UNITED STATES DEPARTMENT OF AGRICULTURE

FOREST SERVICE

RR Pine Ranges Burgess Spring

October 21, 1936

THE VEGETATION TYPE MAP
Burgess Spring Experimental Range
1936

Report on Field Methods and Progress

By
L. R. Short
Junior Range Examiner



California Forest and Range Experiment Station

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THE VEGETATION TYPE MAP Burgess Spring Experimental Range

Pasture I of the Burgess Spring Experimental Range is divided into about 836 square "blocks", each of these being two and one half chains on a This means that the area of each block is about 5/8 of an acre. Using these blocks as working units, field work on a type map was begun in June, but mostly completed in September. The work consisted of excluding all tree species except Cercocarpus ledifolius from the picture, and listing each remaining species that could be found at any point on the block. All species were listed as either "conspicuous" or "inconspicuous." No particular density was borne in mind as a yardstick for throwing a species either way. Rather their appearance as "dominants" or "codominants" on any one block (trees excluded) was used as the criterion for inclusion with "conspicuous" species. It is possible with a given density, therefore, to have a species listed as "conspicuous" on a sparsely vegetated block, and appear as "inconspicuous" on a fairly densely vegetated block, simply because it appeared as a "dominant" in the first instance, but could not even be rated as a "codominant" in the second instance. In addition to the above division, "conspicuous" species were listed in descending order of their abundance on every block. Other things being equal, this ranking was based on the estimated density of the species concerned, but the bulk of material produced by the top of the plant is also considered in borderline cases. For example, under "conspicuous" species, Ceanothus prostratus might at times be listed after Wyethia mollis, even though it may actually occupy a slightly greater part of the area, this arrangement being justified because of the difference in height growth of the two species.

There was, of course, an appreciable difference in the general appearance

of the vegetation between June and September. Some species, especially annuals, that appeared as "conspicuous" in June were almost if not completely "gone" in September. Accordingly, those blocks worked early in the season were checked at the end of the work insofar as "conspicuous" species were concerned, and changes made in those instances where a species no longer occupied its former "conspicuous" position. The completed data for the type map are therefore based on the appearance of the vegetation near the close of the grazing season. An attempt was made to list the "conspicuous" species according to the position they would have occupied if they had remained ungrazed.

Since there is a distinct tendency for some species to pass out of the picture as the season progresses, it only follows that for the distribution of such species, the type map data will prove inadequate. Some such species may have been missed altogether, while others will appear only occasionally, even though they may actually occur quite generally over the pasture. These species are relatively unimportant as forage plants, and the data should stand up well for all of the more important species. In Table B (which lists all species to be found in the type map data), after each species recorded appears, in the column headed "Data on plant", the words "Good", "Fair" or "Poor."

Those species for which the data are designated "good" are thought to be well over 90 percent correct with respect to the type map data when compared with their actual occurrence. Species that are thought to be checked as present from roughly 75 to 90 percent of the time that they might actually be found on the various blocks are designated "fair." And species for which the data are thought to be less reliable than this are designated "poor."

The type map data have been checked against/available data except the

4. R. Short Pine Ranges Oct.7, 1936 Burgess Spring TableA Vegetation Type Map List of Conspicuous Species on the B.S.E.R. Plant Remarks Plant Species Symbol × 1. Amelanchier alnitolia AMa 2 Arctostaphylos patula 3 Artemisia arbuscula Ap ARa 4 Artemisia tridentata ARt 5. Balsamorhiza sagittata Conspicuous but once BAS × 6. Bromus marginatus
7. Bromus tectorum Bm Bt Cp 8. Ceanothus prostratus 9. Cercocarpus leditolius CEL Conspicuous but once 10. Chrysothamnus bloomeri CRYb CI 11. Circium spp) (tall) X12. Festuca idahoensis Fü 13 Gnaphalium No. 5-475 GN(415) Probably Antennaxia sp. × 14. Lupinus sp. L 15 Madia sp. MA 16 Poa sandbergii +17. Purshin tridentata Ps Pt * 18. Sitanion hystrix 19. Stipa lemmoni <u>51h</u> 51 20 Wyothia mollis Wm Based on a survey of each 5/8 Acre Block of Land in Pasture I.

L.R. Short Pine Ranges Burgess Spring Oct. 7, 1936 Table B Vegetation Type Map Inconspicuous Species on the B.S.E.R. -(Summer - 1936) Symbol Collection Other symbols Data Plant Species Remarks No. of Plant or names used plant Achillea milletolium AC 483 Good Agoseris grandiflorar Agoseris No. 5-361 436 AGa Fair 361 AG(351) Poor Agrapyron Fair 499 Agrostis exerata AGex. Allium sp. ALU416 POOY 349 Amelanchier amitolia AMa Good 386 386 Antemnaria sp. AN Fair APa Apocyanum androsaemitolium 492 Aquiligia formosa No. 5-407 407 Probably 2 spp; (wide pods) Atabis holboelli var. fendleri 354 11 TD Good Ap Arctostaphylos patula 346 Artemisia arbuscula ARa 506 13 Artemisia bridentata ARt 505. Artemisia vulgarus ARV Fair 15 If separate species, possibly confised at time Aster Sp. AST 350 16 Aster integritalius ASTi 498 17 Astragalus purshi ASps 402 18 Good AS(\$\frac{1}{2}\)i Astragalus No. 5-371 371 1371 POOT Balsamorhiza sagittata BAS 44/ Ø Fair 486 Brodiaealwhite Brodiaea hyacinthina 2] Bh Poor Bm Bromus marginatus 4601 22 Good 24 Bromus tectorum. Bt_ 409 408 405 419 25 Capsella bursa pastoris 26 Carex spp. CHall) Includes 2 or more spp. 21 Carex rosea Good 348 28 Carrot Fair Carum gairdneri 449 **e**5 30 Castellija sp. 378 1 31x1 Ceanothus prostratus Good

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	pr + Sagine	Symbol	Collection	Other symbols	Data on		
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2346	Cercocarpus ledifolius		507		Good		and the second s
33 32	Charnactis douglasii			No. 10, PH-10] "		
	Chrysothamnus bloomeri	CRYb			Good		
35 34	Chrysothamnus nauseatus	CRYM.	494.	y			
	Chrysothamnus No. 5-495	CRY (45)	495.	1495	11.1		
	7 Chrysothamnus No. 5-502	CRY (502)	502	1502	Fair	h	
(%)	8 Chrysothamnus No. 5-503			v 503	"	Possibly the sa	ime sp.
1.0	Chrysothamnus No. 5-504	CRYGON	504	v 504	••		
	Circium spp.	CI	K479	CI (white); Clein	Good		
	Circium sp.	CI (low)		7	Fair		
	Clarkia thomboidea	CLr	L358.	358			
	Collinsia parviflora	COP	344		Good		
	Collinsia No. 5-455	(0/3-)	1455	/	Poor	**************************************	
	Collomia grandiflora	COLO	<362×	362	Fair		***
	Collomia No. 5-382	382			Poor		
487			• .	·CVat	Fair		
48	Crepis acuminata	CREa			Good	Possible at times	andred
		1	444.	3	Poor	Possibly at times	CREO
2 49 5 40	Crepis monticula	CREO	476	5 .	1		
	Crepis occidentalis				N E :-	Possibly attimes con	
S OP	Cryptantha affinis	CRa	(426)	CR(364); CR(381	A Pair	Probably but one.	species
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. 2	Danthonia unispicata	Dw"	398		Poor	Possibly more than	one sp.
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58	Elymus (glaucus?)	E	470		Fair	and principal property and a second party recognition of the constraint of the const	and the second
. 55	Elymus (triticoides?)	E (t!)	general consistence of the second	entablish spragonish on analysis sama for the activities on a	Poor	and the control of th	rentermos es desarros esconto no elli
54	Epilobium paniculatum	EPP	493	and the street of the street o	Fair		
58	Erigeron inornatus	397	397		"		
5.57	Eriogonum (nudum?)	EGn	474	4/3	Good		
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	Plant Species	symbol Used	Blection No. of Plant	Othersymbols or Names Usea	Pata on Plant	Remarks
60	Eriogonum spergulinum Eriogonum (umbellatum?) Eriophyllum sp.		5- 375 432 459		Fair " Good	Probably 2 spp.
62	Festuca idahoensis Fritillaria spp	Fò FT			Good Poor	Probably 2 spp.
65 66 67 68 69 70 71	Galium (aparine) Galium (?) Geranium incisum Geum triflorum Gilia aggregata Gilia leptalea Gnaphalium No.5-414 Gnaphalium No.5-475 Gayophytum sp. (spp?)	GM 368' GEUt GEUt GI(414) GN(414) GN(415)	412 412 414 475 491	GM(3.7); 36 423 412) Gilia laptaled + 452; GO(large);GO(pin GO(slender) 49	Fair "	Probably Antennaria sp.
73 74	Hieracium albiflorum Hydrophyllum capitatum	HC HYc	4// · 333 ·	411	Fair Poor	
75	Juncus (?)	Juncus	418	418; Juncus	3 Fair	Probably 2 Spp.
- 76 17	Kellogia galoides Koeteria cristata	Kg Kc	379° 373°	379	Fair "	to here

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	Plant Species	Symbol Used	Collection No. of Plant	Othersymbols or Names Used	Data on Plant	Remarks	
19		No. (500)	5- 458-	370	Poor	Rare; not call Rare	ected
8/	Linanthus sp. Linanthus sp. Linum lewesii	41	332; 385°		Fair Poor Fair		Transport
	Linum like	<i>←</i> .	336;		Poor	Rare; Not call	ected
85	Lomatium (?) Lotus (americanus?)	LOM	400		" Fair		
	Lupinus	L	471		Good		
ĊV	Madia (a) and tall	MA	<i>धर्मः</i>				To manifest management of the state of the s
20	Madia (glomerata?) Melica Mentzelia Mindre No Salut (11)	MA MZ	457	383	Fair Poor	Rare; possibly so	nething
7/	Mimulus No. S-417 (yellow) Mimulus No. S-446	MM (3.7) MM (pink)		446			
	Monardella sp. Montia (perfoliata?)	M			Good Poot		
95 96	Navarretia spp. Nemophilla sp.	Navarret.	377 393 404	N(393); N(30V)	Fair	Possibly 2 sp	<i>p</i> .
			en e e e e e e e e e e e e e e e e e e		er menter in region to children		
98	Orthocarpus No. 5-394 Orthocarpus (?) No. 5-453 Osmorrhiza occidentalis	OR(394) 453 OZo	394° 453 403°	8~	Poor Fair	(yellow) (putple)	and the second of the second o
99	W MULTILES OCCIDENTALIS	ULO			e emilione de provinci	on the second of	

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	Plant Species	Used	No. of Plant	or Names Used	Plant	Ramarks
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100	Pazonia brownii	PAEb			Poor	
101	Pedi cularus	PU.	410:	No.5-410	<i>(1)</i>	
102	Pentstemon No. 5-357	PE (357)	357	este vinas es exemples	Fair	
103	Pentstemon (Not s-357)	PE (Not)	(40.5)	35%	"	and the second of the second o
104	PHacelia heterophylla	PHh	{448}	PH(large)	38 	ation that the state of the sta
105	Phacelia (humilus?)	PH(ann)		Contract of the second of the	Poor	and the second of the second o
106	Phlox gracilis	PHXq	63>		Good	No.5-\$63= white
107	Poa Hervosa	Pnr	340>	And the second of the second o	# . . V	derande a cuatro de criminado e o comboso de contrato de combos de
108	Poa sandbergii	P ₅	3577		"	ters was one otherway when any every point of the second of the second of the second
109	Polygonum spp.	PG(ann.)	(501)	PG(301); 420	Fair	Probably 2 Spp.
110	Potentilla glandulosa	Poq	425	PO(424)	Good	and the second of the second o
#11	Potentilla gracilis	Pagr	175V	No.5-425	T a	The second of th
1/2	Prunus sp. (spp.?)	PR (narrow)	PR(small)		Possibly 2 spp.
113	Prunus sp. Pterospora andromeda	PR(wide)				
114	Pterospora andromeda	No.5-488	488.		Poor	
115	Pursha tridentata	. Pt	482	and the second second control of the second	Good	The same of the sa
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		market in the state of the stat		- magaka oo maga oo		
116	Ranunculus occidentalis	RAG	338	and the second of the second of	Poor	and the second s
117	Ribes No. 5-439	RI(\$-1)	439		Good	(Smooth)
118	Ribes No S-481	RIS4	0 481			(With stickers)
119	Rasa	RO	484		,,	
120	"Round Leaf"	-			Poor	
12/	Rumex	BU	387	Rumex	Fair	
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122	Sam bucus	5B	490		Fair	The second secon
123	Scorzonella nutans	5Zn	353		Poor	- Annual - The same of the sam
124	Scorzonella No. 5-360			360	<i>U</i> `	Wide leaf whitish midrib
125	Scorzonella (?) No. 5-372	SZ(312)	372	372	4	Possibly same sp. as above
126	Scutellaria nana	Sc	445		. 11	
127	Senecio armicoides (1)	5N	355	And the second of the second o	Good	en e
128	Silene sp.	Silene	487	Silene (\$57);457	Fair	The state of the s
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129	Sisimbrium (pinnatum?)	SIS	435-			Poor	- Contracting		1 Augustus	
130	Sitanion hystrix	SIh	461-	1 477 1	P) Property of the Control of the Co	Good	was the same		and the second s	
131	Smilacina	5-406				Fair			Parallel and a second a second and a second	•
132		SODe	376	5-376		Poor			Pendulary	
133		SSV	1	SS; St	t I	Fair			depropriate description of the second of the	
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	Stipa occidentalis	50 5W	200	-		Fair	TO DA DIL	e' finnes i	confused w	un <u>Je</u>
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124	Symphoricarpos sp.	J. J. J	160	**************************************		Good		and the second second		
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140	Taraxacum vulgare	TAV	442	Taraxa	ıcum	Fair	- September 1			
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	Trifolium No.5-395	Tcy T(395)	395			Poor	· · · · · ·			
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144	Verbascum	Verbascu	e mant i di ti si treferimi e e e			Fair		Maderna and on a con-	to the second	
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	Viola nuttallii	Yn	334	enga i nukulapi kuu sasatti kuulaapuu kensi ka	e - Lagis II. Ligares es II. II. Ligares III. II. Resilia	e orientales de la companya de la c Esta de la companya della companya de la companya della companya della companya della companya de la companya della comp	e semanages, i e mailesens	erena i eren a secologisk el carrette		A Paragraph on the Confession of the Confession
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149	Zygadenus paniculatus	Zp	434	ļ	}	Poor		l		en No. a deside :
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156		380		7	J	380				Poor	Possib	ly Erig	ernn No.	5-397)
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Table C

Vegetation Type Map - Summary of Conspicuous Species
B.S.E.R. - 1936

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species count on quadrats, to see that the type map corresponded with the other data in the case of the known distribution of some of the important species.

Plant species were listed almost entirely by the use of the plant symbols proposed by Hormay. The use of these symbols on this project saved a great deal of time, since a total of approximately 25,000 individual entries made.

There were a number of species whose identity was not determined at the beginning of the work, some of which even yet remain as "unknowns." These species were handled by the use of collector's numbers. There are a few instances where a given species was designated by more than one symbol, number, or name. Table B shows the name to be used for all plant species recorded, and is arranged alphabetically. It also shows any other name, number, or symbol that may have been used for all species encountered, as well as the collection number of each species included in the herbarium collection.

Compilation of the Type Map

It will be noted, by referring to Table B, that there were 167 species encountered in assembling the data for the type map. This would seem to make a large task of compiling the data. However, it will in reality require less time than one might at first suspect. Compiling the "conspicuous" species, which are listed alphabetically in Table A, should be done quite independently from the "inconspicuous" species, shown in Table B.

Compiling the "conspicuous" species

The suggested form for compiling the "conspicuous" species is shown in Table C. The first column cares for the block number, which is here called "quadrat No." The second column, headed "No. of species", refers only to

"conspicuous" species, and expresses the number of these that are recorded about each quadrat. Its chief purpose is to serve as a quick method of checking the compilation to determine whether or not some entry has been omitted, but it may also be used to see at a glance how the number of dominants and codominants varies from block to block. The next 20 columns are given over to the 20 "conspicuous" species that are found in Pasture I. They are arranged in alphabetical order for simplicity of location on the part of the compiler. Symbols are used at the heads of these columns, the same as were used in the field work. It will be noted that instead of making a check under the proper species column and opposite the quadrat concerned to record in the summary the presence of a given "conspicuous" species, a number has been used. This number represents the position of the particular "conspicuous" species with reference to other species in this group on the quadrat. For example, the order of entries in the field for quadrat l is "STh, Bm, and Cp", indicating that 'SIh' is most abundant, Bm next, and Cp least abundant of the conspicuous species. Accordingly, opposite quadrat 1 and in the SIh column a figure 1 is placed (instead of a check), a figure 2 in the Bm column, and a figure 3 in the Cp column. It takes almost no more time to apply this system of checking off the species than it would to make an ordinary check mark (\checkmark) , and the advantages are that one has a possible check against the omission of a species, and an added means of determining the positions of the various "conspicuous" species with respect to one another. Approximately 16 sheets of 14 x 17 inch compilation paper will be necessary to compile the complete list of "conspicuous" species.

It should be borne in mind that what was said about good, fair, and

poor data for the "inconspicuous" species does not apply to "conspicuous" species. Even though the records for <u>Madia</u>, <u>Balsamorhiza</u>, and <u>Gnaphalium</u>

<u>No. S-475</u> are only considered "fair" for "inconspicuous" species, they are "good" for these species when they occur on the "conspicuous" part of the form.

Compiling the "inconspicuous" species

Table D shows the suggested form for compiling "inconspicuous" species. Instead of using 14 x 17 inch compilation paper, the 17 x 27 inch size should be used. This means that headings for all of the 44 species for which the field data is "good" may be entered on one sheet, and that it will take approximately 14 sheets of paper to compile all of the data. On this form there are a few extra columns, one of which might be used for <u>Balsamorhiza</u>, even though it is classed as "fair" rather than "good." However, it is felt that the summary of "inconspicuous" species should, aside from this possible exception, be limited to those species for which the type map data are rated "good."

Constructing the type map

After the work of compiling is completed, a number of maps showing the blocks in Pasture I (as they were laid out in 1935, with reference stakes between quadrats serving as the north and south boundary between the blocks) should be obtained, and from the compiled data a distribution map of each species constructed. In constructing such a map for a given species, two intensities of the same color should be used, the more dense one being applied to those blocks where the species is "conspicuous", and the least intense shade used on blocks where the species was present but "inconspicuous." It

may be possible to combine a number of these distribution maps of the more important species and obtain a type map. For example, the summary of the conspicuous species will probably show that there are but six species that appeared as "conspicuous" more than a dozen times. One might use six distinct colors, and by dividing a block up into a number of smaller squares, apply the colors of the respective species present to these squares within the blocks; or one might take only the most abundant one of the "conspicuous" species for each block, and assign its color to the entire block. For only six species, symbols rather than colors might be used in each block, the result being a type map with the "conspicuous" species intermingled, somewhat the same as they occur in nature.