OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA FPMR (41 CFR) 101-11.6

UNITED STATES GOVERNMENT

Memorandum

6680.2a (015)

TO : District Manager, Vermillion Resource Area Mgr., District Biologist and Central Files

DATE: June 12, 1980

FROM : Sidney C. Slone, Vermillion Resource Area Biologist

SUBJECT: Kaibab Squirrel Clipping Transects

The five squirrel transects were read in May 1980. Due to weather and additional workload created by examining basal areas around feed trees, the survey was not completed the first trip on May 22nd and 23rd and had to be finished on May 29th and 30th.

A five-factor prism was used to obtain basal area data around feed trees. At each feed tree, a point five yards out on each of the north and south sides was selected to take a reading. The sum of trees that fell within the prism reflectance was divided by two then multiplied by five to obtain the basal area/acre around the feed tree.

Squirrel activity varied from light-to-heavy, depending upon transect. Transect SQ2 had approximately 60 trees downed or partially down from wind and snow breakage.

Feeding activity was greatest in the 11 to 21 inch Dbh range. The table below gives the percentage of feed trees and clippings that occurred in the 11 to 15.9 Dbh range, 16-20.9 Dbh range and the total from May'79 to May '80.

Dbh	#of Trees	#of Clippings
11-15.9"	49.7%	54.8%
16-20.9"	28.0%	31.0%
11-20.9"	77.7%	85.8%

Approximately half of the total squirrel feeding activity occurred in the 11 to 16 inch Dbh range. At this point we do not know if this is a reflection of stand characteristics or truely represents a Dbh characteristic that the squirrels are keying in on. We will hopefully be able to answer this question when we survey the transect stand characteristics. It may be that the most commonly used feed trees are also the most common sized trees in the stand and only reflect that abundance.

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Almost half of the feeding activity occurred in areas where the basal area/acre was 90 to 130. The basal areas around feed trees will need to be compared with stand basal area characteristics before the data can be meaningful.

The following tables compare this year's data with previously collected data. The discrepancies between some of the tables reflects the way the data was broken down. E.g. the total number of feed trees is 111. Where two trees were together and it was impossible to tell which clippings came from which tree, each tree was counted as one and given one-half of the clippings. Three or more trees were not considered in these tables but are listed in a separate table. When computing the feeding activity by basal area/acre, groups of two or more trees were counted as one feeding site. Therefore, the table "Feeding Activity by Basal Area/Acre" shows only 103 feeding sites.

The reasoning behind the breakdown of the data is as such: If two trees are together one can tell if both trees were clipped or only one was clipped; however, when a situation arises where there are more than two trees, it becomes very difficult to tell which trees were clipped and which were not.

Attachments

SLONE:emg

Attachment 2:

Percent of Feeding Activity Within Five-Inch DBL Classes

Dbh Range	No. of Feed Trees			No. of Clippings		
	May '79	Dec.'79	May'80	May '79	Dec.'79	May '80
0-5.9"	1.5	0.0	0.0	3.3	0.0	0.0
6-10.9"	19.0	11.3	11.7	9.1	7.8	5.2
11-15.9"	51.1	47.5	49.5	58.4	50.3	50.0
16-20.9"	21.9	32.5	32.4	25.5	35.3	38.1
21-25.9"	2.2	8.8	5.4	0.6	6.6	3.7
26-30.9"	2.2	0.0	0.9	1.2	0.0	3.0
31-35.9"	0.7	0.0	0.0	0.8	0.0	0.0
36-40.9"	1.5	0.0	0.0	1.0	0.0	0.0

Feeding Activity by Basal Area/Acre

Basal Area/Acre	No. of Feeding Sites	No. of Clippings	No. of Clippings/Feed Tree	Total Feeding Sites
50.5 - 70.0	6	186	31.0	5.8
70.5 - 90.0	12	249	20.8	11.7
90.5 -110.0	26	923	35.5	25.2
110.5 -130.0	24	668	27.8	23.3
130.5 -150.0	14	509	36.4	13.6
150.5 -170.0	9	336	37.3	8.7
170.5 -190.0	9	285	31.7	8.7
190.5 -210.0	-	-	-	-
210.5 -230.0	3	50	16.7	3.0
Totals:	103	3206	31.1	100

Transect	Minimum Feed Tree DBH (Diameter at Breast Height)*				
	June '78	Oct. '78	May '79	Dec. '79	May '80
SQ1	-	5.5	8.6	8.2	7.5
SQ2	11.1	24.3	18.0	16.6	15.7
SQ3	11.2	5.9	6.0	11.4	9.1
SQ4	8.0	4.6	12.6	8.4	6.3
SQ5	6.0	6.0	5.6	8.8	10.0
Average:	9.1	9.3	10.2	10.9	9.7

Transect	Feed Tree Density* (Feed Tree Per Acre)				
	June '78	Oct. '78	May '79	Dec. '79	May '80
SQ1	0.00	0.57	0.92	2.41	2.29
SQ2	0.59	0.13	0.13	0.26	0.20
SQ3	2.39	1.24	3.03	0.41	3.03
SQ4	0.20	0.55	0.35	1.61	0.50
SQ5	0.26	0.95	4.57	1.21	1.03
Average:	0.69	0.69	1.80	1.18	1.41

Transect	Average (DBH (Diameter at Breast Height) of Feed Trees*				
	June '78	Oct. '78	May '79	Dec. '79	May'80
SQ1	-	10.6	16.3	15.0	14.6
SQ2	17.7	25.1	19.3	19.7	18.5
SQ3	16.5	16.3	14.9	15.2	15.5
SQ4	12.8	14.2	16.6	15.0	14.9
SQ5	16.6	13.8	13.3	14.9	13.6
Average:	15.9	16.0	16.1	16.0	15.4

Transect	Number of Pinyon Pine Trees Used				
	June '78	Oct. '78	May '79	Dec. '79	May '80
SQ1	-	-	1	-	-
SQ2	-	-	1	-	-
SQ3	-	-	-	-	-
SQ4	1	2	5	-	3
SQ5	-	-	1	-	-

Attachment 1:

COMPARISON OF THE DIFFERENT PERIODS THAT THE TRANSECT DATA WAS COLLECTED

Transect	Number of Feed Trees *				
	June '78	Oct.'78	May'79	Dec. '79	May '80
SQ1	-	5	8	21	20
SQ2	9	2	2	4	3
SQ3	52	27	66	9	66
SQ4	4	11	7	32	10
SQ5	3	11	53	14	12
Total:	68	56	136	80	111

Transect	Maximum Feed Tree DBH (Diameter at Breast Height)*				
	June '78	Oct. '78	May '79	Dec.'79	May '80
SQ1	-	15.3	27.1	19.8	19.9
SQ2	24.8	26.0	20.6	22.1	22.0
SQ3	24.0	28.3	38.2	21.0	27.7
SQ4	14.6	25.1	21.0	23.8	22.7
SQ5	18.8	27.6	26.6	23.2	19.5
Average:	21.6	24.5	26.7	22.0	22.4

The following table shows the number of feed trees that were in clumps of three or more

	Number of Groups			Total Number of Trees in Groups		
Transect	May 79	Dec. 79	May 80	May 79	Dec 79	May 80
SQ1	1	2	-	6	7	-
SQ2	2	-	-	13	-	-
SQ3	10	1	3	46	4	11
SQ4	0	2	-	0	7	-
SQ5	17	1	-	80	3	-

TOTAL NUMBER OF FEED TREES AND SQUIRREL CLIPPINGS
BY FIVE INCH DBH CLASS*

DBH RANGE	Number of Feed Trees			Total Number of Clippings			Average Number of Clippings per Feed Tree		
	May 79	Dec.79	May 80	May 79	Dec.79	May 80	May 79	Dec. 79	May 80
0-5.9"	2	0	0	167	0	0	83.5	0	0
6-10.9"	26	9	13	455	81	139	17.5	9.0	10.7
11-15.9"	70	38	55	2,921	519	1,342	41.7	13.7	24.4
16-20.9"	30	26	36	1,277	364	1,023	42.6	14.0	28.4
21-25.9"	3	7	6	32	68	100	10.7	9.7	16.7
26-30.9"	3	0	1	60	0	81	20.0	-	81.0
31-35.9"	1	0	0	41	0	0	41.0	-	-
36-40.9"	2	0	0	49	0	0	24.5	-	-
	137	80	111	5,002	1,032	2,685	36.5	12.9	24.2

TOTAL NUMBER OF FEED TREES AND SQUIRREL CLIPPINGS BY TWO
INCH DBH CLASS FOR THE DBH RANGE OF 6 TO 21
INCHES*

DBH Range	Number of Trees			Total Number of Clippings			Average Number of Clippings per Feed Tree		
	May 79	Dec. 79	May 80	May 79	Dec 79	May 80	May 79	Dec 79	May 8
6-7.9"	4	0	2	34	0	15	4.3	-	7.5
8-9.9"	16	6	4	334	52	28	20.9	8.7	7.0
10-11.9"	26	11	17	1,148	103	351	47.8	9.4	20.6
12-13.9"	25	14	21	863	219	459	34.5	15.6	21.9
14-15.9"	27	16	24	997	226	628	36.9	14.1	26.2
16-17.9"	14	13	18	716	131	386	51.1	10.1	21.4
18-19.9"	15	10	13	524	211	472	34.9	21.1	36.3
20-21.9"	3	6	6	55	50	188	18.3	8.3	31.3
22-Greater	6	4	6	150	40	158	25.0	10.0	26.3
	136	80	111	4,961	1,032	2,685	36.5	12.9	24.2

*Does not include feed trees that were in a group of three or more trees because the clippings origination could not be determined.

Transect SQ1 -(Read on May 22, 1980 by Slone, Hunter and Kulinovich)

No.	DBH	Clippings	Basal Area/Acre
1.	13.9	8	62.5
2.	16.2	12	142.5
3.	15.9	10	82.5
4.	13.3	12)	100.0
5.	16.2	11)	
6.	18.2	5	57.5
7.	13.6	10	110.0
8.	12.0)	12	125.0
9.	16.3)		
10.	15.9)	12	90.0
11.	14.2)		
12.	14.8	27	75.0
13.	19.9	67	77.5
14.	13.0	17	125.0
15.	15.0	21	100.0
16.	13.5)	11	100.0
17.	14.0)		
18.	15.7	18	107.5
19.	13.5	13	72.5
20.	7.5	11	127.5

Transect: SQ2 - (Read by Slone, Hunter and Jensen on May 30, 1980)

No.	DBH	Clippings	Basal Area/Acre
1.	17.7	5	105.0
2.	22.0	9	137.5
3.	15.7	12	172.5

Transect SQ 3 -(Read by Slone, Hunter and Kulinovich on May 23, 1980)

No.	DBH	Clippings	Basal Area/Acre
1.	13.8		
2.	7.0		
3.	11.7	69	92.5
4.	10.1		
5.	14.3	115	62.5
6.	10.1		
7.	15.4	24	112.5
8.	12.6	36	125.0
9.	15.7	6	125.0
10.	18.6		
11.	14.5	65	120.0
12.	18.4		
13.	18.1	9	100.0
14.	15.3	53	137.5
15.	17.3		
16.	13.5	10	145.0
17.	11.1	5	187.5
18.	10.7	6	187.5
19.	11.0	39	187.5
20.	11.7	9	215.0
21.	12.4	29	230.0
22.	11.7	12	230.0
23.	14.3	40	160.0
24.	12.4	18	160.0
25.	17.2	98	155.0
26.	19.5	9	155.0
27.	12.5	8	177.5
28.	19.1	77	120.0
29.	14.2	8	125.0
30.	8.8		
31.	16.2	18	120.0
32.	15.8	12	147.5
33.	12.5		
34.	11.5	20	
35.	20.9	15	90.0
36.	10.5	38	
37.	14.4	5	90.0
38.	10.5	19	90.0
39.	9.5		
40.	11.7	22	157.5
41.	12.5	11	132.5
42.	16.3	62	187.5
43.	13.1	99	142.5
44.	11.5	105	132.5
45.	20.3	60	115.0
46.	12.8	26	152.5
47.	11.0	32	135.0
48.	11.7		
49.	27.7	81	102.5
50.	24.6	29	112.5
51.	19.9	53	110.0
52.	21.1	23	102.5
53.	9.1	9	95.0
54.	17.5		
55.	16.0	20	162.5

SQ 3 (Cont'd.)

No.	DBH	Clippings	Basal Area/Acre
56.	13.8	20	162.5
57.	17.8)	17	142.5
58.	14.0)		
59.	19.3	83	167.5
60.	16.9	9	57.5
61.	23.5	24	127.5
62.	20.4	9	135.0
63.	17.1	30	122.5
64.	18.3	44	107.5
65.	18.0)	35	145.0
66.	19.0)		
67.	24.3	6	100.0
68.	20.0)	81	177.5
69.	20.0)		
70.	13.4)	33	182.5
71.	16.3)		
72.	11.6)		
73.	20.2)		
74.	15.8)	39	185.0
75.	18.6)		
76.	15.3)	19	87.5
77.	16.3)		

Transect SQ 4 -(Read by Slone, Hunter and Jensen on May 30, 1980)

No.	DBH	Clippings	Basal Area/Acre
1.	5.1 Pinyon	26	52.5
2.	7.6 Pinyon	51	90.0
3.	19.7	40	90.0
4.	22.7	9	105.0
5.	15.7	52	110.0
6.	16.8 Pinyon	92	115.0
7.	10.6 & 6.3	8	127.5
8.	16.7 &12.5	30	55.0
9.	9.8 &17.6	22	77.5
10.	17.4	29	122.5

Transect SQ 5 - (Read by Slone, Hunter and Kulinovich on May 22, 1980)

No.	DBH	Clippings	Basal Acre/Area
1.	8.4)		
2.	11.3)		
3.	6.6)		
4.	12.1)		
5.	13.8)	107	92.5
6.	12.6)		
7.	8.4)		
8.	14.7	70	135.0
9.	14.4	35	147.5
10.	16.5)	22	122.5
11.	11.0)		
12.	10.0	13	97.5
13.	10.5	13	105.0
14.	14.0	19	62.5
15.	13.0)		
16.	12.5)	144	107.5
17.	16.5)		
18.	10.0	49	
19.	13.0	61	117.5
20.	19.5	31	105.0
21.	15.4	94	97.5
22.	12.0	38	105.0
23.	12.2	10	152.5

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Memorandum

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TO : Files

DATE: December 12, 1979

FROM : Sidney C. Slone; Vermillion Resource Biologist

SUBJECT: Kaibab Squirrel Clipping Transects

The five squirrel transects were surveyed on Dec. 4-5, 1979 by Sid Slone, Carl Bezanson and Robin Hunter. An attempt was made to use a "relascope" to determine tree basal area where feed trees were located. Due to inexperience in using the device, we decided not to use the relascope until we could become better acquainted with it. Clippings were cut and bundled with surveyors tape for future reference as to discoloration of the needles at transects SQ 3 and 5. The weather was cold and mostly cloudy with scattered patches of snow left from a snow storm several weeks before.

One problem that arised in attempting to evaluate the squirrel clipping data is the inconsistency in time intervals between reading the transects. The transects were read 16 weeks after they were initially installed. The third reading occured 31 weeks later and 27 weeks lapsed before the last reading in Dec. 1979.

If one disregarded the variables involved in determing squirrel clipping activity on Ponderosa pine, an assumption could be made that an x number of feed trees or clipping activity would occur evenly over a given period of time. For example, if squirrels fed on 100 trees over a period of 10 weeks then 200 trees would be clipped over 20 weeks. Feeding activity or intensity as expressed in total number of clippings would be a more appropriate measurement. However, tree clippings were only counted during the last two surveys and therefore number of feed trees will be used as an index at this time.

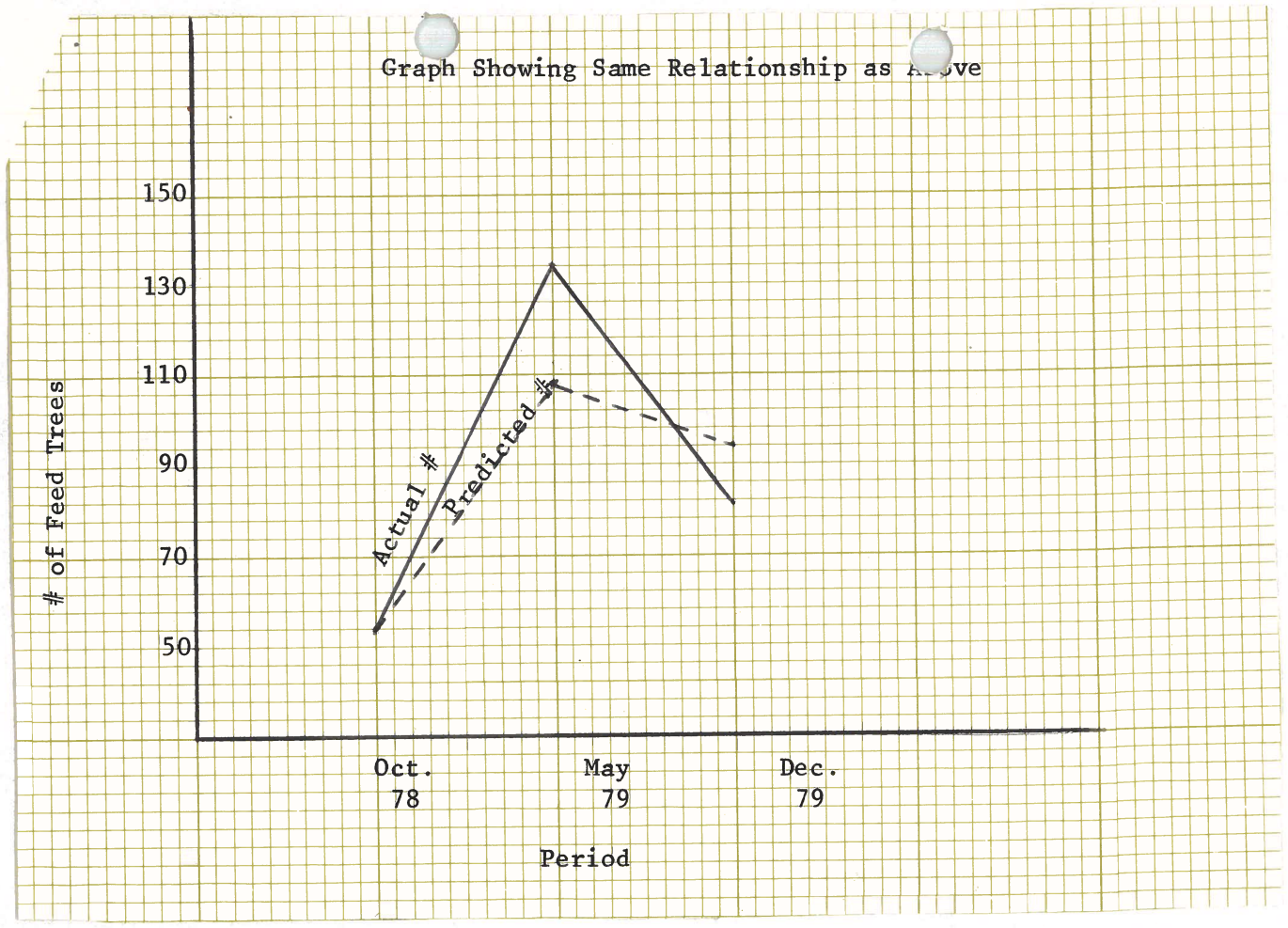
The following table shows the relationship between the actual number of feed trees observed and the predicted number that would occur based upon the ~~just~~ first 16 week period.

Actual Feeding Intensity vs. Predicted Feeding Intensity

Period	# of weeks	Actual # of feed trees	Predicted # of feed trees
June 25-Oct.18	16	56 SUMMER	--
Oct. 18-May 25	31	136 WINTER	109
May 25-Dec. 4	27	80 SUMMER	95

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The following tables and graphs extrapolates the data.

COMPARISON OF THE DIFFERENT PERIODS THAT THE TRANSECT DATA WAS COLLECTED

Transect	Number of Feed Trees *			
	June 78	Oct. 78	May 79	Dec. 79
SQ1	-	5	8	21
SQ2	9	2	2	4
SQ3	52	27	66	9
SQ4	4	11	7	32
SQ5	3	11	53	14
Total	68	56	136	80

Transect	Maximum Feed Tree DBH (Diameter at Breast Height)*			
	June 78	Oct. 78	May 79	Dec. 79
SQ1	-	15.3	27.1	19.8
SQ2	24.8	26.0	20.6	22.1
SQ3	28.0	28.3	38.2	21.0
SQ4	14.6	25.1	21.0	23.8
SQ5	18.8	27.6	26.6	23.2
Average	21.6	24.5	26.7	22.0

Transect	Minimum Feed Tree DBH (Diameter at Breast Height)*			
	June 78	Oct. 78	May 79	Dec. 79
SQ1	-	5.5	8.6	8.2
SQ2	11.1	24.3	18.0	17.6
SQ3	11.1	5.9	6.0	11.4
SQ4	8.0	4.6	12.6	8.4
SQ5	6.0	6.0	5.6	8.8
Average	9.1	9.3	10.2	10.9

Transect	Feed Tree Density* (Feed Trees Per Acre)			
	June 78	Oct. 78	May 79	Dec. 79
SQ1	0.00	0.57	0.92	2.41
SQ2	0.59	0.13	0.13	0.26
SQ3	2.39	1.24	3.03	0.41
SQ4	0.20	0.55	0.35	1.61
SQ5	0.26	0.95	4.57	1.21
Average	0.69	0.69	1.80	1.18

Transect	Average DBH (Diameter at Breast Height) of Feed Trees*			
	June 78	Oct. 78	May 79	Dec. 79
SQ1	-	10.6	16.3	15.0
SQ2	17.7	25.1	19.3	19.7
SQ3	16.5	16.3	14.9	15.2
SQ4	12.8	14.2	16.6	15.0
SQ5	16.6	13.8	13.3	14.9
	15.9	16.0	16.1	16.0

Transect	Number of Pinyon Pine Trees Used			
	June 78	Oct. 78	May 79	Dec. 79
SQ1	-	-	1	-
SQ2	-	-	1	-
SQ3	-	-	-	-
SQ4	1	2	5	-
SQ5	-	-	1	-

The following table shows the number of feed trees that were in clumps of 3 or more.

Transect	Number of Groups		Total Number of Trees in Groups	
	May 79	Dec. 79	May 79	Dec. 79
SQ1	1	2	6	7
SQ2	2	-	13	-
SQ3	10	1	46	4
SQ4	0	2	0	7
SQ5	17	1	80	3

TOTAL NUMBER OF FEED TREES AND SQUIRREL CLIPPINGS
BY FIVE INCH DBH CLASS*

DBH Range	Number of Feed Trees		Total Number of Clippings		Average Number of Clippings per Feed Tree	
	May 79	Dec.79	May 79	Dec. 79	May 79	Dec. 79
0-5.9"	2	0	167	0	83.5	0
6-10.9"	26	9	455	81	17.5	9.0
11-15.9"	70	38	2,921	519	41.7	13.7
16-20.9"	30	26	1,277	364	42.6	14.0
21-25.9"	3	7	32	68	10.7	9.7
26-30.9"	3	0	60	0	20.0	-
31-35.9"	1	0	41	0	41.0	-
36-40.9"	2	0	49	0	24.5	-
	137	80	5,002	1,032	36.5	12.9

TOTAL NUMBER OF FEED TREES AND SQUIRREL CLIPPINGS BY TWO INCH DBH CLASS
FOR THE DBH RANGE OF 6 TO 21 INCHES*

DBH Range	Number of Feed Trees		Total Number of Clippings		Average Number of Clippings per Feed Tree	
	May 79	Dec. 79	May 79	Dec. 79	May 79	Dec. 79
6-7.9"	4	0	34	0	4.3	-
8-9.9"	16	6	334	52	20.9	8.7
10-11.9"	26	11	1,148	103	47.8	9.4
12-13.9"	25	14	863	219	34.5	15.6
14-15.9"	27	16	997	226	36.9	14.1
16-17.9"	14	13	716	131	51.1	10.1
18-19.9"	15	10	524	211	34.9	21.1
20-21.9"	3	6	55	50	18.3	8.3
22-&-greater	6	4	150	40	25.0	10.0
	136	80	4,961	1,032	36.5	12.9

*Does not include feed trees that were in a group of three or more trees because the clippings origination could not be determined.

COMPARISON OF FEED TREE DATA

Transect	Acres	June 1978 # of Feed Trees	June 1978 Feed Trees Per Acre	Oct. 1978 # of Feed Trees	Oct. 1978 Feed Trees Per Acre	May 1979 # of Feed Trees	May 1979 Feed Trees Per Acre	Dec. 1979 # of Feed Trees	Dec. 1979 Feed Trees Per Acre	Total # of Feed Tree	Feed Trees P/A	$\bar{x}$ Feed P/A
SQ1	8.7	-	-	5	0.57	8	0.92	21	2.41	34	3.9	1.0
SQ2	15.3	9	0.59	2	0.13	2	0.13	4	0.26	17	1.1	0.4
[illegible]	21.8	52	2.39	27	1.24	66	3.03	9	0.41	154	7.1	1.8
SQ4	19.9	4	0.20	11	0.55	7	0.35	32	1.61	54	2.7	0.7
SQ5	11.6	3	0.26	11	0.95	53	4.57	14	1.21	81	7.0	1.7
	77.3	68	0.8 $\bar{x}$	56	0.7 $\bar{x}$	136	1.8 $\bar{x}$	80	1.2 $\bar{x}$	340	4.4 $\bar{x}$	1.1 $\bar{x}$

Transect SQ 1

No.	Clippings	DBH
1	8	14.3
2	18	16.5
3	9	19.1
4	6	15.6
		8.2
5	13	15.0
6	6	11.4
7	14	11.4
		14.1
8	9	16.4
9	17	13.7
10	40	19.8
11	81	15.7
		11.5
		16.3
		20.2
12	6	11.5
13	14	17.9
14	12	15.1
		11.5
		9.7
15	20	18.1
16	58	13.1
		14.9
17	15	13.0
18	19	19.4
19	6	15.6
20	8	16.6

Transect SQ 2

No.	Clippings	DBH
1	15	18.9
2	5	17.6
3	10	22.1
4	7	20.2

Transect SQ 3

No.	Clippings	DBH
1	31	18.6
2	11	13.3
3	12	13.0
4	5	12.9
5	18	11.4
6	15	15.2
		11.7
7	7	19.6
8	13	21.0
9	24	16.0
		15.2
		15.7
		17.1

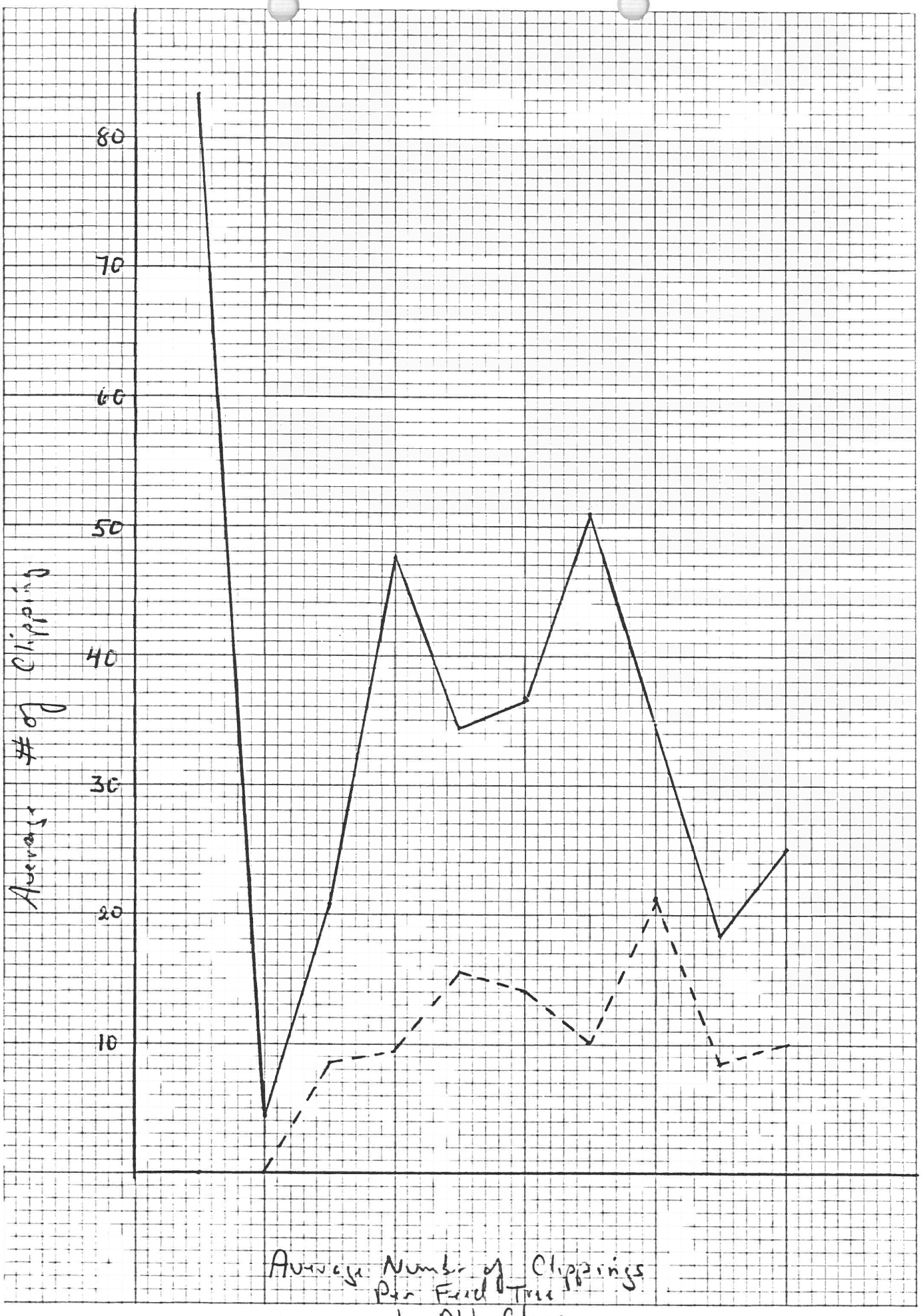
Transect SQ 4

No.	Clippings	DBH
1	4	14.0
2	23	12.0
3	7	17.5
4	5	11.5
5	6	8.6
6	35	13.8 8.6 15.8 14.5
7	14	11.4 16.8 19.8
8	35	11.0 9.0
9	45	15.0
10	10	10.3
11	8	14.8
12	8	18.0
13	6	17.3
14	5	18.8
15	25	14.9 10.7
16	7	20.3
17	12	22.5
18	6	8.4
19	7	21.9
20	10	23.8
21	8	21.1
22	12	10.25 12.2
23	19	9.5 16.4
24	6	16.3
25	5	17.85
26	19	15.75 16.5
27	25	15.7
28	38	14.4 14.7

Transect SQ 5*

No.	Clippings	DBH
1	59	12.0
2	15	17.2
3	9	13.5
		13.7
		13.25
4	16	23.2
		20.6
5	57	19.35
6	7	13.5
7	11	8.75
	11	13.25
8	19	16.5
9	6	12.3
10	11	12.3
11	7	11.8
12	7	13.55
13	10	14.2

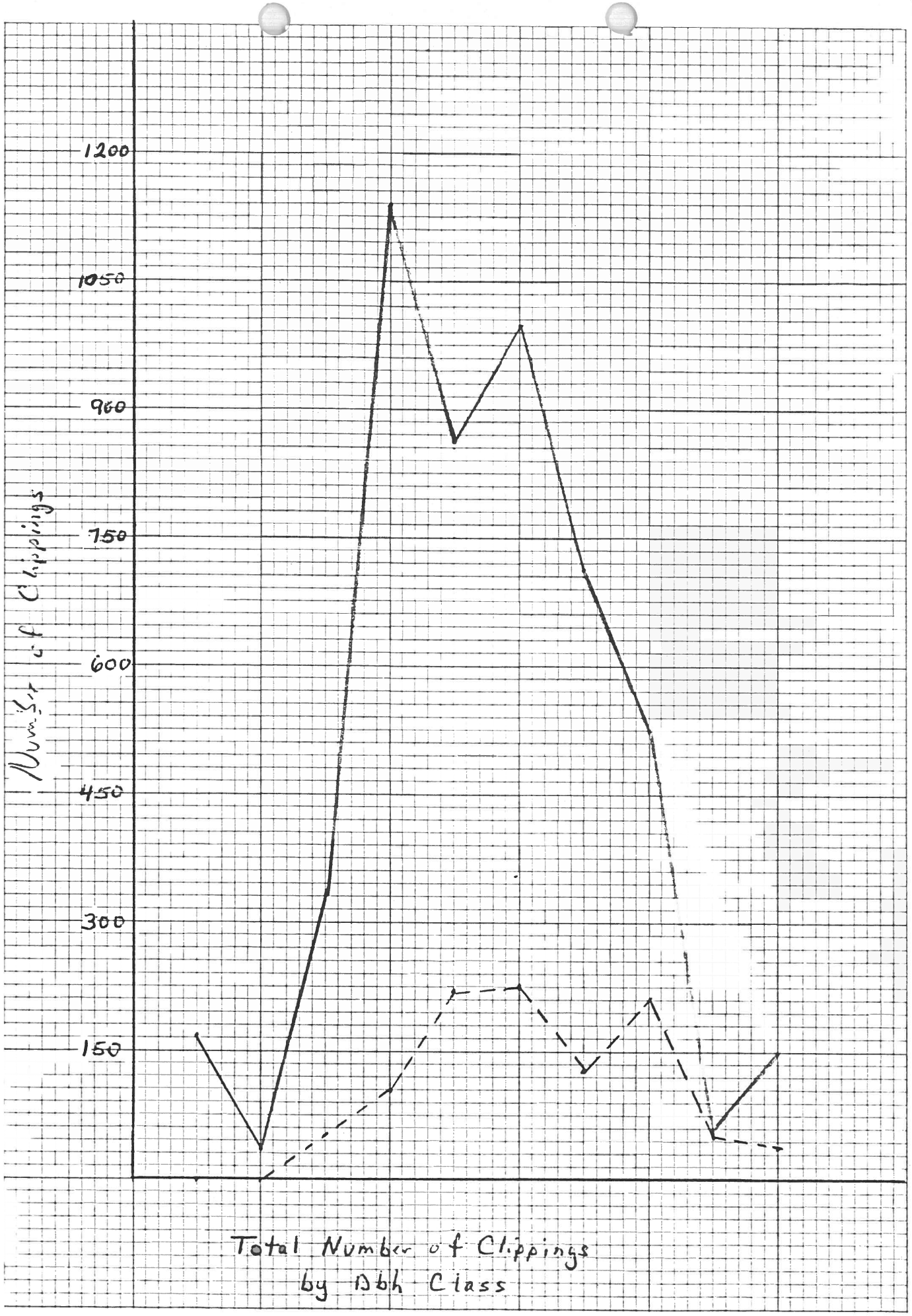
* Transect read from East to West



Average Number of Clippings
Per Feed Tree
by Obh Class



Number of Field Trees
by Dbh Class



Total Number of Clippings
by Dbh Class

EPI-FOM 10 X 10 TO 1 INCH
10TH LINE HEAVY

OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA FPMR (41 CFR) 101-11.6

UNITED STATES GOVERNMENT

Memorandum

TO : The Files - **DATE:** June 25, 1979

FROM : Sid Slone, Vermillion R.A. Wildlife Biologist

SUBJECT: Kaibab Squirrel Clipping Transects

The five squirrel transects were read May 23-25, 1979 by Sid Slone and Carl Bezanson. The number of feed trees had increased drastically over the two previous periods when the transects were read. This is probably the result of deep winter snows that measured at least 30 inches at Nixon Springs and did not melt completely until mid-May.

The following tables and charts are provided to show the extrapolation of the data.

Attachments

SSLONE:SS

5010-108

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COMPARISON OF THE DIFFERENT PERIODS THAT THE TRANSECT DATA WAS COLLECTED*

Transect	Number of Feed Trees		
	June 78	Oct. 78	May 79
SQ1	-	5	8
SQ2	9	2	2
SQ3	52	27	66
SQ4	4	11	7
SQ5	3	11	53

Transect	Maximum Feed Tree DBH (Diameter of Breast Height)		
	June 78	Oct. 78	May 79
SQ1	-	15.3	27.1
SQ2	24.8	26.0	20.6
SQ3	28.0	28.3	38.2
SQ4	14.6	25.1	21.0
SQ5	18.8	27.6	26.6

Transect	Minimum Feed Tree DBH (Diameter of Breast Height)		
	June 78	Oct. 78	May 79
SQ1	-	5.5	8.6
SQ2	11.1	24.3	18.0
SQ3	11.1	5.9	6.0
SQ4	8.0	4.6	12.6
SQ5	6.0	6.0	5.6

	Feed Tree Density*		
Transect	June 78	Oct. 78	May 79
SQ1	0.00	0.57	0.92
SQ2	0.59	0.13	0.38
SQ3	2.34	1.22	2.97
SQ4	0.20	0.55	0.35
SQ5	0.26	0.95	4.58

*The density did not include feed trees that were in a group of three or more trees because the clippings origination could not be determined.

Transect	Average DBH (Diameter at Breast Height) of Feed Trees		
	June 78	Oct. 78	May 79
SQ1	-	10.6	16.25
SQ2	17.7	25.1	19.3
SQ3	16.5	16.3	14.9
SQ4	12.8	14.2	16.6
SQ5	16.6	13.8	13.3

Transect	Number of Pinyon Pine Trees Used		
	June 78	Oct. 78	May 79
SQ1	-	-	1
SQ2	-	-	1
SQ3	-	-	-
SQ4	1	2	5
SQ5	-	-	1

*The data for May 1979 was obtained only from groups of trees of two or less used by the Kaibab squirrel. The following table shows the number of feed trees that were in clumps of 3 or more.

Transect	Number of Groups	Total Number of Trees in Groups
SQ1	1	6
SQ2	2	13
SQ3	10	46
SQ4	0	0
SQ5	17	80

TOTAL NUMBER OF FEED TREES AND SQUIRREL CLIPPINGS
BY FIVE INCH OBH CLASS*

OBH Range	Number of Feed Trees	Total Number of Clippings	Average Number of Clippings per Feed Tree
0-5"	2	167	83.5
6-10"	26	455	17.5
11-15"	70	2,921	41.7
16-20"	30	1,277	42.6
21-25"	3	32	10.7
26-30"	3	60	20.0
31-35"	1	41	41.0
36-40"	2	49	24.5

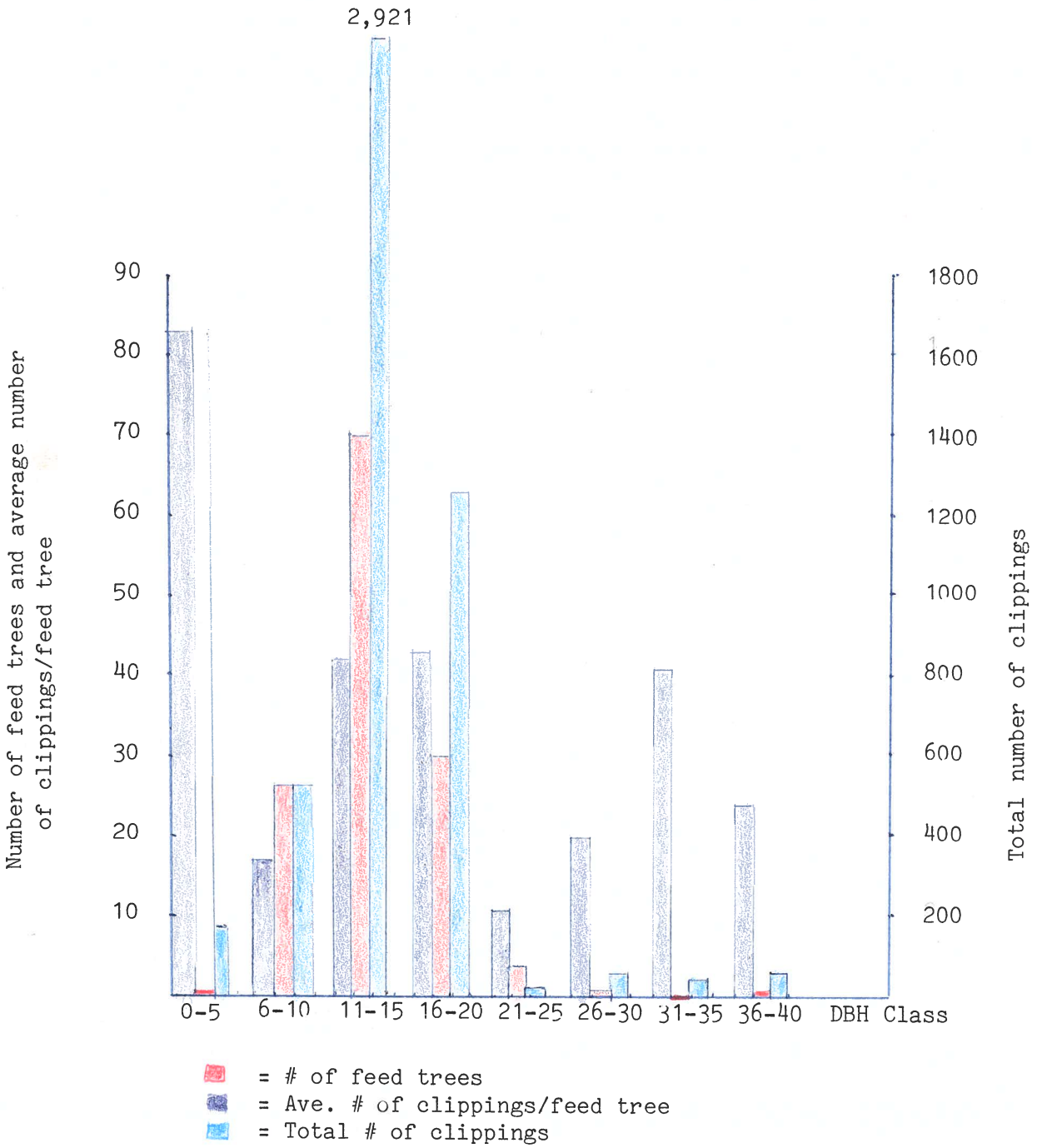
TOTAL NUMBER OF FEED TREES AND SQUIRREL CLIPPINGS BY TWO INCH DBH CLASS
FOR THE DBH RANGE OF 6 TO 21 INCHES*

OBH Range	Number of Feed Trees	Total Number of Clippings	Average Number of Clippings per Feed Tree
6-7"	4	34	4.3
8-9"	16	334	20.9
10-11"	26	1,148	47.8
12-13"	25	863	34.5
14-15"	27	997	36.9
16-17"	14	716	51.1
18-19"	15	524	34.9
20-21"	3	55	18.3

*The data includes those feed trees where there are two trees grouped or as individuals. Three trees or more in a group were not counted.

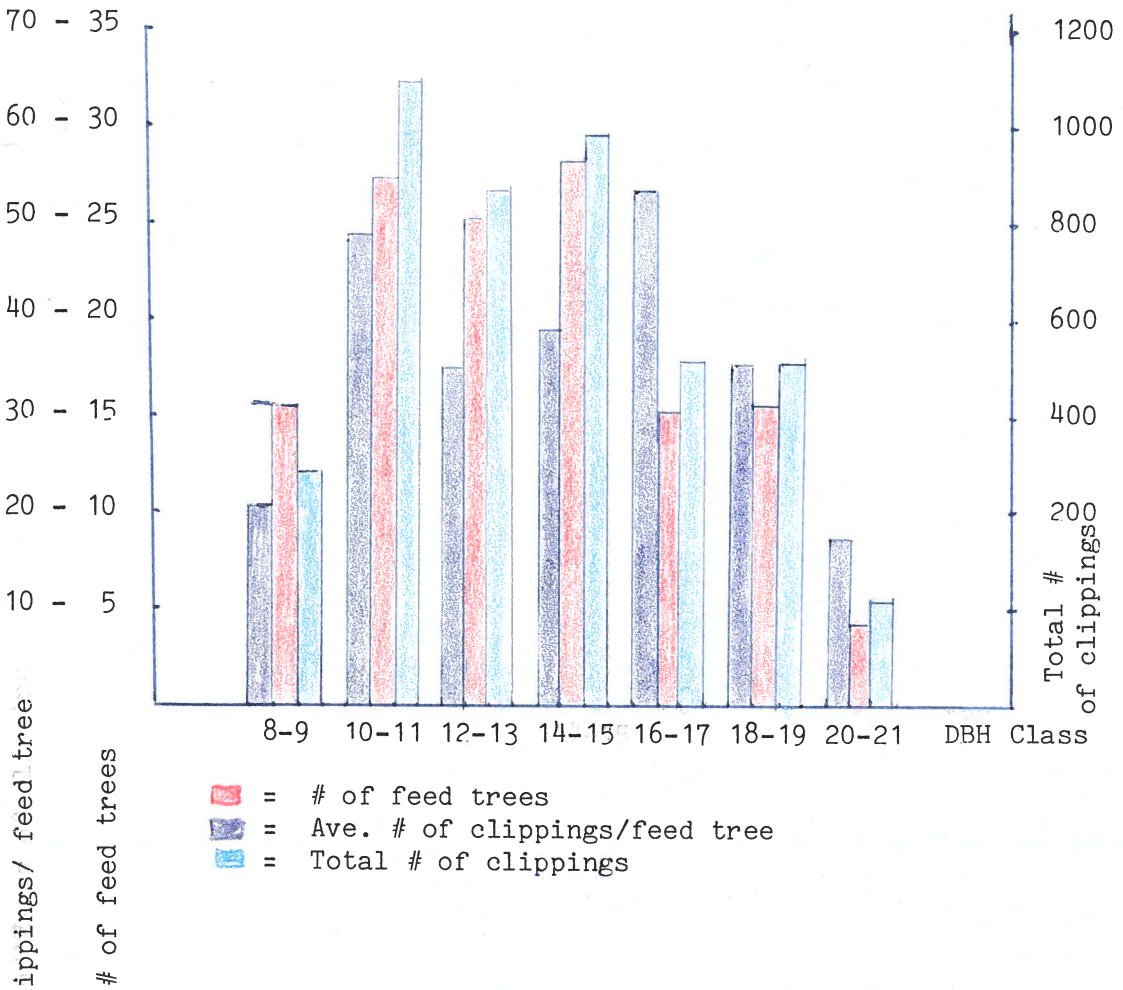
Selection of Feed Trees by Five Inch DBH Class

on Mt. Trumbull by the Kaibab Squirrel



Selection of Feed Trees by Two Inch DBH Class

on Mt. Trumbull by the Kaibab Squirrel



CONCLUSIONS

1) The average DBH for the feed trees was 13.6 inches DBH. The mean was 14.0 inches DBH.

2) Many of the feed trees were not used in the evaluation computations because in most cases when there were three trees or more in a clump it was impossible to determine if the clippings came from all of the trees in the clump or only a few. Therefore, only the clippings that originated from trees that were in clumps of two or individual trees were counted for computation purposes. However, all trees including trees in large clumps were measured and recorded.

3) There was at least 30 inches of snowpack at Nixon Springs Admin. site during the 78-79 winter and the snow did not completely melt until mid-May. This snowpack was probably responsible for the tremendous increase in Kaibab squirrel clipping activity that occurred during the 78-79 winter-spring period.

4) The data suggests that the Kaibab squirrel is selecting Ponderosa feed trees that have a DBH range of 11 to 16 inches. This may reflect a higher density of this size tree in the transects, however, we do not have the data to support this rationale.

OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA FPMR (41 CFR) 101-11.6

UNITED STATES GOVERNMENT

Memorandum

SID

6680

TO : Files

DATE: Nov. 6, 1978

FROM : Non-game Biologist

SUBJECT: Kaibab Squirrel Clipping Transects

Once again Kaibab Squirrel clipping transects were evaluated on the 17th and 18th of October, 1978.

The test plot was inspected to determine the amount of clipping discoloration that had occurred. Over a period of 3½ months (the last time transects were read), the clippings were completely brown and when touched, needles disarticulated easily.

Consequently, if transects are read at six month intervals, clippings from the previous sample period will not be counted twice, unless they are deposited just prior to inspection. Therefore, transects will be cleared of all distinguishable clippings each time they are surveyed.

Every transect was cleared of clippings, however, only green clippings were counted to avoid confusing brown ones with the previous sample period. From now on transects will be surveyed on April 22 and October 22 to give a spacing of six months and make yearly comparisons possible.

During field exercises, criteria was established to determine what actually constituted a group of clippings. Care also must be taken when evaluating clippings to make sure they were fed on by tassel-eared squirrels and not rock squirrels, porcupines, etc.

Clipping Group Standards

1) At least four or five clippings must be present.

2) Distinct incisor marks and cleanly cut clippings indicate tassel-eared squirrels.

3) Pealed twigs must be in the vicinity. Many times squirrels feed on three or four trees in an area and may be only peal twigs under one tree. In this case if it looks like the same squirrel fed through the area, then count all groups. Compare diameters of clippings and incisor patterns to make the decision.

The presence of pealed twigs is the major factor used in the two prior sample periods to decide whether a group of clippings were counted.

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CONCLUSION

Fifty-six feed trees were measured and had an average D.B.H. of 15.18 inches. A total of 77.63 acres (180 foot strip width) were inventoried and contained 1.38 feed trees per acre.

Feeding activity increased on Sq-1, Sq-4 and Sq-5 and decreased on Sq-2. Sq-3 stayed about the same.

Squirrels utilized two pinyon pine feed trees on Sq-4.

Six feed trees close to rock outcrops, transects Sq-2 and Sq-4 are suspected to be used by rock squirrels.

The next time squirrel transects are run the number of fresh clippings in each group should be counted to determine the feeding intensity of individual transect area's.

Ponderosa pine cone and gambel oak acorn production surveys should also be established to evaluate annual food crops. These plots are to be monitored incidental to squirrel transects.

Enclosures

SQUIRREL TRANSECTS FEED TREE DATA

Transect	D B H Max.	D B H Min.	D B H $\bar{X}$	Dist. Feet Max.	Dist. Feet Min.	Dist. Feet $\bar{X}$	Number of Feed Trees	Feed Trees/Acre	Sample Area (Acre)	Length of Transect Feet
Sq-1	15.3	5.5	10.56				5	0.57	8.73	2,112
Sq-2	26.0	24.25	25.13				2	0.13	5.47	3,696
Sq-3	28.33	5.89	16.27				27	1.22	22.21	5,375
Sq-4	25.1	4.6	14.15	87	9	56.45	11	0.55	19.86	4,805
Sq-5	27.6	6.0	13.84	72		37.27	11	0.95	11.56	2,798
									77.63	
Average	DBH=15.18									

DATA FOR CLIPPING TRANSECTS

Transect	D.B.H. Inches	Laterial Distance	Time (AM) Starting Ending	Mileage*	Tree Species	Side of Road	Remarks
Sq-1	13 8.3 5.5 15.3 10.7 52.8		2:30 to 3:00		Pipo " " " "		Slightly overcast, only green clippings were counted. Nine old groups were observed.
Sq-2	24¼* 26* 50.25	117'	2:00 to 2:30				*Close to lava flow may be rock sq. cuttings many, cones used. No fresh cuttings. Six old cutting groups recorded. Sq. Kaibab sighted at east side of transect. Clipping plot established west end of transect 15' north of marker.
Sq-3	17.5 16.5 26.0 19.0 12.0 25.75		11:00 to 1:30			R. Heading West " " " " "	Only green clippings were counted. Plot cleared. Clipping Plot established west end north side of transect.
Sq-3	17.75 13.75 14.75 15.0 19.25 11.75 12.75 8.00 5.89 11.94					Left " "	

(Continued on next page)

DATA FOR CLIPPING TRANSECTS

Transect	D.B.H. Inches	Laterial Distance	Time (AM) Starting Ending	Mileage*	Tree Species	Side of Road	Remarks
	21.17					Left	
	14.16					"	
	16.87					"	
	11.14					"	
	11.14					"	
	13.69					"	
	28.33					"	
	14.96					"	
	26.58					"	
	16.87					"	
	16.71					"	
	439.20						
Sq-4	24*	57	12:15 to 1:00		Pipo		Slightly overcast plot cleared of all clippings, only green counted.
	25.1*	33					
	24.1*	48					
	19*	9					
	7.1	18			Pinyon Pine		*Clippings cut very roughly and may be rock sq. Also many cones eaten.
	13	87			"		
	11.7	87			Pipo		
	4.6	84			"		
	4.6	87			"		
	4.6	87			"		
	17.9	24			"		
	155.7						
	Continued on Page 3.						

DATA FOR CLIPPING TRANSECTS

Transect	D.B.H. Inches	Laterial Distance	Time (AM) Starting Ending	Mileage*	Tree Species	Side of Road	Remarks
Sq-5	25	18'	11:00 to 11:45		Pipo	L	Slightly overcast all plots cleared.
	10.7	15'			"	L	A discoloration plot was established
	9.5	72			"	R	on west side of road at start of
	8.4	72			"	R	transect. Check next time.
	15.6	8			"	R	
	16.2	9			"	R	One old group discovered.
	17.1	12			"	R	
	27.6	18			"	L	
	6.8	60			"	L	
	6.0	64			"	L	
	9.3	62					
	152.2						

OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA FPMR (41 CFR) 101-11.6

UNITED STATES GOVERNMENT

6680

Memorandum

TO : Non-Game Files

DATE: September 29, 1978

FROM : Non-Game Biologist

SUBJECT: Kaibab Squirrel Clipping Transects

A Kaibab squirrel monitoring system was established in the Mt. Trumbull Area on June 28, 29 1978.

Five transects were layed out in ponderosa pine areas which were thought to reflect good squirrel habitat. A total of 3.54 miles of transect was inventoried.

The procedure involves counting the number of groups of clippings. In many case 1 Group is associated with a single feed tree and/or separate groups are not distingishable. In this situation a group of clippings is considered to be one. In order to determine the area of effective sample and thus compute the number of groups of clippings and/or the number of feed trees per acre the laterial distance from the road (for each group, etc.) and the total transect length are measured. This will allow us to establish a trend index from year to year.

Some confusion may result in trying to determine if clippings are recent (within the last six months). As the study progresses it may be necessary to remove all clippings from plots or cut fresh clippings each time to provide a known age reference. A test plot with freshly cut clippings are located on the west end of SQ-3 25 yds. N.E. of transect monument. These test plots should be checked prior to starting the survey to acknowledge the amount of discoloration that has occurred during the time interval. If the clippings from test plots are proven to be a reliable guide then this will necessitate that they are established each time the transects are read.

The time of day transects are read is important in detecting groups of clippings. Before and just after noon time appeared to be the best time to obtain the least amount of shadow and thus a higher detectability.

Three people are required to run the transects. The driver plus two observers which stand in the back of the truck, watch for clippings. A speed of less than 5 MPH must be maintained to adequately survey the area. The DBH of each tree in which clippings are observed is recorded. A 100' tape was used to measure the laterial distance of each feed tree or group of clippings from the road. The transects are to be read once every six months. Additional transects should be layed out as they are identified.

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SQ-1
This transect is approximately .8 miles south from the Nixon Springs administrative site on the Mt. Logan Road. A large pile of rocks with red paint are located on the left hand side of the road heading south. The transect runs for .4 miles on a secondary road and ends at the old forest service boundary fence. Both ends of the transect are marked.

SQ-2
Is located 1.5 miles south of SQ-1 on the Mt. Logan road. The transect begins 1/4 mile down a secondary road just off the main road. A pile of red painted rocks on the north side of the road denotes the starting point. The transect is .7 miles long and ends .15 miles west of the old forest service boundary fence.

SQ-3
At the junction of the Mt. Logan Big Springs road proceed .35 miles on the Big Spring Road. A pile of rocks on the north side of the road indicates the starting point. The transect runs for 1 mile. The end of the transect is also denoted by a pile of red painted rocks on the north side of the road.

SQ-4
The plot is located along the main Mt. Trumbull Road. The starting point is at the intersection of the Mt. Trumbull and Mt. Logan Roads, and runs for .91 miles to the east. The ending point is marked by a large pile of red painted rocks.

SQ-5
Proceed .5 miles west of the Nixon Spring administrative site on the Mt. Trumbull road. Travel west on the Mt. Trumbull Road for .5 miles of the Nixon Springs Administrative Site. Turn left and travel approximately .6 of a mile to a large pile of red painted rocks. The transect is .53 miles long and the end is marked by a pile of rocks next to a large downed tree on the left hand side of the road going south.

All beginning and ending points are also marked with 20" rebar painted red.

CONCLUSION

The data suggest's squirrels are selecting a wide variety of sizes of trees for food. The average DBH of feed tree's are 15.9" as computed from a sample of 68 trees. The maximum and minimum DBH utilized are 28.0" and 8.0" respectively.

The average maximum distance at which groups of clipping were detected was 87.5'. Field observations indicate a strip width of 90' on each side of the road is the approximate laterial distance at which clippings are detected. This year's data shows a strip width of 180' will allow the majority of clippings to be discovered.

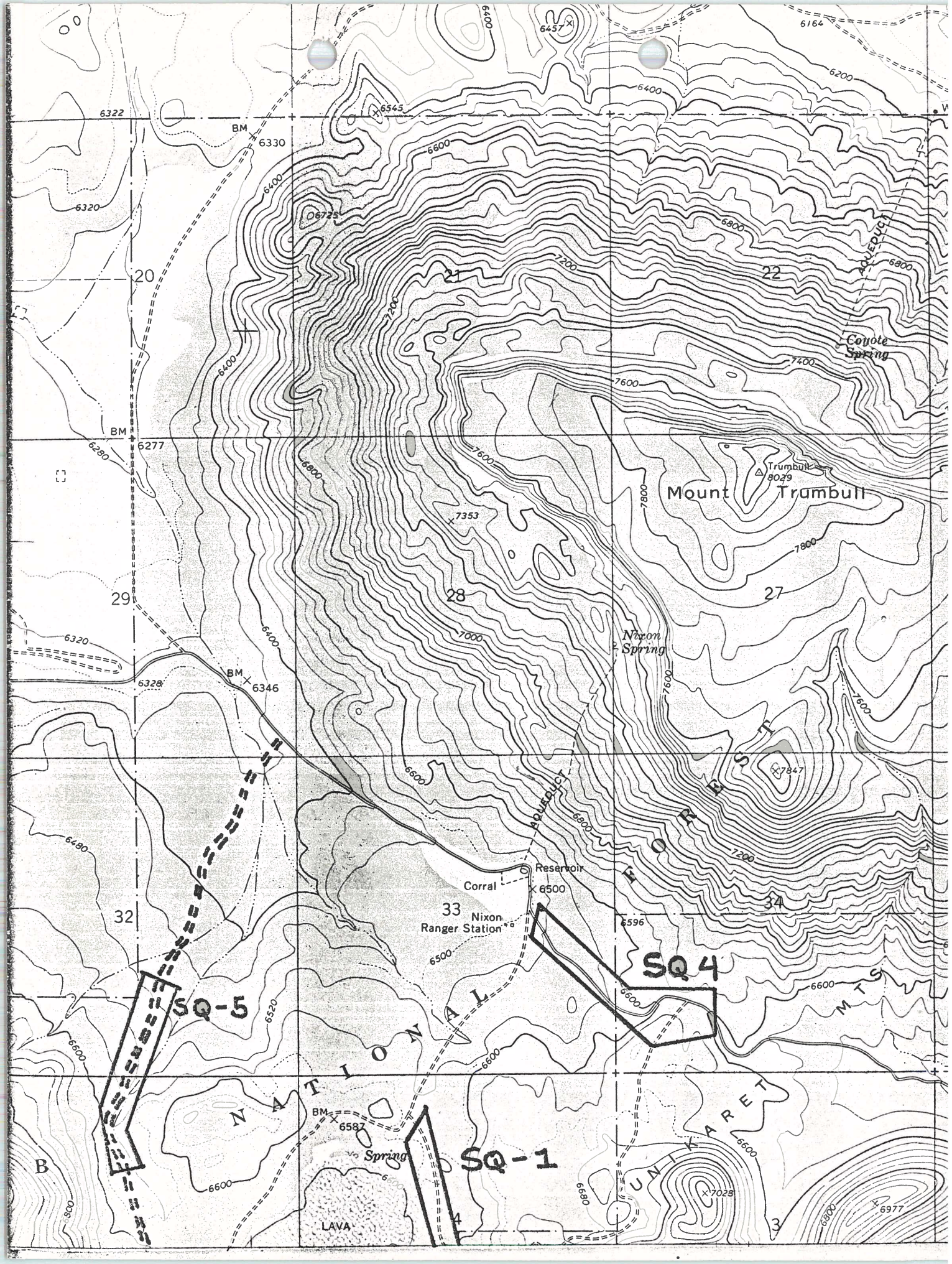
Future surveys are to use a standard strip width of 180' to make the data comparable, from year to year.

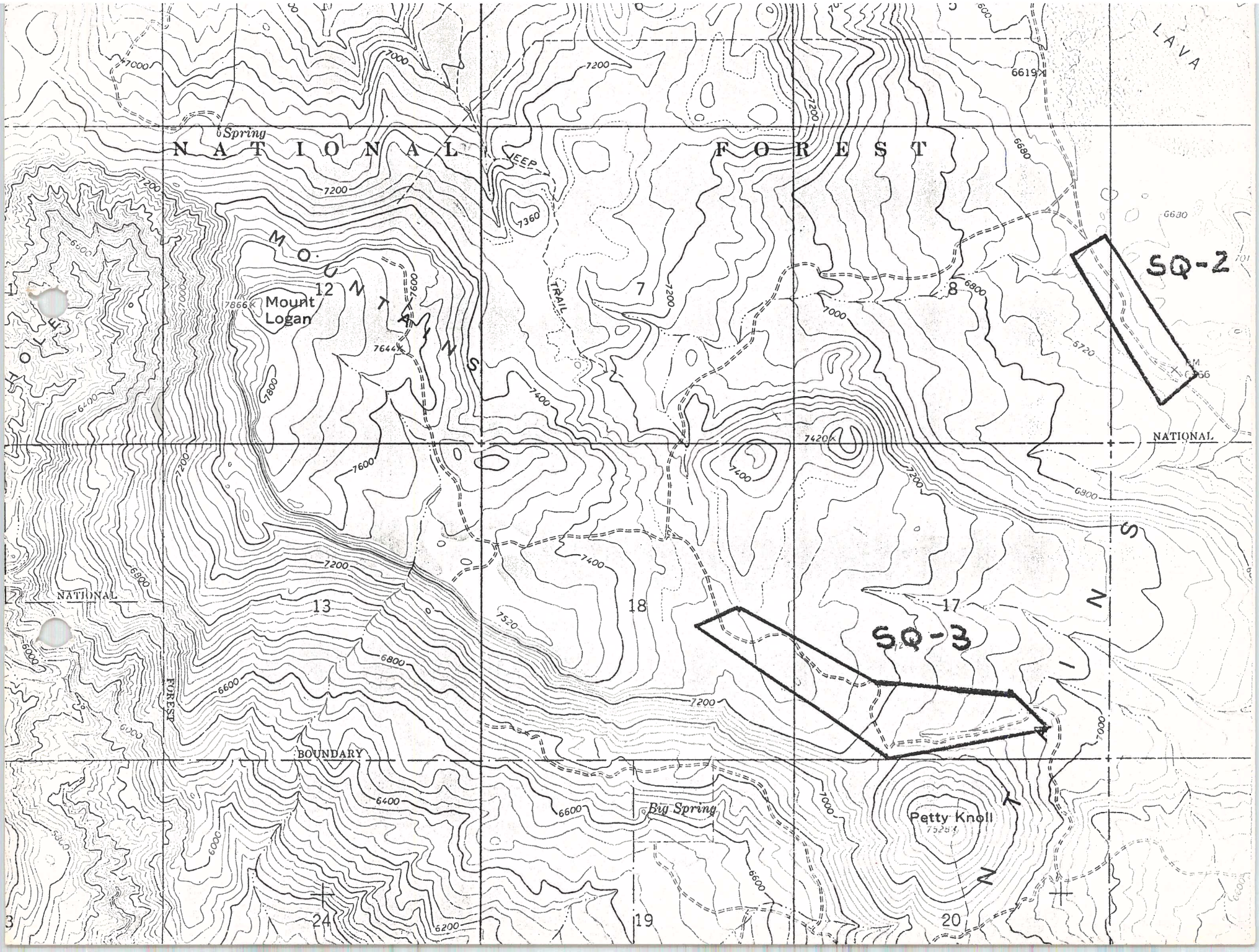
The area of effecting sample based on a strip width of 180' is 77.6 acres for all transects. The average maximum area of sample was 51.25 acres. However the sample size was too small except for SQ-3 to determine the sample area.

The next time squirrel transects are run the number of fresh clippings in each group should be counted to determine the feeding intensity of individual transect area's.

Ponderosa pine cone and Gambel oak acorn production surveys should also be established to evaluate annual food crops. These plots are to be monitored incidental to squirrel transects.

NMiddlebrook:ab


SQ-5
SQ 4
SQ-1
Mount Trumbull
Trumbull 8029
Coyote Spring
Nixon Spring
Nixon Ranger Station
Reservoir
Corral
6500
BM 6330
BM 6277
BM 6346
BM 6587
Spring
LAVA
AQUEDUCT
NATIONAL
MONUMENT
TOROWEAP
FAULT
UNKARET
MTS
20
21
22
27
28
29
32
33
34
6322
6545
6457
6164
6725
7353
7847
7025
6977
6596
6680


NATIONAL FOREST
Spring
JEEP TRAIL
MOUNTAINS
Mount Logan
7866
7644
7360
6619
LAVA
SQ-2
SQ-3
NATIONAL
FOREST
BOUNDARY
Big Spring
Petty Knoll
7528
12
7
8
13
18
17
24
19
20
7200
7400
7600
7000
6800
6600
6400
6200

Kaibab Squirrel Transect - 23-25 May, 1979

Transect	CBH	DBH	# of Clippings	Pinyon Pine
SQ1	50.5	16.1	63	
	20.5	6.5	135	Yes
	44.0	14.0	75	37.5
	28.5	9.1		37.5
	40.3	12.8	29	14.5
	27.0	8.6		14.5
	85.0	27.1	28	14
	54.5	17.3		14
	28.25	7.4		
	35.5	11.3		
	52.0	16.6	118	
	61.0	19.4		
	33.0	10.5		
	33.0	10.5		
	76.0	24.2	14	
SQ2	69.75	22.2	71	
	37.0	11.8		
	24.5	7.8		
	62.5	19.9		
	18.0	5.7	78	Yes
	56.5	18.0	19	
	42.25	13.4		
	23.0	7.3		
	40.5	12.9		
	11.5	3.7		
	14.25	4.5	111	
	46.0	14.6		
	18.5	5.9		
	26.0	8.3		
	43.0	13.7		
	64.75	20.6	37	

circled don't put in

Feed Trees DBL & clippings

Transect	CBH	DBH	# of Clippings	Pinyon Pine
SQ3	44.25	14.1	244	
	31.0	9.9	~~69~~	34.5 / 34.5
	46.0	14.6		
	114.0	36.3	38	
	34.0	10.8	23	
	59.0	18.8	~~120~~	60 / 60
	38.0	12.1		
	46.0	14.6	14	
	45.5	14.5	39	
	36.0	11.5	~~26~~	13 / 13
	27.5	8.8		
	35.0	11.1	17	
	30	9.5	4	
	31.75	10.1	37	
	42.5	13.5	4	
	31.0	9.9		
	33.0	10.5		
	25.5	8.1	~~28~~	
	14.5	4.6		
	36.5	11.6		
	29.0	9.2		
	48.0	15.3		
	32.5	10.3		
	18.25	5.8		
	50.5	16.1	~~35~~	
	40.0	12.7		
	21.0	6.7		
	45.0*	14.3	52	
	25.0	8.0		
	15.0	4.8	~~23~~	
	37.0	11.8		
	48.5	15.4	12	
	35.75	11.4	18	
	40.5	12.9	19	
	120.0	38.2	11	
	30.0	9.5	12	
	14.0	4.5		
	36.5	11.6	~~10~~	
	24.0	7.6		
	27.5	8.8		
	37.5	11.9	9	
	37.0	11.7	7	
	31.5	10.0	5	
	38.0	12.1	~~10~~	5 / 5
	28.25	9.0		
	43.5	13.8	18	

SQ3

65

* Indicates squirrel clippings for mushrooms.

Transect	CBH	DBH	# of Clippings	Pinyon Pine

SQ3 (Continued)

	54.0	17.2	12
	26.5	8.4	
	47.5	15.1	
	49.0	15.6	115
	35.0	11.1	
	48.25	15.6	31
	87.0	27.7	34
	61.0	19.4	156
	60.0	19.1	30
	53.5	17.0	
	55.0	17.5	109
	56.0	17.8	
	41.5	13.2	17 8.5 / 8.5
	48.0	15.3	
	61.0	19.4	24
	59.0	18.8	31
	107.0	34.1	41
	59.0	18.8	77 38.5 / 38.5
	31.0	9.9	
	27.5	8.8	18
	41.5	13.2	44
	54.0	17.2	16 8 / 8
	36.75	11.7	
	46.75	14.9	13
	57.5	18.3	5
	52.0	16.6	8
	19.0	6.0	13
	47.75	15.2	
	50.5	16.1	
	45.0	14.3	66
	35.0	11.1	
	34.5	11.0	
	55.5	17.7	
	58.5	18.6	29
	41.25	13.1	6
	50.25	16.0	
	40.75	13.0	
	36.0	11.5	54
	55.5	17.7	
	35.5	11.3	
	41.5	13.2	
	38.0	12.1	

Transect	CBH	DBH	# of Clippings	Pinyon Pine

SQ3 (Continued)

	50.75	16.2	35
	46.0	14.6	19
	50.0	15.9	53
	61.0	19.4	~~30~~ 15
	52.5	16.7	15
	50.0	15.9	47
	42.5	13.5	67
	36.5	11.6	194
	26.5	8.4	~~27~~ 13.5
	42.5	13.5	13.5
	37.0	11.8	~~95~~ 47.5
	40.0	12.7	47.5
	52.25	16.6	11
	43.0	13.7	21
	42.0	13.4	~~38~~ 19
	45.5	14.5	19
	30.0	9.5	27
	33.0	10.5	
	50.75	16.2	~~74~~
	44.0	14.0	
	29.5	9.4	
	36.5	11.6	~~68~~
	21.0	6.7	
	42.5	13.5	

SQ4

	55.0	17.5	37
	62.0	19.7	25
	49.5	15.8	11
	52.5	16.7	159 Yes
	66.0	21.0	14
7	47.0	15.0	19
	26.5	8.4	133 Yes
	39.5	12.6	54
	46.5	14.8	10
	25.5	8.1	145 Yes
	23.0	7.3	79 Yes
	11.5	3.7	Yes

Transect	CBH	DBH	# of Clippings	Pinyon Pine
SQ5	29.25	9.3		
	12.5	4.0	85	
	37.5	11.9		
	27.25	8.7		
	36.0	11.5	7	
	34.5	11.0	377	
	41.0	13.1		
	18.5	5.9	259	
	12.5	4.0		
	19.5	6.2		
58	37.0	11.8		
	15.0	4.8		
	24.25	7.7		
	30.25	9.6	193	
	51.0	16.2		
	15.0	4.8		
	38.50	12.3		
	14.00	4.5		
	40.0	12.7		
	43.0	13.7	59	
	38.25	12.2	178 89/89	
	17.50	5.6		
	38.0	12.1	41	
	40.50	12.9		
	11.50	3.7		
	18.50	5.9	174	
	11.00	3.5		
	10.00	3.2		
	21.0	6.7		
	20.50	6.5		
	30.0	9.5		
	15.25	4.9		
	36.0	11.5		
	36.0	11.5	92	
	15.0	4.8		
	10.25	3.3		
	21.00	6.7		
	32.0	10.2		
	30.50	9.7	77	
	19.75	6.3		
	20.50	6.5		

Transect	CBH	DBH	# of Clippings	Pinyon Pine
SQ5 (Cont.)	46.75	14.9		
	24.50	7.8	32	
	38.0	12.1		
	20.0	6.4		
	34.50	11.0	39	
	44.25	14.1	84	
	35.0	11.1		
	23.50	7.5	14	
	17.0	5.4		
	33.0	10.5		
	40.50	12.9	37	
	44.25	14.1		
	44.0	14.0	10	
	31.0	9.9	13	
	48.25	15.4	60	
	60.50	19.3	41	
	22.0	7.0	4	
	20.50	6.5	12	
	41.75	13.3	46	
	31.50	10.0	4	
	19.75	6.3		
	16.50	5.3	14	
	19.25	6.1		
	37.50	11.9	144	
	28.50	9.1	8	
	58.25	18.5	12	
	68.0	21.6	4	
	37.0	11.8	52	

Transect	CBH	DBH	# of Clippings	Pinyon Pine
SQ5 (CONT.)	48.0	13.7	11	
	53.75	17.1	267	
	55.25	17.6	96	
	53.0	16.9	54	
	37.75	12.0	134	
	26.50	8.4	13	
	27.0	8.6	60	
	19.50	6.2	5	
	31.50	10.0	7	
	34.0	10.8	11	
	34.5	11.0	8	
	23.0	7.3		
	40.0	12.7	29	
	36.50	11.6		
	53.75	17.1	76	
	45.50	14.5	11	
	30.0	9.5	24	
	42.50	13.5	11	
	41.50	13.2	10	
	83.50	26.6	12	
	41.0	13.1	36	
	41.5	13.2		
	42.0	13.4		
	26.0	8.3		
	34.75	11.1		
	19.5	6.2	105	
	39.0	12.4		
	41.75	13.3		
	39.5	12.6		
	40.25	12.8		
	25.0	8.0		
	35.0	11.1		
	19.5	6.2	13	
	18.5	5.9		
	37.5	11.9	4	
	45.25	14.4	8	
	55.5	17.7	20	
	48.0	15.3	10	
	35.0	11.1		
	45.0	14.3	81 40.5 / 40.5	
	10.0	3.2	32	YES
	35.75	11.4	4	
	45.5	14.5	29	

Transect	CBH	DBH	# of Clippings	Pinyon Pine
SQ5 (CONT.)	49.0	15.6		
	23.0	7.3	248	
	32.75	10.4		
	49.5	15.8	64	
	60.5	19.3		
	47.0	15.0	23 11.5 11.5	
	42.0	13.4	19	
	24.5	7.8		
	30.75	9.8	15	
	31.0	9.9		
	57.5	18.3	26	
	36.5	11.6	73	
	28.5	9.1		
	36.25	11.5		
	32.0	10.2		
	30.50	9.7		
	23.50	7.5	130	
	34.50	11.0		
	23.50	7.5		
	16.00	5.1		
	26.50	8.8		
	31.25	9.8		

Dec. 1979

21

Transect SQ 1

No.	Clippings	DBH
1	8	14.3
2	18	16.5
3	9	19.1
4	~~6~~ 3/3	15.6 8.2
5	13	15.0
6	6	11.4
7	~~14~~ 7/7	11.4 14.1
8	9	16.4
9	17	13.7
10	40	19.8
11	~~81~~	~~15.7~~ ~~11.5~~ ~~16.3~~ ~~20.2~~
12	6	11.5
13	14	17.9
14	~~12~~	~~15.1~~ ~~11.5~~ ~~9.7~~
15	20	18.1
16	58	13.1 14.9
17	15	13.0
18	19	19.4
19	6	15.6
20	8	16.6

Transect SQ 2

No.	Clippings	DBH
1	15	18.9
2	5	17.6
3	10	22.1
4	7	20.2

Transect SQ 3

No.	Clippings	DBH
1	31	18.6
2	11	13.3
3	12	13.0
4	5	12.9
5	18	11.4
6	~~15~~ 7.5 7.5	15.2
		11.7
7	7	19.6
8	13	21.0
9	~~24~~ 6	16.0
	6	15.2
	6	15.7
	6	17.1

13

Transect SQ 4

No.	Clippings	DBH
1	4	14.0
2	23	12.0
3	7	17.5
4	5	11.5
5	6	8.6
6	~~35~~	~~13.8~~ ~~8.6~~ ~~15.8~~ ~~14.5~~
7	~~14~~	~~11.4~~ ~~16.8~~ ~~19.8~~
32 8	~~35~~ 17.5 / 17.5	11.0 9.0
9	45	15.0
10	10	10.3
11	8	14.8
12	8	18.0
13	6	17.3
14	5	18.8
15	~~25~~ 12.5 / 12.5	14.9 10.7
16	7	20.3
17	12	22.5
18	6	8.4
19	7	21.9
20	10	23.8
21	8	21.1
22	~~12~~ 6 / 6	10.25 12.2
23	~~19~~ ~~9~~ 9.5 / ~~9~~ 9.5	9.5 16.4
24	6	16.3
25	5	17.85
26	~~19~~ 9.5 / 9.5	15.75 16.5
27	25	15.7
28	~~38~~ 19 / 19	14.4 14.7

Transect SQ 5*

No.	Clippings	DBH
1	59	12.0
2	15	17.2
3	~~9~~	~~13.5~~
		~~13.7~~
		~~13.25~~
4	~~16~~ 8/8	23.2
		20.6
5	57	19.35
6	7	13.5
7	11	8.75
	11	13.25
8	19	16.5
9	6	12.3
10	11	12.3
11	7	11.8
12	7	13.55
13	10	14.2

14

* Transect read from East to West

May 1981

SQ1

R 1	L 2 Yava Flow N.	3 NEST 40	4	5 NEST 35	6	7
10.8 = 6 clip	13.9 = 17 clip	14.7 = 22 clip	18.0	15.5 = 14 clips	10.9 = 9 clip	14.8 = 12 clip
17.1	14.1	11.7	1.1 (48 clip)	5.8	5.6	11.2
6.9 14	9.9	8.5 16	2.6 37	14.8	9.3	13.6
2.5	6.8 8	1.1	2.5	16.9	4.0 8	11.6 13
13.7	2.1	2.6	5.5	12.2	14.2	7.6
6.5	1 pumyon	2.5	12.7	7.2 8	9.0	8.1
6.6	14.3	5.5	16.2	2.5	6.0. 5.8	7.5
12.2	12.9	12.7	14.6	2.8	2.0	7.9
14.0	7.0	16.2	2.5	15.0	9.1	7.3
7.9	15.7	14.6	16.0	8.6	3 2 juniper	10.5
11.9		12.6	8.5	NEST HEIGHT 35	2 pumyon scap	8.2
12.0		3.0	15.1	NO TWIGS FOUND		8.8
11.7		12.2	8.2			11.0
17.4		5.9	9.0			2 juniper
13.0		9.9	13.5			
1 juniper		6.6	7.0			
		1 juniper	12.0			
		12.7	7.7			
		[redacted]	12.6			
			2.7			
			1.8			
			8.4			
			14.5			
			11.3			
			14.2			
			14.6			
			14.0			
			15.1			

5' from Found on Wilhelms small mammal study plot, nest + tree + feet

S.L.F.

R 8	L 9		L 10	R 11
16.1 = 9 clips	15.8 = 25 clip		14.0 = 56 clips	17.4 = 9 clips
9.1	8.6	G.O. 6.0	6.4 G.O.	13.6
14.1	2.3	G.O. 3.4	4.2 G.O.	5.4
12.4	18.3	G.O. 7.3	6.7 G.O.	16.6
8.3	5.3	G.O. 5.4	6.1 G.O.	16.0
11.1	18.7	G.O. 6.1	5.4 G.O.	2.7
9.5	15.3	G.O. 6.7	7.3 G.O.	16.1
5.7	13.5	G.O. 4.2	3.4 G.O.	7.5
6.2	6.7	G.O. 6.4	6.6 G.O.	13.7
3.4	2.7		5.8 G.O.	3.0
13.4	1 pinyon sap		15.7	6.2
2.5	G.O. 8.2		13.8	12.7
2.0	G.O. 8.2		6.8	2 juniper seedling
2.8	G.O. 9.3		2.6	14.6
2.3	G.O. 5.3		6.8	8.6
9.5	G.O. 5.7		4.2	1 pinyon sap
1 juniper sap	G.O. 3.2		7.0	
9.4	G.O. 4.3		18.3	
3.3	4.3		3.3	
2.7	G.O. 9.5		1 juniper	
1.9	G.O. 6.9		5.0	
2.7	G.O. 5.0		17.9	
10.2	G.O. 5.5		1.7	
5.0	G.O. 9.6		9.0	
	G.O. 5.7		5.4	
	G.O. 4.3			
	G.O. 5.4			
	G.O. 4.0			
	G.O. 5.8			

L 12	L 13	L 14	L 15	L 16
19.4 = 56 clips	16.1 = 36 clips	15.2 = 9 clips	20.15 = 22 clips	16.1 = 7 clips
6.8	11.3	5.1	6.3	15.5
11.8	6.7	6.0	9.4	15.1
15.0	19.5	11.5	12.6	16.4
20.0	juniper	14.5	14.8	5.8
16.0	11.5	6.6	17.1 G.O.	1.8
7.8	9.0	6.8	16.7 G.O.	16.2
15.2	5.7	11.9	13.4 G.O.	1.6
13.4	11.3	juniper	4.1	1.7
16.4	15.0	13.4	6.9	2.5
15.6	15.0	11.0	6.3	4 pond. pop.
11.2	11.4	17.1 G.O.	5.6	17.0
5.8	6.2	16.7 G.O.	11.5	3.0
juniper	13.7	10.7	14.3	8.7
8.9	8.0	19.4	10.8	2.0
11.8	15.4	6.9	13.3	4.7
17.0	18.0	12.0	12.3	5.1
11.0	16.8	15.8	14.0	4.3
		7.7	juniper	14.2
		15.3	juniper seedling	3.5
		13.3	juniper seedling	2.8
		6.0		14.6
				7.0
				13.0

S.L.F.

L 17	L 18	R 19	R 20
22.6 = ~~8~~ 4 clips	13.6 = ~~14~~ clips	12.6 = ~~12~~ 6 clip	13.8 = 90 clips
24.5 4	3.8	9.3 6	13.1
2.1	7.5	1.7	14.9
5.8	12.4	3.2	G.O. 4.1
4.0	15.7	7.1	G.O. 5.8
7.3	G.O. 9.7	14.8	G.O. 7.5
6.8	G.O. 7.5	15.2 13	G.O. 6.8
3.4 ~~15~~	G.O. 5.7	5.8	G.O. 8.9
8.0 16	G.O. 5.5 12	10.8	G.O. 9.3
5.0	11.7 ~~23~~	10.7	G.O. 9.2
8.1	5.3	11.3	G.O. 3.8
8.2	9.5	8.7	G.O. 6.0
14.7	G.O. 7.9	10.1	G.O. 5.9
5.6	G.O. 5.2	2.1	9.3
4.7	G.O. 6.9	6.2	11.4
11.1	G.O. 6.4		10.6
9.8	G.O. 5.2		12.1
	G.O. 7.0		7.9
	G.O. 7.2		11.5
	G.O. 7.6		15.8
	11.1		6.8
	8.5		8.6
	9.0		10.5
	7.3		11.4
			G.O. 20
			G.O. 11
			G.O 6.1
			3.4

G.O. 3.4
G.O. 3.7 ~~15~~ ~~18~~
G.O. 5.7
G.O. 2.9
G.O. 6.4
G.O. 4.4
12.3
8.7
15.9

17 trials = 1 pound 3oz pine

R 21	R 22	R 23	L 24	L 25
15.5 = 8 clips	14.5 = 100 clips	17.7 = 16 clips	14.0 = 12 clips	10.0 = ~~21.0~~ 10.5
2.5	11.7	12.4	1.0	10.1 10.5
2.9	12.4	13.8	13.7	12.1
10.6	17.7	12.3	7.3 6	1 pinyon sap
6.2	15.8 9	17.0 13	9.2	1 pinyon
1.4	15.5	15.7	18.3	16.3
14.9	13.7	15.5	1.8	11.0
15.8	2 pond sap.	15.4	16.6	7.0 9
11.1 ~~31~~	17.0	15.8		17.6
13.6 27	14.6	10.0		27.4
9.6		2 pinyon sap		1 juniper
13.5		4.1		12.5
14.7		14.4		
14.5		11.2		
12.1				
8.4				
8.4				
5.0				
12.2				
14.2				
11.2				
6.0				
14.3				
7.5				
7.1				
8.2				
3.2				
4.7				

intersectio

* NEST TREE/ 4. from road
w RED SURVEY TAPE
75' from road

26	27	28	29	30	31
[	L	R			
18.4 = 59 clips	18.2 = 17 clips	11.0 = 27 clips	15.1 = 15 clips	16.7 = 11 clips	16.5 = 8 cl
16.3	17.9	15.5	4.6	14.0	17.4
11.0	12.7	9.9	16.3	12.9	13.5
7.0	11.7	10.8	5.4	16.9	13.5
17.6	28.7	10.8	14.8	2.2	1.9
27.4	16.4	12.3	10.8	17.3	4.2
5.4	20.0	9.6	9.8	12.7	2 juniper
10.0	2 pond sap	2.6	18.0	11.8	13.2
10.1	1 pinyon sap	9.1		18.3	12.5
		11.0		5.7	
		11.5		12.1	
		9.3			
		8.0			
		7.8			
		5.2			
		12.9			
		13.4			
		3.1			
		8.0			
		2.1			
		9.0			
		6.3			
		13.5			
		4.8			
		16.4			

R 32

10.6 = 29 clips

G.O. 11.0
G.O. 5.9
GO 10.0
GO 2.6
GO 2.9
GO 3.1
GO 6.1
GO 1.8
3.5
GO. 3.0
GO 2.5
GO 3.2
GO 4.6
GO 6.7
GO 10.7
GO 9.0
GO 10.0
9.9
11.6
9.4
1.5
5.6
7.2
11.1
9.7
15.3
12.6
9.1

G.O. 14.0
G.O. 9.0
G.O. 10.3
GO 8.6
G.O. 4.1
G.O. 4.8
G.O. 5.3

11

R 33

7.2 = ~~38~~ 19 clips

5.6 19
G.O. 11.0
G.O. 5.9
G.O. 10.0
G.O. 2.6
G.O. 2.9
G.O. 3.1
G.O. 6.1
GO 1.8
3.5
9.9
11.6
9.4
1.5
19.7
9.4
15.6
9.9
13.8
10.9
13.1
10.6
5 ponderosa pine
3 juniper

17

R 34

9.4 = ~~9~~ 4.5 clips

15.5 4.5
10.6
13.1
10.9
13.8
9.9
7.2
5.6 15
3.5
9.9
11.6
9.4
1.5
19.7
G.O. 2.9
GO 2.7
GO 3.3
GO 1.8
GO 6.6
GO 10.1
GO 6.0
GO 10.4
22.5

35

9.7 = ~~8~~ 4 clip

13.8 4
15.8
9.5
10.9 11
7.5
5.6
G.O. 10.3
13.3
3 pond pine
11.8
9.6
1.4
22.5
1 juniper

36

18.5 = 17 cl

15.7
12.4
18.5 8
12.4
8.1
15.0
17.0

(37)

2

13.1 = 26 clips

15.6
10.8
12.4
8.6
11.6
9.0
12.1
16.0
14.1
16.0
14.7
3 pond rep.
11.0
9.4
13.1
13.8

16

(38)

9.5

2

14.6 = ~~19~~ clips

12.8 9.5
12.6
7.7
13.0
G.O. 6.6
G.O. 6.1
G.O. 4.0
G.O. 8.2
G.O. 5.1
G.O, 5.4
G.O. 9.4
G.O. 10.2
8.0
9.8
13.2
3.7
5.7
9.0
8.4
9.3
18.6
15.5
11.7
1 juniper

~~9~~ 16

8

Transect SQ1 -(Read on May 22, 1980 by Slone, Hunter and Kulinovich)

No.	DBH	Clippings	Basal Area/Acre
1.	13.9	8	62.5
2.	16.2	12	142.5
3.	15.9	10	82.5
4.	13.3	12)	100.0
5.	16.2	11)	
6.	18.2	5	57.5
7.	13.6	10	110.0
8.	12.0)	6	125.0
9.	16.3)	~~12~~ 6	
10.	15.9)	6	90.0
11.	14.2)	~~12~~ 6	
12.	14.8	27	75.0
13.	19.9	67	77.5
14.	13.0	17	125.0
15.	15.0	21	100.0
16.	13.5)	5.5	100.0
17.	14.0)	~~11~~ 5.5	
18.	15.7	18	107.5
19.	13.5	13	72.5
20.	7.5	11	127.5

Transect: SQ2 - (Read by Slone, Hunter and Jensen on May 30, 1980)

No.	DBH	Clippings	Basal Area/Acre
1.	17.7	5	105.0
2.	22.0	9	137.5
3.	15.7	12	172.5

3

Transect SQ 3 -(Read by Slone, Hunter and Kulinovich on May 23, 1980)

No.	DBH	Clippings	Basal Area/Acre
1.	13.8)		
2.	7.0)		
3.	11.7)	69	92.5
4.	10.1)		
5.	14.3	115	62.5
6.	10.1)	12	
7.	15.4)	24 12	112.5
8.	12.6	36	125.0
9.	15.7	6	125.0
10.	18.6)		
11.	14.5)	65	120.0
12.	18.4)		
13.	18.1	9	100.0
14.	15.3)	36.5	137.5
15.	17.3)	53 26.5	
16.	13.5	10	145.0
17.	11.1	5	187.5
18.	10.7	6	187.5
19.	11.0	39	187.5
20.	11.7	9	215.0
21.	12.4	29	230.0
22.	11.7	12	230.0
23.	14.3	40	160.0
24.	12.4	18	160.0
25.	17.2	98	155.0
26.	19.5	9	155.0
27.	12.5	8	177.5
28.	19.1	77	120.0
29.	14.2)	4	125.0
30.	8.8)	8 4	
31.	16.2	18	120.0
32.	15.8)	6	147.5
33.	12.5)	12 6	
34.	11.5	20	
35.	20.9	15	90.0
36.	10.5	38	
37.	14.4	5	90.0
38.	10.5)	9.5	90.0
39.	9.5)	19 9.5	
40.	11.7	22	157.5
41.	12.5	11	132.5
42.	16.3	62	187.5
43.	13.1	99	142.5
44.	11.5	105	132.5
45.	20.3	60	115.0
46.	12.8	26	152.5
47.	11.0)	16	135.0
48.	11.7)	32 16	
49.	27.7	81	102.5
50.	24.6	29	112.5
51.	19.9	53	110.0
52.	21.1	23	102.5
53.	9.1)	45	95.0
54.	17.5)	9 4.5	
55.	16.0	20	162.5

64

SQ 3 (Cont'd.)

No.	DBH	Clippings	Basal Area/Acre
56.	13.8	20	162.5
57.	17.8)	8.5 ~~17~~	142.5
58.	14.0)	8.5	
59.	19.3	83	167.5
60.	16.9	9	57.5
61.	23.5	24	127.5
62.	20.4	9	135.0
63.	17.1	30	122.5
64.	18.3	44	107.5
65.	18.0)	17.5 ~~35~~	145.0
66.	19.0)	17.5	
67.	24.3	6	100.0
68.	20.0)	40.5 ~~81~~	177.5
69.	20.0)	40.5	
70.	13.4)		
71.	16.3)	~~33~~	182.5
72.	11.6)		
73.	20.2)		
74.	15.8)	19.5 ~~39~~	185.0
75.	18.6)	19.5	
76.	15.3)	~~9~~.5 ~~19~~	87.5
77.	16.3)	9.5	

Transect SQ 4 -(Read by Slone, Hunter and Jensen on May 30, 1980)

No.	DBH	Clippings	Basal Area/Acre
1.	5.1 Pinyon	26	52.5
2.	7.6 Pinyon	51	90.0
3.	19.7	40	90.0
4.	22.7	9	105.0
5.	15.7	52	110.0
6.	16.8 Pinyon	92	115.0
7.	10.6 & 6.3	~~6~~ 4 ~~4~~ 15	127.5
8.	16.7 &12.5	~~30~~ 15	55.0
9.	9.8 &17.6	~~22~~ 11	77.5
10.	17.4	29	122.5

10

Transect SQ 5 - (Read by Slone, Hunter and Kulinovich on May 22, 1980)

No.	DBH	Clippings	Basal Acre/Area
1.	8.4)		
2.	11.3)		
3.	6.6)		
4.	12.1)		
5.	13.8)	107	92.5
6.	12.6)		
7.	8.4)		
8.	14.7	70	135.0
9.	14.4	35	147.5
10.	16.5)	"	
11.	11.0)	22 "	122.5
12.	10.0	13	97.5
13.	10.5	13	105.0
14.	14.0	19	62.5
15.	13.0)		
16.	12.5)	144	107.5
17.	16.5)		
18.	10.0	49	
19.	13.0	61	117.5
20.	19.5	31	105.0
21.	15.4	94	97.5
22.	12.0	38	105.0
23.	12.2	10	152.5

R

11	12	13	14
14.0 = 115 clips	21.5 = 92 clips	15.4 = 47 clips	14.8 = 63 clips
3.2	5 pond sap.	1.7	2.0
7.3	0.9	2.0	3.5
23.7	3.0	4.0	9.5
2.6	19.5	9.4	3.8
5.3	6.0	7.3	5.0
2.3	8.7	13.0	14.1
19.2	6.5	1.2	7.9
8.8	4.3	10.0	5.7
5.9	9.0	2.0	14.1
	3.6	3.5	11.8
	19.0	9.5	10.8
	5.0	3.8	6.6
	9.0	5.0	11.8
	24.5	5.7	5.2
	15.1	7.9	8.2
	1.4	14.1	2.5
	1.7	11.8	1.5
	8.0	2.2	3.8
	13.4	10.3	4.8
	16.5	9.4	3.0
	3.8	14.1	3.7
	1.1	1 pond. sap	2.0
		4.2	3.0
		16.4	3.3
		6.3	6.2
		16.9	6.8
		2.4	10.2
		13.2	4.0
		11.4	4.7
		15.3	3.4
		2.3	11.5
		12.5	9.2
			6.1
			9.4
			2.3
			6.8
			3.7
			3.0
			2.0
			8.9
			17.0
			10.9
			10.4
			15.7
			15.7
			1.9
			7.2
			9.7
			4.1
			10.4
			6.2
			12.2

8 | 18 | 25 | 46

L 15

16.4 = 15 clips

2.2
3.2
10.4
4.6
4.7
12.6
5.1
2.6
1.6
4.6
5.7
3.7
11.0
13.0
7.7
3.2
4.6
1.2
2.8
3.7
2.8
3.1
7.6
7.7
1.7
3.1
4.6
11.6
5.6

8.7
6.3
10.7
7.0
1.6
1.7
5.0
9.0
6.1
3.9
10.2
3.6
5.0
5.9
7.5
3.6
9.4
14.4
3.7
6.5
3.2
9.0
16.8
1.8
3.3
3.0
8.5
18.0
1.6

1.6
4.5
10.7
2.3
10.0
3.2
38.6
4 pond. sap

53

L 16

110

24.4 = [redacted] clips

1.2
4.4
3.0
5.9
10.0
18
12.4
6.5
1.0
6.1
8.3
3.5
16.2
18.0
5.2
3.6
6.3
1.1
5.5
8.5
6.5
13.1
3.7
4.3
1.4
13.3
5.6
4.4

2.1
4.3
3.0
5.0

27

L 17

1.2
4.4
3.0
5.9
10.0
1.9
12.4
6.5
1.0
6.1
8.3
3.5
16.2
18.0
5.2
3.8
6.3
1.1
5.5
8.5
6.5
13.1
3.7
4.3
1.4
13.3
4.3

3.0
5.0
14.2
5.0
5.0
16.1
4.5
2.8
3.9
8.0
4.5
5.6

34

33

R 18

22.4 -- 300 clips

3 pond caps
11.6
8.0
8.6
2.6
4.3
19.3
13.5
39
11.0
16.1
7.7
3.3
3.0
2.2
9.4
4.7
8.6
8.6
3.1
4.0
1.4
16.7
27.1
7.1
8.0
4.1
2.9

13.0
3.6
6.4
1.2
6.4
1.3.
16.6
11.6

30

L 138 / 129 / 257 — 19 — R — 20 — L — 21 — 22

15.4 = 257 clips	12.8 = 54 clips	13.3 = 42 clips	8.5 = 80 clips
16.5	6.1	8.9	10.7
5 pond sap	8.4	10.4	9.8
10.8	11.4	12.9	7.3
10.7	1.1	4.8	8.1
6.4	8.4	4.4	7.7
9.6	9 pond sap	2.8	3.5
17.2	3.5	8.2	11.4
14.0	6.2	6.6	7.4
	4.5	4.8	1.7
	11.5	11.8	9.3
	2.6	3.9	9.6
	2.4	1.3	1.1
	2.2	17.9	12.2
	3.7	12.7	8.2
	4.4	15.3	2.6
	4.6	9.2	4.5
	1.5	13.1	4.1
	9.2	9.0	18.4
	2.7	13.0	8.8
	2.0	13.2	3.9
	2.9	14.4	16.2
	10.2	10.9	3.1
	5.0	3 pond sap	3.2
	7.8	12.7	11.7
	6.6	13.7	1.6
	1.7	1.1	11.1
	4.6	24.0	
	30.3		
	1.5		
	41.5		
	3.7		
	35.4		
	3.6		
	3.0		
	1.5		
	4.1		
	9.2		
	5.5		
	3.5		
	1.2		
	3.1		
	4.3		
	6.8		

8

31

24

Delete

FSL

start 6

R 22	L 23	R 24	L 25
11.7 = 49 clips	17.0 = 89 clips	11.3 - 28 clips	21.0 = 48 clips
18.6	1.8	12.8 3.7	14.5 = 32 clips
11.6	10.7	10.0 2.7	10.1 6.0-3.7
9.2	18.7	2.7 14.4	2.7 6.0-3.2
12.9	7.4	5.6 3 pond dap	20.0 6.0.-5.5
1.8	7.6	1.2	5.7 6.0.-5.0
19.2	7.2	3.3	13.2 6.0. 5.6
11.1	3.5	10.4	15.8 6.0. 4.0
6.3 13	8.4	7.3	12.8 1.5
4.2	1.9	7.2	14.9 2 pond. dap
14.5	7.0	12.4	4.3
9.5	1.8	10.7 24	13.7
12.2	5.7 22	7.1	2.9
2.5	5.3	11.3	14.8
3.7	19.3	4.2	13.6
2.4	3.2	6.3	3.7 24
2 pond dap	8.1	19.0	7.0
	10.5	1.3	5.5
	10.1	1.8	1.4
	4.8	4.0	4.5
	2.7	16.0	7.1
	17.4	4.0	5.2
	2.0	2.1	4.5
	6.1	8.5	2.1
	7.3	12.1	7.0
	7.1	3.9	9.7
	20.0	7.4	11.9
		2.7	12.0

R 26	L 27	R 28	L 29
12.8 = 127 clips	18.2 [redacted] = 35 clips	22.6 = 178 clips	22.0 = 114 clips
12.9	1.5	2.6	5.1
19.7	14.4	2.1	8.2
6.1	6.4	2.3	4.6
13.3	3.4	4.5	1.8
15.3	11.4	2.9	3.3
18.8 14	22.2	1.6 7	16.5
16.8	1.6	5.4	2.8
15.3	14.7	8.8	4.3
10.2	15.7 18	3.9	1.4
10.8	6.3	9.3	1.3 14
13.9	15.7	4.2	13.4
16.5	2.0	[redacted] pond caps	2.0
1 pond cap	3.7		1.1
1.2	15.4		23.0
5.0	3.9		4.1
	13.7		13.5
	10.5		1.0
	8.3		2.3
	4.9		12.4
	18.6		9.9
	4 pond caps		21.0
			6 pond cap

L 30	L 31	R 32	R 33
17.1 = 68 clips	20.0 = 90 clips	12.0 = 39 clips	15.5 = 24 clips
3.3	4 pond snaps.	10.3	13.5
2.8	6.5	13.5	8.3
14.4	3.4	6.9	31.8
23.0	13.7	11.1	12.2
21.0	8.4 6	10.1	8.3
1.4	1.7	8.2	7 pond snap
1.3	1.6	11.4	10.9
19.3 11	4.3	6.1 14	2.3
1.7		11.2	6.8
5.1		14.8	12.5
8.2		8.3	2.4
6.8		2.4	7.7 11
9.4		31.8	2.0
2.0		12.6	1.2
12.4		14 pond snap	1.4
3 pond snaps			2.5
1.7			2 locust

R

34

Hostamer 26.5	18.5 = 64 clips
1.9	11.5
4.5	8.4
5.3	2.6
0.7	14.8
25.2	15.7
4.8	5.6
1.2	6.0.-9.8
42.9	7.6
9.0	7.6
1.4	6.4
6.4	7.7
10.3	4.9
4.1	13.2
7.8	6.0.-5.1
9.9	6.0. 6.1
13.7	6.0.-4.8
	4.0. 6.0
	7.7
	5.9
	1 pinyon
	6.0, 5.7
	5.5
	3 pond sap.

13

15

middebrook
Slone
CONDON

5-12-81

BIG SPRINGS TRANSECT SQ3

N.S.

(1)

13.8" - 21 Clippings

JUNIPER
5.8" 4.9
1.9"
2.7"
2.7"
2.7"
13.0"
7.0"
1.2"
1.3"
6.7"
1.0"
1.0"
4.6"
1.5"
20.9"
1.75"
1.5"
15.2"
15.7"
5.8"
[illegible]"
.0"

12

(2)

~~6 OAK CLIPPINGS~~

13.0 - 12 Clippings

1.5
1.75
20.9
1.5
4.6
1.0
1.0
6.7
1.3
1.2
7.0
~~13.0~~
2.7
2.7
2.7
1.9
11.8
6.9
4.4
9 saplings
13.8

9

(3)

12.6 130 clippings

8.1
11.8
14.5
2.2
15.0
11.6
11.6
8.1
G OAK-7.1
16.9
1.5
3.5
7.2
5.6
14.6
G OAK-4.0
1.4
1.3
16.5
7.1
11.0
8.9

7.1
4.5
4.7
11.5
3.7
7.7
3.6
3.5
18.8
12.9
11.9
2.9
2.9
1.7
1.5

28

92

11.3 136 clipp

11.6
15.1
2.2
14.5
11.6
8.1
11.9
3.1
2.9
12.5
1.2
7.3
G. OAK
4.1
4.3
8.9
1.4
2.7
10.0
.7
10.1
1.5

7.6
13.7
11.8
6.8
JUNIPER
5.7
8 saplings
15.6
19.0
15.0
15.5
8.3
12.0
14.5

52

DBH

~~11.5 NO BASAL AREA, FT~~

~~10.8~~ " (4) "

14.2 - 135 clippings

39.3

G. OAK- 6.2

G. OAK- 4.6

G. OAK- 7.0

9.5

9.6

14.9

G. OAK- 7.6

3.1

4.4

14.4

8

10.2 ~~95~~ 95 clippings

14.7

G. OAK- 7.2

16.4

G. OAK- 4.6

17.9

10.6

12.5

15.4

(FT) 12.3 - 8 clippings

10.7

9.9

36.5

17.0 - 214 clippings

14.8

16.5

9.0

15.4

11.5

14.7

10.6

9.6

9.1

(FT) 7.9 - 15 clippings

G. OAK- 6.2

11.9

[redacted]

(5)

17.3 - 42 clippings

G. OAK- 6.2

9.3

11.3

16.1

7.0

7.4

G. OAK- 8.3

5.6

G. OAK- 6.3

12.8

10.5

7.4

7.3

10.9

10.6

10.8

5.4

8.5

6.9

10.0

8.2

10.0

11.4

6.9

36.1

23

193

(6)	(7)	(8)	(9)	(10)
16.3 = 44 clips.	11.0 = 66 clips.	16.3 = 14 clips.	14.5 = 123 clips.	17.4 = 27 clips.
7.4 14.3	10.5	18.1	18.3	14.7
11.3	13.6	17.7	18.2	10.9
8.7	9.5	17.7	17.3	11.0
7.4	12.8	5.8	12.5	15.0
9.7	8.9	5	16.7	15.0
17.3	9.9		15.7	12.8
8.1	11.3		12.7 13	14.3 19
10.4	10.5		13.4	13.5
6.9	11.2		12.9	16.8
8.5	5.4 29		21.5	15.2
10.8	10.6		17.6	17.5
10.5 29	10.8		18.1	9.6
10.8	10.8			11.4
7.0	9.1			12.5
7.5	13.5			12.4
7.3	28.9			10.6
10.5	8.1			11.8
9.9	6.7			11.0
11.6	8.3			
9.8	4.5			
10.7	13.1			
12.2	9.9			
10.6	3.2			
12.6	3.9			
G.OAK 6.4	9.3			
6.7	5.8			
G.OAK 8.3	3.9			
5.5	7.1			
11.4				

11

R

11.9 = 92 clips.

30.6
7.6
12.1
10.4
12.5
10.3
13.4
3.1
8.3
G.O. 8.8
12.5
5 SAPLINGS

11

12

R

12.6 = 28 clips

11.3
12.6
G.O. 5.0
11.3
13.3
15.1
14.3
10.8
16.4
10.4
12.2
11.0
10.8

13

13

L

20.4 = 88 clips

10.0
18.0
15.3
13.1
8.2
15.7
10.0
8.6
10.0
11.0
11.0
8.3
10.5
6.1
8.4
14.7
2.7
8 SAPLINGS

17

14

L

155

19.2 = [illegible] clips.

18.0
1.5
9.9
12.2
19.2
7.0
11.4
10.0
12.2
12.3
11.0
G.O. 7.7
G.O. 7.8
10.2
7.9
13.0
15.2

15

R

12.4 = 118 clips

10.4
7.0
(FT) 12.3 = 35 clips.
10.0
10.1
9.8
13.0
12.1
9.1
14.6
14.5
9.0
12.9
G.O. 7.7
G.O. 7.8
19.2
11.1
(FT) 19.2

R (15) 79.5 L (16) L (17) L (18) L (19)

16.4 = 159 clips	14.8 = 59 clips	11.0 97 clips	14.1 = 25 clips	15.1 22 clips
16.7	11.0	15.5	13.9	21.9
15.6	14.5	16.4	13.8	12.0
11.2	13.2	8.6	12.3	10.1
10.8	4	10.9	7.3	13.5
1.4		1.5	18.5	26.8
15.5		12.8	10.6	
13.1 11		9.9	8.7	
13.0		9.6	10.2	
11.4		6.4 20	8.4	
17.0		5.0	10.9	
15.5		2.9	8.9	
2 LOCUST		6.5	11.8 23	
		2.9	10.1	
		3.7	10.9	
		29.3	12.6	
		1.3	10.9	
		13.7	3.7	
		1 PINYON SEEDLING	1.3	
		11.8	7.4	
		12.0	11.8	
		10.5	10.5	
		14.2	.75	
		16.0	.70	
		14.3	15.9	
		4 PONDEROSA SEEDLINGS	12.2	
		FT = 16.0		

R (30)

13.5 = 20 clips

8.5
11.0
8.1
12.2
11.0
12.3
28.2

4

R (21)

11.0 - 89 clips

14.5
7.6
5.0
9.6
11.0
27.3
7.2
11.0
10.8
15.1
28.8

12

R (22)

12.3 = 23 clips

11.5
11.5

10.0
12.6
13.1
13.2
9.9
12.3
9.3
9.6
14.1
10.1
10.3
12.5
Locust (2)

13

R (23)

14.0 = 33 clips

10.5
5.8
8.7
15.6
8.3
11.4
10.8
11.6
13.3
14.3
14.0
12.0
16.5
11.0

15

R (24)

6

13.6 = 7 clips

13.7
9.9
10.1
6.0
10.1
8.5
9.7
11.9
12.6
12.8
14.7
13.5
14.1
13.6

15

25 R 13.0 = 12 clips

19.3
23.2
17.6
16.2
24.7

6

26 R 12.1 = 16 clips.

9.8
11.7
10.6
13.1
11.9
8.5
6.0 - 11.0
12.0
10.1
11.5
7.0
27.8

12

27 L 10.4 = 11 clips

10.2
4.6
6.0 - 6.8
7.3
13.4
6.0 - 5.7
12.3
11.9
2 - saplings

7

28 L 12.1 = 133 clips

juniper 1
8.0
8.0
10.4
juniper 2
6.9
9.9
9.0
8.5
9.3
2 saplings

9

L 29

11.0 = 34 clips

2.0
3.7
10.4
8.6
4.6
4.5
5.4
7.2
3.3
4.1
4.9
.5
6.5
3.2
7.6
5.3
5.6
10.5
5.0
3.5
9.4
8.5
8.7
9.0
4.7
9.7
6.1
5.7
13.1
12.9
1.2
6 saplings
2.5
1.5
9.9

30

L 30

4.9 = 16 clips

4.6
4.6
8.6
10.5
10.4
6.0
15.4
8.9
2.5
7.7
5.5
7.4
3.8
3.0
4.3
5.3
29.9
7.1
1.6
7.4
4.9
4.1
5.7
8.1
3.4
8.0
3.2
3.3
10.0
.7
2.
9.4
6.1
11.0
9.0
5.0
10.9
1.5
10.2
9.6
4.8
9.1
8.5
9.3
5.1
8.8
3.5
5.5
5.2
7.6
.75
10.6
.7
5 saplings
2.1
11.1

48

4.0

L 31

16.4 = 14 clips

11.7 = 87 clips

23.7
2 juniper
2.1
8.0
7.9
7.0
10.4
9.7
3.7
9.4
8.5
9.0
8.8
5.6
3.5
5.5
7.7
5.0
9.6
10.6
1.4
9.6
6.0
3.2
8.0
3.5
11.0
11.0
9.1
5.0
7.7
8.1
2.9
2.1
3.6
10.5
7.8
12.9
9.3

36

R 32

13.3 = 7 clips

32.8
7.8
14.9
12.5

5

R 33

14.9 = 17 clipps.

1 juniper sap.

32.8

2 ponderosa sap.

33.6

7.8

13.3

5

R 34

13.5 = 62 clips

start here

7.8

13.0

9.5

7.2

7.3

6.0

7.2

5.0

6.0

6.9

9.3

6.0

8.1

ponderosa

12 saplings

3.0

11.6

33.6

6.5

19

509 meas.

BIG SPRING (CONT)

35 — 9. = 28 clips

36 — 10.3 = 11 clips

37 — 11.1 = 15 clips.

3.6
4.4
1.7
2.7
3.6
7.7
3.5
4.2
2.8
6.5
5.2
2.8
1.0
35.2
7.5
10.4
8.3
1 juniper
9.6

14

8.3
9.5
2.0
12.3
7.1
7.2
35.2
1.0
2.7
6.4
5.6
3.7
8.0
3.0
3.6
4.4

14

10.7 = 6 clips

6.0 6.7 4.9 3.0
6.6 4.8 6.0 1.3
11.3 2.8 4.0 4.3
4.0 2.0 2.0 1.0
4.3 4.3 3.1
8.0 2.4 4.2
2.6 1.3 2.8
8.4 2.0 4.2
4.3 2.0 4.5
3.0 1.4 3.6
2.0 1.0 4.7
3.7 1.5 2.0
5.2 2.0 3.9
1.0 7.0 3.6
2.0 2.7 7.8
2.3 4.4 2.9
1.6 3.2 1.4
3.7 4.2 4.5
7.8 5.1 7.4
5.5 6.5 8.1
.7 3.8 9.6
4.3 2.0 6.4
1.8 1.6 2.7
3.5 7.9 5.6
3.0 3.5 6.7
1.8 3.5 10.4
6.3 2.2 8.8

2 juniper
1 ponderosa pine

56

38

28.0 = 15 clips

9.0 – GO.
7.2 – GO.
6.7 – GO.
5.5 GO.
3.2
2.7
3.2
3.0
8.1
5.3
11.0
7.0
7,8
9.4
1.2
2.7
4.7
5.3
2.9
4.1
4.1
5.2
5.0
4.4
9.0
7.4
4.0
2.8

5.7
6.0
.5
2.0
5.6
3.1
4.5
4.4
2.6
1.3
1.6
3.0
5.5
3.2
7.3
4.8
6.3
4.3
8,1
4.0
2.8
6.4
2.8
5.4
4.6
3.1
8.0
4.0

11.0
2 pinyon

42

39

10.0 = 44 clips

22.9
23.9
35.1
2 ponderosa pap.
2.8
4.5
2.7
1.0
7.0
4.3
13.0
10.1
14.2
8.3

11

40

13.0 - 27 clips

14.2
8.3
G.O. 8.9
[redacted]
14.5
8.6
10.5
10.5
15.5
10.7
7.9
9.5
1 juniper
27

12

... Big Spring cont.

(41)

133 = 6 clips

10.4
11.0
11.0
9.8
12.1
14.6
22.9
10.0
12.3
10.8
12.8
6.0-6.0
6.0, 6.2
5.6
12.1
1 pinyon
2 pinyon rep

14

13.3 = 13 clips

10.2 = 10 clips
15.8 = 36 clips

5.7
1.8
0.5
1.8
1.7
4.3
13.0
1.4
1.5
5.8
8.3
3.9
1.8
7.0
1.1
8.6
5.0
6.1
12.0
6.0
1.7
2.1
3.6
11.5
11.1

10.6
4.9
7.3
2.0
12.6
2.2
2.2
4.3
10.2
4.2
2.8
6.6
4.7
11.0
1.4
2.1
10.1
9.7
4.7
9.8
13.6
7.5
~~3.~~ 3.2

(42)

130 = 196

25.4
12.9
10.1
11.2
16.6
11.4
3 ponderosa rep.

7

13
12

BIG SPRING TRANSECT

14.3 = 134 clips

8.6 = 85 clips

10.9 = 45 clips

7.6	3.3
5.0	2.2
1.6	4.2
2.7	27.5
3.7	8.8
1.9	2.9
8.4	5.2
15.3	8.3
2.1	2.9
3.2	4.6
1.0	5.2
4.1	4.3
4.0	2.4
4.2	5.0
7.1	8.5
4.0	4.3
5.6	10.7
1.5	5.1
4.4	3.9
1.2	6.9
4.0	4.7
4.3	6.5
2.4	8.1
2.9	2.6
7.2	1 juniper
4.2	2 ponderosa sap

43

[redacted] = 8 clips

[redacted]
7.7
[redacted]
9.8
[redacted]
13.0
9.9
11.0
10.7
37.5
1 juniper sap
1 pinyon sap

8

44

15.2 = 24 clips

G.O. 10.8
G.O. 8.5
G.O. 8.3
1.3
3.3
7.5
4.0
2.7
3.0
11.4
3.4
2.5
5.6
11.0
6.4
8.7
8.7
1.0
12.0
9.3
9.2
1.8
9.1
2.2
11.3
1.3
7.0
14.7

19

BIG SPRING TRANSECT

45	46	47	48
14.7 = 41 clip	14.0 = 115 clips	14.4 = 72 clips	18.0 = 82 clip
10.7	10.4	13.1	3.0
1.3	2.9	38.2	5.0
6.7		14 juniper	9.4
14.6			2.8
4.6			3.0
2.2			5.7
10.1 SO			2.3
8.4 SO.			4.1
8.9. SO.			3.0
8 juniper			5.9
			4.4
			5.3
			14.1
			5.6
			2.8
			6.9
			6.3
			8.3
			3.8
			11.1
			5.8
			7.1
			3.7
			23.2
			23.5

5

2

3

23

2 3 3 4

49

13.1 = 42 clips

8.1
9.0
11.5
4.4
7.5
3.8
6.6
4.0
12.4
5.4
8.2
6.5
8.0
12.6
13.8
6.6
10.7
6.6
4.5
4.2
7.7
4.5
1.3

6.2
11.4
2.8
7.6
5.5
5.7
9.1
10.8
3.4
6.0 - 5.8 - 2 juniper

34

50

14.3 = 15 clips

1.9
9.7
9.4
12.6
8.6
18.3
40.3

7

51

22.0 = 50 clips

5.0
8.3
5.0
9.3
17.0
18.2
19.1
15.4
6.8
6.0
8.6
11.6

13

15

52

18.8 = 10 clips

7.6
1.3
12.4
8.8
9.3
3.9
12.6
2.1
12.6
4.9
4.0
11.4
10.7
8.1
11.3
1.8
5.3
37.8
10.6
11.4
14.9
15.3
7.6
4.6
12.0
4.3
13.1
15.5

5.5
1.4
2.5
1.1
3.6
3.8
2.7
33.0

30

53

15.1 = 26 clips

9.1
8.5
15.4
10.2
9.0
2.1
11.7
10.1
5.2
5.2
6.9
4.9
2.7
1.5
14.0
5.7
4.7
13.1
4.7
3.6
6.0-11.3
2.7
2.3
11.8
5.6
1.8
7.0
7.4

7.0
7.8
8.0
13.3
4.0
4.8
6.6
8.3
21.4
3.2
13.2
0.9
3.8
3.4
1.5
6.1
8.0
6.0-10.0
6.2
11.5
8.2
30.7
1 juniper sap

41

54

11.1 = 22 clips

8.7
12.6
13.7
12.7
10.0
10.7
6.0-9.6
6.0-10.3
6.0-11.3

7

55

12.2 = 13 clips

10.1
9.3
12.3
9.8
11.1
11.3
9.0
4.6
12.1
10.6
9.0
22.0
2 juniper sap

13

56

15.5 - 28 clips

38.0
6.5
5.1
11.1
1.0
1.5
3.6
8.0
1.5
4.0
3.1
13.7
11.6
9.4
10.0
6.0-15.0

13

R 244 176 420

35.7 = 420 clips

25.9
25.1
27.7
25.1
21.5
G.O.
13.9
2.3
G.O. 12.8

L

57

27.9 = 108 clips

24.6
G.O. - 11.5
G.O. - 9.0
G.O. - 11.7
G.O. - 8.5
G.O. - 10.1
7.8
G.O. - 14.9
9.0 - G.O.
G.O. 7.6

3

83 76 159

58

18.6 = 159 clips

17.0
16.0
G.O. - 4.0
6.8
15.0
14.5
15.2
18.5
6.5
2.0
3.0
.7
9.5
8.0
12.1
8.6
8.0
1 locust

15

17

59

14.7 = 27 clips

18.6
6.7
2.0
3.0
9.0
14.2
1.2
13.6
3.7
5.9
5.6
5.1
2.1
3 locust
3.3
2.6
18.0
12.1
5.6
9.1
13.0
2.1
10.6
4.3

19

K (60)	L (61)	R (62)	R (63)
14.3 = 70 clips	13.2 = 79 clips	16.5 = 40 clips	16.4 = 28 clips
12.4	9.3	1.0	8.3
14.6	9.6	15.6	16.2
18.6	6.8	15.8	8.9
15.6	10.8	14.4	17.6
15.5	10.1	12.0	17.4
G.O. 3.7	12.0	1.7	3.7
9.7	9.4	7.0	19.7
9.2	9.7	18.7	9 locust
9.4	9.2	18.3	
13.6	11.5	15.3	
7.5	13.0	19.0	
9.5	11.3	7 locust	
9.8	11.9		
11.7	10.6		
9.6	10.8		
9.4	13.3		
10.0	15.5		
9.0	16.4		
11.8	15.6		
8.2	8.1		
16.7	16.7		
11.9	12.0		
4 locust	12.2		
	9.4		

22

25

10

8

Big Spring Transect

R

64

19.5 - 98 clips

G.O. - 8.0
19.2
12.5
19.5
14.2
6.1
8.0
17.1
13.6
3 ponderosa sap.

9

65

44

19.0 - F ~~22~~ clips

16.3 F 22 clips
4.5
8.0
3.8
3.0
4.4
5.0
35.0
23 locust
12.3

10

66

19.2 - 144 clips

13.4
19.4
4.4
16.5
3.1
14.7
8.0
7.4
11.2
14.0
10.8
13.4
10.8
19.0
22.7
5.9
4.4
14.0
17.2
3.1
13.5

22

67

15.6 = 103 clips

15.0
11.2
15.2
15.1
7.5
17.6
8.0
19.8
10.0
26.2
9.5
~~15~~ locust
20.9

13

Big Springs transect

L	R		
14.6 = 213 clips (68)	18.2 = 24 clips (69) (12)	16.1 = [redacted] clips (74) (70)	19.3 = 38 clips (71) 20
24.9	14.7 (12)	19.3	4.6
1.1	14.1	17.7	16.1 4
1.5	12.1	10.1	17.0
1.2	22.4	15.4	23 locust
11.7	20.4	10.5	[redacted]
17.5	13.8	16.1	
18.7 8	9.3	13.2	
12.0	5.6 14	14.4	
17.6	11.8	11.8 16	
24.4	18.4	12.0	
6.0 - 9.1	19.7	13.9	
6.0 - 8.6	15.0	13.9	
6.0 - 13.2	9.2	9.4	
6.0 - 9.6		12.4	
[redacted] 8 locust		22.3	
		11 locust	

21

R (72) 79.5 — 17.3 = 159 clips

12.2 (79.5)
8.4
8.3
10.4
17.0
19.3
31.8
11 locust
1 pinyon

8

R (73) — 31.8 = 67 clips

8.1
8.6
17.6
10.2
13.4
9.0
12.0
18.3
14.7
11.1
6.1
9.6
11.2
16.9
18.2
12.0

17

R (74) — 9.1 = 27 clips

12.3
18.0
7.7
19.4
8.2
7.5
6.1
12.8
13.7
2.7
6.0-5.0
14.7
27.1
9 locust
22.1
17.8

14

R (75) — 22.1 = 20 clips

22.1
9.1
12.3
18.0
14.7
17.2
7.6
21 locust

8

R

76

18.0 = 29 clips

3.0
5.1
4.7
13.1
24.4
22.7
5.6
4.6
3.6
18.4
6.8
16.5
12.0
16.8

22 locust

15

R

77

22.7 = 16 clips

24.4
13.1
4.7
5.6
4.6
3.6
15.3
23.5
5.1
17.5

31 locust

G.O. 15.5

16.4
20.5

13

L

78

19.0 = 320 clips

8.0
11.1
10.3
15.3
9.0
12.7
9.6
11.0
11.6
7.9
16.5
20.5
16.4
25.1
5.7
20.0
4.6
3.4
4.9
12.6

G.O. 7.1
G.O. 6.0
G.O. 8.0
G.O. 7.2
G O. 2.5
G.O. 5.9
G.O 9.3

8 locust

21

22

79

17.2 - 10 clips

G.O. 18.5
G.O. 15.1

13.1
10.2
8.6
10.0
10.7
[redacted]
9.2
10.0
9.1
11.1
15.5
14.2
11.0
13.5
13.7
5.0

G.O. - 11.0

5 locust

16

Big

80	81	82	83
17.3 = 163 clips	15.0 = 49 clips	17.4 = 59 clips	18.0 = 49 clips
6.0 - 5.2	13.5	15.5	11.5
6.0 - 8.0	13.7	2.5	11.3
16.2	14.0	15.0	13.7
12.5	13.2	19.2	2.4
13.1	14.2	9.5	16.0
4.0	12.0	4.6	19.2
6.0 - 7.0	10.2	1 ponderosa sap	18.0
6.0 - 7.4	10.3		14.0
6.0 - 6.1	3.2		14.7
6.0 - 9.3	2.2		14.0
6.0 - 7.3	4.2		8.0
16.3	6.9		6.7
10.7	7.7		16.2
7.7			2 locust
17.0			3.5
15.5			
16.2			
14.7			
14.5			
11.4			
8 locust			

9.5

13

6

14

14

NL 5329 24

UTAH

Chevy TRUCK LT. BLUE

R	R	L
(84)	(85) 11.5	(86)
24.2 = 42 dips	16.6 = 23 dips	19.4 = 170 dips
18.5	16.0 11.5	12.5
17.7	2.0	1.5
19.2	16.6	.75
12.7 6	1.5	1.6
14.7	6.6	4.7
	12.6 9	16.2
	3.0	17.6
	7.0	13.2
	1.5	11.5 18
	Tyonderoga sap	12.0
	20.0	13.2
		19.2
		11.3
		15.1
		13.0
		12.3
		13.2
		19.0
		15.0
		5 3

SQ 5 TROUGH TRANSECT

22 plots

R

49
35

13.4 = 84 clips

12.2
12.0
11.8
2.3
3.6
12.5
12.2
1.3
11.9
3.6
10.9
11.3
9.2
12.9
8.0
11.3
13.0
11.2
13.1
6.2
11.0
8.4
4.1
13.2
4.8
2.6
2.3
2.5
13.1

1 juniper

150.1
30 P.P°

Ave Dbh
8.6

R

1

13.6 = 100 clips

0.8
3.0
7.0
5.0
8.2
3.6
10.5
7.0
11.3
4.5
6.1
3.8
9.0
3.7
13.8
2.7
4.8
0.7
3.5
5.0
3.3
5.0
2.3
1.6
6.6
16.5
10.7
2.7
4.3

3.2
2.3
13.5
3.8
4.3
3.4
2.5
1.5
9.0
11.4
4.9
14.3
1.4
3.5
5.0
10.0
14.2
11.0
2.0
1 juniper
2 pond. saps.

160.2
+1

6.5
Ave.
Dbh

R

2

14.1 = 54 clips

5.5
12.4
5.4
11.0
8.9
13.9
1.0
3.0
3.2
1.4
17.8
0.8
3.5
0.4
1.1
2.3
1.7
5.2
8.6
3.8
1.5
10.7
9.4
7.4
3.0
4.6
11.2
10.7

15.6
13.9
14.5
12.8
4.5
1.3
12.7
4.1
1.9
7.0
8.9
2 juniper
6 pond. saps.

30

39

15 4.4
1.0

7.4
Ave
Dbh

L

9.2 = 249 clips

7.5
11.7
16.1
12.6
12.7
4.6
4.5
1.5
1.1
1.0
13.3
5.4
11.7
3.5
1.0
2.2
1.7
5.3
3.9
8.8
2.9
4.4
13.2
3.3
11.4
3.4
11.0
3.7

1.0
12.2
14.4
15.1
1.3
3.8
3.4
7.3
4.3
3.1
5.3
9.4
1.9
4.2
7.0
9.0
5.9
2 juniper
2 pond saps

15 7.2

6.6
Ave
Dbh

(3)

17.8 = 73 clips

2.7
8.5
9.4
3.0
2.4
4.5
4.2
7.4
6.2
9.1
2.4
10.2
11.1
14.4
14.3
11.4
12.7
1.6
2.9
3.5
2.5
1.8
4.3

17

92.0

(4)

13.2 = 315 clips

6.1 19.4 0.6
1.5 2.0 1.4
1.2 6.0 - 5.0 2.6
1.5 4.1 0.8
8.3 16.7 26 pond soap
3.8 4.5 2 juniper
0.6 4.9
8.3 3.1
4.4 0.5
10.0 3.0
11.8 5.1
3.4 0.1
12.5 8.5
12.6 1.4
5.0 4.2
12.7 2.6
2.1 2.9
3.4 8.6
5.4 5.0
4.3 0.5
7.7 0.9
0.7 1.4
2.6 0.9
1.3 1.0
5.8 1.0
12.0 1.0
6.9 1.8
3.5 1.2

33

142.1

(5)

19.4 = 61 clips

6.3 5.3
1.9 7.5
3.4 0.6
1.2 3.0
1.0 0.7
6.6 2.3
1.0 17.0
0.7 1.1
1.1 5.9
1.2 8.3
9.7 9.9
1.3 9.7
0.5 0.4
0.5 1 juniper
5.9 29 pond soap
6.1
4.5
1.0
2.0
11.7
7.1
4.2
1.8
5.1
2.5
2.0
6.0
0.4

21

92.5

(6)

23.3 = 33 clips

3.5 1.7 3.3
4.7 3.2 1 juniper
2.8 5.2
2.9 2.1
5.2 1.7
4.2 1.3
4.3 4.9
3.7 8.6
9.0 4.1
7.3 6.4
3.0 10.7
2.6 0.4
5.7 0.7
2.5 2.1
15.5 2.7
21.1 4.3

26

2.1 0.4
2.4 4.1
4.0 2.3
1.7 1.4
2.1 2.8
2.2 3.3
1.5 2.0
0.6 1.1
4.1 0.8
1.7
1.9
2.0

11.2

3

L (7)

21.1 ~ 35 clips

2.4	11.7
4.0	18.6
1.7	9.6
2.1	7.2
2.2	2 juniper
1.5	14.0
0.6	2.6
4.1	5.8
1.7	2.5
1.9	3.0
2.0	7.4
0.4	9.0
4.1	4.3
2.3	5.4
1.4	2.7
2.8	4.6
3.3	8.5
2.0	1.6
1.0	1.7
0.8	12 pond pap
23.3	144.6
3.5	
4.7	
2.8	
3.1	
5.2	
2.0	
16.6	

24

L

10.0 = 47 clips

16.2	11.9
13.5	12.5
17.1	6.1
4.8	13.2
1.4	1 pinyon pap
1.7	
3.1	
5.0	
1.9	
2.4	
2.7	
1.1	
1.6	
1.9	
7 pond pap	
13.0	
16.2	
14.5	
17.7	
11.6	
14.9	
10.7	
13.3	
14.2	
8.2	
14.6	
10.7	
1 juniper pap	

201.7

L

13.5 : 34 clips

11.6	1 pinyon
9.0	
4.8	
3.0	
3.4	
8.0	
1.4	
5.0	
2.4	
2.3	
7.8	
8.0	
4.3	
12.5	
5.8	
12.2	
12.1	
14.8	
9.9	
7.7	
12.6	
13.5	
9.8	
14.2	
11.8	
7.8	
3.7	
4 juniper	

134.0

R (8)

18.0 = 8 clips

8.0	
15.8	
11.3	
8.2	
13.6	
9.8	
11.1	
4.8	
9.2	
13.2	
11.4	
1.1	
5.0	
29.7	
8 juniper	
25.5	
2.4	

15

177.65

R 9 start

12.1 = 29 clips

1.3 5.8
1.1 3.3
8.6 4.3
2.1 6.5
6.2 5.0
5.5 2 juniper
6.0 1 pinyon
4.8 2 pond cap.
9.0 2 pinyon cap
2.3
2.8 46.3
1.0
2.0
2.5 20
2.2
1.0
6.0.5.0 6 with 0 ck
3.5
1.7
0.4
9.0
2.8
4.3
3.7
5.0
3.1
4.8
5.4

R 10

16.8 = 40 clips

5.1 2.6
7.2 2.0
8.9 1.3
5.5 3.5
10.5 6.3
3.4 3.7
8.9 2.4
11.5 6.0
3.3 2.3
6.8 6.3
7.0 5.5
2.0 2.7
2.7 2.4 31
7.6 1.1
8.2 0.7
1.6 2.2
5.7 126.6
6.1
9.6
6.5
6.6
6.7
8.7
5.5
8.4
12.1
2.2
5.9

R 11 *

16.1 = 61 clips

4.0 0.3 23 pond cap
13.4 9.8
2.5 12.4
18.3 11.5
3.5 5.1
6.4 2.7
4.1 10.7
6.8 2.5
5.6 0.6
14.7 10.7
2.2 1.3 161.4
4.9 3.3 34
1.1 3.2
1.3 9.6
5.2 10.0
3.4 0.3
2.8 4.5
3.1 7.2
14.0 10.5
12.8 0.4
6.8 2.2
9.2 0.9
11.1 3.2
0.4 9.5
0.5 2.3
0.8 2.5
0.9 2.4
0.4 1.0

L 12

13.5 = 11 clips

20.2 2.2
1.9 6.4
6.1 11.7
4.7 11.0
1.2 3.9
1.0 5.7
1.3 8.4
2.5 4.7
1.1 1.4
1.5 1.8
2.8 14.1
13.7 4.2 43
1.8 2.9
1.1 6.4
1.4 4.4 6.8
1.3 5.2 6.6
1.6 2.8 3.5
1.6 3.7 4.1
1.9 3.8 18.7
9.3 4.1 2.6
18.4 5.0 13.6
1.4 15.3 4.0
0.8 4.8 2.4
1.2 3.4 7.0
9.2 10.9 12.2
0.8 14.5 9.3
5.1 3.2 5.6
10.1 2.8 2.3
206.8

L 13 * 4 clips

1.9-5.6-3.
6.1-4.0-4.0
4.7-4.5-4.
1.2-5.0-6.
1.0-1.4-2.
1.3-1.0-9.5
2.5-0.3-1.7
1.1-2.8-1.8
1.5-6.0-6.
2.8-6.1-12.
13.7 5.
1.8 15.
1.1 5.0
1.4 4.1
3.3 38 11.
1.6 2.3
1.6 3.2
1.9 2.8
9.3 3.3
18.4 13.
1.4 8.4
0.8 12.1
1.2 6.3
6.6 15.
6.3 2.3
3.5 4.0
18.7 4.0
2.5 14.0
187.8

R	L	R	L	L
12.3 = 57 clips (14)	17.6 = 33 clips (15)	14.3 = 29 clips (16)	14.8 = 30 clips (17)	29.4 = 23 clips (18)
12.6	12.8	1.5	4.9	15.5	4.5	8.3	7.9
7.3	3.7	4.4	4.1	7.7	11.0	16.3
11.8	1.1	2.0	5.0	6.1	10.1	15.6
4.3	3.0	3.3	1.1	3.3	10.5	11.6
4.4	6.8	4.2	1.2	4.2	9.0	10.5
12.2	6.2	8.4	1.5	2.9	12.8	14.4
10.9	12.1	6.1	4.9	~~1.0~~	16.9	8.6
3.7	13.5	4.1	1.0	~~3.0~~	4.2	11.5
4.7	6.7	6.7	6.4	9.1	12.0	8.4
3.3	10.2	6.3	7.7	8.4	9.1	14.5
10.9	0.7	2.5	0.4	4.0	12.1	10.3
1.5	1.4	7.2	1.7	12.6	10.2	4.3
2.3	5.5	3.3	1.9	8.3	11.1	10.2
7.2	2.4	4.6	2.0	10.0	8.5	12.8
1.0	5.2	3.7	11.5	14.5	13.2	2 ponderosa, sapo.
2.7	6.0	1.1	5.0	1.3	8.7	151.9
4.1	3.7	6.9	6.0	5.5	16.1	
12.8	4.1	5.1	2.9	1.2	16.3	
5.5	3.4	5.0	8.2	12.0	2 pond. oap	
1.8	0.5	4.2	5.5	5.8	19.4	
3.3	1.2	6.5	2.3	7.9	163.3	
2.9	1.6	5.6	8.1	13 pond. oap		
3.9	3.8	3.9	2.7	1 juniper		
13.0	1.2	10.4	2.7	~~3~~		
0.8	4 juniper	4.2	5.4	131.2		
12.0	24 pond oap	17.5	5.9			
10.3	60. 6.6	15.3	7.7			
3.4	146.2	3.4	12.2			

26 (between 1.1 and 4.1)

39 (between 4.7 and 3.3)

84.5 (between 1.1 and 6.9)

33 (between 7.7 and 8.4)

20 (between 12.1 and 10.2)

15 (between 8.6 and 11.5)

26

33

59

5-13-81

MT TRUMBULL ROAD TRANSECT SQ4

1 — 17.4 = 39 clippings

[redacted] 2.7
4.7
8.3
G.O.- 4.2
1.8
3.8
1.0
5.5
6.3
3.7
3.8
1.8
20.6
2 juniper
1 pinyon
12.3
14.3
21.2
2 juniper
7.8
2.7
4.5
2 pinyon
1 pinyon
8.8
G.O.-6.2

G.O- 6.7
G.O.- 4.3
4.4
5.7
5 pinyon sap.
*pinyon (FT) - 10.5

17

2 — 14.3 = 19 clippings

1 pinyon 1111
1 juniper
12.3
10.5 pinyon
1.4
1 juniper 111
22.7
7.1
20.9
3.8
7.9
4.6
3.0
17.6
3.8
23.4

12

3 — 14.4 = 20 clippings

11.8
9.3
18.3
9.2
12.7
21.9
2.4
11.5
6.1
14.0
9.9
4.4
4.3
2.6
juniper 10" DBH
pinyon 2" (20 clips)

13

4 — 14.9 = 37 clippings

19.9
12.9
9.8
10.9
14.1
3.4
5.8
7.2
5.3
G.O-4.0
6.0-4.2
G.O-6.1
G.O-5.2
G.O 5.9
G.O 5.1
5.2
3.2
13.5
6.2

junipers [redacted] 4
pinyon 1

FT = 14.7 } 8 clips.
FT = 13.9

R (4)	R (5)	L (6)	L (7)
13.5 = 35 clips	30.2 = ~~195~~ 5	13.9 = 36	13.7 = 98
6.9	13.4	12.9	G.O.- 7.1
26.9	13.8	10.0	G.O.- 6.8
5.3	6.1	6.0	G.O.- 7.9
3.6	juniper 2	30.2	G.O- 8.5
8.5	piNyoN 5 saps	9.2	G.O.- 6.8
9.2	10.0	juniper-4	G.O. -6.2
10.3	ponderosa 3 saps.	piNyoN-6 saps	~~G~~. .6
13.1		ponderosa 4 saps	13.5
13.7			21.6
juniper 1			ponderosa 1 sap.
~~3~~7.4			juniper 2
4.7			piNyoN 5 + 2 saps.
piNyoN SAPS.			
3.5			
5.1			
4.1			
8.0			
5.4			

17 5 6 3

* longer clippings

8

21.6 = 15 clips

13.7
7.1
6.8
7.9
8.5 G.O.
6.8
6.2
23.0
8 pinyon sap
6
2 juniper
4 pinyon

6.4 pinyon
11.0 pinyon

9

14.6 - 17 clips

26.0
4.0
1.5
17.0
5.1
5.1-G.O
G.O.-3.7
G.O.-4.5
G.O.-4.4
G.O.-3.5
G.O.-5.2
G.O.-4.5
G.O.-6.2
G.O.-6.3
G.O.-2.8
G.O.-5.8
G.O.-3.3
G.O.-4.3
14 pinyon
10 pinyon saps.

10

26.0 = 7 clips

14.6
4.0
1.5
17.0
5.1
3.2
1 juvip seedling
11 pinyon
4 pinyon saps.

pinyon 3.1 = 13 clips

11

17.7 = 11 clips

12.3
12.4
G.O.-4.3
G.O.-5.3
G.O.-5.1
G.O.-4.9
10.5
G.O.-5.1
G.O.-5.0
8.3
11.9
G.O.-3.0
G.O.-4.8
G.O.-5.9
G.O.-5.0
G.O.-6.0
3.8
14.2
3 juniper
3 pinyon
6 pinyon saps

start

R (12) 18.6 = 28 clips.

19.9
7.6
11.2
14.8
9.3
21 pinyon
4 juniper
9.6
9.1
4.4
4.7

10

R (13) 15.3 = 28 clips

13.3
15.9
13.1
10.6
10.7
6.7
11.3
13.0
8.8
3.5
6.6
10 pinyon
.75
6 juniper
7 pinyon saps
2 juniper saps

12

R (14) 16.7 = 20 clips

14.0
7.6
10.9
5.0
6.0 - 11.1
2.6
9.0
9.9
4.5
6.8
4.2
13.6
2.6
4.2
11.5
12.5
12.9
14.0
6 pinyon
7 pinyon saps
2 juniper

16

L (15) 15.7 = 12 clips

11.1
10.7
13.0
13.0
5.4
6.4
8.3
13.2
1.5
.75
1.75
14.2
1.3
15.8
6.3
9.9
2.5
6.1
4.8
4 juniper
13.2
3 pinyon
2 pinyon sap
2 ponderosa saps
2 juniper saps

16

DBH (16)

17.5 - nest tree of flammulated owl w/ 1 egg

7.2
10.0
5.3
20.7
5.3
5.7
9.0
12.2 17
3.1
3.7
15.4
10.6
14.3
3.7
7.8
12.9
1.2

4 PINYONS
9 JUNIPER
14 PINYON SAPS
1 PONDEROSA SAP

G.O.- 4.9
G.O.- 4.3
G.O.- 5.1
G.O.- 4.0
G.O.- 4.5
G.O.- 3.4

L

15.1 = 48 clips (17)

6.6
G.O.-6.1
12.1
14.6
12.6
11.7
16.2
13.1
14.3
15.0
11.7
4.5
16.0
13.5
13.2
8.3
G.O.-7.7
G.O.-7.3
G.O.-7.3
G.O.-4.7
G.O.-6.5
G.O.-7.5
2 pinyon
9 " saps
G.O.-8.5
3 juniper
1 ponderosa saps

L

14.6 = 25 clips (18)

12.1
11.7
13.2
G.O.-6.1
15.0
6.6
12.2
4 pinyon
1 ponderosa saps
8 pinyon saps
1 juniper

L

18.1 = 39 clips (19)

12.8
11.5
9.2
6.2
18.6

L

15.9 = 170 clips

13.6
13.7
17.7
14.7
9.2
6.2
17.6
2.9
7.2
4.3
6.2
20.2
5.0
7.7
15.8
14.0
5.3
4 pinyon
2 " sapling
2 juniper saps
1 ponderosa sap.

20

13.0 — 16 clips

8.5 — 5 clips

[redacted]

16.1

6.4

[redacted]

4.5

15.0 — 12

17.9

11.6

10.2

16.7

10.4

[redacted] 4.3

2.7

1 pinyon
4 11 saps.
1 juniper
1 juniper sap
1 ponderosa sap

21

16.4 = 93 clips.

13.0

6.6

7.7

11.2

3.3

11.0

2.3

,75

12.8

7.9

10.0

9.8

10.0 — 20

5.5

8.6

8.0

11.3

6.4

2.8

4.1

15.4

8.0

1 pinyon
1 juniper
5 pinyon sap
4 juniper sap.

22

17.5 = 37 clips

13 pinyons
4 pinyon saps
4 juniper

[redacted]

16.4

14.9

11.3 — 9

8.1

8.0

12.6

19.0

9.7

23

18.1 = 15 clips

6.5

13.4

17.2

19.0

7.0

9.7

6.8 — 11

8.2

8.3

13.7

8 junipers
6.0 - 6.1

8 pinyons
5 pinyon sap.
1 ponderosa sap.
1 pinyon sap

A (24) 22.9 = 16 clips

19.6
5.0
8.7
4.0
14.0
2 junipers
1 pinyon
8.0
2 pinyon sap.
1 ponderosa sap

7

R (25) 16.2 = ~~8~~ clips

14.0
20.1
4 junip sap.
1 pinyon sap
1 pinyon
1 ponderosa sap
9
14.2

5

L (26) 18.1 = 9 clips

18.4
13.2
14.8
9.2
3.3
9.2
8.2
3.4
11.9
11.2
4.0
16.2
5 juniper
2 junip sap.
13.2

14

L (27) 16.2 = 75 clips

8.1
9.5
3.0
3.2
6.6
6.3
20.4
5.8
7.7
6 junipers
11.4
2 junip. sap.
2.9
1 pinyon sap
1 ponderosa sap.
9.1
1.6

12

L

28

18.2 = 12 clips

12.1
14.3
11.3
14.2
12.1
15.7
12.9
6.5
12.7
6.9
6.0
11.2
3 juniper
1 junip- sap
7.7
1 ponderosa sap.

14

R

29

18.3 = 10 clips

5.4
[redacted]
7.4
7.9
6.6
1 pinyon
2 pinyon sap
18.2
18.7

7

R

30

21.5 = 5 clips

13.1
19.8
10.0
11.1
15.0
2 pinyon
1 juniper
2 pinyon sap.

6

R

31

16.0 = 35 clips

14.0
11.0
12.2
5.8
15.0
10.1
3 juniper
13.1
1 pinyon
11.0
12.4
13.7

11

R (32) 11.9 = 18 clips

9.4
7.4
13.1
13.8
18.7
11.7
5 piñon
13.0
4 juniper

8

R (33) 18.5 15.9 = 37 clips

15.0 18.5
14.2
11.0
12.0
14.3
15.8
18.0
16.7
16.0
17.9
10.2
5 junipers
10.3
14.5
14.2

15

L (34) 16.3 = 17 clips

12.2
5.8
14.2
13.3
17.7
13.7
14.1
13.5
16.8
12.9
4.5
3 juniper
6.8
5 piñon SAP
1 junip SAP
1 ponderosa SAP

13

(35) 21.3 = 7 clips

11.4
13.1
5.6
22.8
17.3
4.3
21.2
18.7

9

36	37	38	39
18.7 = ~~35~~ 32 clips	19.8 = 16 clips	17.0 = 18 clips 9c	20.0 = 14 clips
21.2	16.0	12.9 9c	15.1
11.4	20.1	3.8	22.~~2~~
13.1	19.6	6.7	14.5 7
~~22.6~~	12.6	15.0	11.9
22.8	14.4	6.7	5.4
17.3 9	7.3	16.0	4 ponderosa SAP
4.3	2.0	12.5	4.3
21.2	1.2	6.0	1.3
18.7	20.3 14	2 ponderosa sap	2 pinyon sap
	1.4	12.8	3 juniper sap
	.8	2.8 14	1 juniper
	19.5	14.5	
	8 PINYON SAP	17.0	
	22.9	12.3	
	17.7	2 juniper	
	8.9	15.1	
	8 pinyon	4 PINYON SAP	
	19.6		
	1 juniper		
	8.8		

OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA FPMR (41 CFR) 101-11.6

UNITED STATES GOVERNMENT

Memorandum

6680.2

TO : Files

DATE: Nov. 6, 1978

FROM : Non-game Biologist

SUBJECT: Kaibab Squirrel Clipping Transects

Once again Kaibab Squirrel clipping transects were evaluated on the 17th and 18th of October, 1978.

The test plot was inspected to determine the amount of clipping discoloration that had occurred. Over a period of 3½ months (the last time transects were read), the clippings were completely brown and when touched, needles disarticulated easily.

Consequently, if transects are read at six month intervals, clippings from the previous sample period will not be counted twice, unless they are deposited just prior to inspection. Therefore, transects will be cleared of all distinguishable clippings each time they are surveyed.

Every transect was cleared of clippings, however, only green clippings were counted to avoid confusing brown ones with the previous sample period. From now on transects will be surveyed on April 22 and October 22 to give a spacing of six months and make yearly comparisons possible.

During field exercises, criteria was established to determine what actually constituted a group of clippings. Care also must be taken when evaluating clippings to make sure they were fed on by tassel-eared squirrels and not rock squirrels, porcupines, etc.

Clipping Group Standards

1) At least four or five clippings must be present.

2) Distinct incisor marks and cleanly cut clippings indicate tassel-eared squirrels.

3) Pealed twigs must be in the vicinity. Many times squirrels feed on three or four trees in an area and may be only peal twigs under one tree. In this case if it looks like the same squirrel fed through the area, then count all groups. Compare diameters of clippings and incisor patterns to make the decision.

The presence of pealed twigs is the major factor used in the two prior sample periods to decide whether a group of clippings were counted.

5010-108

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CONCLUSION

Fifty-six feed trees were measured and had an average D.B.H. of 15.18 inches. A total of 77.63 acres (180 foot strip width) were inventoried and contained 1.38 feed trees per acre.

Feeding activity increased on Sq-1, Sq-4 and Sq-5 and decreased on Sq-2. Sq-3 stayed about the same.

Squirrels utilized two pinyon pine feed trees on Sq-4.

Six feed trees close to rock outcrops, transects Sq-2 and Sq-4 are suspected to be used by rock squirrels.

The next time squirrel transects are run the number of fresh clippings in each group should be counted to determine the feeding intensity of individual transect area's.

Ponderosa pine cone and gambel oak acorn production surveys should also be established to evaluate annual food crops. These plots are to be monitored incidental to squirrel transects.

Enclosures

Neal Middlebrook

SQUIRREL TRANSECTS FEED TREE DATA

Transect	D B H Max.	D B H Min.	D B H $\bar{X}$	Dist. Feet Max.	Dist. Feet Min.	Dist. Feet $\bar{X}$	Number of Feed Trees	Feed Trees/Acre	Sample Area (Acre)	Length of Transect Feet
Sq-1	15.3	5.5	10.56				5	0.57	8.73	2,112
Sq-2	26.0	24.25	25.13				2	0.13	5.27	3,696
Sq-3	28.33	5.89	16.27				27	1.22	22.21	5,375
Sq-4	25.1	4.6	14.15	87	9	56.45	11	0.55	19.86	4,805
Sq-5	27.6	6.0	13.84	72		37.27	11	0.95	11.56	2,798
								1.38/acre	77.63	
Average	DBH=15.18									

DATA FOR CLIPPING TRANSECTS

Transect	D.B.H. Inches	Laterial Distance	Time (AM) Starting Ending	Mileage*	Tree Species	Side of Road	Remarks
Sq-1	13 8.3 5.5 15.3 10.7 52.8		2:30 to 3:00		Pipo " " " "		Slightly overcast, only green clippings were counted. Nine old groups were observed.
Sq-2	24¼* 26* 50.25	117'	2:00 to 2:30				*Close to lava flow may be rock sq. cuttings many, cones used. No fresh cuttings. Six old cutting groups recorded. Sq. Kaibab sighted at east side of transect. Clipping plot established west end of transect 15' north of marker.
Sq-3	17.5 16.5 26.0 19.0 12.0 25.75		11:00 to 1:30			R. Heading West " " " "	Only green clippings were counted. Plot cleared. Clipping Plot established west end north side of transect.
Sq-3	17.75 13.75 14.75 15.0 19.25 11.75 12.75 8.00 5.89 11.94 (Continued on next page)					Left " "	

DATA FOR CLIPPING TRANSECTS

Transect	D.B.H. Inches	Laterial Distance	Time (AM) Starting Ending	Mileage*	Tree Species	Side of Road	Remarks
	21.17					Left	
	14.16					"	
	16.87					"	
	11.14					"	
	11.14					"	
	13.69					"	
	28.33					"	
	14.96					"	
	26.58					"	
	16.87					"	
	16.71					"	
	439.20						
Sq-4	24*	57	12:15 to 1:00		Pipo		Slightly overcast plot cleared of all clippings, only green counted.
	25.1*	33					
	24.1*	48					*Clippings cut very roughly and may be rock sq. Also many cones eaten.
	19*	9					
	7.1	18			Pinyon Pine		
	13	87			"		
	11.7	87			Pipo		
	4.6	84			"		
	4.6	87			"		
	4.6	87			"		
	17.9	24			"		
	155.7						
	Continued on Page 3.						

DATA FOR CLIPPING TRANSECTS

Transect	D.B.H. Inches	Laterial Distance	Time (AM) Starting Ending	Mileage*	Tree Species	Side of Road	Remarks
Sq-5	25	18'	11:00 to 11:45		Pipo	L	Slightly overcast all plots cleared.
	10.7	15'			"	L	A discoloration plot was established
	9.5	72			"	R	on west side of road at start of
	8.4	72			"	R	transect. Check next time.
	15.6	8			"	R	
	16.2	9			"	R	One old group discovered.
	17.1	12			"	R	
	27.6	18			"	L	
	6.8	60			"	L	
	6.0	64			"	L	
	9.3	62					
	152.2						

Jun 78

SQUIRREL TRANSECTS FEED TREE DATA

Transect	DBh Max.	DBh Min.	DBh $\bar{X}$	Dist. feet. Max	Dist. feet. Min.	Dist. feet. $\bar{X}$	Number of Feed Trees	θ Feed Maximum	Trees/Acre $\bar{X}$	Area; Acres Samples Maximum	Area; Acres Samples $\bar{X}$	$\bar{X}$ Distance between feed trees feet	Length of transect feet
SQ-1	--	---	---	---	----	---	0	---	---	---	---	----	2,112
SQ-2	24.8'	11.1'	17.7'	7.5'	13'	30.1'	9	.71	1.76	12.72	5.1	410.6	3,696
SQ-3	28.0'	11.1'	16.49	116'	1'	37.28'	52	1.82	5.67	28.63	9.2	103.4	5,375
SQ-4	14.6'	8.0'	12.75	84'	30'	65.5'	4	18.5	14.5	.22	.28	1,201.3	4,805
SQ-5	18.8'	15.0	16.6	75'	6'	30.3'	3	.31	.77	9.64	3.89	932.6	2,798

DATA FOR CLIPPING TRANSECTS

Transect	D.B.H. Inches	Laterial Distance	Time (AM) Starting Ending	Mileage*	Tree Species	Side of Road	Remarks
SQ-1							Total Mileage .4 miles
SQ-2	11.1	20'	10:00 - 10:20	04.13	PIPO	S	Total Mileage .7 miles
	19.1	20'5"		04.16	"	N	
	13.3	74'9"		04.20	"	N	
	22.3	24"		04.40	"	S	
	14.0	24'8"		04.50	"	N	
	20.7	33'8"		04.50	"	N	
	24.8	12'8"		04.72	"	S	
	15.3	24'6"		04.75	"	N	
	19.4	35'5"		04.77	"	S	
SQ-3	17.2	43'2"	11:10 - 12:30	09.01	"	S	Total Mileage 1 mile
	18.8	1'		09.01	"	S	
	17.2	57'		09.03	"	N	
	28.0	26'10"		09.03	"	S	
	18.6	2'		09.08	"	S	
	25.1	10'6"		09.08	"	S	
	14.3	89'5"		09.09	"	S	

DATA FOR CLIPPING TRANSECTS

Transect	D.B.H. Inches	Laterial Distance	Time (AM) Starting Ending	Mileage*	Tree Species	Side of Road	Remarks
SQ-3	18.8	89'5"		09.09	Pipo	S	
	11.5	89'5"		09.09	"	S	
	11.1	89'5"		09.09	"	S	
	16.6	89'5"		09.09	"	S	
	16.9	116'		09.09	"	S	
	17.8	116'		09.09	"	S	
	18.8	38'		09.10	"	S	
	18.8	48'		09.10	"	N	
	19.4	48'		09.10	"	N	
	20.0	18"		09.19	"	N	
	11.5	9'		09.19	"	N	
	8.6	4'		09.19	"	N	
	21.6	0		09.19	"	S	
	17.2	3'		09.19	"	S	
	22.6	21'		09.19	"	S	
	17.5	27'		09.21	"	S	
	19.4	3'		09.34	"	S	
	17.8	12'		09.39	"	N	

DATA FOR CLIPPING TRANSECTS

Transect	D.B.H. Inches	Laterial Distance	Time (AM) Starting Ending	Mileage*	Tree Species	Side of Road	Remarks
SQ-3	10.8	5'		09.40	PIPO	N	
	14.6	5'		09.40	"	N	
	10.8	5'		09.40	"	N	
	22.0	8'		09.40	"	S	
	16.6	12'		09.65	"	N	
	12.4	45'		09.73	"	N	
	13.7	57'		09.73	"	N	
	13.7	2'		09.85	"	N	
	13.4	24'		09.85	"	N	
	13.7	74'		09.85	"	N	
	18.1	99'		09.85	"	N	
	13.3	100'		09.85	"	N	
	18.5	.5'		09.91	"	S	
	17.9	18'		09.91	"	S	
	15.0	19'		09.91	"	S	
	15.2	45'		09.91	"	N	
	16.2	45'		09.91	"	N	
	15.2	66'		09.91	"	N	
	11.1	47'		09.91	"	N	

DATA FOR CLIPPING TRANSECTS

Transect	D.B.H. Inches	Laterial Distance	Time (AM) Starting Ending	Mileage*	Tree Species	Side of Road	Remarks
SQ-3	14.3	68'		09.93	PIPO	S	
	16.9	27'		09.95	"	N	
	19.1	12'		09.99	"	N	
	21.6	23'		09.99	"	N	
	14.6	10'		09.99	"	N	
	18.5	7'		09.99	"	N	
	15.9	26'		10.01	"	S	
	13.3	27'		10.01	"	S	
SQ-4	14.10	78'	2:00 - 2:20 PM	21.30	"	N	Total Mileage .91 miles
	14.3	84'		21.50	"	N	
	14.6	70'		21.80		N	
	8.0	30'		22.15	PIED	N	Numerous cuttings on juniper
SQ-5	18.8	10'	4:35 - 5:15 PM	25.55	PIPO	NE	Total Mileage .53 miles
	15.0	6'		25.55	"	NE	
	16.2	75'		25.75	"	W	

Record Mileage for Each Feed type in relation to starting mileage

D.B.H. = C.B.H. x .3183

Oct. 1980

Big Springs Transect SQ3

Plot

#1 18.5" 10.25, 6.5, 4.5, ~~1.5~~, ~~2.5~~, 5.25, 8.25, 7.5, 3.25, 4.0, ~~1.25~~, 19.0, 10.25, 7.0, ~~2.75~~, ~~2.5~~, ~~1.75~~, 4.75, #180 clipping 13

#2 19.25 9.3, ~~6 oak~~, 15.5, 10.5, 11.25, 8.25, 13.25, 3.25, 5.25, ~~2 [illegible]~~, 6.25, 20.5, 15.25, 20.5, ~~3 oak~~, 16.5, ~~5 [illegible]~~, 11.25, 15.5, 8, 11.25, 9.25, 12.5, 27 clippings 20

#3 26.5 11 clippings 5 oak, 3 oak, 1 oak, 24.0 2

#4 25.0 8 clippings [illegible] 11 11 11 7 oak, 1 oak, 24.5, 8" 2

#5 (24.25) 35.0 13.0, 9 clippings, 25.5, 2.25", 25.25", 30.75 7

#6 20.25 11.5, 8.25, 10.5, 11 3/4, 4.25, 5.25, 38.0, 12.5, [illegible], 8.0, 8.0, 4.0, 13.25, 12.5, 2.25, 33.3, 5.5, 10.2, 13.5, 4.7, 12.5, 4.5, 15.2, 7.2) 15.0, 12.25, 2 [illegible], 10.25, [illegible] 7 clippings 38

#7 14.5 13.0, 14.25, 13.5, 13.0, 15.25, 13.0, 13.5, 21.0, 10.5, 9 clips 26.5 11

#8 27.5 24.7, 12.5, 8.5, 11.25, 26.0, 10.5, 10.0, 13.0, 16.25, 5.5, 13 clippings 11

9. 14.25, 19.0 8.5, 12.5, 10.7, 8.0, 10.25, 11.5, 13.5, 12.0, 7.5, 9.7, 7.2, 9.7, 9.2, 6.5) 12.5, 25.0, 24 clippings 18

10. 17.5 9.25, 14.25, 2 oak, 10.5, 11.0, 12.25, 19.5, 13.0, 19.25, 2.0, 1.5, 12.5, 16 clippings 10

11. 20.7 16.0, 6.5, 8.5, 4.7, 9.7, 10.2, 10.7, 9.0, 10.0, 10.7, 10.2, 9.0, 15.0, 2.7, 12.5, 1.7, 17.7, 15, 9.25, 8.0 13.0, 15 clippings 20

12 18.2 10 clippings, 16.5, 15.5, 11.25, 15.7, 9.25, 16.25, 1 oak, 17.0, 4 oak, 6.0, 8.7, 9.0 11

13. 14.2 9.5, 14.5, 9.2, 1 oak, 29.5, 2 oak, 4.0, 2.7, 17 clippings 6

1 Oak clipping & Basal Area → = Feed tree

W

( ) = PJ Schmutz Transect 10L23LPO SQ5

#1 14.5 4.5, 5.0, 15.2, 13.0, 7.7, 6.7, (12 saps), 13.5, (2.2), (2.2), (2.0), 4.0, 6.2, 3.5, 4.5, 7.5, 12.5, 7.7, 3.0, 8.5, 3.2, (2.2), 6.2, 12.0, 4.7, 8.5, 5.5, 5.7, 5.7, (2.5), 9.2, 12.2, 9.5, ~~2.7~~ 13.7, 12.5, 9.7, 8.5, 14.0, (1.5), 5.5, (1.5), 12.0, 5.7, 7.5, (1.2)

38 clips

C,8010,SQ5,1,1,37,14.5,38,F\

SQ5

Lava South

SQ 2

#1

0

Lava North SQ1

#1 18.5 (No twig), 10.5, 14.5, 15.7, 15.7, 7.2, 16.5, 15.5, 10.0, 16.5, 12.5, (2 saps), 11.7, 13.7. 86 clips

12

17
41
12
80

#2 33.0 (No twig), 13.5, 5.2, 10.2, 4.7, 7.2, (3 saps), (2.2), (1.2), (1.2) 129 clips

#3 13.5 19.0, 16.0, 19.0, 12.0, 7.0, (4 saplings) No twig 16 clips

SQ1

① C,8010,SQ1,3,1,13,18.5,86,F\

② C,8010,SQ1,3,2,6,33.0,129,F\

③ C,8010,SQ1,3,3,6,13.5,16,F\

(4) = Pied Pinyon Mt. Trumbull Rd SQ4 10/23/20

— = Feed Trail

1. 20.0 7.5 (2 Juos, 17.7, 15.0, 8.0, 14.2, (3.0 Pied), 14.5, 9.7, 10.5, 1.0,
8.0, (2 Juos, 3.5, 1.8, 7.5, 15.5, 3.7, 10.0, 11.5
4.7, 13.0, (1 oak, (1 Juos, (Pied saplings 2), (5 Pipo saplings
5 clips

2. 20.5
21.5, 7.2, (1.2, 10.0, 3, (1.2, 9.7, (2.7, 4.2, 10.0, 5.7, 9.2,
(2.2, (2.7, 8.7, 8.7, 8.5, 6.5, 3.0, 11.2, (Pied 3.0), ~~10.5~~, 9.7, 10.2
5.2, 5.7, 3.7, 8.2, 5.5, 7.2, 1.2 Pied, 10, 7.5, 3, (3 oak, 18.2,
7.0, 3.0, ~~1 sapling~~, 3, (2.7, 4.0, (2 Pipo saplings, (12 Pied saplings
(1 Juos sapling, 4 Juos) 7 clippings
37

3. 18.5 (Pied 3.7), 7.5, (Pied 4.0), (Pied 4.7), 10.2, (2.5 12.5), (2.2 Pied),
(6.2), (1.2), (5), (5), 20.0, (1.5), (1.7), (1.2), 7.0, (2.2), 4.5, 4.2
9.0, 9.5, (1.5), (4.0), (5.0), 15.2, 1 Pipo sapling, 1 Pied sapling, 4 Juos
9 clips

15
SQ4

C,8010,SQ4,3,1,18,20.0,25,F\
C,8010,SQ4,3,1,18,7.5,2.5,F\
C,8010,SQ4,3,2,32,20.5,7,F\
C,8010,SQ4,3,3,15,18.5,19,F\