

Date of Report: March 28, 2016

BURNED-AREA REPORT
(Reference FSH 2509.13)**PART I - TYPE OF REQUEST**

A. Type of Report

- ☐ 1. Funding request for estimated emergency stabilization funds
☐ 2. Accomplishment Report
☒ 3. No Treatment Recommendation

B. Type of Action

- ☒ 1. Initial Request (Best estimate of funds needed to complete eligible stabilization measures)
☐ 2. Interim Report # _____
 ☐ Updating the initial funding request based on more accurate site data or design analysis
 ☐ Status of accomplishments to date
☐ 3. Final Report (Following completion of work)

PART II - BURNED-AREA DESCRIPTIONA. Fire Name: Millis Swamp FireB. Fire Number: NC-NCF-160079C. State: North CarolinaD. County: CarteretE. Region: 08F. Forest: Croatan National ForestG. District: Croatan Ranger DistrictH. Fire Incident Job Code: P8J6Z4I. Date Fire Started: March 18, 2016J. Date Fire Contained: March 24, 2016K. Suppression Cost: approximately \$200,000

L. Fire Suppression Damages Repaired with Suppression Funds

1. Fireline waterbarred (miles): 0
2. Fireline seeded (miles): 0
3. Other (identify): No suppression repairs had been conducted at the time of this assessment, No repairs of constructed fireline are recommended since erosion potential is very low on these gentle slopes and expected ample soil coverage from leaf fall. Gravel surfacing is planned to be placed on about 3 miles of affected NFS road.

M. Watershed Number: 03020106030060, Newport River SubwatershedN. Total Acres Burned: 1,327

NFS Acres(X) Other Federal () State () Private ()

O. Vegetation Types:

The wildfire occurred across a relatively flat terrain extending from its southwest perimeter to the northeast for 2.3 miles. Vegetation types were determined based on aerial reconnaissance, field review on the wildfire

perimeter, from its center to the northeast edge, previous plant surveys, and modeled natural vegetation. Pocosin vegetation dominates the burn area, consisting from 60-65% of the landscape. Both high and low pocosin occur although low pocosin is much more common. Pocosins occur on domed peatlands, are nutrient-poor, are dominated by shrubs and occur with only scattered trees, primarily stunted pond pine (*Pinus serotina*). High pocosin differs from low pocosin by stature of the shrubby vegetation (greater than 1.5 meters), have shallower organic soil layers, and occur on slightly lower lands when adjacent to each other. Frequently encountered woody species in the pocosin burned areas include fetterbush (*Lyonia lucida*), titi (*Cyrilla racemiflora*), inkberry (*Ilex glabra*), honey-cups (*Zenobia pulverlenta*), wax-myrtle (*Morella cerifera*), and bamboo-vine (*Smilax laurifolia*). Along the ridges wet to mesic longleaf pine savannas occur over 25-35% of the burned area. The two communities differ primarily by moisture regime and the dominant understory vegetation. Wet savannas have higher species diversity and are dominated by longleaf pine (*Pinus palustris*) in the canopy, scattered shrubs such as inkberry, dangleberry (*Gaylussacia frondosa*), and creeping blueberry (*Vaccinium crassifolium*), with a very diverse mix of grasses, sedges and forbs including wiregrass (*Aristida stricta*), toothache grass (*Ctenium aromaticum*), bluestems (*Andropogon* and *Schizachyrium* species), blackroot (*Pterocaulon pycnostachyum*), vanilla-leaf (*Carphephorus odoratissimus*), and Virginia thistle (*Cirsium virginianum*). Mesic savannas also have a diverse species component but tend to be more dominated by bracken fern (*Pteridium aquilinum*), little bluestem, sweet goldenrod (*Solidago odora*), and sunbonnets (*Chaptalia tomentosus*). Within the burned area various successional stages of these two savanna types are present with varying density of canopy trees including loblolly pine (*Pinus taeda*). Venus flytrap (*Dionaea muscipula*), sundews (*Drosera* species), *Sphagnum* species including the rare *S. cribrosum*, pitcher plants (*Sarracenia* species), and other uncommon or rare species were found within the ecotone of the pocosin and longleaf pine savannas and more open portions of the pocosin within the wildfire burned area. Along the drain on the eastern and portion of the southern fire perimeter covering less than 3% of the area, a hardwood community including swamp tupelo (*Nyssa biflora*), red maple (*Acer rubrum*), sweetbay (*Magnolia virginiana*), and swamp red bay (*Persea palustris*) occurs. A dense shrub thicket was present in the cypress gum type that did not have any visible cypress (*Taxodium distichum*).

P. Dominant Soils:

The following soils occur in the burned area:

- Murville mucky sand (66.5%) – Depressions and flats on marine terraces, high pocosins, organic soil, wetland, very poorly drained;
- Leon sand (18.3%) – Flats on marine terraces, fine sands, longleaf (low site, stunted), poorly drained;
- Mandarin sand (10.2%) – Broad marine flats, sandy soil, somewhat well drained, upland, longleaf pine;
- Dorovan muck frequently flooded (2.9%) – floodplains, very poorly drained, derived from woody organic material;
- Rains fine sandy loam, 0 to 2 percent slopes, Atlantic Coast Flatwoods (1.5%) – Carolina bays on marine terraces, broad interstream divides on marine terraces, flats on marine terraces, poorly drained
- Onslow loamy sand (0.4%) - Broad interstream divides on marine terraces, flats on marine terraces, moderately well drained; and
- Lynchburg fine sandy loam (small %) - Flats on marine terraces, broad interstream divides on marine terraces, somewhat poorly drained.

Murville soils support the high pocosin soils. These soils are very poorly drained (hydric), accumulate sphagnum moss during non-fire periods and are highly organic. The Leon soils occur in minor depressions on uplands, lower ridges and flats. These soils are easy to erode if exposed on sloping terrain, because of the fine to medium size sands and lack cohesion in the surface horizon. Even though most of the soils within the Millis Swamp wildfire area would be considered wetlands, the Mandarin soil series would not. These soils are located on the deep sandy ridges on marine terraces and marine flats. These deep sandy soils are somewhat well drained, droughty and have productivity issues related to water and nutrient retention. Of all the soils, Mandarin soil series has the lowest organic component on the surface (litter, duff, and humus) and was more likely to be affected by the fire. All soils continue to have ample organic content on the surface (duff and humus) to maintain productivity, prevent erosion, and sediment delivery.

Q. Geologic Types:

The Coastal Plain is a wedge of mostly marine sedimentary rocks that gradually thickens to the east. The most common sediment types are sand of varying grain sizes and clay, although a significant amount of limestone occurs in the southern part of the Coastal Plain. The Duplin Formation occurs in the burn area. This

formation consists of shelly, medium- to coarse-grained sand, sandy marl, and limestone, bluish gray; mainly in areas south of Neuse River.

R. Miles of Stream Channels by Order or Class:

One and a half mile of perennially flowing (blue line) streams occur as estimated from topographic maps. These are small perennial streams with low gradient channels. The area is affected by many natural wetlands and includes several miles of man-made drainage features that are affecting the local hydrology, soil, and plant conditions.

S. Transportation System

Trails: 0 miles Roads: 6.06 miles (including FS roads system and non-system)

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 1,327 (low) 0 (moderate) 0 (high)

After a field review, both on the ground and from the air, of the burn severity it was determined that a Burned Area Reflectance Classification (BARC) map was not needed. The entire burn unit had a low burn severity. No moderate or high severity fire was seen during the field survey. A very small portion of the area within the wildfire perimeter did not burn resulting in refugia for individuals of two rare species, Venus flytrap and *Sphagnum cribrosum*. There was found very little evidence of exposed mineral soil resulting from the fire. The fire effectively burned the shrub layer in both the wetland and upland forested areas, with partial consumption of the duff organic layer. In the upland forested areas young stands of trees were burned with some mortality observed, but overall survival was high, particularly for longleaf. It appeared that most larger overstory trees survived the fire and trees used by the red-cockaded woodpecker (RCW) (*Picoides borealis*) were not destroyed by the fire, and RCWs were not adversely impacted.

B. Water-Repellent Soil (acres): Not found, sandy soil with organic surface still absorbing well.

C. Soil Erosion Hazard Rating (acres): 1,327 (low) (moderate) (high)

D. Erosion Potential: 0.02 tons/acre (Very low potential)

E. Sediment Potential: 0.3 cubic yards / square mile (assuming a Sediment delivery ratio of 5 percent)

PART IV - HYDROLOGIC DESIGN FACTORS

The northern end of the fire burned in the southern headwaters of the Southwest Prong Newport River, e.g. Millis Swamp Branch, draining to the north and east. The southern end of the fire burned in the headwaters of Pettiford Creek which flows southwest into the White Oak river. Potential hydrologic treatments were not determined to be a critical need since the area is relatively flat with isolated pocosin wetland and other depressional wetlands. Perennial streams within and adjacent to the fire were generally unburned to lightly burned, with high density vegetation providing very stable streambanks. Even with some potential for increased flow from the temporary loss of vegetation within these drainage areas, the stability of the channels and absorption of water within these pocosin dominated ecosystems remains high. Hydrologically, the area reacts primarily as a wetland with drainage that is difficult to determine the exact drainage path in the saturated or inundated zone. An Erosion and sediment hazard is expected to be minimal due to the limited amount of mineral soil exposure and flat terrain. The only fireline constructed occurs off of Millis Road extending southwest to Pringle Road along the eastern flank of the fire. This line included construction and reconstructed of old fireline with a dozer and plow, across about 2.5 miles. **No actions beyond those anticipated by suppression rehabilitation are needed at this time.**

A. Estimated Vegetative Recovery Period, (years): 1-3 years for site cover

Note: Full recovery of plant type and structural diversity to pre-burn conditions is expected to take only a year or two in both wetland and upland areas.

B. Design Chance of Success, (percent): Very High (90+ percent)

Unused design sections C-H were omitted from form.

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats:

An evaluation was completed as to impacts to critical rare species and threats to spread of non-native invasive plant species from the wildfire. As reported below **no significant threats were noted or critical resources impacted by the wildfire.**

Red-cockaded woodpeckers (RCW) are a federal endangered species. The wildfire burned through one active RCW colony, #66, and one inactive recruitment colony, # 48. Twelve active or previously active trees were raked prior to the wildfire reaching colony 66 (Figure 1). All these trees survived the fire and appeared to have sustained little damage except some needle discoloration. All the active trees in the recruitment colony had previously died and provided no nesting potential. Even though the few older entact trees in colony 48 were not raked around, they appear to have sustained no real damage from the wildfire. As previously noted the wildfire was generally of low intensity with incomplete consumption of the leaf litter, duff and shrub layer. Only one longleaf pine was partially consumed and fell as a result of the wildfire. It is unlikely that any active cavity trees will be lost as a result of the wildfire. The wildfire was not unlike a typical prescribed burn within this area.

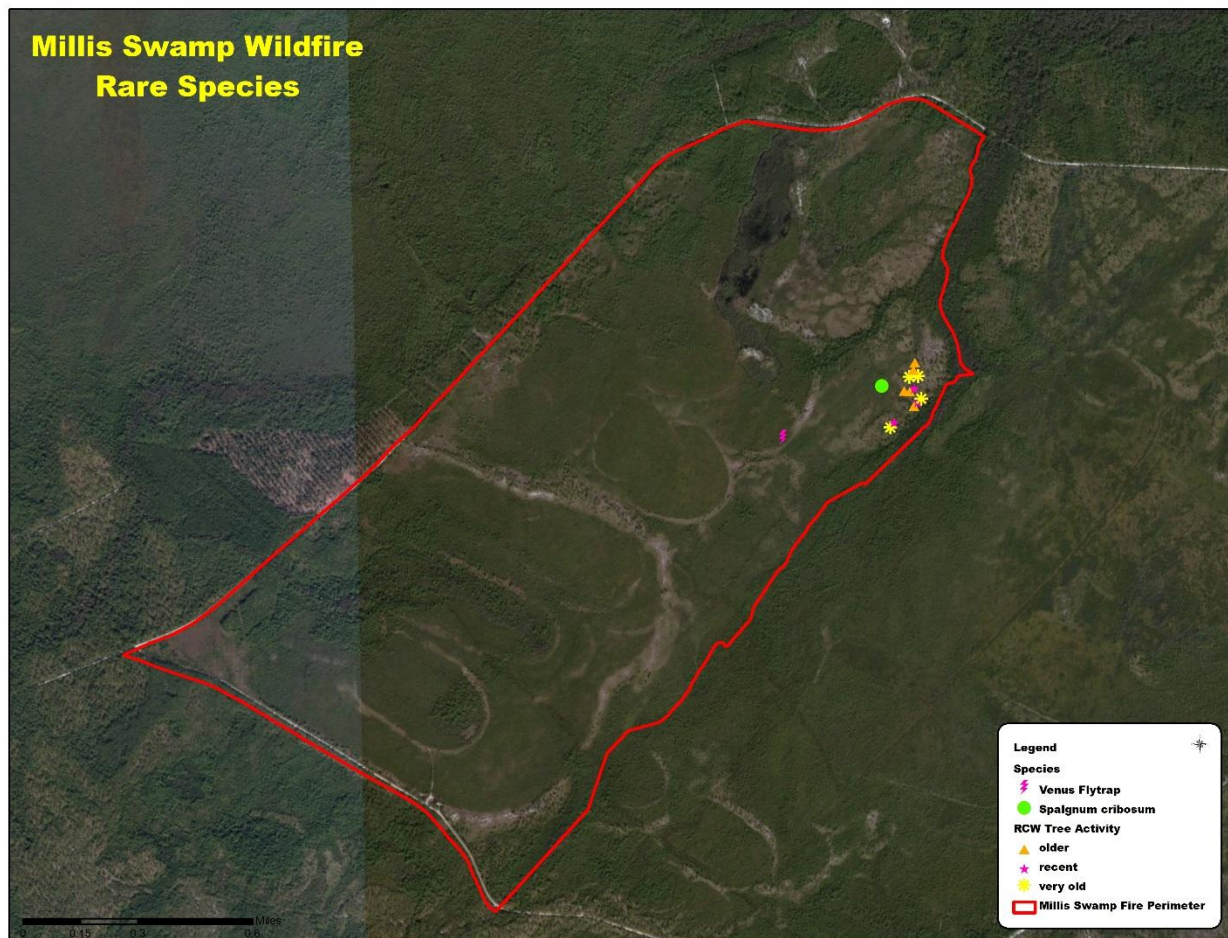


Figure 1. Aerial image of Millis Swamp Wildfire with rare species and RCW trees located after the burn.

Venus flytrap cutworm is tracked as a Region 8 rare moth, a sensitive species. This species feeds on Venus flytrap plants, a Region 8 sensitive plant species. Three concentrated subpopulations of Venus flytrap occur across the Croatan from Millis Road to Briad Creek east of Nine Foot Road. The habitat within the Millis Swamp Wildfire for this one cutworm subpopulation was burned with low intensity. Most Venus flytraps were completely or partially consumed, however a few unaffected individuals were located in unburned portions (Figure 1). A deep organic matter layer is evident on the ectone of the pocosin and upland longleaf savana where the Venus flytrap subpopulation occurs. Thus it will persist after the wildfire, just as it has during many previous similar prescribed burns across this area. There are two remaining sites with cutworm activity observed on Venus flytraps across the Croatan NF. A portion of one of these sites is scheduled to be prescribed burned later this growing season. Seven other cutworm populations have been documented across southeastern NC, representing the entire range for this exceeding rare endemic invertebrate. Venus flytrap cutworms are thought to be sensitive to burns and need fire refugia sites in order to recolonize the burned habitat. The other site with a proposed fire on the Croatan NF will have an fire exclusion zone to maintain some potential venus flytrap cutworm refugia. Since the wildfire was similar to a typical prescribed burn for this area, it was determined neither Venus flytraps or its associated cutworm is at risk at this site.

There are no known critical non-native invasive plant species (NNIS) issues within the burn or on adjacent areas. A few small infestations of privet (*Ligustrum sinense*), sericea lespedeza (*Lespedeza sericea*) and stilt grass (*Microstegium vimineum*) were noted along portions of the Pringle and Millis Roads in the western and northern perimeter of the wildfire. Previous surveys within these areas also have noted small infestations. Since the wildfire did not result in significant changes with exposure of bare soil, the risk of invasion of these infestations into the burn perimeter is very low. As a result there are no recommended control treatments or inventory within the wildfire area.

Fire is a natural part of the Millis Swamp wildfire ecosystems, and most plants benefit from low to moderate intensity fire. The pocosins and adjacent interface were only partially consumed at the surface. Plant mortality is unlikely for most trees, shrubs, and herb species that sprout from their root systems. Response tends to be rapid, within weeks to months, as most species are adapted to all but the most severe fire in this ecosystem. Wiregrass, where present, is emerging in refugia and partially burned areas. Longleaf pine seedlings and saplings were examined for evident impacts. All the observed seedlings and saplings had protected buds that appeared to be unaffected by the wildfire. The wildfire area is known to contain habitat for eight rare species, either federally listed, regional sensitive or locally rare. Occupied habitat for the rare plant species appears to be marginally affected by the wildfire given the lack of reduction in the duff layer. Based on previous similar prescribed burns, these species should maintain or increase their population sizes.

B. Emergency Treatment Objectives: None qualifying at this time. Future issues relative to the critical values may be addressed in normal workplans, such as reforestation, or Regional wildfire damage funds.

C. Probability of Completing Treatment Prior to Damaging Storm or Event:

Land N/A % Channel N/A % Roads/Trails N/A % Protection/Safety N/A %

D. Probability of Treatment Success: No treatments are proposed for BAER funding.

E. Cost of No-Action (Including Loss): \$0

F. Cost of Selected Alternative (Including Loss): \$0

G. Skills Represented on Burned-Area Survey Team:

<input checked="" type="checkbox"/> Hydrology	<input checked="" type="checkbox"/> Soils	<input type="checkbox"/> Geology	<input type="checkbox"/> Range	<input type="checkbox"/>
<input checked="" type="checkbox"/> Forestry	<input checked="" type="checkbox"/> Wildlife	<input checked="" type="checkbox"/> Fire Mgmt.	<input type="checkbox"/> Engineering	<input type="checkbox"/>
<input type="checkbox"/> Contracting	<input checked="" type="checkbox"/> Ecology	<input checked="" type="checkbox"/> Botany	<input type="checkbox"/> Archaeology	<input type="checkbox"/>
<input type="checkbox"/> Fisheries	<input type="checkbox"/> Research	<input type="checkbox"/> Landscape Arch	<input checked="" type="checkbox"/> GIS	

Team Leader: Brady Dodd

Email: bdodd@fs.fed.us

Phone: (828) 257-4214

FAX: _____

Team members/support included Gary Kauffman, David Nelson, James Cherry, Olive Jones, and partners.

H. Treatment Narrative:

(Describe the emergency treatments, where and how they will be applied, and what they are intended to do. This information helps to determine qualifying treatments for the appropriate funding authorities. For seeding treatments, include species, application rates and species selection rationale.)

Land Treatments: none

Channel Treatments: none

Roads and Trail Treatments: none

Protection/Safety Treatments: none

I. Monitoring Narrative:

(Describe the monitoring needs, what treatments will be monitored, how they will be monitored, and when monitoring will occur. A detailed monitoring plan must be submitted to the Regional BAER coordinator.)

BAER Monitoring is not requested.

Part VI – Emergency Stabilization Treatments and Source of Funds
Interim # Initial

Part IV - Emergency Stabilization Treatments and Closure of Lands											
			NFS Lands				Other Lands			All	
		Unit	# of		Other		# of	Fed	# of	Non Fed	Total
Line Items	Units	Cost	Units	BAER \$	\$		units	\$	Units	\$	\$
A. Land Treatments											
				\$0	\$0			\$0		\$0	\$0
				\$0	\$0			\$0		\$0	\$0
Insert new items above this line!											\$0
Subtotal Land Treatments				\$0	\$0			\$0		\$0	\$0
B. Channel Treatments											
				\$0	\$0			\$0		\$0	\$0
				\$0	\$0			\$0		\$0	\$0
Insert new items above this line!											\$0
Subtotal Channel Treat.				\$0	\$0			\$0		\$0	\$0
C. Road and Trails											
				\$0	\$0			\$0		\$0	\$0
				\$0	\$0			\$0		\$0	\$0
Insert new items above this line!											\$0
Subtotal Road & Trails				\$0	\$0			\$0		\$0	\$0
D. Protection/Safety											
				\$0	\$0			\$0		\$0	\$0
				\$0	\$0			\$0		\$0	\$0
Insert new items above this line!											\$0
Subtotal Structures				\$0	\$0			\$0		\$0	\$0
E. BAER Evaluation											
Hydrologist	each	2995	1	\$0	\$2,995			\$0		\$0	\$2,995
Botanist	each	2925	1	\$0	\$2,925			\$0		\$0	\$2,925
Travel Costs	day	150	6	\$0	\$900			\$0		\$0	\$900
Vehicle (gas)	miles	0.1	2000	\$0	\$200			\$0		\$0	\$200
Insert new items above this line!											\$0
Subtotal Evaluation				\$0	\$7,020			\$0		\$0	\$7,020
F. Monitoring											
				\$0	\$0			\$0		\$0	\$0
				\$0	\$0			\$0		\$0	\$0
Insert new items above this line!											\$0
Subtotal Monitoring				\$0	\$0			\$0		\$0	\$0
G. Totals				\$0	\$7,020			\$0		\$0	\$7,020
Previously approved											
Total for this request				\$0	\$7,020						

* estimated costs as of 03/28/2016

PART VII - APPROVALS

1.

Forest Supervisor (signature)

Date
2.

Regional Forester (signature)

Date