Resources: Question: Is there an actual public benefit accruing as a result of the management of private forest lands supposedly for public benefits and thus receiving Woodland Tax Assessment (property tax reduction) under New Jersey's Farmland Assessment Program? Though the Highlands Act exempts forestry activities with an approved Forest Management Plan, forestry is a significant activity with enormous potential for negative impacts to the region's critical water and other natural resources. Current forestry guidelines for management plans are insufficient at best, and non-existent at worst; guidelines are outdated and essentially ignore modern problems of forest management in New Jersey. Indicators of forest problems that are being ignored include: over browsing by deer, lack of native species regeneration, soil impairment (enrichment) from air pollution, and destruction by invasive alien earthworms of the organic humus layer that nurtures native plant reestablishment. These factors conspire to make forest soils less permeable. Resulting impacts include increased surface rainwater sheet flow with erosion and degradation of surface water quality, plus reduced natural infiltration of the rainwater required to recharge critical Highlands aquifers that supply both wells and stream flow during droughts. Forest management practices on both private and public lands need to be modernized by the inclusion of the science of ecology relative to these contemporary forest stressors that, ignored, make New Jersey's current standard forestry practices obsolete. The Highlands Council should promote the inclusion of modern scientific forestry principles to protect Highlands surface and groundwater in numerous ways. For one, activities may be addressed through the RMP Conformance Process, either by the requirement of a municipal ordinance or resolution. The best method to protect Highlands' core forests from inappropriate projects is to require the inclusion of certification standards from the Forest Stewardship Council (FSC) for any work done under a forestry plan. Many states and other entities have adopted the FSC certification standards with great success; other substandard and industry-supported certification programs must be ignored. The Forest Stewardship Council certification is the premier program and the only one endorsed by reputable national and international environmental NGOs, including the New Jersey Highlands Coalition, and with the potential to protect forests in the Highlands. The health of the entire forest ecosystem – not just the trees -- in the Highlands is critically important to both biodiversity and the quality and quantity of the State's water supply, and thus demands the highest level of sustainable forestry practices. As the lead agency in the New Jersey Highlands, it is the Highlands Council's responsibility to work with other state entities and stakeholders to ensure that forestry practices on both private and public lands do not degrade the quality of Highlands forests. All landowners, both private and public, should be required to incorporate FSC standards as part of any waiver or approval requirements for forestry work. "Historic Forests" Protection: Proposed Natural Resource Quality Indicator In New Jersey, there remain numerous patches of historically forested lands which have never been exposed to the agricultural practices of plowing or heavy pasturing. These historically forested lands usually have been utilized repeatedly for the harvest of wood products, but the forest was never converted to non-forest. Richard Lathrop, of the Rutgers Remote Sensing Lab, prepared a GIS layer for the Highlands Council depicting the historic topographic manuscript maps developed by C.C. Vermeule in the late 19th century. The Vermeule survey maps show the forests that were still present on the landscape at the height of the agricultural clearing during the 19th century; they were lands that had never been converted to agriculture. These "Historic Forests" still retain intact, native soil structure with undisturbed soil horizons, native soil invertebrate communities, native understory herbaceous and woody shrub communities with vigorous root structure in the upper soil horizons, and high native plant and animal biological diversity. These "Historic Forests" correlate with the most intact ecological communities with little presence of invasive species. In contrast, there are also an abundance of post-agricultural forests, where 19th century agricultural lands have reverted to middle-aged successional forests on post-agricultural soils. These forests are often heavily invaded by non-native alien species, and are no longer dominated by native herbaceous woody and herbaceous understory plant species. These "Historic Forest" areas should be afforded special protection by the Regional Master Plan, through acquisition and the most stringent regulations. On public lands, they should also be protected from any activities which threaten to increase invasive species, such as opening the canopy through large-scale forestry operations. Small projects to benefit rare, threatened or endangered species, if permitted, must be carefully developed so as not to degrade these forests with unintended consequences. On private lands, these "Historic Forest" areas were delineated so that proposed impacts to unique forest communities with exemplary conservation values could be evaluated. Incorporating these maps in the RMP would be beneficial in the general planning process as well as open space preservation efforts. Critical differences exist between these two types of forest. A recent study by New Jersey Conservation Foundation shows that historically forested lands are significantly higher in native species richness, dominance, and Floristic Quality Index (FQI) (see <http://universalfqa.org/>) than post-agricultural forest (See Figure 1, below). Figure 1- Summer 2014 field research by New Jersey Conservation Foundation, showing that historic forest lands have significantly higher Floristic Quality Index FQI than post-agricultural forest lands. The mechanism by which "Historic Forests" retained their native floristic quality, in comparison to successional forests that have recolonized former agricultural lands, is simply that the upper soil horizons have never been severely disturbed by plows or other mechanized equipment, and they never experienced severe grazing pressure, erosion, or compaction by long-periods of intense exposure to domestic animals. Maintenance of native soil integrity allows a natural community to maintain historic ecological functions and provide valuable ecological services, such as: • Resistance to alien species invasion and loss of native species; • Maintenance of carbon sequestered in an organic litter and root layer; • Nutrient transfer by soil invertebrates, especially native ant communities; • Maintenance of diverse and abundant soil invertebrate populations, which are at the base of the food chain, giving rise to an ecological web that supports all forest vertebrate populations, from salamanders to understory birds, reptiles, small mammals, and even large mammalian and avian predators. • Resistance to alien earthworm invasion and their eventual dominance, which results in the loss of soil organic layer and sequestered carbon, erosion due to the loss of native deep-rooted perennials and replacement by alien, weedy, shallow-rooted annual plants such as Japanese Stiltgrass; and • Maintenance of aquifer recharge and flood prevention attributes, through maintained health of the sponge-like organic soil horizon with intact, deep-rooted perennials. In contrast, disturbance to this thin but essential organic soil horizon results in soil compaction, increased surface runoff during storms, harmful sedimentation in streams, scouring of stream channels, and other cascading degradations that not only ruin downstream ecological quality, but also result in expensive siltation, flooding, and water supply problems that are either expensive or impossible to cure.

Respondent

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11/24/2015

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