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Comments: The Wildlife Resources Section of the West Virginia Division of Natural Resources appreciates the ability to comment on the proposed Red Spruce Restoration Project action. Within the project purpose the authors of this action recognize that red spruce ecosystems have been and continue to be impacted by anthropogenic effects. These effects have changed or at least altered many of the processes that created the conditions under which the red spruce ecosystem flourished and perpetuated itself. In order to restore this system to a type of normality, active management must be employed as doing nothing (a type of management) will only ensure the current condition maintains itself or even further degrades under the proliferation of non-native invasives which are likely more catastrophic than the fires that removed the organic soils. One must only look at the expanse, spread and impact of Japanese stiltgrass Microstegium vimineum on forest regeneration in much of WV to realize the threat.

The management proposed contains two complementary scenarios that must be considered collectively in order to afford the land manager the breadth of tools to affect the desired outcome. The first scenario describes a site where red spruce is either absent or of such low frequency of occurrence to make restoration impossible in our lifetime or likely the next. In this scenario, the action is to plant seedlings to establish red spruce into the area. Establishment of the species into an area will at least provide the next land management stewards a starting point from which to work from. Our only substantive comment would be to consider planting a rapidly growing but short time persisting, native nurse crop species which should be trembling/quaking aspen (Populus tremuloides). It has been our observation that nurse species, in this case a shade intolerant one will help soften the sites' growing conditions such that a shade tolerant species will thrive. In addition to the partial shade which reduces sun scald, helps buffer the wind and lessen evapotranspiration losses, the increase in organic deposition will help build the soil. The growth form of trembling aspen is such that sunlight is only partly restricted thereby making it an ideal young forest restoration species.

The second scenario addresses those sites where red spruce is present but repressed due to interspecific competition. Some may want to leave these sites alone and while that might work eventually, the time window is so far out that the likelihood of success is very low; evidence of this is the existing condition and the time since last management action which is often many decades in the past. This course of non-action has become even more unpredictable in the face of non-native invasives as well as native invasives i.e., beech brush - Fagus grandifolia, which is slowing or eliminating forest regeneration in some areas. In this scenario, it is proposed to release (expose the existing spruce regeneration to sunlight from above and soil nutrients and water from below) by removing adjacent competing trees by cutting/felling or herbiciding. It has been our experience that herbicide continues to become more targeted and more refined such that only small amounts of active ingredient are used to achieve the desired objective and in most instances like the hack and squirt, basal spray or cut-surface techniques only the treated tree is affected. We encourage the Forest Service to continue to follow the EPA developed herbicide label information and use the guidance developed by respected and published practitioners such as Jeff Kochenderfer, USDA Forest Service. Utilizing his and our in-house practitioners' decades of land management experience has resulted in many acres of invasives or un-wanted vegetation being safely treated with positive results. It is also important to have employees and contractors versed in sanitation techniques to ensure they are not spreading seed.

The document proposes to use mechanical equipment in suitable areas to assist with the reduction of competing vegetation to release red spruce. This tool may be viewed by some as heavy handed, but restoration is often trying to undo the significant impact that was created years prior by similarly sized or greater pieces of equipment or landscape level impacts that are simply impractical to treat with hand tools. We point out that many restoration practitioners view the use of heavy equipment as a project necessity to balance project scale with cost or efficiency. As long as ground disturbance and soil erosion concerns are daily kept in mind, good operators can typically minimize both, especially when they are implementing the WV Division of Forestry BMPs for sediment and erosion control. Exposed soil areas in excess of that considered minor, should be mulched with clean straw

and secured with a suitable cereal grain which will not persist but hold the soil until the existing seed bank can flourish. All heavy equipment, trucks and trailers must be pressure washed before coming on site ensuring the risk of bringing in unwanted seed is minimized.

Lastly, we wanted to bring up utilizing the existing, commercially valuable forest resource to not only pay for the red spruce release but reduce the cost to the American taxpayer for treatment. Releasing spruce in some areas can be accomplished by the judicious use of commercial loggers who financially benefit from the action while creating the desired post-treatment condition at less cost to the landowner. We routinely utilize commercial sales to implement silvicultural techniques which benefit both forest regeneration and wildlife goals resulting in an efficient land management action.

Thank you for soliciting our input into the management of our National Forest. The Wildlife Resources Section of the WV DNR has supplied on-Forest staff for 70+ years and have a vested interest in the wise use of this area. We support the Red Spruce Restoration Project in both concept and purpose and encourage its implementation.