Descon: Utilizing Benign Wildfires to Achieve Land Management Objectives

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INTRODUCTION

THE 250,000-acre Francis Marion National Forest is located in the low flat coastal plain of South Carolina. The area consists of excellent stands of loblolly, longleaf, and some slash pine, interspersed with bays, creeks, and swamps containing hardwoods and cypress.

Due to heavy rainfall and an extended growing season, fuel accumulates rapidly; also, an understory of hardwood sprouts and brush develops quickly, especially in loblolly areas. Previous to the establishment of the National Forest in 1934, wildfires burned much of the area annually.

Fire, prescribed and wild, is a major factor in the ecology of the area and is responsible for the predominance of the subclimax pine types. Prescribed burning began in the early 1940's, and has been a major land management activity since 1948. During the past 15 years 30,000 to 45,000 acres have been treated annually.

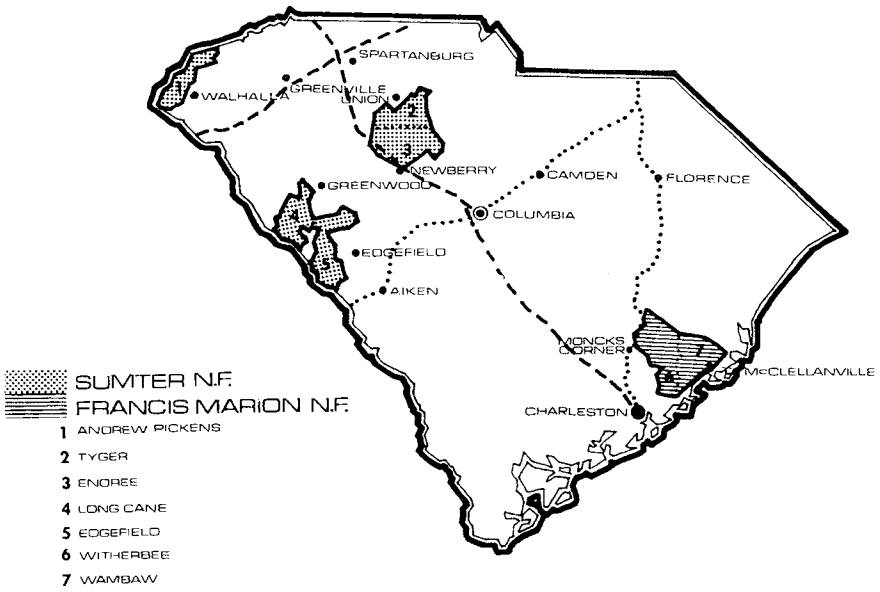

Fig. 1. Map showing location of Sumter and Francis Marion National Forests in South Carolina.

Prescribed fire accomplishes many land management objectives. These include:

(1) Reduction of hazardous forest fuels.
(2) Control of brownspot disease on longleaf seedlings.
(3) Preparation of site, for natural pine regeneration.
(4) Control of undesirable tree species.
(5) Establishment and improvement of game habitat and range forage.

Woods burning, a local tradition, is carried on primarily to reduce underbrush, to open the timber stands, and for various other reasons. Approximately 80-90 wildfires occur annually. Due to the prescribed burning program reducing the fuel load, fast suppression, and the fact that most incendiary action occurs during periods of moderate fire danger, damage from most fires is low.

Some of the Francis Marion National Forest wildfires are "benign" having the characteristics of prescribed fires, yet, policy required that all wildfires be vigorously suppressed, regardless of their potential for damage or benefit to resources.

If let alone, some would go out by themselves due to weather conditions or natural barriers. Some can be converted to "benign" fires by modification of suppression tactics that would permit that portion of the selected fire's perimeter which is behaving as a prescribed burn, to continue its movement to a predetermined control line. Judicious use may be made of this line, for burning out or for backfiring, to reduce the cost of accomplishing desired land management objectives.

When "benign" fires occur on areas specifically planned for prescribed burning, standard suppression action gives the impression of being taken solely because the fires were not started as planned. Such action is viewed by many as unproductive, especially in view of the extensive prescribed burning program.

THE PLAN

In the summer of 1973 a DESCON plan establishing guidelines and operational instructions was prepared to utilize benign wildfires to accomplish land management objectives. This plan required approval by the Chief of the U. S. Forest Service since it deviated from the historic "10 A.M. Fire Control Policy." This policy, made on April 20, 1935, called for "Fast, energetic and thorough suppression of all fires in all locations during possibly dangerous fire weather . . . with the aim of obtaining control before 10 o'clock of the next morning."

The DESCON plan was approved by the Chief on August 27, 1973 and the Forest Supervisor was authorized to implement it within pine types of the Francis Marion National Forest where planned management includes prescribed use of fire.

Stringent standards for land treatment accomplishment, fire behavior, action guidelines, records, certification of personnel, informing and involving the public and financial management were established in the DESCON plan.

Fig. 2. DESCON #1 (left) Burned January 16, 1974—Photo taken April 4, 1974; Note low scorch line—no exposed soil—no heavy fuels on ground—good kill of aerial stems of understory brushy hardwoods—area is opened up for mechanized cone collection.

Fig. 3. DESCON #2 (right) Burned January 17, 1974—Photo taken April 5, 1974—moderate to low scorch—no exposed soil—quick cover of bracken fern came up—aerial stems of undesirable understory killed—heavy fuels on ground gone—fuel load reduced to approximately 2-3 tons per acre.

Fig. 4. DESCON #3 (left) Burned February 27, 1974—Photo April 4, 1974—note low scorch line—most heavy and light fuels gone—green grass and some legumes emerging—fuel load reduced to 2 tons per acre.

Fig. 5. DESCON #4 (right) Burned March 17, 1974—photo taken April 4, 1974; note low scorch line—herbaceous ground vegetation preferred by wildlife on forest floor released—fuel load reduced to 2 tons per acre.

Fig. 6. Prescribed burning crew treating a longleaf pine stand to reduce fuel load and improve wildlife habitat.

IMPLEMENTING THE PLAN

During the Spring Fire Season of 1974, the DESCON plan was implemented on the Francis Marion National Forest. Out of a total of 62 wildfires, 4 met the requirements of the plan and were declared DESCON fires by the District Rangers.

The largest wildfire was 70 acres when declared a DESCON and the suppression action was modified to result in a 146 acre prescribed burn.

The smallest wildfire was ½ acre when declared a DESCON and resulted in a 4 acre prescribed burn.

Most of the fires did the greater part of their movement at night. None of the fires extended beyond 10 A.M. of the following day.

Creeks, roads and bays formed the bulk of the natural barriers containing the fire. Only a total of 18 chains of plowline construction and a short line made by a water tanker unit was needed to confine all four fires.

One fire went out naturally along an REA electric power distribution line right of way when the fine fuels became too wet to burn when night time humidity approached 100 percent.

DESCON costs were less than ordinary suppression action in three of the four fires. The major cost of DESCON was maintaining surveillance until the fire is abandoned.

The best results financially and from the land treatment objective were obtained on the two larger fires, the 105 and the 146 acre fires.

Land treatment was accomplished in all fires.

One fire kept a seed production area open for the operation of a tree shaker. One fire removed accumulated fuel and understory to release herbaceous game food on the forest floor. All fires resulted in fuel reduction.

No resource damage occurred. None of the fires escaped planned holding lines. There was no adverse public reaction. No smoke management problems developed.

DESCON fires started in areas of high incendiary occurrence.

Additional fires could have possibly been declared DESCON, except that adjacent private lands were threatened.

We plan to recommend for future DESCON operations:

1. Reduce the amount of surveillance. Handle the same as scheduled prescribed burns.
2. The minimum DESCON fire should be at least 45 estimated acres. Any potential candidate for a DESCON should be attacked for immediate suppression if this acreage cannot be treated.

We learned a great deal this winter. We hope to learn more in how to efficiently concert and utilize wildfires for land management purposes.

Table 1. Summary of Descon Fires—January-March 1974, Francis Marion National Forest.

Basic Information	Descon #1 Brick Church Rd.	Descon #2 Seewee	Descon #3 Dutart	Descon #4 Cane Gully Rd.
Acres When Declared DESCON	20	6	½	70
Total Acres Burned	105	20	4	146
Type of Fire	Light Head	Flanking	Backing	Light Head
Land Management Activity Benefiting From Descon	Timber Management	Hazard Reduction	Hazard Reduction	Wildlife Habitat
Burning Periods—Origin	1/16-1700	1/16-2130	2/27-2200	3/17-1800
Burning Periods—Declared Descon	1/16-2330	1/17-1330	2/28-0015	3/18-1310
Burning Periods—Declared Out	1/17-0130	1/18-0900	2/28-0900	3/18-1830
Cost as DESCON	$73	$100	$150	$62
Estimated Cost if Normal Suppression Action Were Taken	$200	$150	$80	$250
Estimated Cost if Area Was Prescribed Burned as Planned	$105	$20	$4	$146
Fuel Type	Grass & Pine Needles	Grass & Pine Needles	Grass & Pine Needles	Grass & Pine Needles
Cover Type	Long Leaf Sawtimber seed production area	Long Leaf Poles	Loblolly Pine & Sawtimber	Loblolly Poles & Pulpwood
Chains of Line Constructed	8	10 (double line)	None	½ Chain
Natural Barriers Utilized	Creek & Roads	Bay & Road	Road, Powerline & Trail	Creek & Roads
Burning Index—(Fuel Model D) 1300	10 (high)	9 (moderate)	10 (high)	10 (high)
Ignition Component 1300	29	29	63	49
Wind	4 MPH, Westerly	5 MPH, Westerly	4 MPH, South West	4 MPH W & N
Scorch Line	Very Low	Low	Low	Low

Table 1 continued

Damage	None	None	None	None
Comments	Normally scheduled for prescribed burning – area is kept open for cone collection, burned during night.	Back of fire was out when crew arrived. Burned during daytime 1/17.	Area was scheduled for prescribed burning. Went out at REA powerline R/W due to high relative humidity at night.	Crew burned out roads & & creek to safeguard perimeter.

Table 2. Summary of prescribed burning, Francis Marion National Forest, CY 1969 – 1974

FY	Total Acres Treated	Reason for Treatment							
		Utilization Burn	Brown Spot	Seedbed Prep.	Undesireable Understory Species	Wildlife Habitat	Range Imp.	Hazard Reduction	Cost Per Acre
1969	35,824	–	452	5,118	15,832	423	–	13,999	.75
1970	26,755	6,288	–	3,265	–	775	–	16,427	.67
1971	34,111	2,693	1,425	2,753	–	304	470	26,466	.70
1972	43,845	5,579	–	1,117	–	688	–	36,461	.55
1973	38,119	5,244	–	3,984	–	4,232	–	24,659	.77
1974	46,171	10,432	604	968	105	5,641	–	28,272	.97

Table 3. Number of fires by size classes and national forest acreage burned
Francis Marion National Forest, CY 1966 – 1973.

Year CY	Total Number of Fires	Number of Fires by Size Classes					Total Acreage Burned
		A	B	C	D	E	
1966	103	9	65	28	–	1	528
1967	94	12	55	27	–	–	609
1968	133	10	92	24	6	1	2091
1969	43	5	24	14	–	–	257
1970	86	13	52	17	–	–	875
1971	67	8	37	21	1	–	524
1972	68	0	41	18	–	–	302
1973	52	8	30	14	–	–	186

Table 4. DESCON: Decision Logic Table, factors affecting decisions