

The Ecology of Sagebrush on the Glacial Outwash Plains
in Grand Teton National Park

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In the summer of 1970, work was continued into some ecological aspects of the sagebrush community which occurs on the glacial outwash plains of Grand Teton National Park. Twenty one sites were selected so that they covered the possible differences in vegetation which may occur. At each site, over an area of 100 x 200 feet, 40 random one-foot square quadrats were placed. For each quadrat was recorded presence or absence of annuals by species, % cover of grasses by species, % cover of Eriogonum umbellatum Torr. var. subalpinum (Greene) M. E. Jones, % bare soil, % covered by pocket gopher mounds, numbers or presence of perennial herbs by species, and number of sagebrush seedlings. Also at 13 of the 21 sites, ten transects of 100 foot length were laid out. The transects were used to measure cover due to low sagebrush (Artemisia arbuscula Nutt.), big sagebrush (A. tridentata Nutt.), other shrubs, Eriogonum umbellatum Torr. var. subalpinum (Greene) M. E. Jones, bare soil, and pocket gopher mounds. At four different sites ten quadrats of one-foot square each were placed selectively on pocket gopher mounds. For each quadrat was recorded number of sagebrush seedlings, % pocket gopher mound, and numbers of other species growing on or through the pocket gopher mound. Analysis of data has been completed only on the pocket gopher mound-sagebrush seedling relationship.

On casual observation of pocket gopher mounds in the big sagebrush community on Antelope Flats, there seems to be a very close relationship between sagebrush seedling establishment and pocket gopher mounds. This appears to be borne out with data taken from the quadrat placement on pocket gopher mounds. This data is in Table 1.

TABLE 1. The Average Number of Sagebrush Seedlings Per Square Foot of Pocket Gopher Mound at Four Selected Sites.

<u>Site</u>	<u>No. of Seedlings Per Sq. Ft.</u>
Big Sagebrush Antelope Flats 1	39.25
Antelope Flats 2	14.94
Big and Low Sagebrush	0.702
Low Sagebrush	0.0

In looking at the data taken on the 21 which were not selectively located, the overall importance of pocket gopher mounds in sagebrush seedling establishment changes. See Table 2 for this data.

TABLE 2. The Average Number of Sagebrush Seedlings Per Square Foot of Pocket Gopher Mound and Per Square Foot of Area not Pocket Gopher Mound at the 21 Sites.

<u>Category</u>	<u>No. of Seedlings Per Sq. Ft. of Mound</u>	<u>No. of Seedlings Per Sq. Ft. not Mound</u>
Big Sagebrush (12 sites)	7.544	0.252
Big Sagebrush & Bitterbrush (3 sites)	5.031	0.0086
Big and Low Sagebrush (3 sites)	8.275	0.495
Low Sagebrush (3 sites)	0.0	0.0604

The t-test was used to compare the average number of sagebrush seedlings per square foot on and not on pocket gopher mounds. In no category, at the 95% significance level, were there significantly more sagebrush seedlings on than not on pocket gopher mounds, and vice versa.

I think that a study on sagebrush seedling survival is necessary in order to determine if pocket gopher mounds are significant in sagebrush establishment on the glacial outwash plains of Grand Teton National Park. All of the sagebrush seedlings sampled were just starting in the 1970 season. Their survival into succeeding seasons could give the necessary data to better show the sagebrush establishment-pocket gopher mound relationship.

Analysis on the remaining data collected is still in progress.

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