

Examination of 1938 Natural "Catch"
of Pine Seedlings

Although early season observations were favorable, an examination on the Burgess Spring Experimental Range did not show a stand of pine seedlings from a natural cast of seed sufficient for a satisfactory study of cattle damage to first-year reproduction. It was hoped that a study of grazing damage could be made with a good natural seedling crop to supplement the two years of observations of seedlings from planted seed. Years favorable to establishment of seedlings are very infrequent in the Eastside region. Most of the pine reproduction in this region has "caught" in a few such seasons, at intervals of many years.

This spring, although not in dense stands, seedlings could be found readily near most seed trees. Many seedlings were in rodent caches while others occurred as scattered individuals. The seedling crop followed only a fair crop of cones but occurred during a very wet season after a winter of heavy precipitation. In comparison to the above, during the preceding two years it was difficult to find a single seedling, even following a good seed crop.

The seedlings were too scattered for satisfactory sampling so no new experiment was designed. A preliminary observation evinced that the pasture could not be sampled systematically without a majority of small plots containing no seedlings. This was true even of the areas near seed trees. It was decided to examine only the old quadrats, to obtain data on (1) intensity of 1938 stand, (2) how this number compared with that obtained by seeding on these quadrats during the last two years, and (3) number of new seedlings available on quadrats for study this year.

The 500 seedlings found on 1675 quadrats during the examination in early July, 1938 is a much lighter stand than that obtained in preceding years by seeding. It is equivalent to an average of 575 seedlings per acre examined. On the basis of an acre seeded and examined, the 5,627 seedlings found on 827 quadrats in 1936 represent a figure of more than 10,000 seedlings per acre. Similarly, in 1937 the 2,137 seedlings found on 1391 quadrats gave an average of approximately 3000 per acre. Considering a cache, or a single seedling, as a "spot", there was an average of 286 "spots" per acre this year. During both years after seeding a considerable, but unknown, number of seedlings occurred two or three in a "spot", where more than one seed was dropped in the hole by the seeding tool.

The 537 acre, cut-over Jeffrey-Ponderosa pine pasture is sampled by two sets of quadrats. One set of 827 quadrats covering the entire pasture is located systematically by the gridiron method, $2\frac{1}{2}$ chains distance between quadrats. On each of these an area of $5/8$ milacre was examined for seedlings this year. The other set of 849 quadrats, sampling only the north half of the pasture, is located by the random-block method, two quadrats at

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random in each $2\frac{1}{2}$ by $2\frac{1}{2}$ chain block. Observations were made on $\frac{1}{2}$ mileacre on each of these. The average "catch" in both seedlings and spots per acre for the two sets of quadrats is summarized in the following table:

	North half (269 acres)		South half (269 acres)		Entire past. (538 acres)	
	Systematic	Random	Systematic	Sys.	Sys. & Ran. *	
Seedlings per acre	404	548	688	588		573
"Spots" per acre	238	280	308	271		286

*Weighed by acreages

Seedlings were found only on 201 of the 1678 quadrats, or only 12 percent of the quadrats contained new seedlings. This helps illustrate the distribution of seedlings in the pasture and helps describe the data on which the averages of stand per acre are based. The data are summarized below:

	North half		South half		Entire pasture	
	Sys	Ran	Sys.	Sys.	Sys.	Sys.
No. of quadrats on which seedlings found.	54	91	56			110
Percent of total quadrats	12.2	10.7	14.6			12.5
Av. number of seedlings on quadrats where found.	2.1	2.5	2.8			2.5
Av. number of "spots" on quadrats where found.	1.2	1.3	1.5			1.3

Approximately two thirds of the total number of seedlings were in rodent caches, indicating capacity of rodent population to remove the seeds which fall. Over 1/3 of the total "spots" were made up by caches. Also, many of the individual seedlings may have represented the only seedling germinating from a cache of seed.

	North half		South half	Entire Past
	Sys.	Ran.	Sys.	Sys.
Percent of total seedlings occurring in caches	59.8	65.2	72.6	67.4
Percent of total "spots" made up by caches	32.7	32.7	41.9	37.1

Approximately 95 per cent of the seedlings, including caches were within tree-length of a tree which produced cones last year. Most of the ground surface of the pasture would fall within such limits. Of the few seedlings in the open, roughly 80 per cent, were in rodent caches.

From this examination it was found that the total germination on skid trails is approximately the same as the per cent of quadrats occurring on skid trails. A previous classification of ground cover on all the systematic quadrats in the pasture showed 20 per cent of the quadrats on skid trails. The percent of germination found this year on skid trails on the systematic quadrats fluctuates around this figure. The data are summarized below:

	North half		South half	Entire pasture
	Sys.	Ran.	Sys.	Sys.
Percent of seedlings on skid trails	18.7	32.6	15.1	17.2
Percent of "spots" on skid trails	22.7	29.3	24.4	24.3
