

San Francisco, Calif.
Oct 6, 1974

Rest-Rotation Multiple-Use Land
Management Program

A. L. "Gus" Hormay

Rest Rotation Management Course

1. Equipment

Projectors, screens, easels, paper pads, scribes
pointer

Portable microphone

2. List of trainees

Name, occupation, position, location

3. Name cards

4. Daily schedule

Hours, break

5. Supervisor

Time keeper

Projectionists

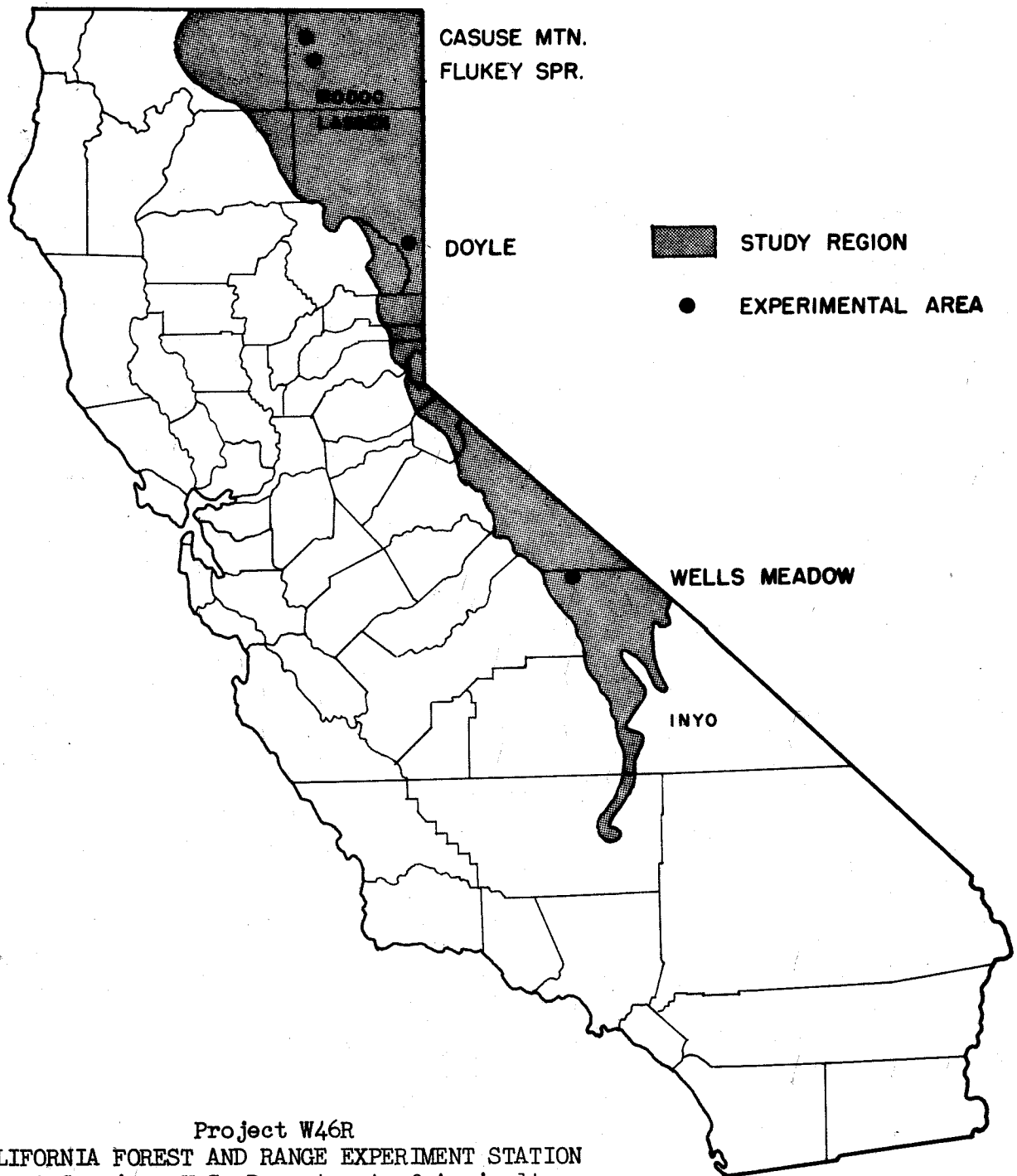
Lights attendant



Hormay photograph



EXPERIMENTAL AREAS
GAME RANGE RESTORATION
CALIFORNIA

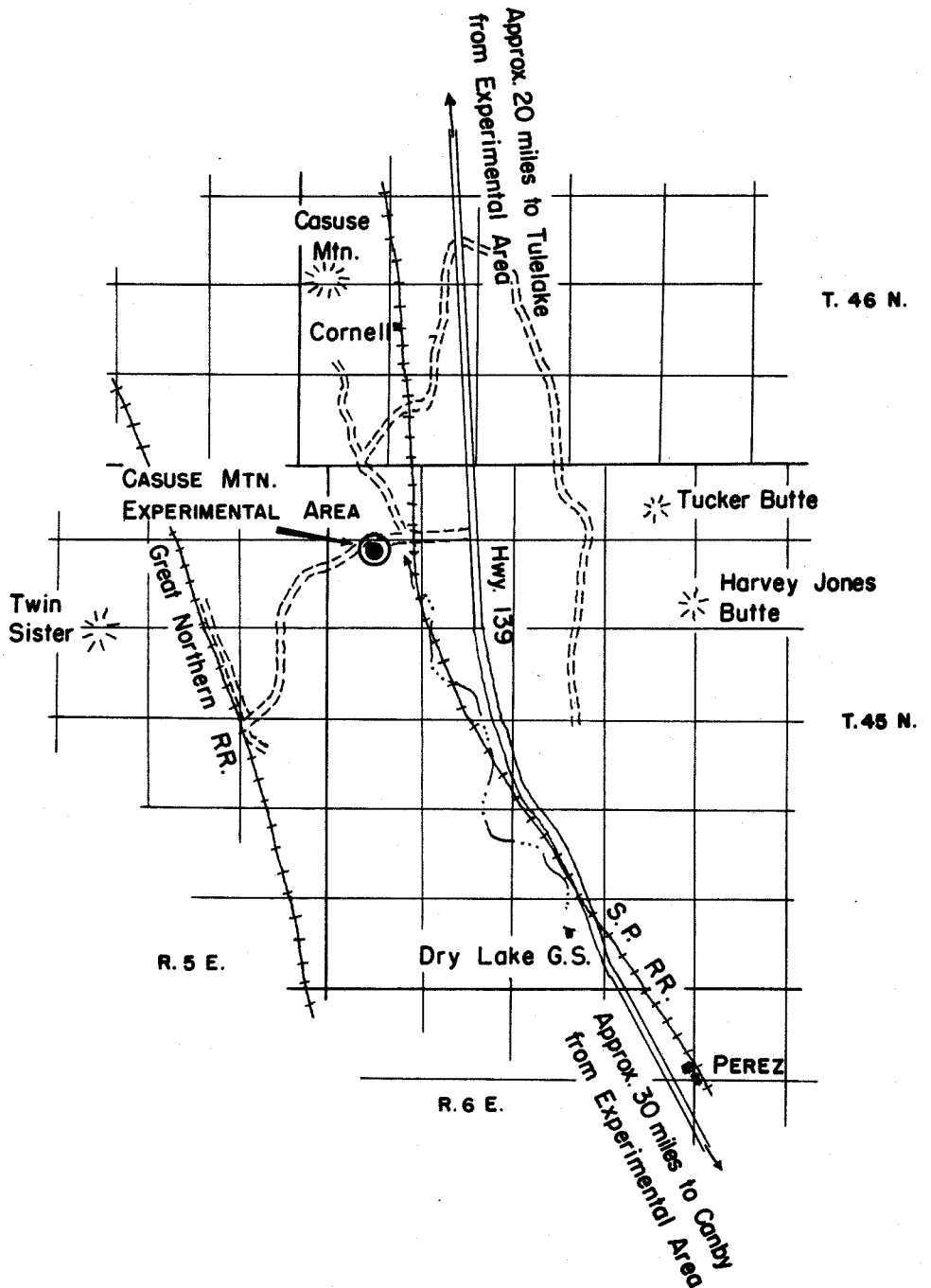


Project W46R

CALIFORNIA FOREST AND RANGE EXPERIMENT STATION
Forest Service, U.S. Department of Agriculture
in cooperation with
CALIFORNIA DEPARTMENT OF FISH AND GAME

Date: June 1953

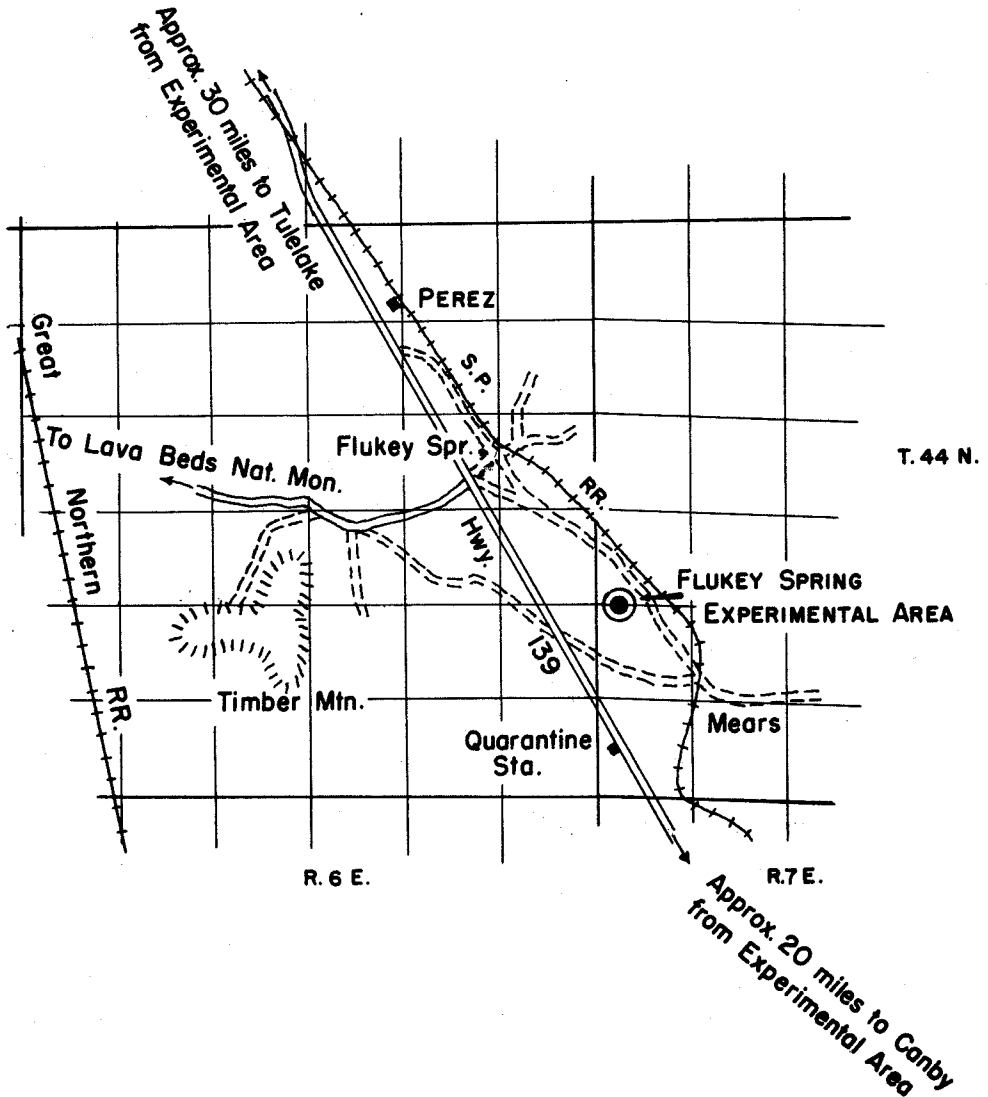
CASUSE MTN. EXPERIMENTAL AREA
 GAME RANGE RESTORATION
 MODOC COUNTY, CALIFORNIA



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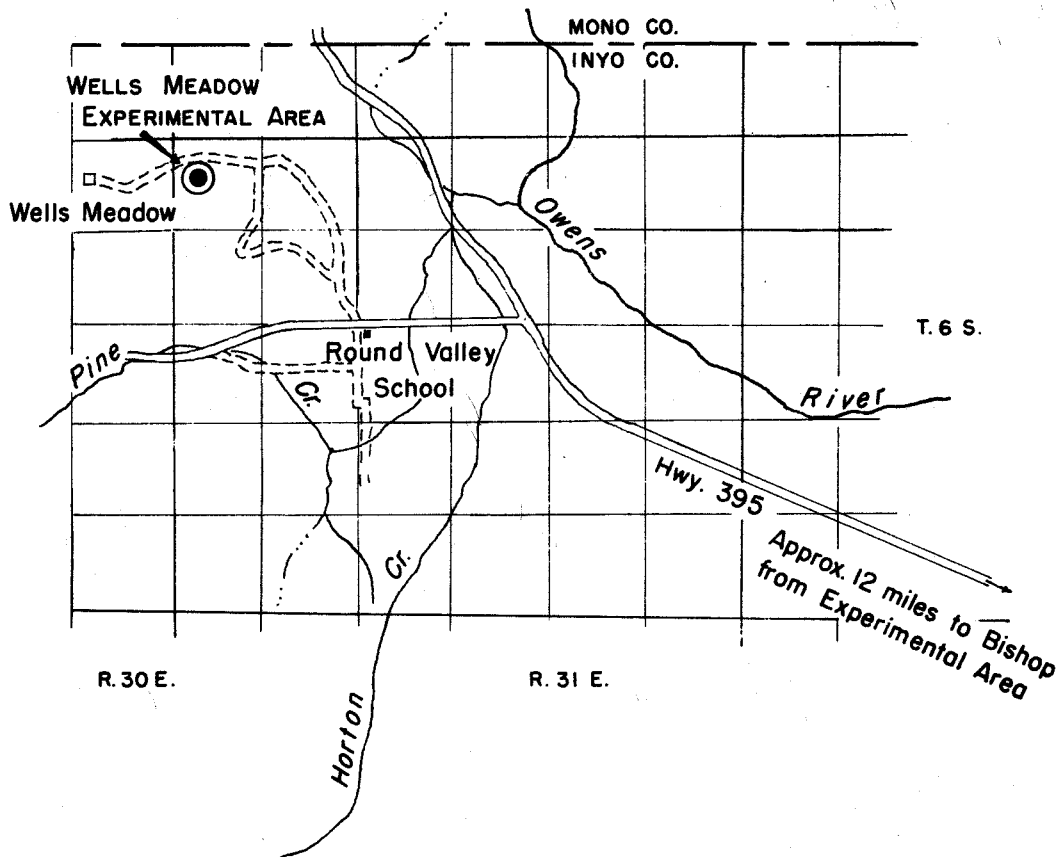
FLUKEY SPRING EXPERIMENTAL AREA
 GAME RANGE RESTORATION
 MODOC COUNTY, CALIFORNIA



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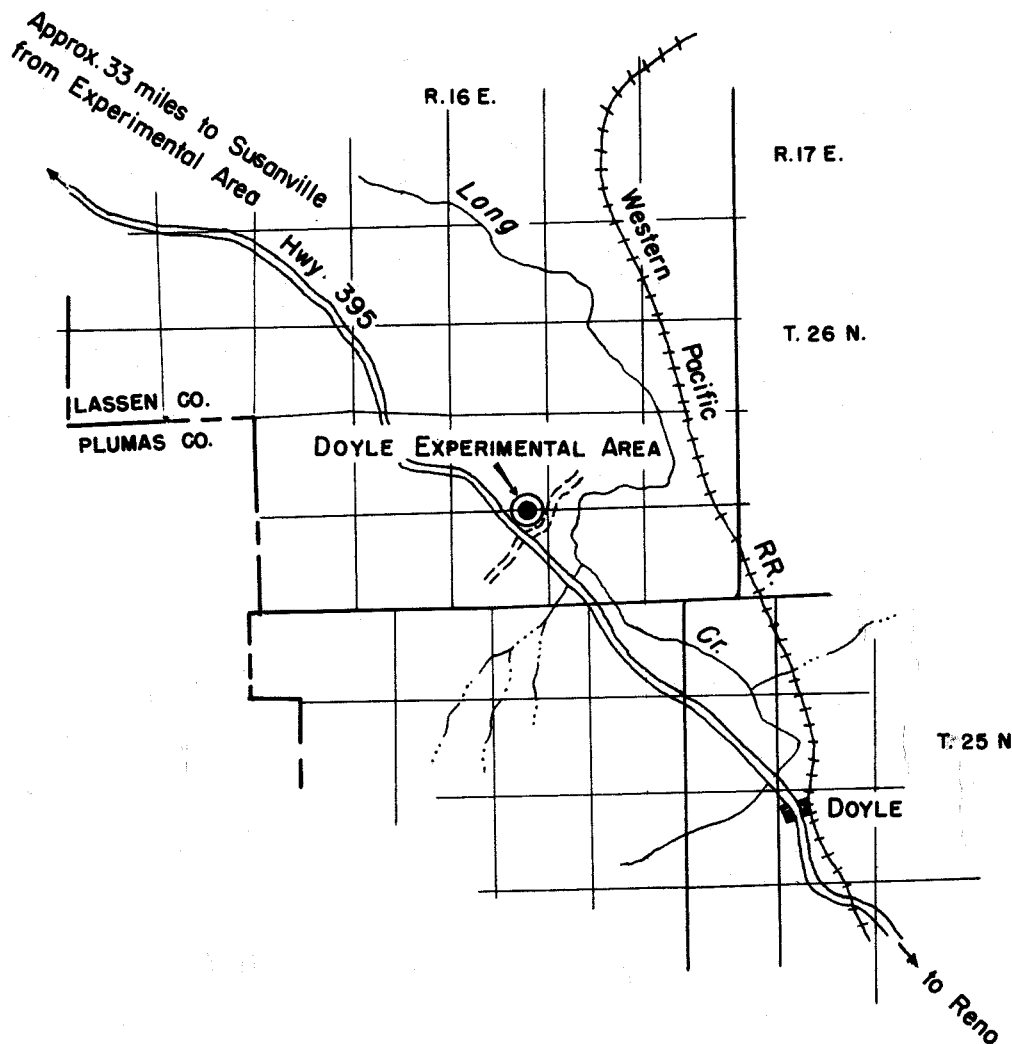
WELLS MEADOW EXPERIMENTAL AREA
GAME RANGE RESTORATION
INYO COUNTY, CALIFORNIA



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Date: June 1953

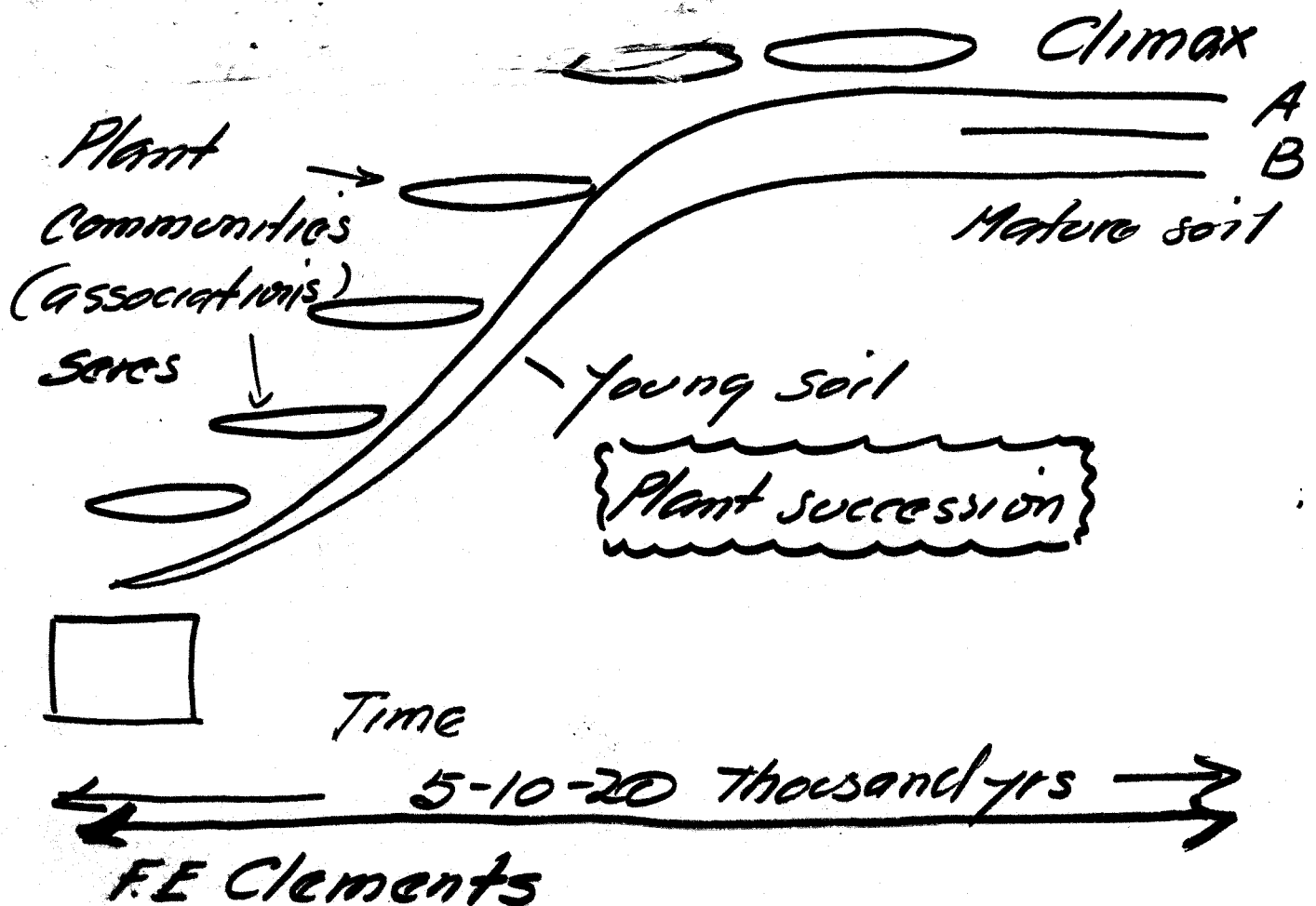
DOYLE EXPERIMENTAL AREA
GAME RANGE RESTORATION
LASSEN COUNTY, CALIFORNIA



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Date: June 1953

20. Ecology - plant composition changes



Plant communities arise, grow, mature, attain old age and die from natural causes or by accident. They regularly reproduce themselves after partial destruction by fire, lumbering, clearing, or other disturbance, regenerating new parts, not altogether unlike the process by which a lobster grows a new claw or a lizard a tail. The final or adult community is termed a climax by reason of the fact that it is the highest type of social organism capable of growing in a particular climate and its process of growth is known as succession, from the series of transient populations that pass across the scene.

Climax

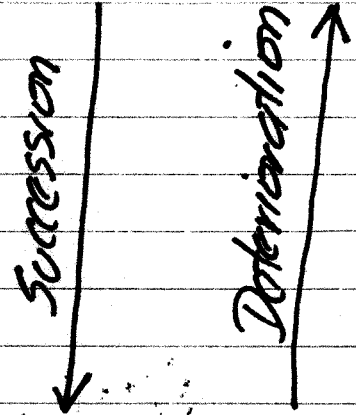
Viewpoints of Succession.—The successive waves of plant populations—crustose lichens, foliose lichens, mosses, herbs, shrubs, and trees—each, in turn, holds possession of a habitat and produces its profound influences upon it. Beginning slowly, increasing to a maximum, and then gradually receding, the plant populations of each ~~have made~~ ^{make} conditions fit for the next community but often less fit for their own continuation.

Succession

⑤ Ecology cont'd ~~1. Lichens~~

Vegetation composition of a plant community

1. Lichens
2. Mosses
3. Cactus
4. Xerophytes
5. ~~Shrub plants~~
6. Annuals
7. Fibrous rooted plants



~~Vegetation changes~~

Animal population changes
with vegetation-soil changes

Vegetation (soil) changes
with deterioration
-by grazing

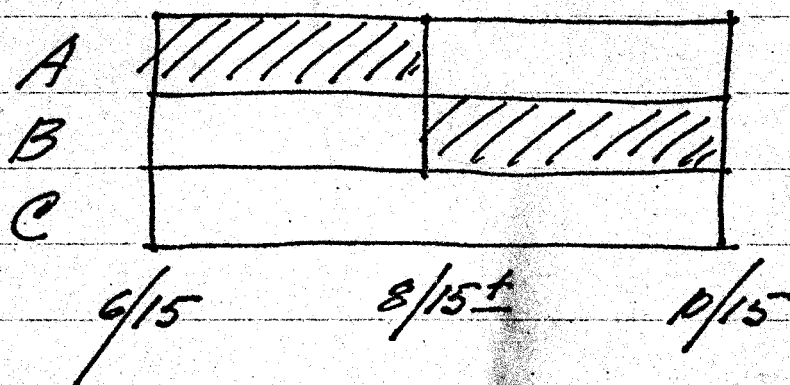
~~Vegetation changes~~ → ~~Animal population changes~~

~~Vegetation changes~~
~~Animal population changes~~

~~Other site~~

RR Grazing Formula & Schedule Mt Haggin Area

Formula (Suggested April 20 1978)
- Adopted



Grazing Schedule
(Clock-wise rotation in pastures used)
See attached map of pastures)

Pasture

1

2

3

Treatments

1978

A

C

B

1979

B

A

C

1980

C

B

A

1982

B

A

C

Cattle Weight Gains Harvey Valley 1957

Stock = Yearling Heifers

Season June 3 - Sept 26 113 days 3.75 mos.

Herd A and B 24 head each

A = Continuous grazing Pasture 3

B = Rotation grazing Pastures 3-2

Weight Gains

lbs/day Season

B	Rotation (3-2)	1.40	158
A	Continuous (3)	1.50	169
	Diff	-0.10	-11

Ninety-five percent of normal forage production

Cattle Weight Gains Harvey Valley 1958

Stock Cows, calves, yearling steers
 Season June 10 - Oct 9 119 days (4 mos)
 Pasture use A Pasture 4 continuous
 B Pastures 4-1 rotation

	COWS			CALVES			STEER		
	No	hd	Pending	No	hd	Pending	No	hd	Pending
B Rotation (4-1)	56	0.21	25	62	1.35	160	68	1.33	152
A Continuous (4)	29	0.45	53	78	1.52	181	63	1.76	154
			-78			-21			-4

2.4
 80/4
 20

2.8
 1.8
 1.0

2.4
 1.8
 0.6

Handling Harvey Valley 1957, 1958

Classes		Seasonal gain lbs 6 months		
		<u>Continuous</u>	<u>Rotation</u>	Diff
Cows		53 (29)	25 (56)	-28
Calves	113	181 (28)	4.5 160 (62)	40 -21
Yearling heifers		169 (24)	158 (24)	-11
Yearling steers	119	154 (63)	150 (68)	-4

Smoliak 1960 JRM 9 years

	Seasonal gain lbs 6 months
16 head Yearling steers	300.5 (50) 286.6 (40) 13.9

Hubbard William 1951 JRM 6 years 1932-37

		Seasonal gain lbs 7 months		
		Continuous	Rotation	
		Moderate stocking	Heavy stocking	
10 head	Cows	199	199	0.
"	Calves	395	353	-42
		Heavy stocking		
4	Cows	158	145	-13
"	Calves	353	331	-22

Sav. Range
Management
Sept 1960

Smoliale

A

B

No Diff

Year

Cont.

Rotation

Seasonal gain/hd.

Difference

Stacking
No head

1949

10

21.2

50

10

45.6

51

16

5.9

52

16

3.3

53

16

9.7

54

16

4.2

55

16

8.9

56

16

16.2

57

16

21.7

9 yrs.

13.9

Protein %
Periods

1 2 3

Cont 8.43 5.88 3.98

Rot 8.42 5.36 3.73

.52 .25 ←

Sig. at 5%

Lbs gain

300.5

286.6

13.9

Forage use

44%

46%

Daily gain/hd

Period

Season

1

2

3

A. Cont.

2.05

2.02

0.37

1.67

B Rot.

2.05

1.88

0.31

1.59

Diff

0

.14

.06

.08

Period diff lbs/hd.

11.3

2.6

13.9

(19)

(17)

Handling Livestock

Smoliak S. Experimental Farm, Manyberries, Alberta
 "Effects of Deferred-Rotation and Continuous
 Grazing on Yearling Steer Gains and Shortgrass
 Prairie Vegetation of Southeastern Alberta."
 Canada Dept Agr. Ottawa, Ontario.
 JRM Sept 1960 Vol 13 No 5

9yr. study Yearling steers 10 head 1949 & 1950
 16 " 1951 to 1957

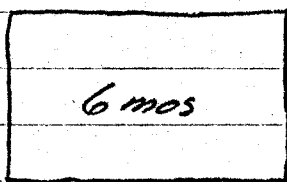
300 acre fields 6 months (180 days) May 1-Oct 27

Principal species *Bouteloua gracilis*, *Stipa comata*,
Koeleria cristata, *Agropyron smithii*, *Poa serotina*,
Calamagrostis montanensis, *Carex* sp.

Artemisia frigida, *Phlox hoodii*, *Plantago purshii*
Artemisia cana, other forbs

Precip. Apr.-July Ave 7.08" Annual Ave 13.83

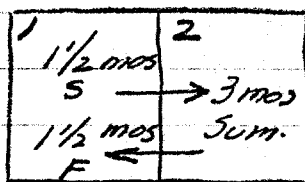
Treatments



May 1

Oct 27

Continuous



A = S-F

B = Summer

Rotation

Period 1 S = May 1 - June 20

" 2 Sum. = June 21 - Sept 17

" 3 F = Sept 18 - Oct 27

Schedule - rotation

Pastures

1	2
A	B
B	A
A	B

(1) (2)

Hubbard William A Dominion Range Exp. Sta

Manitoba, Alberta, Canada

"Rotational Grazing Studies in Western Canada"

JRM Jan. 1951 Vol 4 No 1

6yr. study 1932-1937 inclusive Contin vs Rotation

Cows and calves Two stocking rates 20 & 30 acres

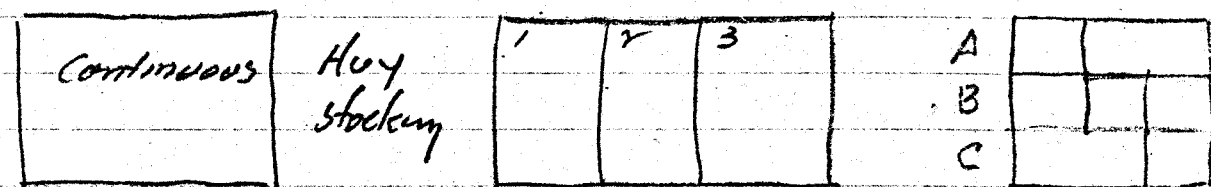
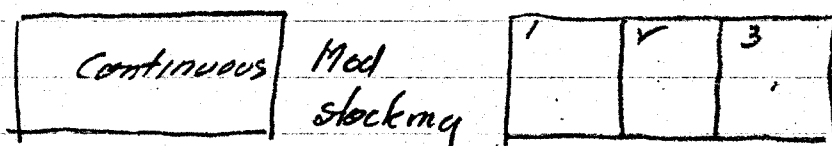
per head Same heifer used throughout

66.6 and 100 acre fields

Season 7 months Apr 8 - Nov 3

10 head used in each set of pastures

Veg. comparable to Smohole



Rotation scheme

Pasture

	1	2	3
1932	A	B	C
1933	B	A	C
1934	C	B	A
1935	B	C	A
1936	A	C	B
1937	C	A	B
	A	B	C
	B	A	C
	C	B	A
	B	C	A
	A	C	B (2x)

A = spring Apr 8 - June 17

B = Summer June 18 - Aug 17

C = Fall Aug 27 - Nov 3

Hubbard (2) Jour. R Manage. Jan 1951
Cattle gains per head - season
lbs

	Moderate stocking		Heavy stocking	
	Cows	Calves	Cows	Calves
Continuous	199	395	158	353
Rotation	199	353	145	331
Diff.	0	42	13	22

Stocking	30 acres/hd	20 acres/hd
	4.3 acres/AUM	2.9 acres/AUM

{ rotation and
Heavy continuous grazing had adverse effect
on veg. Continuous more harmful }

Primary forage species maintained better
under moderate-rotation.

Cont	139	395	?	86	353
Rot	151	353	,	78	331
Diff	-12	+42		+8	+22
		41			44

Season of grazing & cattle production

4 - Month Season

Start		End	Cattle sq mi	wt gain	Cattle prod/pound
April 22	Lvs 2"	Aug 19	48	201 93	15.1 79
May 2	" 3	" 29	51	212 98	16.9 88
May 12	Flr stalks low bt.	Sept 8	55	216 <u>100</u>	18.6 97
May 22	" " mid bt.	Sept 18	58	212 98	19.2 <u>100</u>
June 1	" " emerging	Sept 18	59	198 92	18.3 95
June 11	" " 1/3 grown	Oct 8	60	178 82	16.7 87
June 21	" " 2/3 "	Oct 18	60	152 70	14.3 74

5 Month Season

Apr. 22	Lvs 2"	Sept 18	30	232 99	14.1 90
May 2	Lvs 3"	" 18	42	234 <u>100</u>	15.4 99
May 12	Flr stalks low	Oct 8	44	227 97	15.6 <u>100</u>
May 22	" " mid	" 18	45	210 90	14.8 95