

New Jersey Division of Fish and Wildlife
Addendum to 2017 Sparta Mountain Forest Stewardship Plan
July 2021

PURPOSE

The purpose of this Addendum is to detail forest management activities that will be implemented by the Division of Fish and Wildlife as part of the approved Sparta Mountain Wildlife Management Area Forest Stewardship Plan (2017). The Plan is valid for ten years. The primary focus of these efforts will be the integration of young forest patches within the forested areas of the Sparta WMA. Any additional management activities beyond the scope of the approved 2017 FSP will be addressed in a future Sparta Mountain Wildlife Management Area plan or subsequent forest stewardship plan.

Using the broad management objectives outlined in the approved SMWMA Forest Stewardship Plan (hereinafter referred to as FSP), the purpose of young forest management is to regenerate patches of young maturing forest by opening the canopy sufficiently for shade intolerant and mid-tolerant vegetation associated with the central hardwood oak-hickory forest type to germinate as well as a variety of shrubs, sedges and forbs. Currently, open mature forest (< 50% canopy cover) and early successional/young forest within a forested matrix are scarce in New Jersey. The increased plant diversity and low-level structure will promote biodiversity and sustain a complexity of habitat types in the region while helping to perpetuate species that co-evolved with the ephemeral nature of stand replacement natural disturbances such as fires, beavers, and hurricanes, all of which helped shape the forests in northern New Jersey prior to European settlement (DeGraaf and Healy 1993, Lafon et al. 2017, Lorimer and White 2003).

Management of young forest habitat will be implemented through modified seed tree or shelterwood forest management activities in accordance with the 2017 FSP. Neither of these silvicultural prescriptions are clear cuts; similar to the sites managed in the first three years of the 2017 FSP, modified seed tree cuts will retain about 10-15 large trees per acre and a residual basal area averaging around 17-20 square feet per acre. Shelterwood cuts have not yet been implemented under the 2017 FSP but will result in at least double the large trees retained and residual basal area. Creating open woodlands ≥ 5 or 25 acres in size, depending on proximity to existing nesting habitat, with 10-15 large trees per acre in areas surrounded by > 70% forest cover is recommended for the recovery of the state endangered Golden-winged Warbler (Bakermans et al. 2011, Golden-winged Warbler Working Group 2019).

While the state endangered Golden-winged Warbler is an icon for these management activities, it serves as an umbrella for numerous species that utilize these habitats (Aldinger et al. 2015, Bakermans et al. 2011, Golden-winged Warbler Working Group 2019). The areas managed on Sparta Mountain WMA prior to the FSP and this Addendum have been monitored annually since 2012. To date, the number of bird species using managed sites during the breeding season is more than double what was observed in these same areas prior to management; 82 different bird species, 30 of which are Species of Greatest Conservation Need (SGCN), have been observed using at least one of the managed sites. Of these, 14 are Priority Species and 4 are Focal Species per the NJ State Wildlife Action Plan (2018). Continued active habitat management is critical to the survival of these species in New Jersey. This habitat will also benefit a variety of mammals and reptiles that require open and/or young forest conditions during some stage of their life cycles, whether it be foraging, basking, or wintering. The proliferation of shade intolerant and mid-tolerant tree species such as cherries, aspens, willows, and oaks, will also support a large majority of Lepidoptera species. These areas can also benefit species of rare plants as well.

While managing for young forest in the Highlands Core Area is key to recovering species such as Golden-winged Warblers and other declining songbirds, diversifying forest stands improves resiliency in the face of a changing climate. Older individual trees sequester more carbon than younger individual trees (Stephenson et al. 2014) but stands of young forests are greater carbon sinks in that they can absorb carbon at a faster rate than stands of older forests (Pugh et al. 2019).

The 2017 Sparta Mountain Forest Stewardship Plan outlined a wide array of forest management activities for the 3,461 Wildlife Management Area. This addendum addresses young forest management within the 2017 – 2027 FSP timeframe:

- Year 1 – 3, three sites totaling 27.7 acres were actively managed to restore young forest habitat.
- Year 4 – 10, six additional 10-acre sites will be managed to restore young forest habitat.

All sites designated to be managed using modified seed tree or shelterwood prescriptions in the 2017 FSP are within stands undergoing a species shift from the shade intolerant and mid-tolerant tree species currently dominating the overstory to shade tolerant species like sugar maple, red maple, and black birch currently dominating the understory. Combining sites to increase the overall size managed in one year will increase the efficiency of implementation, allow for greater tree retention and variability in treatments, and be more beneficial for Golden-Winged Warblers and other species during the breeding and post-breeding seasons.

SITE SELECTION

Modified seed tree and shelterwood forest management activities can only occur in stands that have been prescribed modified seed tree and shelterwood activities in the FSP. The selection and boundaries of individual sites within these stands will be planned in accordance with the following criteria (to the extent practical):

- At least 150 feet from known rare plant occurrences, unless modified by the Office of Natural Lands Management.
- At least 400 feet from mapped potential and certified vernal pools per the vernal pool layer in Landscape Project V3.3 or later version, or at least 100 feet for cuts maintaining >50% canopy cover per Calhoun and deMaynadier (2004) and Vermont NRCS (2010). Boundaries may be moved if, upon evaluation, the potential vernal pool location does not meet the hydrologic and biologic criteria of a vernal pool and/or buffers are modified by the Endangered and Nongame Species Program.
- At least 300 feet from mapped C1 streams.
- Steep slopes will be avoided.
- Edison Bog drainage area will be avoided. This drainage is currently delineated using 10-m elevation grid and will need to be verified using 2-ft lidar and/or on-site.
- At least 1/4 mile from existing residential development using the 2015 Land Use/Land Cover or later version.
- Near existing access roads.
- Outside the Beaver Lake's viewshed as defined in the settlement agreement between the New Jersey Department of Environmental Protection and Beaver Lake Realty Co. Shelterwood cuts are permitted within the viewshed.

Figure 1 depicts sites already managed under the current and previous (2009) FSPs as well as 7 potential site locations (see Table 1). It is important to note boundaries of new sites in the maps are draft and need to be verified on-site prior to being finalized. As a result, boundaries may be adjusted or relocated based on information collected on site, such as locations of rare and/or unique plants, and/or the ability to access the sites. Some sites may be increased or decreased in size as a result. All site locations are within stands currently averaging around 80-85 years old, which comprises the majority of the forests throughout Sparta Mountain WMA. Converting some of the abundant mature closed-canopy forest to a different age class and structure will help increase diversity across the 3,461-acre WMA.

ANNUAL TIMELINE OF ACTIVITIES

Current timeline for 2021/2022 work in Stand 9a

July 12, 2021	Stand boundary mapping of next specific work area identified on the Division's website.
August 12, 2021	Comments due concerning specific stand work must be submitted. All comments are to be submitted to the NJ Division of Fish and Wildlife.
Sept. 10, 2021	Public comments incorporated to extent feasible.
Sept. 10- Oct. 15, 2021	Stand marked and practice plan completed. Due to contract procedures and costs, once stand is marked no further comments or changes can be entertained.
Oct. 15- Nov. 15, 2021	Contract Procedures
Nov. 2021 – Mar. 2022	Management Activities

In order to conduct activities under favorable environmental conditions, while avoiding critical timing restrictions and periods of high visitation (due to the use of machinery), as of January 2022 the following annual timeline will be followed:

January 31	Stand boundary mapping of next specific work area identified on the Division's website.
March 31	Comments due concerning specific stand work must be submitted. All comments are to be submitted to the NJ Division of Fish and Wildlife.
April 1-April 30	Public comments incorporated to extent feasible.
May 1-June 30	Stand marked and practice plan completed. Due to contract procedures and costs, once stand is marked no further comments or changes can be entertained.
July 1 – Sep. 30	Contract Procedures
Nov. - March	Management Activities

NOTIFICATION OF ACTIVITIES

The NJDFW will notify surrounding municipalities and the public of upcoming work. The notification will be distributed through the Department's Office of Local Government and the Sparta Mountain WMA Listserve and posted on the Division's website.

TIMING RESTRICTIONS

Activities will follow the timing restrictions to minimize impacts to rare species as outlined by the US Fish and Wildlife Service and the Endangered and Nongame Species Program. Specific timing restrictions will depend on the type of activities and species documented in the area. For example, current timing restrictions for cutting trees near Indiana Bat hibernacula allows for cutting to take place between November 16 and March 31.

MANAGEMENT ACTIVITY PROVISIONS

- All management activities will conform to acceptable industry standards for timber harvesting and comply with applicable guidelines contained in the "New Jersey Forestry and Wetlands Best Management Practices Manual" published by the NJ Bureau of Forest Management.
- Stumps will be kept as low as possible, generally below 12" in most cases. Trees hung up or severely damaged during harvesting operations are required to be felled and made safe.
- Tree tops and slash can generally be left intact within the harvest area without being lopped and scattered to ground level in order to provide immediate wildlife structure, but they cannot be stacked or left in a way that creates an excessive hazard.
- Skidding activities will be restricted to the harvest area and to the existing primary skid trail routes connecting the project area and access road.
- Skid trails and access roads will be back-bladed to eliminate any rutting that may occur during operations.
- Water diversions and/or logs will be used when necessary to divert water runoff and erosion.
- Heavy equipment to be used in the harvest area will be washed prior to entering the area to prevent the spread of invasive species.

INVASIVE SPECIES MANAGEMENT

Prior to and after management, each site will be evaluated, pre- and post-management, for invasive species outbreaks and treated accordingly. Individual plants will be hand pulled when feasible, but herbicide application is currently the most effective treatment method for large or numerous invasive plants. In any situation where the use of herbicide is warranted, it will be applied by a licensed applicator in accordance with the manufacturer's label and species to be treated. Directed low-volume foliar (using a backpack sprayer) and basal bark or cut stem applications will be used to minimize impacts on non-target species. Prescribed fire may also be used to control invasive species should that treatment be deemed more effective than herbicide.

DEER

Prior to and after management, each site will be evaluated for regeneration and impacts of deer browse. Areas where regeneration has been inhibited as a result of excessive deer browse will be addressed through targeted hunting and/or deterrents such as fencing. To date, regeneration has not

been inhibited by deer browse on any previously managed sites on Sparta Mountain WMA, as also demonstrated by a fenced area that was erected in a post-management site on Sparta Mountain WMA in 2012 that continues to show the lack of impact by deer browse in the same site outside the fence.

MACHINERY

Use of heavy machinery is unavoidable in the creation and maintenance of young forest habitats. At the level of intensity of a seed tree cut, leaving all cut trees at the site would result in dense slash that would inhibit regeneration and increase the risk of wildfire. That said, the crowns and some trees will be purposely left scattered on site to create favorable microclimates for germination, protect new seedlings, buffer soil erosion, and return nutrients back into the soil as they decompose.

Sparta Mtn WMA 2017 FSP Young Forest Planning Draft

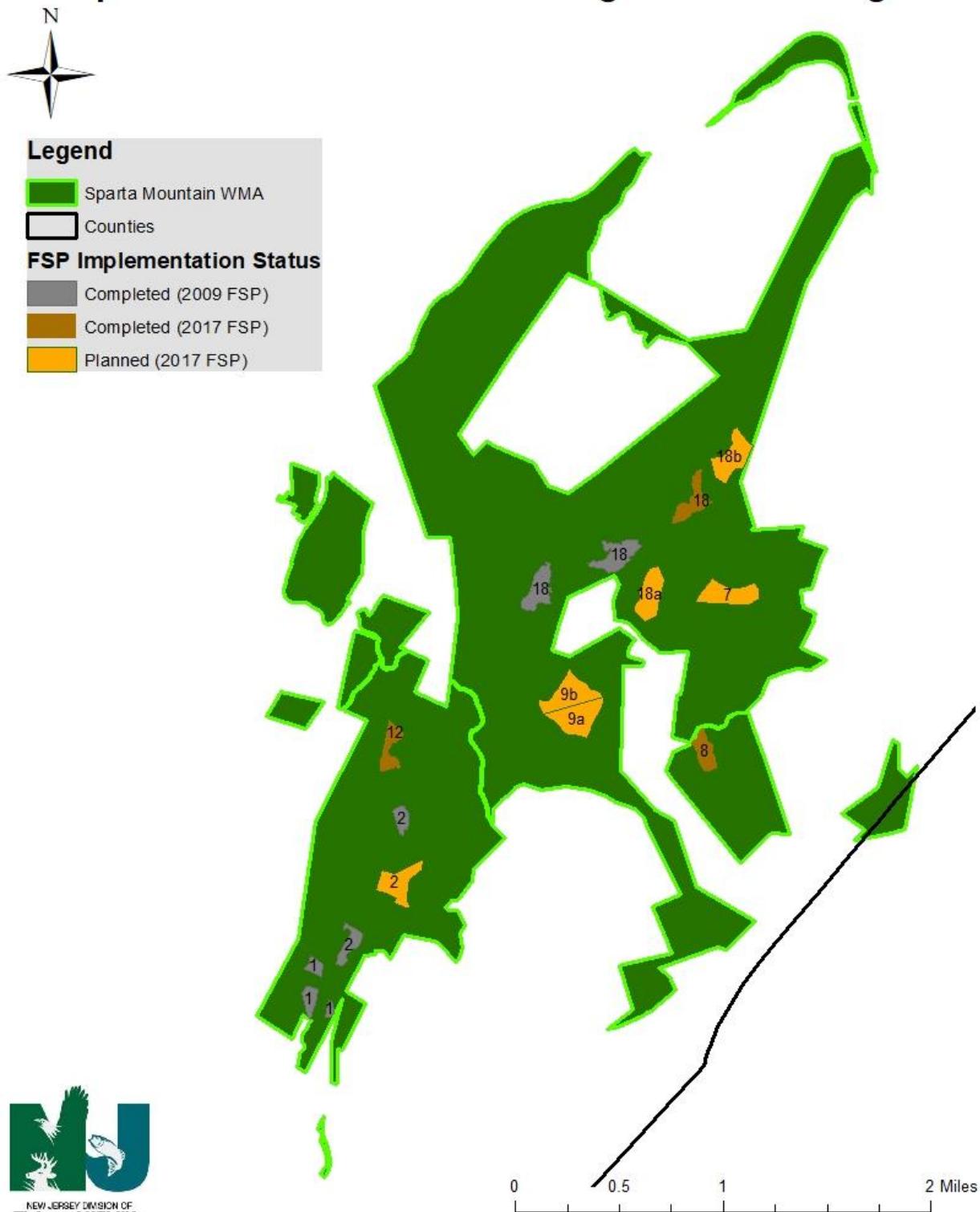


Figure 1. Draft planning map showing where young forest management has been completed under all forest stewardship plans, and where young forest management may occur in the future. Boundaries of these future sites may change after on-site verification. Labels on each site indicates the stand where the management has or may occur.

Table 1. Timeline for young forest management activities under the 2017 FSP. This does not account for management activities accomplished prior to or beyond the 2017 FSP. Any planning beyond the 2017 FSP to reach 200 acres of young forest management will be addressed in subsequent management plans.

Name	Mgmt. Year	FSP Reference	Stand	Acres Managed	Comments
MST Stand 18	2018-19	Year 1	18	9.4	Completed in 2018/19
MST Stand 8	2019-20	Year 2	8	9.1	Completed in 2019/20
MST Stand 12	2020-21	Year 3	12	9.2	Completed in 2020/21
Stand 9a	2021-22	Year 4	9	10.0	
Stand 18a	2022-23	Year 6	18	10.0	
Stand 7	2023-24	Year 7	7	10.0	
Stand 2	2024-25	Year 8	2	10.0	
Stand 18b	2025-26	Year 10	18	10.0	
Stand 9b	2026-27	Year 6	9	10.0	
				TOTAL	87.7
				acres	

Literature Cited

- Aldinger, K., M. H. Bakermans, J. Larkin, J. Lehman, D. J. McNeil Jr., and A. Tisdale. 2015. Monitoring and evaluating golden-winged warbler use of breeding habitat created by the Natural Resources Conservation Services Practices: A conservation effects assessment project (CEAP). Cooperative agreement #68-7482-12-502, Phase I: 2012-14 Final Report.
- Bakermans, M. H., J. L. Larkin, B. W. Smith, T. M. Fearer, and B. C. Jones. 2011. Golden-winged Warbler Habitat Best Management Practices for Forestlands in Maryland and Pennsylvania. American Bird Conservancy. The Plains, Virginia. 26 pp.
- Calhoun, A. J. K. and P. deMaynadier. 2004. Forestry habitat management guidelines for vernal pool wildlife. MCA Technical Paper No. 6, Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, New York.
- DeGraaf, R. M. and W. M. Healy. 1993. The myth of nature's constancy – preservation, protection and ecosystem management._North American Wildlife and Natural Resources Conference, Washington DC, pages 17-28.
- Golden-winged Warbler Working Group. 2019. Best Management Practices for Golden-winged Warbler Habitats in the Appalachian Region. 2nd Edition. www.gwwa.org.Lafon, C. W., A. T. Naito, H. D. Grissino-Mayer, S. P. Horn, and T. A. Waldrop. 2017. Fire history of the Appalachian Regions: A review and synthesis. Gen. Tech. Rep. SRS-219. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station. 97 p.
- Lorimer, C. G. and A. S. White. 2003. Scale and frequency of natural disturbances in the northeastern US: Implications for early successional forest habitats and regional age distributions. Forest Ecology and Management 185:41-64.
- New Jersey Department of Environmental Protection, Division of Fish and Wildlife. 2018. New Jersey's Wildlife Action Plan, March 2018.
https://www.state.nj.us/dep/fgw/ensp/wap/pdf/wap_plan18.pdf
- Pugh, T. A. M., M. Lindeskog, B. Smith, B. Poulter, A. Arneth, V. Haverd, and L. Calle. 2019. Role of forest regrowth in global carbon sink dynamics. PNAS 116(10): 4382-4387.
- Stephenson, N. L., A. J. Das, R. Condit, S. E. Russo, P. J. Baker, N. G. Beckman, D. A. Coomes, E. R. Lines, W. K. Morris, N. Ruger, E. Alvarez, C. Blundo, S. Bunyavejchewin, G. Chuyong, S. J. Davies, A . Duque, C. N. Ewango, O. Flores, J. F. Franklin, H. R. Grau, Z. Hao, M. E. Harmon, S. P. Hubbell, D. Kenfack, Y. Lin, J.-R. Makana, A. Malizia, L. R. Malizia, R. J. Pabst, N. Pongpattananurak, S.-H. Su, I-F. Sun, S. Tan, D. Thomas, P. J. van Mantgem, X.Wang, S. K.Wiser, & M. A. Zavala. 2014. Rate of tree carbon accumulation increases continuously with tree size. Nature 507: 90-96.
- Vermont NRCS. 2010. Vernal Pool Habitat in Conservation Planning. Vermont Biology Technical Note 1.