

Appendix 5. McNaughton, SJ. 1968. Structure and Function in California Grasslands. Ecology 49:962-972.
Methods and results,

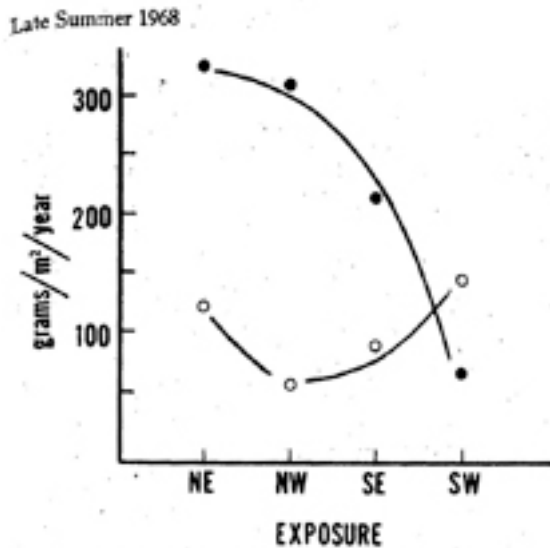


FIG. 7. Productivity of the Jasper Ridge grasslands in relation to exposure and substrate. (Solid circles = sandstone; open circles = serpentine).

Methods. Beginning on January 1, 1966, and on the first of every month through July 1, 1966, three quadrats 1 m by 1/2 m placed end to end perpendicular to the slope of the hill were harvested on northeast, northwest, southeast, and southwest slopes on sandstone and serpentine soil areas. Position of quadrats on slopes was random. Aboveground standing crop was dried at 105°C for 8 hr, and the yield of each quadrat was determined separately. During May, which represented the period of peak standing crop, two 5-m transects, one parallel and one perpendicular to the slope, were used to determine frequency and yield of individual species. Fifty random numbers were drawn from Snedecor (1956) to fix sampling points on each transect. At each of these points, frequency was determined by canopy interception and a 4-cm² area was harvested, sorted into species composition, and dried. Each species contribution to peak biomass was determined after drying. The sampling technique, though laborious, allowed a more direct comparison of floristic data (gathered along a transect) with biomass data (gathered by harvesting randomized blocks). Standing crop refers to total plant material present, including litter. Productivity is defined as change in standing crop with time. (McNaughton, 1968, p.3)

Species rank measured by aboveground biomass 1966

Serpentine (4 plots)

- Nassella pulchra* (30%)
- Bromus hordeaceus* (24.4%)
- Eschscholzia californica* (9%)

Greenstone

- Bromus hordeaceus* (24.4%)
- Bromus diandrus* (21.1%)
- Nassella pulchra* (16%)
- Avena fatua* (13%)

Summary charts on following 2 pages

TABLE 1. Relative importance of species on two soil types and four exposures in the Jasper Ridge grasslands—expressed as percentage of peak standing crop and as percentage frequency during the period of peak standing crop

Species	Sandstone				Serpentine			
	North-east	North-west	South-east	South-west	North-east	North-west	South-east	South-west
A. Standing crop								
<i>Avena fatua</i>	44.4		8.6					
<i>Medicago hispida</i>	0.7		3.7					
<i>Avena barbata</i>			1.7					
<i>Torilis nodosa</i>		1.8	0.9					
<i>Centaurea melitensis</i>			2.0					
<i>Festuca megalura</i>				0.2				
<i>Lolium multiflorum</i>	7.0	7.4		3.5				
<i>Erodium botrys</i>	4.4	0.8	5.9	8.3				
<i>Bromus rigidus</i>	35.4	67.8	42.6	22.6				
<i>Bromus mollis</i>	7.0	21.1	21.3	38.1	7.9	19.6	27.3	53.2
<i>Clarkia purpurea</i>	1.1	1.1	4.7	1.2	3.3	1.2	2.7	
<i>Hemizonia luzulaefolia</i>			1.2	8.3	11.8			5.9
<i>Eriastrum abramsii</i>				3.0				0.8
<i>Lotus subpinnatus</i>			0.2	3.7	4.0	6.5	3.6	14.4
<i>Stipa pulchra</i>				16.4	40.7	41.0	26.4	10.5
<i>Eschscholzia californica</i>					11.8	11.6	13.4	1.3
<i>Festuca grayii</i>					1.1	1.2	10.2	1.4
<i>Plantago erecta</i>					2.0	4.1	5.6	1.8
<i>Melica californica</i>					8.0	11.2		
<i>Linanthus androsaceus</i>					1.7	0.45		
<i>Brodiaea laxa</i>					0.35	3.0		
<i>Calochortus venustus</i>					3.3			1.0
<i>Agoseris heterophylla</i>					0.31			2.4
<i>Festuca dertonensis</i>					0.30		2.1	
<i>Achillea millefolium</i>					1.4			
<i>Polypogon monospermiensis</i>					0.20			
<i>Trifolium tridentatum</i>						0.10		
<i>Brodiaea pulchella</i>							4.0	
<i>Sitanion jubatum</i>							3.6	
<i>Lomatium utriculatum</i>								6.5
<i>Madia gracilis</i>							1.0	1.6
<i>Poa scabrella</i>								0.6
TOTAL SAND	15							
B. Frequency								
<i>Avena fatua</i>	31		4					
<i>Medicago hispida</i>	2		3					
<i>Avena barbata</i>			1					
<i>Torilis nodosa</i>		1	1					
<i>Centaurea melitensis</i>			3					
<i>Festuca megalura</i>				1				
<i>Lolium multiflorum</i>	11	8		1				
<i>Erodium botrys</i>	2	1	5	6				
<i>Bromus rigidus</i>	32	55	27	18				
<i>Bromus mollis</i>	20	34	43	63	24	30	40	53
<i>Clarkia purpurea</i>	2	1	4	2	4	3	4	
<i>Hemizonia luzulaefolia</i>			3	6	18			7
<i>Eriastrum abramsii</i>				2				1
<i>Lotus subpinnatus</i>			1	2	6	8	5	14
<i>Stipa pulchra</i>				4	14	20	14	3
<i>Eschscholzia californica</i>					4	12	3	1
<i>Festuca grayii</i>					3	4	21	4
<i>Plantago erecta</i>					10	10	4	4
<i>Melica californica</i>					2	8		
<i>Linanthus androsaceus</i>					5	2		
<i>Brodiaea laxa</i>					3	2		
<i>Calochortus venustus</i>					2			1
<i>Agoseris heterophylla</i>					1			4
<i>Festuca dertonensis</i>					1		5	
<i>Achillea millefolium</i>					1			
<i>Polypogon monospermiensis</i>					1			

