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SITE RECORD OF THE PERMANENTLY MAPPED
VEGETATION QUADRATS AT BIG MEADOWS
SHENANDOAH NATIONAL PARK, VIRGINIA

July 20, 1980

Submitted by:

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Permanently marked quadrats have been established within the mesic vegetation of Big Meadows, Shenandoah National Park, for the purpose of following the encroachment process characteristic of Robinia pseudo-acacia L., black locust, and Rubus spp., the blackberries and dewberries. The grid was established using a concrete pylon, USDI 796-88 NPS, as the permanent reference point, and is oriented along a magnetic north-south and east-west set of coordinates. For location purposes, the pylon is approximately due south of the Byrd Visitor Center (Fig. 1). The details of the location of survey markers and the arrangement of the 3 x 3 m contiguous quadrats are illustrated in Fig. 2.

Each of the sectors has been mapped by counting the number of Robinia and Rubus stems occurring within each quadrat. The Rubus stems were further subdivided into large, relatively heavy canes characteristic of Rubus allegheniensis Porter, the Allegheny blackberry, and the smaller, more flexible stems typical of Rubus flagellaris Willd., the dewberry. The line of demarcation between these species is indistinct when only vegetation tissues are present and therefore the separation is one of growth form and not necessarily floristically accurate in all instances. In addition, the area within each quadrat which was covered by members of the Ericacea is also mapped. The original mapping (Fig. 2) of SECTORS A and C was carried out in late-July, 1978, and SECTOR B was mapped during mid-July of 1980. The original mapping of each is presented for each in the Appendix Figures.

The history of the mapped areas can be traced back to the fall of 1974 when each was mowed with a bush-hog. The vegetation then was left unmanaged during 1975 and then treated with a headfire prescribed burn in the spring of 1976. It was then left unburned and unmowed in 1977 and the spring of 1978. A relatively good standing crop of vegetation was therefore present in all

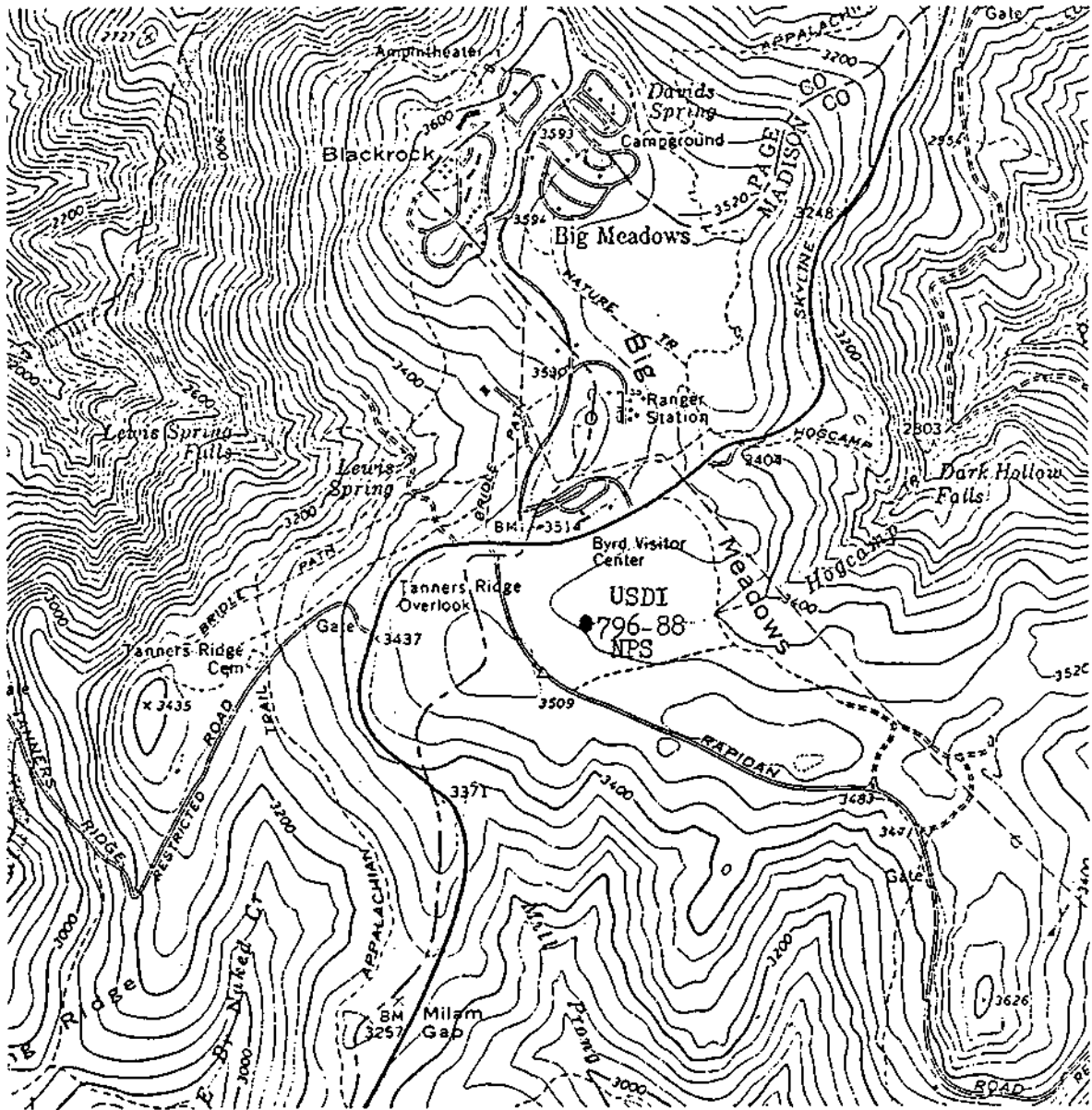


Fig. 1. Location of the mapped area within Big Meadows, Shenandoah National Park. The reference point for the research site is the permanent survey marker (·) USDI 796-88 NPS, which is located directly south of the Byrd Visitor Center.

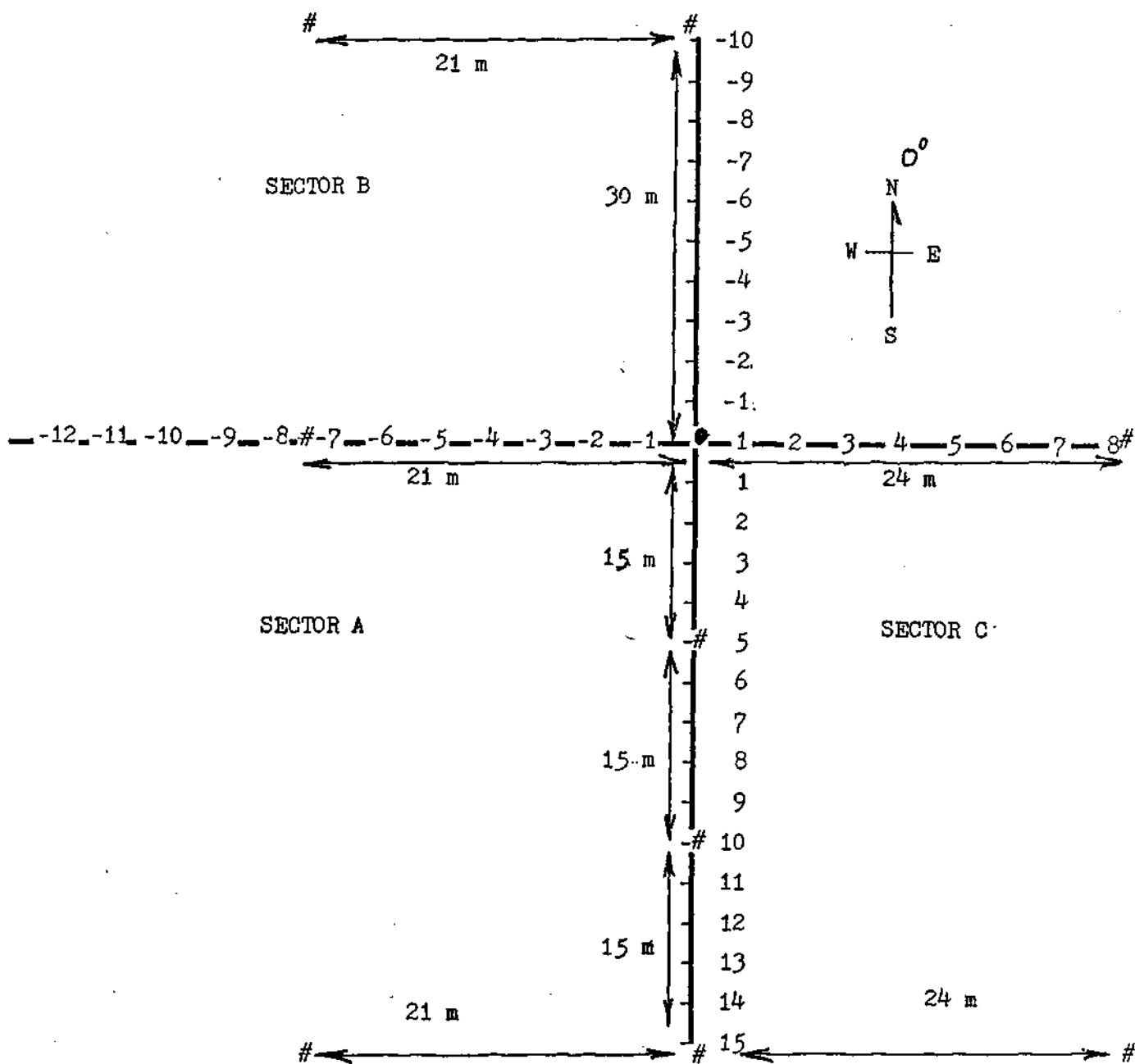


Fig. 2, Physical layout of mapped area at Big Meadows, Shenandoah National Park. The axes indicate the coordinates of the location of 3 x 3 m permanently marked quadrats. Orange survey markers are located (#) along the margins of the sectors as indicated.

- = concrete pylon USDI 796-88 NPS.

SECTORS by mid-summer 1978 (Fig. 2). At this point, the treatment of the SECTORS differed. SECTOR A was defined as a control and the only management which has occurred therein since the original mapping in 1978 was a prescribed spring burn headfire. in 1979. SECTOR B was also subjected to this burn, but was not mapped prior to the summer of 1980. SECTOR C was originally designated as the experimental plot for an experiment designed to investigate the impact of an August mowing and spot burn on the encroachment process. Subsequent to the 1978 mapping the vegetation was mowed, allowed to dry for several weeks, and then burned with a back-fire torch. This pre-treated vegetation was then burned along with SECTORS A and B in the spring of 1979. The original experimental design involved an end of the summer evaluation comparing the spot-burned SECTOR C with the control SECTOR A. Unfortunately, another experimenter working at the meadow added an unprogramed treatment to SECTOR C prior to the 1979 sample date. This involved the removal by individual clipping of all Robinia stems present within SECTOR C during August. Individual selective removal of the stems of a single species does not approximate the management technique which was originally being investigated since this would result in a disruption of patterns of competition within the plant community. Therefore, the experiment was disrupted significantly. The reason for mapping SECTOR B in 1980 was to repeat the original 1978 experiment which was aborted. This area will be mowed and burned during August 1980 and then both SECTORS A and B will receive a prescribed spring burn in 1981. A repetition of the mapping process in late July or August of 1981 will provide the information originally sought through the experiment which was started in 1978.

APPENDIX

Maps of woody stemmed vegetation in the vicinity
of concrete pylon USDI 796-88 NPS at
Big Meadows, Shenandoah National Park

-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8
**	20	15	4	17	23	9	1	33	**	23	22	**	**	5	1
**	**	25	11	15	21	9	2	40	42	27	12	19	5	8	6
**	**	**	**	16	15	5	3	**	**	35	37	12	15	18	10
**	**	**	25	9	2	5	4	25	**	**	**	**	46	**	**
**	**	**	**	**	2	5	5	28	**	**	**	**	**	45	**
**	**	**	25	**	**	32	6	42	29	**	**	**	**	**	**
**	**	25	25	25	46	**	7	**	23	**	**	**	**	**	**
**	**	**	29	**	14	**	8	**	23	30	**	**	**	**	**
**	**	**	**	7	8	**	9	29	39	26	**	**	**	**	**
25	**	**	**	**	**	21	10	**	**	**	**	**	**	**	**
22	**	**	**	**	**	6	11	14	**	**	**	**	**	**	**
16	**	**	**	**	**	25	12	29	18	**	**	**	**	**	**
**	**	**	**	**	**	**	13	**	30	43	**	**	**	**	**
**	**	27	13	**	**	**	14	41	45	40	**	35	**	**	**
**	**	**	22	**	**	**	15	**	**	**	**	41	11	15	5

SECTOR A

SECTOR C

Rubus flagellaris stems in July, 1978. Number in each 3 x 3 m quadrat. ** = 50+
 ● = concrete pylon USDI 796-88 NPS.

** ** *					**	20	25	**	**	**	5	
**	**		**	**	**	20	**	*#	**	25	15	5
					**	**	**	" **		35	5	10
					**	**	**	**	**		12	1
					**	**	**	**	#*	10		2
					**	**	**	**	**		6	5
					**	**	**	**		25	5	3
					**	**	**	**	#*	4		5
							<i>r</i>					
					**	15	25	25	5	10		5
					**	20	₅	1	4	5		2
-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	

SECTOR B

Rubus flagellaris stems in July, 1980. Number in each 3 x 3 m quadrat. ** = 50+
 · = concrete pylon USDI 796-88 NPS.

-7	-6	-5	-4	-3	-2	-1	●	1	2	3	4	5	6	7	8
5							1								
							2								
	1						3								
14	18						4					1	2	2	
10	4						5					1	5	12	
5	4						6						3	8	
2							7					2	10	4	
							8					2	5	3	
							9						6	5	
							10						2	8	
							11						1	1	
							12								
							13								
							14								
							15								

SECTOR A

SECTOR C

Rubus allegheniensis stems in July, 1978. Number in each 3 x 3 m quadrat.
 ● = concrete pylon USDI 796-88 NPS.

**	**	**	10										-10
**	20	3	4										-9
				3	5	2							-8
				18	7			2					-7
				23	15			1					-6
				11	9	1	1						-5
				9	7	1							-4
				3	3								-3
				2									-2
													-1

-12 -11 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 ●

SECTOR B

Rubus allegheniensis stems in July, 1980. Number in each 3 x 3 m quadrat. ** = 50+

● = concrete pylon USDI 796-88 NPS.

-7	-6	-5	-4	-3	-2	-1	●	1	2	3	4	5	6	7	8
5	10	5	5	3			1					8	4	7	9
7	10	3	5				2						5	4	7
19	10	7	1				3				1	1	5	6	8
25	11	7	1				4					1	5	7	25
30	23	10	11				5		1		2	4	6	4	31
29	17	12	4				6				1	1	13	4	15
14	21	3					7			1	4	7	9	13	18
5	4						8			1	4	3	12	25	29
		2					9	2		1	2	9	8	22	29
		1					10		2	3	9	9	14	25	30
							11		1	3	2	12	20	17	31
							12			2	1	4	9	11	21
							13			4	1	3	9	5	3
							14			2			3		2
							15			1		1			

SECTOR A

SECTOR C

Robinia pseudo-acacia stems in July, 1978. Number in each 3 x 3 m quadrat.

● = concrete pylon USDI 796-88 NPS.

5	5	18	20	29	19	2)	4	8	9	2	3
7	9	35	23	14	15	9	7	7	6	4	1
					15	19	30	28	10		
			.		15	22	30	25	3	1	
					35	15	30	20	9	1	
					16	23	20	18	1	1	
					26	35	20	30	3		
					23	12	22	15	24	2	
					23	16	15	11	3		1
					18	16	9	11	2		

-12 -11 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1

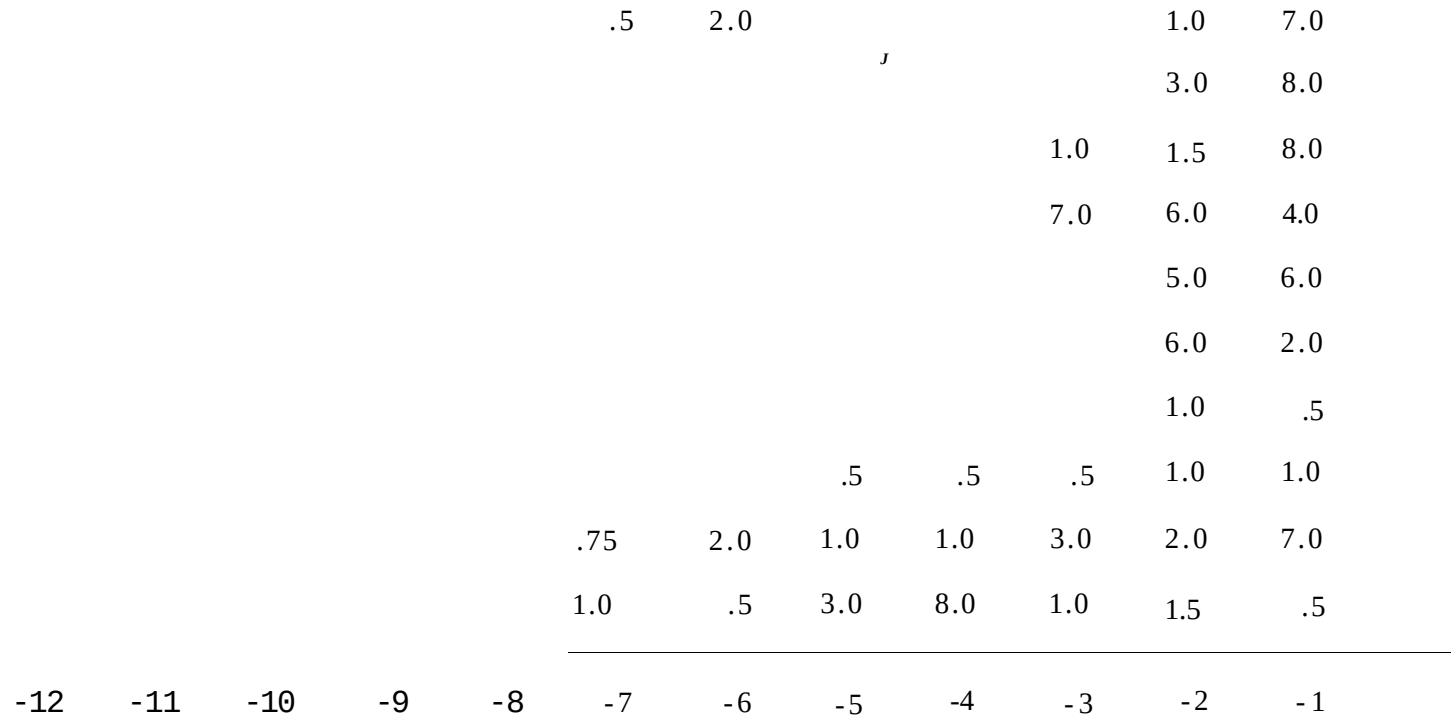
SECTOR B

Robinia pseudo-acacia stems in July, 1980. Number in each 3 x 3 m quadra

- = concrete pylon USDI 796-88 NPS.

-7	-6	-5	-4	-3	-2	-1	●	1	2	3	4	5	6	7	8
	.3	.8	3.0	.3		.5	1	.5	1.3	3.5	2.5			2.5	1.5
	.5		3.0	1.0	1.5	4.0	2	2.3	4.5	5.5	4.0	.5		3.5	7.5
		.1	2.0	1.0	5.0	7.0	3	2.5	4.0	3.3	2.5	1.5	2.5	7.0	2.0
			.3	.8	1.0	1.0	4	1.0	3.0	.3	1.3	1.0	4.0	8.0	.8
					1.0	4.0	5	.1	3.0	1.0	2.0	1.0	.3	2.0	
						.1	6		.5	.5	2.5	1.5	1.0	1.5	1.3
							7	1.3		2.8	1.0	7.5	.8	1.5	
	.3	.5	1.3	1.0	2.0		8	1.0	7.5	.3	2.0	2.0	2.0	2.0	
	.5	3.0	.5	1.3	4.0	.5	9	3.0	.3	.8	.3	.3	1.8	1.0	.3
1.5		.3			2.0	.8	10	6.5	.1	.5	1.0	1.0	1.5	1.0	
	1.5	.5				2.0	11	2.0							
	1.5	1.0	.5			.1	12	.5	.8		.5	.3			
.3		2.0	1.0				13	.5	1.3	.8	3.5	1.0		.5	1.0
1.5		1.0	1.0	1.0			14			.8					
.1	.2		1.3	2.0			15						.1	6.5	
SECTOR A								SECTOR C							

Stems of ericaceous woody plants in July, 1978. Area covered (m²) in 3 x 3 m quadrat.
 ● = concrete pylon USDI 796-88 NPS



SECTOR B

Stems of ericaceous woody plants in July, 1980. Area covered (m²) in 3
• = concrete pylon USDI 796-88 NPS.

APPENDIX G

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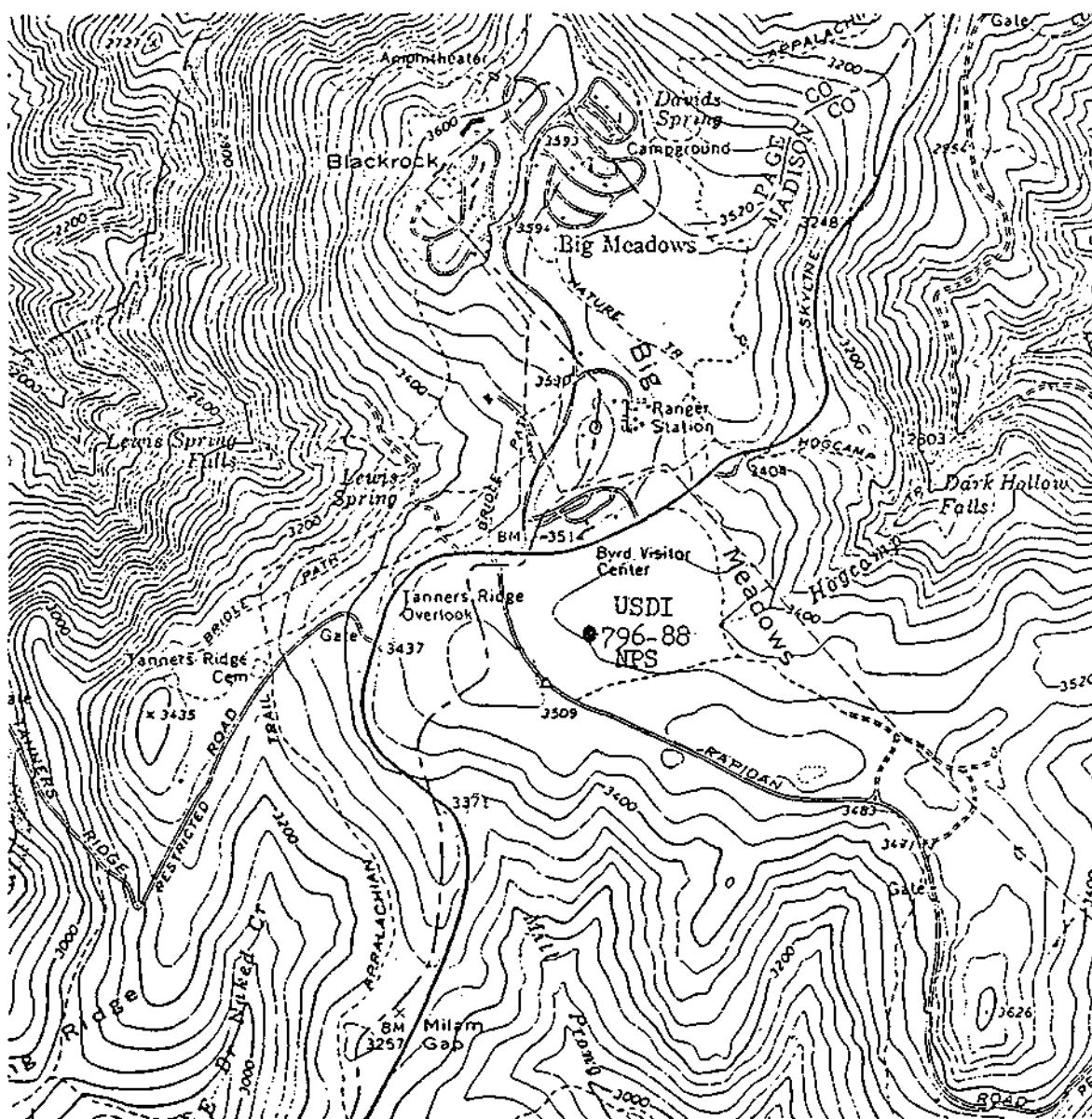


Fig. 1. location of the mapped area within Big Meadows, Shenandoah National Park. The reference point for the research site is the permanent survey marker (·) USDI 796-88 NPS, which is located directly south of the Byrd Visitor Center.

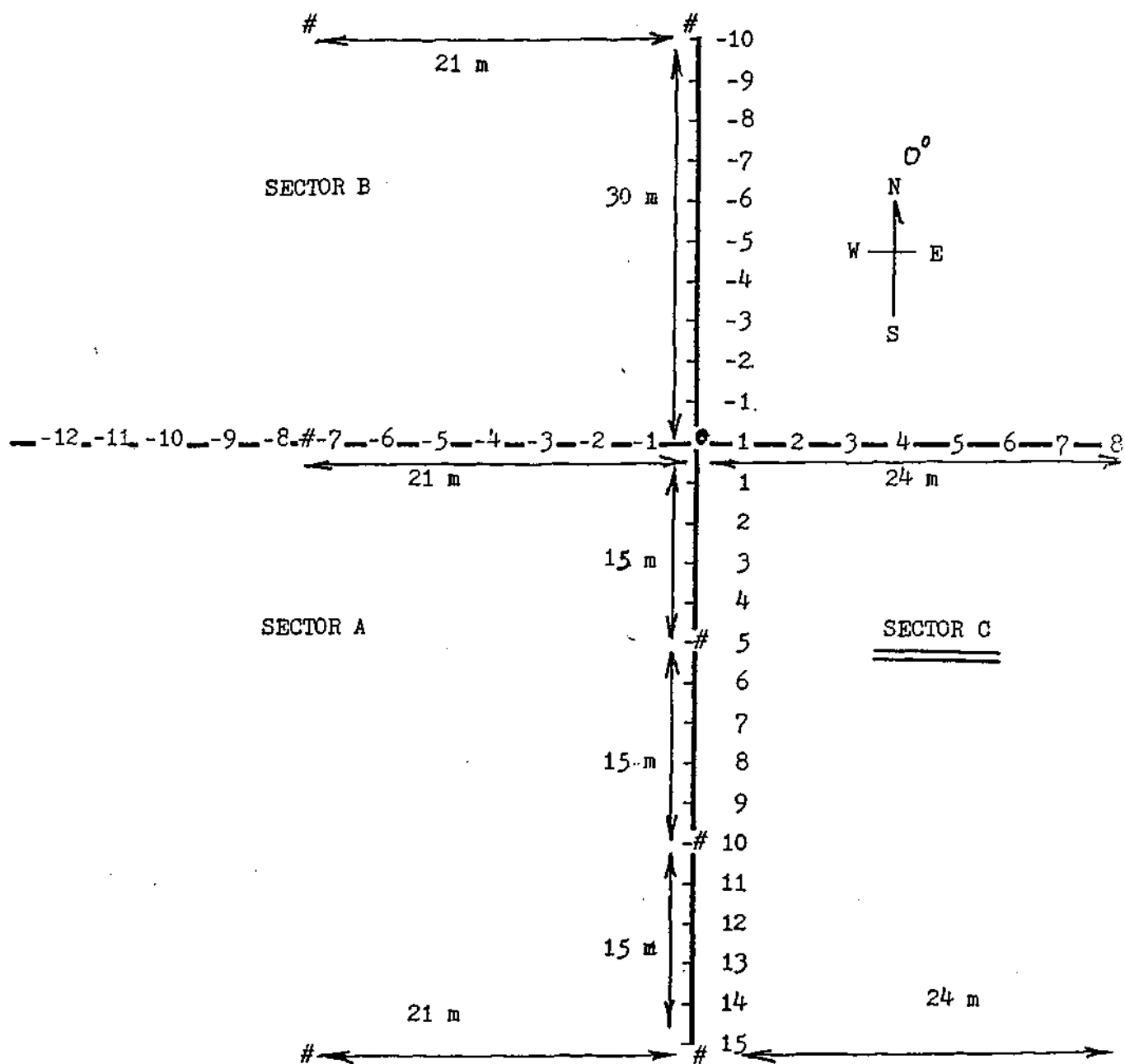


Fig. 2, Physical layout of mapped area at Big Meadows, Shenandoah National Park. The axes indicate the coordinates of the location of 3 x 3 m permanently marked quadrats. Orange survey markers are located (#) along the margins of the sectors as indicated.

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SECTORS by mid-summer 1978 (Fig. 2). At this point, the treatment of the SECTORS differed. SECTOR A was defined as a control and the only management which has occurred therein since the original mapping in 1978 was a prescribed spring burn headfire in 1979. SECTOR B was also subjected to this burn, but was not mapped prior to the summer of 1980. SECTOR C was originally designated as the experimental plot for an experiment designed to investigate the impact of an August mowing and spot burn on the encroachment process. Subsequent to the 1978 mapping the vegetation was mowed, allowed to dry for several weeks, and then burned with a back-fire torch. This pre-treated vegetation was then burned along with SECTORS A and B in the spring of 1979. The original experimental design involved an end of the summer evaluation comparing the spot-burned SECTOR C with the control SECTOR A. Unfortunately, another experimenter working at the meadow added an unprogramed treatment to SECTOR C prior to the 1979 sample date. This involved the removal by individual clipping of all Robinia stems present within SECTOR C during August. Individual selective removal of the stems of a single species does not approximate the management technique which was originally being investigated since this would result in a disruption of patterns of competition within the plant community. Therefore, the experiment was disrupted significantly. The reason for mapping SECTOR B in 1980 was to repeat the original 1978 experiment which was aborted. This area will be mowed and burned during August 1980 and then both SECTORS A and B will receive a prescribed spring burn in 1981. A repetition of the mapping process in late July or August of 1981 will provide the information originally sought through the experiment which was started in 1978.

APPENDIX H

Annual Vegetation Sampling in the Big Meadow 4840-RMVP-N-94 1984

Introduction and Methods

This was the first year of the sampling. Six permanent plots from the Cocking study and 18 temporary plots were sampled on June 15 and 18. The permanent plots were all in an area that was later mowed. Of the temporary plots, 10 were later mowed and 8 were left unmowed. The attached map shows the mowed areas (Type A) and the general location of the 18 temporary plots.

Results

The attached sheet shows the count from each plot. The data for the permanent plots can be compared with 1985 data on a plot by plot basis; however, the data for the temporary plots must be grouped. The summary of this years data is as follows:

Plot	Locust		Blackberry	
	Mean Stems per Plot (9m ²)	Mean Stems per Meter ²	Mean Stems per Plot ^{a, b}	Mean Stems per Meter ²
Permanent	0.6	0.074	119.5 ^a	13.27
Temporary				
Mowed	21.3	2.36	22.7 ^b	10.08
Unmowed	0.0	0.0	10 ^b	4.4
^a 9m ²	^b 2.25m ²			

Data Sheet
Big Meadow Vegetation Sampling

June 15 & 16, 1984

Transect Number	Side of Road	Plot Number	Number Locust Stems¹	Number Blackberry Stems²	Mowed or Unmowed Area
1	Left	1	6	14	Mowed
		2	0	0	Unmowed
	Right	1	32	16	Mowed
		2	17	28	Mowed
2	Left	1	0	36	Unmowed
		2	20	3	Mowed
	Right	1	0	0	Unmowed
		2	0	23	Unmowed
3	Left	1	0	4	Unmowed
		2	0	0	Unmowed
	Right	1	0	0	Unmowed
		2	0	17	Unmowed
4	Left	1	35	8	Mowed
		2	49	54	Mowed
	Right	1	9	9	Mowed
		2	21	45	Mowed
5	Left	1	10	31	Mowed
		2	14	19	Mowed

¹ 9m² plot (3m x 3m)

² 2.25m² plot (1/4 of 3m x 3m plot)

