

Sagebrush Ecological Study: To Determine a Method to
Quantify and Compare Cambial Arcs of Sagebrush Plants

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The sagebrush occupy positions on glacial outwash plains. Each plain promotes a very homogeneous appearing stand, but the stands differ as whole units when compared to neighboring outwashes which are of a different texture, elevation and/or age. My project was to work out a way to quantify and compare the cambial arcs of sagebrush samples taken in a more extensive study on the ecology of sagebrush on these glacial outwash plains being conducted by Darold Sabinske.

An initial period of three weeks was spent becoming familiar with the sagebrush vegetation within the Park. Twenty-two sagebrush stands were selected for study areas by using a modification of the random numbers table. This would allow a total and unbiased study of the representative sagebrush within the Park. The study areas were marked off in 200 ft. x 100 ft. plots; then a 100 ft. transect was made adjacent to each plot for sampling of plants for my study in order not to disturb plants within the study area. All sagebrush plants touched by the 100 ft. transect were collected. I recorded species, height, seedlings or young embryos, and later computed age and percent cambial arc. This was done for all 22 stands.

The greatest difference in stands is due to the different species found. When like species are compared the stands are much more alike. Perhaps valid comparison can come from cambial measurement (viability) and the numbers of seedlings.

The stands encountered were either all Artemisia tridentata or a mixture of Artemisia arbuscula, A. tridentata or Purshia tridentata. Although the stands might vary a great deal in their average heights, they seemed to be quite homogeneous in age. The greatest variation came from the differences in the amount of viable members. This measure is the percent of the cambium that is still viable.

Ferguson (1964) points out the anatomy of sagebrush in his book, Annual Rings in Big Sagebrush. When a plant is young it has cambium surrounding the stem. When this plant becomes overly mature the stem splits at the pith giving rise to sagebrush that is octopus-like in having several stalks arising from one root system. Naturally the cambial tissue is only on the outer arc of this stem which is now like a piece of pie. I noted that in seemingly more severe areas only a small portion of this arc would be viable while in a favorable area the plants would not reach the overly mature stage or would have complete cambial arcs. I am now working on quantifying this aspect and will make my results available as soon as possible.

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