Appendix A

DuPont State Forest Land Management Plan Strategic Document Crosswalk

On the following pages the Goals/Desired Conditions and Resource Management Objectives included in the DuPont State Forest Land Management Plan are provided in tabular format. The goals and objectives presented in this plan were developed to support other statewide initiatives regarding natural resource conservation and education. Where applicable the specific strategic document associated with a particular goal and objective is provided. This crosswalk is designed to facilitate easier understanding, interpretation, and implementation of the proposed activities of the plan.

Below is a list of the strategic documents specifically referenced in the DuPont State Forest Land Management Plan:

Acronym	
NCFRA	**North Carolina's Forest Resources Assessment (2010)**
NCWAP	**The North Carolina Wildlife Action Plan (2005)**
PIF	**The Partners in Flight Bird Conservation Plan for the Southern Blue Ridge (1999)**
NCEEP	**The North Carolina Environmental Education Plan (2009)**
BMP Manual	**North Carolina Forestry Best Management Practices Manual To Protect Water Quality (2006)**

Goal(s) and Desired Condition(s)	Resource Management Objective(s)	Supporting Strategic Plan(s)	Supporting Strategic Plan Goal(s) or Objective(s)
VEG-1: The forest will be maintained in a healthy condition against widespread insect and disease occurrence.	**Vegetation and Wildlife** **4.** Identify white pine plantation stands that are overstocked and are at an elevated risk for southern pine beetle infestation within the first year (2011). **5.** Over the entire planning period (2011-2025) initiate the regeneration of declining, unhealthy, or degraded white pine plantation stands, Montane Oak-Hickory stands, and Acidic Cove stands utilizing the techniques outlined in the Standards and Guidelines portion of this plan. Regeneration harvests will focus on increasing species and structural diversity and restoring desirable natural community attributes to areas impacted by past management. The amount of area targeted for regeneration within each natural community throughout the first five planning years (2011-2014) is addressed in the Standards and Guidelines portion of this plan. **6.** Over the entire planning period (2011-2025) conduct thinnings of overstocked white pine stands at high risk for southern pine beetle infestation. The amount of area targeted for this activity is addressed in the Standards and Guidelines portion of this plan. **9.** Treat 10 acres for control of non-native and invasive plant species annually throughout the planning period (2011-2025). Area inspections and invasive species treatments will coincide with the implementation of other management procedures, as well as with the monitoring of areas following active management. **10.** Continue to treat designated eastern	**NCFRA** **NCWAP**	**Objective 2.2: Minimize negative impacts to forest health caused by major, locally significant, or imminent insects, diseases, and nonnative invasive plants.** ***Oak decline:*** Management of oaks to create more complex age and species mixtures on the landscape, reduce competition for moisture and nutrients, and promote healthy hardwoods is the best defense against oak decline… ***Southern pine beetle:*** Practicing good silviculture before outbreaks, which reduces basal area and encourages healthy radial growth, can prevent the spread of SPB in stands. ***Hemlock wooly adelgid:*** Most control measures are confined to application of systemic insecticides on urban landscape trees and on easy-to-access forest trees of high ecologic, aesthetic, historic, and sentimental value. ***Non-native invasive plants:*** …NNI plants crowd out native species; their impacts minimize diversity, simplify natural systems, limit production of native wildlife food, and foster monocultures. **Cove hardwood habitat** …potential problem affecting cove hardwood habitat is the advent of several exotic pest species…including the hemlock wooly adelgid, as well as several non-native plants. **Early successional habitat** Conservation actions necessary…control of exotic species. **Oak forest habitat** Chestnut blight, oak decline, gypsy moths, and other diseases/pests may significantly affect the composition and diversity of hardwood stands throughout the Southern Appalachians.

	hemlock and Carolina hemlock trees to control the effects Hemlock Wooly Adelgid, and monitor the efficacy of those treatments throughout the course of this management period (2011-2025). Treat a minimum of 100 individual trees annually.		
VEG-2: Forest-wide structural diversity will be enhanced through the establishment of canopy gaps and the perpetuation of a variety of successional stages.	**Vegetation and Wildlife** **5.** Over the entire planning period (2011-2025) initiate the regeneration of declining, unhealthy, or degraded white pine plantation stands, Montane Oak-Hickory stands, and Acidic Cove stands utilizing the techniques outlined in the Standards and Guidelines portion of this plan. Regeneration harvests will focus on increasing species and structural diversity and restoring desirable natural community attributes to areas impacted by past management. The amount of area targeted for regeneration within each natural community throughout the first five planning years (2011-2014) is addressed in the Standards and Guidelines portion of this plan. **6.** Over the entire planning period (2011-2025) conduct thinnings of overstocked white pine stands at high risk for southern pine beetle infestation. The amount of area targeted for this activity is addressed in the Standards and Guidelines portion of this plan. **7.** Conduct first shelterwood treatments on 20 acres annually during the planning period (2011-2025) as a means of establishing competitive oak and hickory regeneration in areas of Montane Oak-Hickory Forest, Chestnut Oak Forest, Acidic Cove Forest, and Pine/Oak Heath where it is lacking but desired. The shelterwood procedure for this objective is	**NCFRA** **NCWAP**	**Threats to oak forest and mixed hardwood pine forest** Homogeneity of stand age… **Cove hardwood habitat** Some bird species which require a diverse understory may be impacted by the aging of stands, which can result in decreased plant diversity until the stand reaches age classes sufficient to produce canopy gaps. **Early successional habitat** Regardless of how it is measured, high quality early successional wildlife habitat in the mountains of western North Carolina is limited and may be declining…Conservation actions necessary… increasing the size of timber harvest areas where appropriate to support greater variety and density of early successional "area sensitive" species. **Oak forest habitat** Homogeneity of stand age has resulted in decreasing habitat for bird species that rely on diverse understory development (lack of understory development).

	outlined in the Standards and Guidelines portion of this plan. **8.** Identify a total of 300 acres of Montane Oak-Hickory Forest, Chestnut Oak Forest, or Pine-Oak/Heath annually throughout the planning period (2011-2025) that would benefit from the reintroduction of fire, and conduct prescribed burns throughout those areas.		
VEG-3: The spread and establishment of non-native invasive plant species will be controlled through systematic inventory, treatment, and monitoring processes.	**Vegetation and Wildlife** **9.** Treat 10 acres for control of non-native and invasive plant species annually throughout the planning period (2011-2025). Area inspections and invasive species treatments will coincide with the implementation of other management procedures, as well as with the monitoring of areas following active management.	**NCFRA** **NCWAP**	**Threats to cove forests** … non-native plants could have a potential significant impact upon the health of the cove hardwood forest. **Cove hardwood habitat** …potential problem affecting cove hardwood habitat is the advent of several exotic pest species… as well as several non-native plants. **Early successional habitat** Conservation actions necessary…control of exotic species.
VEG-4: White pine plantations will be managed for the purposes of increasing species and structural diversity, so that they may more closely resemble the natural community type appropriate for the site.	**Vegetation and Wildlife** **4.** Identify white pine plantation stands that are overstocked and are at an elevated risk for southern pine beetle infestation within the first year (2011). **5.** Over the entire planning period (2011-2025) initiate the regeneration of declining, unhealthy, or degraded white pine plantation stands, Montane Oak-Hickory stands, and Acidic Cove stands utilizing the techniques outlined in the Standards and Guidelines portion of this plan. Regeneration harvests will focus on increasing species and structural diversity and restoring desirable natural community attributes to areas impacted by past management. The amount of area targeted for regeneration within each natural community throughout the first five planning years (2011-2014) is addressed in	**NCFRA**	**Threats to dry coniferous woodlandad** …an additional problem is the…conversion of this habitat to other pine habitat (mainly white pine).

	the Standards and Guidelines Portion of this plan. **6.** Over the entire planning period (2011-2025) conduct thinnings of overstocked white pine stands at high risk for southern pine beetle infestation. The amount of area targeted for this activity is addressed in the Standards and Guidelines Portion of this plan.		
VEG-5: Prescribed fire will be utilized to manage fire dependent vegetation including pitch pine and shortleaf pine and the natural community types in which they are found or introduced.	**Vegetation and Wildlife** **8.** Identify a total of 300 acres of Montane Oak-Hickory Forest, Chestnut Oak Forest, or Pine-Oak/Heath annually throughout the planning period (2011-2025) that would benefit from the reintroduction of fire, and conduct prescribed burns throughout those areas.	**NCFRA** **NCWAP**	**Objective 3.2.: Restore and conserve fire-adapted species, habitats, and forest ecosystems.** Fire exclusion threatens the health and existence of many native plant communities and the wildlife they support. The use of prescribed fire in North Carolina is an important wildlife and forest management tool to maintain fire-dependent ecosystems. **Threats to dry coniferous woodlands** The most significant problem affecting dry coniferous forests in North Carolina is the lack of regular fire to maintain and reproduce this habitat. **Dry coniferous woodland habitat** There is little doubt that frequent fires are necessary to sustain this habitat…Significant ownership of this habitat occurs in western North Carolina upon state owned lands…DuPont State Forest…We must do everything possible to promote appropriate management of dry coniferous forest on public land through increased use of prescribed fire as a management tool. Prescribed burning is necessary to promote understory development, as well as maintain overall habitat quality and function. **Oak forest habitat** Fire suppression is a major factor affecting species diversity and richness, also affecting

			the composition, structure and diversity of hardwood stands throughout the Southern Appalachians.
		PIF	**Southern yellow pine** Composition of this group, in general, varies along an elevational gradient and depends upon past disturbance history, landuse, and topographic features. Stands of shortleaf pine occurring below 2,400 ft grade into stands of pitch pine which dominate up to around 2,800 ft after which Table Mountain Pine becomes more prominent…The composition and structure of these forests were historically produced and maintained by periodic disturbances, including heavy winter storms…and, most importantly, fire which opened seed beds and allowed shade intolerant species like pitch and Table Mountain Pines to regenerate…In the absence of disturbance (*i.e.*, fire), yellow pine stands become dominated by hardwoods…Where not otherwise managed for commercial production, mature southern yellow pine forests should be maintained at current levels and increased wherever possible. This means instituting an active fire management program.
VEG-6: Oak and hickory regeneration will be gradually established in the understory of target communities to ensure the long-term retention of these species.	**Vegetation and Wildlife** **7.** Conduct first shelterwood treatments on 20 acres annually during the planning period (2011-2025) as a means of establishing competitive oak and hickory regeneration in areas of Montane Oak-Hickory Forest, Chestnut Oak Forest, Acidic Cove Forest, and Pine/Oak Heath where it is lacking but desired. The shelterwood procedure for this objective is outlined in the Standards and Guidelines portion of this plan. **8.** Identify a total of 300 acres of Montane Oak-Hickory Forest, Chestnut Oak Forest, or Pine-Oak/Heath annually throughout the	**NCWAP** **PIF**	**Oak forest habitat** Homogeneity of stand age has resulted in decreasing habitat for bird species that rely on diverse understory development (lack of understory development). **Appalachian oak hardwood** …the current proportions of early and late successional stands within the SBR should be maintained and, whenever possible, augmented with appropriate disturbances reintroduced into the system… this approach will likely require substantial reduction of presently high stocking levels and careful introduction of fuel reduction protocols… mid-successional stands that are determined to be in poor condition (i.e. over stocked, closed canopy stands in the stem

	planning period (2011-2025) that would benefit from the reintroduction of fire, and conduct prescribed burns throughout those areas.		exclusion stage), and are likely providing only marginal habitat for a select few species should be improved through thinnings or shelterwood silvicultural techniques.
VEG-7: Where appropriate, shortleaf pine will be re-introduced as a forest component. This species holds significant ecological importance to the region and has been reduced in abundance due to past land-use. All other threatened plant species as identified will be protected.	**Vegetation and Wildlife** **12.** Within the first planning year (2011) identify and delineate potential areas for the establishment of shortleaf pine.	**NCFRA** **PIF**	**Objective 5.3: Promote the restoration and conservation of declining tree species and forest ecosystems.** …forested area of shortleaf pine and the number of shortleaf trees occupying each acre has sharply dropped in North Carolina. Reasons include urbanization, especially in the piedmont, lack of management for regeneration, fire exclusion, forest conversion, and harvesting… In the mountains, all of the 51,458 acres with shortleaf pines were a mixed shortleaf pine–oak type suggesting pure shortleaf stands are rare there. **Southern yellow pine** Composition of this group, in general, varies along an elevational gradient and depends upon past disturbance history, landuse, and topographic features. Stands of shortleaf pine occurring below 2,400 ft grade into stands of pitch pine which dominate up to around 2,800 ft after which Table Mountain Pine becomes more prominent…The composition and structure of these forests were historically produced and maintained by periodic disturbances, including heavy winter storms…and, most importantly, fire which opened seed beds and allowed shade intolerant species like pitch and Table Mountain Pines to regenerate…In the absence of disturbance (*i.e.*, fire), yellow pine stands become dominated by hardwoods…Where not otherwise managed for commercial production, mature southern yellow pine forests should be maintained at current levels and increased wherever possible. This means instituting an active fire management program.

WLD-1: A variety of successional stages across all natural communities will exist throughout DSF, the extent and proximity of which will adequately support a diverse assemblage of vertebrates, non-vertebrates, game and non-game species appropriate for the southern Blue Ridge ecoregion.	**Vegetation and Wildlife** **5.** Over the entire planning period (2011-2025) initiate the regeneration of declining, unhealthy, or degraded white pine plantation stands, Montane Oak-Hickory stands, and Acidic Cove stands utilizing the techniques outlined in the Standards and Guidelines portion of this plan. Regeneration harvests will focus on increasing species and structural diversity and restoring desirable natural community attributes to areas impacted by past management. The amount of area targeted for regeneration within each natural community throughout the first five planning years (2011-2014) is addressed in the Standards and Guidelines portion of this plan. **6.** Over the entire planning period (2011-2025) conduct thinnings of overstocked white pine stands at high risk for southern pine beetle infestation. The amount of area targeted for this activity is addressed in the Standards and Guidelines portion of this plan. **7.** Conduct first shelterwood treatments on 20 acres annually during the planning period (2011-2025) as a means of establishing competitive oak and hickory regeneration in areas of Montane Oak-Hickory Forest, Chestnut Oak Forest, Acidic Cove Forest, and Pine/Oak Heath where it is lacking but desired. The shelterwood procedure for this objective is outlined in the Standards and Guidelines portion of this plan. **8.** Identify a total of 300 acres of Montane Oak-Hickory Forest, Chestnut Oak Forest, or Pine-Oak/Heath annually throughout the planning period (2011-2025) that would	**NCFRA** **NCWAP** **PIF**	**Threats to dry coniferous woodlands** …an additional problem is the lack of early successional .habitat of this type. **Cove hardwood habitat** Some bird species which require a diverse understory may be impacted by the aging of stands, which can result in decreased plant diversity until the stand reaches age classes sufficient to produce canopy gaps. **Early successional habitat** Regardless of how it is measured, high quality early successional wildlife habitat in the mountains of western North Carolina is limited and may be declining…Conservation actions necessary… increasing the size of timber harvest areas where appropriate to support greater variety and density of early successional "area sensitive" species. **Oak forest habitat** Homogeneity of stand age has resulted in decreasing habitat for bird species that rely on diverse understory development (lack of understory development). **Appalachian oak hardwood** …the current proportions of early and late successional stands within the SBR should be maintained and, whenever possible, augmented with appropriate disturbances reintroduced into the system… this approach will likely require substantial reduction of presently high stocking levels and careful introduction of fuel reduction protocols… mid-successional stands that are determined to be in poor condition (i.e. over stocked, closed canopy stands in the stem exclusion stage), and are likely providing only marginal habitat for a select few species should be improved through thinnings or shelterwood silvicultural techniques. **Early-succession, shrub-scrub, bald**

	benefit from the reintroduction of fire, and conduct prescribed burns throughout those areas.		There are many opportunities to enhance the availability of early successional habitat in the SBR…set specific objectives (i.e. amount, condition, patch sizes, rotation ages, burning schedules), for the creation and maintenance of a steady amount of early successional habitat within each appropriate forest type. The main objectives for early successional species are to 1) protect, maintain, and where necessary, restore sensitive early successional habitats such as mountain wetlands and high elevation balds, 2) where even-aged timber management is employed (industrial private lands and state and national forests), increase the size of early successional forest patches while maintaining the number of smaller patches, and 3) in larger tracts of forest, maintain a shifting mosaic of early, mid and late successional habitats with forest cover remaining above 70%. If even aged management is determined to be a feasible way to create early successional habitat, then patches should be between 8-40 ha (20-100 ac) as limited data indicates that patches of this size are more likely to support source populations of many early successional species than are smaller ones.
WLD-2: Habitat for all federally listed threatened or endangered species, as well as federally listed species of concern that have been indentified on DSF will be protected and perpetuated throughout the natural communities in which they are currently present.	**Vegetation and Wildlife** **11.** Within the first planning year (2011) in cooperation with NCWRC establish a list of important wildlife indicator species, including federally listed threatened and endangered species with the potential to inhabit DSF, and develop the procedure to establish baseline abundance numbers.	**NCWAP**	**Oak forest habitat** Problems affecting species and habitats… Amphibian species impacted by loss of embedded ephemeral pool habitats.
WLD-3: An abundance of hard and soft mast will be available, and those species that produce mast will be perpetuated across DSF.	**Vegetation and Wildlife** **7.** Conduct first shelterwood treatments on 20 acres annually during the planning period (2011-2025) as a means of establishing competitive oak and hickory	**NCWAP**	**Oak forest habitat** Homogeneity of stand age has resulted in decreasing habitat for bird species that rely on diverse understory development (lack of understory development).

	regeneration in areas of Montane Oak-Hickory Forest, Chestnut Oak Forest, Acidic Cove Forest, and Pine/Oak Heath where it is lacking but desired. The shelterwood procedure for this objective is outlined in the Standards and Guidelines portion of this plan.	**PIF**	**Appalachian oak hardwood** …the current proportions of early and late successional stands within the SBR should be maintained and, whenever possible, augmented with appropriate disturbances reintroduced into the system… this approach will likely require substantial reduction of presently high stocking levels and careful introduction of fuel reduction protocols… mid-successional stands that are determined to be in poor condition (i.e. over stocked, closed canopy stands in the stem exclusion stage), and are likely providing only marginal habitat for a select few species should be improved through thinnings or shelterwood silvicultural techniques.
WLD-4: The amount of in-stand vertical structure will be increased to provide higher quality habitat as outlined in the PIF conservation plan and the NCWAP.	**Vegetation and Wildlife** **5.** Over the entire planning period (2011-2025) initiate the regeneration of declining, unhealthy, or degraded white pine plantation stands, Montane Oak-Hickory stands, and Acidic Cove stands utilizing the techniques outlined in the Standards and Guidelines portion of this plan. Regeneration harvests will focus on increasing species and structural diversity and restoring desirable natural community attributes to areas impacted by past management. The amount of area targeted for regeneration within each natural community throughout the first five planning years (2011-2014) is addressed in the Standards and Guidelines portion of this plan.	**NCWAP** **PIF**	**Cove hardwood habitat** Some bird species which require a diverse understory may be impacted by the aging of stands, which can result in decreased plant diversity until the stand reaches age classes sufficient to produce canopy gaps. **Oak forest habitat** Homogeneity of stand age has resulted in decreasing habitat for bird species that rely on diverse understory development (lack of understory development). **Appalachian oak hardwood** …the current proportions of early and late successional stands within the SBR should be maintained and, whenever possible, augmented with appropriate disturbances reintroduced into the system… this approach will likely require substantial reduction of presently high stocking levels and careful introduction of fuel reduction protocols… mid-successional stands that are determined to be in poor condition (i.e. over stocked, closed canopy stands in the stem exclusion stage), and are likely providing only marginal habitat for a select few species should be improved through thinnings or shelterwood silvicultural techniques.
WLD-5: Habitat components that are currently lacking throughout	**Vegetation and Wildlife**	**NCWAP**	**Cove hardwood habitat** Some bird species which require a diverse

DSF, including those associated with late successional forestland will be present and supported through management.	**5.** Over the entire planning period (2011-2025) initiate the regeneration of declining, unhealthy, or degraded white pine plantation stands, Montane Oak-Hickory stands, and Acidic Cove stands utilizing the techniques outlined in the Standards and Guidelines portion of this plan. Regeneration harvests will focus on increasing species and structural diversity and restoring desirable natural community attributes to areas impacted by past management. The amount of area targeted for regeneration within each natural community throughout the first five planning years (2011-2014) is addressed in the Standards and Guidelines portion of this plan. **7.** Conduct first shelterwood treatments on 20 acres annually during the planning period (2011-2025) as a means of establishing competitive oak and hickory regeneration in areas of Montane Oak-Hickory Forest, Chestnut Oak Forest, Acidic Cove Forest, and Pine/Oak Heath where it is lacking but desired. The shelterwood procedure for this objective is outlined in the Standards and Guidelines portion of this plan. **8.** Identify a total of 300 acres of Montane Oak-Hickory Forest, Chestnut Oak Forest, or Pine-Oak/Heath annually throughout the planning period (2011-2025) that would benefit from the reintroduction of fire, and conduct prescribed burns throughout those areas.	**PIF**	understory may be impacted by the aging of stands, which can result in decreased plant diversity until the stand reaches age classes sufficient to produce canopy gaps. **Hemlock-white pine** …the amount of late succession hemlock and hemlock-white pine mixed stands should be increased on as many acres as possible for this type, especially on public lands. **Cove (mixed mesophytic) hardwood** …the amount of mid and, especially, late succession cove hardwood forests should be sustained at current levels….This objective needs to be tempered by the fact that much of the most commercially important timber, especially on public lands, is in the same coves that now support dense populations of many priority bird species. It is, thus, necessary to determine the compatibility of various harvest practices with the maintenance of healthy bird populations. **Appalachian oak hardwood** …the current proportions of early and late successional stands within the SBR should be maintained and, whenever possible, augmented with appropriate disturbances reintroduced into the system… this approach will likely require substantial reduction of presently high stocking levels and careful introduction of fuel reduction protocols… mid-successional stands that are determined to be in poor condition (i.e. over stocked, closed canopy stands in the stem exclusion stage), and are likely providing only marginal habitat for a select few species should be improved through thinnings or shelterwood silvicultural techniques.
WLD-6: Open areas and designated wildlife food plots will consist of native grasses, herbs, and shrubs.	**Vegetation and Wildlife** **9.** Treat 10 acres for control of non-native and invasive plant species annually throughout the planning period (2011-	**NA**	**NA**

	2025). Area inspections and invasive species treatments will coincide with the implementation of other management procedures, as well as with the monitoring of areas following active management.		
SWF-1: The Little River and its tributaries will continue to function properly providing high quality aquatic habitat for both game and non-game organisms.	**Soil, Water, and Fisheries** **1.** Contact the NCDWQ within the first planning year (2011) to assess the need and feasibility of establishing additional stream monitoring stations in the Little River and its tributaries. If established, these stations will be used to monitor water quality throughout the entire planning period (2011-2025). **2.** Contact the NCDWQ within the first planning year (2011) to review the current and potential maintenance needs of all lake dam structures on DSF. **3.** Contact the NCDWQ within the first planning year (2011) to determine the extent of native freshwater mussel populations and potential habitat on DSF. In cooperation with NCDWQ develop an action plan that describes the steps needed to sustain, protect, or improve mussel populations throughout this planning period (2011-2025). **4.** Within the first two planning years (2011-2012) conduct a comprehensive baseline assessment of the Little River and its tributaries regarding stream bank degradation. **5.** Monitor the Little River and its tributaries for possible stream bank degradation and restore or stabilize affected areas to improve water quality and enhance aquatic habitat for the duration of this planning period (2011-2025). This	**NCWAP**	**Floodplain forest habitat** Contiguous, unfragmented gradients between floodplain forest and adjacent upland sites are essential to many amphibian and reptile species in providing foraging habitat, hibernation sites, and refugia during high water events… Protection and restoration of the remaining floodplain forest in the region needs to be a high priority… **Riverine aquatic community habitat** Water quality deterioration and loss of habitat are two of the most serious problems affecting wildlife that utilize riverine habitat…. originating from both point and non-point sources…continue to pose a threat directly to species that occur in riverine habitat, and indirectly through alteration of the food base or habitat… sedimentation, channel scour, and other alterations of the physical habitat can lead to both deterioration of the habitat quality and negative impacts upon aquatic flora and fauna, which form the base of the food web for numerous wildlife species.

	could include the restoration of wetlands, bogs, or riparian floodplain forests. **6.** Annually assess the forest road network regarding the need for grading, resurfacing, drainage improvement, or stabilization work for the duration of this planning period (2011-2025). Road improvement projects will be prioritized based on the severity of damage, and the potential for water quality degradation. Road improvement and maintenance will be viewed as a continuous process with constant monitoring by all DSF personnel during normal work duties. The annual assessment is to ensure that even those segments of road that are not commonly used are systematically inspected. Roads posing an imminent threat to water quality will be addressed immediately. **7.** Annually inspect all road and trail stream crossings regarding the stability of those crossings, and the potential for water quality degradation as a result of their condition for the duration of this planning period (2011-2025). Poorly functioning crossings should be stabilized or replaced with a more appropriate structure (i.e. replacing culverts with bridges). Stream crossings posing an imminent threat to water quality will be addressed immediately. **8.** Annually inspect all forest trails to assess the need for stabilization work, rerouting, or closure as a means of minimizing accelerated erosion throughout the network, and eliminating potential sources of sedimentation for the duration of this planning period (2011-2025). Trails posing an imminent threat to water quality will be addressed immediately.		
SWF-2: Riparian areas will	**Soil, Water, and Fisheries**	**NCFRA**	**Threats to floodplain forests**

contain a natural assemblage of vegetation and coarse woody debris, sufficient to maintain stream hydrologic function and aquatic habitat. Riparian areas will effectively filter sediment from roads and trails and provide important wildlife corridors.	**5.** Monitor the Little River and its tributaries for possible stream bank degradation and restore or stabilize affected areas to improve water quality and enhance aquatic habitat for the duration of this planning period (2011-2025). This could include the restoration of wetlands, bogs, or riparian floodplain forests.	**NCWAP** **PIF**	…habitat fragmentation, and altered hydrology and plant composition. **Threats to bogs and associated wetlands** A significant problem for some mountain bog forest types is secondary succession of the plant communities… **Bogs and associated wetland habitat** The largest scale problem affecting mountain bogs and wetlands in general has been and continues to be the conversion of these habitats to other land uses… A significant problem for some mountain bogs, or at least for some species associated with them, is secondary succession of the plant communities at particular sites… **Floodplain forest habitat** Contiguous, unfragmented gradients between floodplain forest and adjacent upland sites are essential to many amphibian and reptile species in providing foraging habitat, hibernation sites, and refugia during high water events… Protection and restoration of the remaining floodplain forest in the region needs to be a high priority… **Riverine aquatic community habitat** Water quality deterioration and loss of habitat are two of the most serious problems affecting wildlife that utilize riverine habitat…. originating from both point and non-point sources…continue to pose a threat directly to species that occur in riverine habitat, and indirectly through alteration of the food base or habitat… sedimentation, channel scour, and other alterations of the physical habitat can lead to both deterioration of the habitat quality and negative impacts upon aquatic flora and fauna, which form the base of the food web for numerous wildlife species. **Lowland riparian woodlands** Riparian areas appear to serve as optimal

		BMP Manual	habitat for transient neotropical migrants as they move through the Southeast….riparian habitats provide the best, if not the only, opportunities to support many vulnerable birds away from large forested wetlands...The width of riparian buffers should increase downslope towards the lower end of a watershed… Narrow streamside management zones on ephemeral or intermittent streams can be extremely important and may contribute to the overall diversity of the avian community in a managed forest…Important habitat features may not always be encompassed by fixed-width streamside management zones, especially in areas with diverse landform features and habitats. **Chapter 4:** Streamside Management Zones and Riparian Buffers
SWF-3: Waterfalls will remain available for public visitation, but public access will not be granted to an extent that adversely affects soil or water quality.	**Soil, Water, and Fisheries** **5.** Monitor the Little River and its tributaries for possible stream bank degradation and restore or stabilize affected areas to improve water quality and enhance aquatic habitat for the duration of this planning period (2011-2025). This could include the restoration of wetlands, bogs, or riparian floodplain forests. **8.** Annually inspect all forest trails to assess the need for stabilization work, rerouting, or closure as a means of minimizing accelerated erosion throughout the network, and eliminating potential sources of sedimentation for the duration of this planning period (2011-2025). Trails posing an imminent threat to water quality will be addressed immediately.	**NA**	**NA**
SWF-4: All forest roads and trails will remain stable with adequate water control structures in place to prevent accelerated erosion and	**Soil, Water, and Fisheries** **6.** Annually assess the forest road network regarding the need for grading,	**NCWAP**	**Riverine aquatic community habitat** Water quality deterioration and loss of habitat are two of the most serious problems affecting wildlife that utilize riverine habitat….

stream sedimentation.	resurfacing, drainage improvement, or stabilization work for the duration of this planning period (2011-2025). Road improvement projects will be prioritized based on the severity of damage, and the potential for water quality degradation. Road improvement and maintenance will be viewed as a continuous process with constant monitoring by all DSF personnel during normal work duties. The annual assessment is to ensure that even those segments of road that are not commonly used are systematically inspected. Roads posing an imminent threat to water quality will be addressed immediately **7.** Annually inspect all road and trail stream crossings regarding the stability of those crossings, and the potential for water quality degradation as a result of their condition for the duration of this planning period (2011-2025). Poorly functioning crossings should be stabilized or replaced with a more appropriate structure (i.e. replacing culverts with bridges). Stream crossings posing an imminent threat to water quality will be addressed immediately **8.** Annually inspect all forest trails to assess the need for stabilization work, rerouting, or closure as a means of minimizing accelerated erosion throughout the network, and eliminating potential sources of sedimentation for the duration of this planning period (2011-2025). Trails posing an imminent threat to water quality will be addressed immediately.	**BMP Manual**	originating from both point and non-point sources…continue to pose a threat directly to species that occur in riverine habitat, and indirectly through alteration of the food base or habitat… sedimentation, channel scour, and other alterations of the physical habitat can lead to both deterioration of the habitat quality and negative impacts upon aquatic flora and fauna, which form the base of the food web for numerous wildlife species. **Chapter 3:** Planning Forestry Operations and BMPs **Chapter 5:** Runoff Control and Forestland Access **Chapter 11:** Site Rehabilitation and Stabilization
SWF-5: Road and trail crossings will be designed and implemented in a manner that prevents sedimentation, and does not alter the hydrologic function of the	**Soil, Water, and Fisheries** **7.** Annually inspect all road and trail stream crossings regarding the stability of those crossings, and the potential for water	**NCWAP**	**Riverine aquatic community habitat** Water quality deterioration and loss of habitat are two of the most serious problems affecting wildlife that utilize riverine habitat…. originating from both point and non-point

watercourse. Crossings will permit the passage of fish and other aquatic organisms.	quality degradation as a result of their condition for the duration of this planning period (2011-2025). Poorly functioning crossings should be stabilized or replaced with a more appropriate structure (i.e. replacing culverts with bridges). Stream crossings posing an imminent threat to water quality will be addressed immediately.	**BMP Manual**	sources…continue to pose a threat directly to species that occur in riverine habitat, and indirectly through alteration of the food base or habitat… sedimentation, channel scour, and other alterations of the physical habitat can lead to both deterioration of the habitat quality and negative impacts upon aquatic flora and fauna, which form the base of the food web for numerous wildlife species. **Chapter 3:** Planning Forestry Operations and BMPs **Chapter 5:** Runoff Control and Forestland Access **Chapter 11:** Site Rehabilitation and Stabilization
SWF-6: The recommendations outlined in the NCWRC DuPont State Forest Fisheries Management Plan will be implemented as specified.	**No specific applicable objectives aside from what is recommended in the NCWRC fisheries plan**	**NA**	**NA**
SWF-7: Restoration of degraded water quality or hydrologic conditions will occur in a manner that limits disturbance to the surrounding vegetative community.	**Soil, Water, and Fisheries** **5.** Monitor the Little River and its tributaries for possible stream bank degradation and restore or stabilize affected areas to improve water quality and enhance aquatic habitat for the duration of this planning period (2011-2025). This could include the restoration of wetlands, bogs, or riparian floodplain forests.	**NCWAP** **BMP Manual**	**Floodplain forest habitat** Contiguous, unfragmented gradients between floodplain forest and adjacent upland sites are essential to many amphibian and reptile species in providing foraging habitat, hibernation sites, and refugia during high water events… Protection and restoration of the remaining floodplain forest in the region needs to be a high priority… **Chapter 11:** Site Rehabilitation and Stabilization
SWF-8: Lake dam structures will remain safe for impounding water at a level sufficient to meet recreational and fisheries management goals.	**Soil, Water, and Fisheries** **2.** Contact the NCDWQ within the first planning year (2011) to review the current and potential maintenance needs of all lake dam structures on DSF.	**NA**	**NA**
REC-1: A variety of trails will be accessible to forest users. Those	**Recreation and Scenic Resources**	**NCFRA**	**Objective 4.3.: Advocate and promote markets for forest-derived ecosystem**

trails will be designed and maintained to prevent adverse ecological impacts including accelerated soil erosion, stream sedimentation, destruction of vegetation, and loss of wildlife habitat components.	**1.** Within the first two years of this planning period (2011-2012), generate an updated trails map for mass distribution including all trail changes, trail re-routes, permanent trail closures, and other infrastructure changes that have occurred through DSF since the last map printing in 2008. **2.** Construct trail re-routes on Grassy Creek, Stone Mt., and Rocky Ridge trails within five years (2011-2015) to reduce erosion potential. **3.** Replace the closed Galax trail with a trail connecting Sheep Mountain trail to the triple falls trail within the first planning year (2011) to mitigate erosion and over-use. **4.** Construct a trail connection between Turkey Knob road and Briery Fork trail within three years (2011-2013) **5.** Conduct a road to trail conversion on the 750 ft. Shortcut trail to maintain the characteristics of a recreational trail rather than those of a road within three years (2011-2013) to reduce environmental impact and enhance the recreational experience of the trail. **6.** Control vegetation to maintain important view-sheds at the High Falls shelter, Triple Falls shelter, and Bridal Veil Falls platform bi-annually for the duration of this planning period (2011-2025). **7.** Annually assess the forest road and trail network regarding the need to trim and control vegetation for the duration of this planning period (2011-2025). Overgrown trails will be maintained through a combination of mechanical and manual	**NCWAP**	**services, nontimber products, and ecotourism.** North Carolina's natural resources support a myriad of recreational opportunities, ranging from wildlife viewing to hunting and fishing, and are the basis for a multibillion dollar outdoor recreation industry. As the population in North Carolina increases, the demand for recreational opportunities and resources will continue to increase. This increase in recreational demand will require a balance between protection and use…These public places make direct impacts on local economies. **Threats to low elevation rock outcrops** Recreational activities… **Low elevation rock outcrop habitat** …the two major problems most associated with the low elevation rock outcrops include development and recreational impacts… conservation actions that are necessary include assigning appropriate management schemes to rock outcrops upon conservation lands to minimize negative impacts from human activities including recreational use…

	methods to ensure they are passable as designed. Priority will be given to roads most utilized for emergency response. Road and trail clearing will be viewed as a continuous process, with the objective of having all roads and trails examined annually and treated as necessary. The clearing of vegetation will be designed to last up to 5 years **8.** Organize a minimum of 25 trail work days with volunteer groups annually for the duration of this planning period (2011-2025), consisting of erosion control work, trail clearing, litter removal, and other related tasks. **9.** Within the first three planning years (2011-2013) develop and administer a systematic DSF user-group survey to ascertain the current level of visitor satisfaction and to uncover any potential sources of user-group conflict.		
REC-2: Visitation levels will be managed to ensure the sustainability of ecological, social, and historical resources.	**Soil, Water, and Fisheries** **6.** Annually assess the forest road network regarding the need for grading, resurfacing, drainage improvement, or stabilization work for the duration of this planning period (2011-2025). Road improvement projects will be prioritized based on the severity of damage, and the potential for water quality degradation. Road improvement and maintenance will be viewed as a continuous process with constant monitoring by all DSF personnel during normal work duties. The annual assessment is to ensure that even those segments of road that are not commonly used are systematically inspected. Roads posing an imminent threat to water quality will be addressed immediately. **7.** Annually inspect all road and trail	**NCWAP**	**Riverine aquatic community habitat** Water quality deterioration and loss of habitat are two of the most serious problems affecting wildlife that utilize riverine habitat…. originating from both point and non-point sources…continue to pose a threat directly to species that occur in riverine habitat, and indirectly through alteration of the food base or habitat… sedimentation, channel scour, and other alterations of the physical habitat can lead to both deterioration of the habitat quality and negative impacts upon aquatic flora and fauna, which form the base of the food web for numerous wildlife species.

	stream crossings regarding the stability of those crossings, and the potential for water quality degradation as a result of their condition for the duration of this planning period (2011-2025). Poorly functioning crossings should be stabilized or replaced with a more appropriate structure (i.e. replacing culverts with bridges). Stream crossings posing an imminent threat to water quality will be addressed immediately. **8.** Annually inspect all forest trails to assess the need for stabilization work, rerouting, or closure as a means of minimizing accelerated erosion throughout the network, and eliminating potential sources of sedimentation for the duration of this planning period (2011-2025). Trails posing an imminent threat to water quality will be addressed immediately. **Recreation and Scenic Resources** **9.** Within the first three planning years (2011-2013) develop and administer a systematic DSF user-group survey to ascertain the current level of visitor satisfaction and to uncover any potential sources of user-group conflict.		
REC-3: User-group conflict will be rare, and potential for conflict will be minimized. Forest use of one interest group will not consistently preclude the use of another.	**Recreation and Scenic Resources** **9.** Within the first three planning years (2011-2013) develop and administer a systematic DSF user-group survey to ascertain the current level of visitor satisfaction and to uncover any potential sources of user-group conflict.	**NA**	**NA**
REC-4: The quality of the user experience will not be reduced by overall visitation levels.	**Recreation and Scenic Resources** **9.** Within the first three planning years (2011-2013) develop and administer a systematic DSF user-group survey to	**NA**	**NA**

	ascertain the current level of visitor satisfaction and to uncover any potential sources of user-group conflict.		
FAC-1: All facilities and associated infrastructure needed to carry out the mission of DuPont State Forest and to provide a rewarding experience for forest visitors will be maintained and functional. All unnecessary facilities will be eliminated.	**Facility Resources Objectives** **1.** A facilities master plan will be developed within the first five years of this planning period (2011-2015) taking into account the current condition of the existing infrastructure and the anticipated need for facilities based on user-group feedback. **2.** A visitor center will be completed within the first five years of this planning period (2011-2015) at the High Falls access area to provide information regarding the history of DSF, resource management techniques, educational offerings, and recreation opportunities.	**NA**	**NA**
SNC-1: The scenic integrity of DSF will be considered in all management decisions.	**No specific applicable objectives**	**NA**	**NA**
SNC-2: The visual impact of management activities on areas within the view-shed of significant points of interest (i.e. waterfalls, heavily used trails) will be considered prior to initiating the treatment.	**No specific applicable objectives**	**NA**	**NA**
SNC-3: Access points to areas of special scenic interest will be provided and maintained in a way that minimizes the site impact of frequent visitation.	**Soil, Water, and Fisheries** **6.** Annually assess the forest road network regarding the need for grading, resurfacing, drainage improvement, or stabilization work for the duration of this planning period (2011-2025). Road improvement projects will be prioritized based on the severity of damage, and the potential for water quality degradation. Road improvement and maintenance will	**NA**	**NA**

	be viewed as a continuous process with constant monitoring by all DSF personnel during normal work duties. The annual assessment is to ensure that even those segments of road that are not commonly used are systematically inspected. Roads posing an imminent threat to water quality will be addressed immediately. **7.** Annually inspect all road and trail stream crossings regarding the stability of those crossings, and the potential for water quality degradation as a result of their condition for the duration of this planning period (2011-2025). Poorly functioning crossings should be stabilized or replaced with a more appropriate structure (i.e. replacing culverts with bridges). Stream crossings posing an imminent threat to water quality will be addressed immediately. **8.** Annually inspect all forest trails to assess the need for stabilization work, rerouting, or closure as a means of minimizing accelerated erosion throughout the network, and eliminating potential sources of sedimentation for the duration of this planning period (2011-2025). Trails posing an imminent threat to water quality will be addressed immediately. **Recreation and Scenic Resources** **6.** Control vegetation to maintain important view-sheds at the High Falls shelter, Triple Falls shelter, and Bridal Veil Falls platform bi-annually for the duration of this planning period (2011-2025). **9.** Within the first three planning years (2011-2013) develop and administer a systematic DSF user-group survey to ascertain the current level of visitor		

	satisfaction and to uncover any potential sources of user-group conflict.		
EDP-1: Educational offerings at DSF will be designed and scheduled to compliment those currently offered by Holmes Educational State Forest and other natural resource education providers that focus primarily on elementary school-aged children. Programs which target a broad demographic including middle school, high school, and college students, as well as retirees and other forest users will be developed.	**Educational Programs** **1.** Develop curriculums and field tours within three years (2011-2013) for interested community members to examine the purpose and techniques of resource management on DSF. The programs will provide a rationale for resource management and highlight implemented treatments designed to achieve a variety of natural resource goals. **2.** Continue annual participation in the USFS Woodland Stewards Series workshops at Holmes Educational State Forest for the duration of this planning period (2011-2025). **3.** Actively promote all educational offerings at DSF for the duration of this planning period (2011-2025) within school systems, in central locations within the local and surrounding communities, and through multiple forms of media.	**NCFRA** **NCEEP**	**Objective 5.4: Educate natural resource professionals, the general public, landowners, and K-12 schoolchildren about forestland conservation, restoration, and management, and the value of forests for fish and wildlife habitat.** **Objective 6.3.: Conduct education and outreach on the relationships between forests and water resources.** **Goal 1:** Increase public participation in environmental awareness and education opportunities. **Goal 3:** Strengthen North Carolina's ability to provide sustainable and comprehensive environmental education programs. **Goal 4:** Increase the number of educators and students who receive environmental education. **Goal; 5:** Increase the environmental literacy of adults.
EDP-2: Programs will be specifically developed for new forestland owners and community members who are unfamiliar with the principles of, and need for, forest management in western North Carolina. Offerings will be widely promoted through a variety of media.	**Educational Programs** **1.** Develop curriculums and field tours within three years (2011-2013) for interested community members to examine the purpose and techniques of resource management on DSF. The programs will provide a rationale for resource management and highlight implemented treatments designed to achieve a variety of natural resource goals. **2.** Continue annual participation in the USFS Woodland Stewards Series workshops at Holmes Educational State Forest for the duration of this planning period (2011-2025).	**NCEEP**	**Goal 1:** Increase public participation in environmental awareness and education opportunities. **Goal 3:** Strengthen North Carolina's ability to provide sustainable and comprehensive environmental education programs. **Goal 4:** Increase the number of educators and students who receive environmental education. **Goal; 5:** Increase the environmental literacy of adults.

VIS-1: The official NCDFR DSF website will act as the primary online source of forest information, and will provide a central location for visitors to provide feedback and comments to DSF managers	**Visitor Information** **1.** Within the first planning year (2011) work with NCDFR Information and Education branch, as well as the NCDFR Webmaster to further the development of a comprehensive NCDFR DSF website.	**NA**	**NA**
VIS-2: Through newsletters and other media DSF staff will inform the general public of educational opportunities, management projects, and other forest events.	**No specific applicable objectives**	**NA**	**NA**
VIS-3: Visitors will be made aware of current trail closures, re-routes, and permanent changes to trail and access points through website resources and onsite kiosk postings.	**Visitor Information** **1.** Within the first planning year (2011) work with the NCDFR Information and Education branch, as well as the NCDFR Webmaster to further the development of a comprehensive NCDFR DSF website. **Facility Resources Objectives** **2.** A visitor center will be completed within the first five years of this planning period (2011-2015) at the High Falls access area to provide information regarding the history of DSF, resource management techniques, educational offerings, and recreation opportunities.	**NA**	**NA**
VIS-4: Accurate maps and brochures indicating the location of forest roads, trails, and specific points of interest will be made available to forest visitors to endorse a safe and positive experience.	**Recreation and Scenic Resources** **1.** Within the first two years of this planning period (2011-2012), generate an updated trails map for mass distribution including all trail changes, trail re-routes, permanent trail closures, and other infrastructure changes that have occurred through DSF since the last map printing in 2008.	**NA**	**NA**

RSD-1: DSF will be utilized by schools, colleges, and natural resource management organizations for use as an outdoor classroom and laboratory.	**Research and Demonstration** **1.** Within the first planning year (2011) contact organizations and individuals that may potentially be interested in utilizing DSF as a platform for research applicable to our mission. **2.** Throughout the duration of the planning period (2011-2025) highlight implemented treatments as demonstration areas during educational programs.	**NCFRA**	***Building Research Capacity*** A major concern associated with the transition in forestland ownership in the South has been the decreasing support of forestry research. Both internal proprietary research and external cooperative research programs have declined substantially or have been eliminated by forest industry…several of the research cooperatives in the South have been terminated in the last 10 years, and the support for some of the remaining programs has declined. Emerging areas that are gaining increased research interest and subsequent funding includes declining ecosystems and species restoration, climate change mitigation, biofuels for energy, carbon management and sequestration, and invasive species.
RSD-2: The results of ecological and social research conducted on DSF will be utilized to inform forest management decisions.	**No specific applicable objectives**	**NA**	**NA**
RSD-3: As management practices are implemented throughout the forest, the practices will be accompanied by signs describing the specific objective, and environmental benefit of the given treatment.	**Research and Demonstration** **2.** Throughout the duration of the planning period (2011-2025) highlight implemented treatments as demonstration areas during educational programs.	**NA**	**NA**
RSD-4: Workshops will be conducted for resource professionals, forest landowners, and other visitors to highlight implemented techniques and the ecological rationale for their use.	**Research and Demonstration** **2.** Throughout the duration of the planning period (2011-2025) highlight implemented treatments as demonstration areas during educational programs.	**NA**	**NA**