The dominant vegetation above 1000 feet is Artemisia-Agropyron association (Daubenmire, 1970). The physiognomy of this association is generally similar throughout the elevational gradient, but the plants are shorter and more widely spaced on the stony soils of exposed ridges and at the highest elevation. Sagebrush is absent where fires have

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The sagebrush vole (Lagurus curtatus pauperrimus) is a small rodent that occurs in the most xeric habitats occupied by members of the subfamily Microtinae in Washington State. The species presents an interesting problem regarding its ecological distribution in Washington because the holotype was collected in Walla Walla County in 1860 (Cooper, 1868), but no specimens have been reported there or in bordering counties since that time. James and Booth (1954) reported information on the distribution of Lagurus but they did not record specimens for Columbia, Franklin, or Benton counties, which border Walla Walla County. They speculated that Lagurus might occur in Benton County, but trapping was not conducted because the prime habitat was located within the U. S. Atomic Energy Commission’s Hanford Reservation.

Intensive small mammal trapping conducted on the Hanford Reservation since 1966 has confirmed the presence of Lagurus curtatus in Benton County, Washington. Locations on the Reservation that have been sampled for small mammals and the distribution of captures are shown in Fig. 1. Table 1 summarizes the elevational distribution of the sagebrush vole along with a brief description of the habitats. The numbers of captures in Fig. 1 and Table 1 should be interpreted only as indices to relative abundance since the trapping effort was not uniform for all sites. The summary includes trapping information from Kritzman (1970).

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ECOLOGICAL DISTRIBUTION OF SAGEBRUSH VOLES, LAGURUS CURTATUS, IN SOUTH-CENTRAL WASHINGTON

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Fig. 1.—Small-mammal trapping sites (open circles) on the U. S. Atomic Energy Commission's Hanford Reservation, Benton County, Washington. Numbers in circles indicate the number of *Lagurus curtatus* trapped at that site. The town of Richland is shown as a geographic reference point. Contour intervals are 500 feet.
Table 1.—Elevational distribution of Lagurus curtatus trapped in Benton County, Washington, 1966–1971.

<table>
<thead>
<tr>
<th>Vegetation type and elevation (feet)</th>
<th>Number trapped</th>
<th>Soil types and climatic conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artemisia-Agropyron</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥3000</td>
<td>64</td>
<td>Silt-loams; climate cooler and more moist with increasing elevation.</td>
</tr>
<tr>
<td>2000–2999</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>1000–1999</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>Artemisia-Poa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;1000</td>
<td>4</td>
<td>Sandy or sandy-loams; mean annual temperature 53.1°; precipitation averaged 6.25 inches for 58 years of records.</td>
</tr>
<tr>
<td>Total captures</td>
<td>96</td>
<td></td>
</tr>
</tbody>
</table>

occurred in past years. Two examples of sites where Lagurus were taken are shown in Fig. 2. The soils are silt-loams, usually with a meter or more of soil over basalt (Hajek, 1966). At intermediate and higher elevations Lagurus curtatus coexists with Peromyscus maniculatus, Perognathus parvus, and Spermophilus townsendii.

In eastern Washington, Rickard (1960) captured Lagurus in the Artemisia-Agropyron association but not in the Agropyron spicatum-Poa secunda association. He suggested that the distribution of Lagurus might be restricted to the occurrence of Artemisia tridentata. On the Hanford Reservation, Lagurus was trapped occasionally on old burn sites dominated by Agropyron spicatum.

Below 1000 feet, where the soils are sandy-loams (Hajek, op. cit.), the Artemisia-Poa association is the most common vegetation type. Average temperatures at this elevation are more extreme than on the higher slopes (Rickard, 1971), and precipitation can be half that of higher elevations. The average annual precipitation measured at 720 feet is 15.5 centimeters. Cheatgrass, Bromus tectorum, and other introduced annual weeds replace Poa on many sites and provide food for Perognathus parvus, which is the most abundant mammal.

Hall (1928) reported that most known specimens of Lagurus had been taken in scattered sagebrush having a uniform height of about 2½ feet where the lower branches are near the ground. No Lagurus had been taken in areas where the sagebrush had a markedly different growth form. Hall mentioned Lagurus curtatus pauperrimus as the only exception to this observation and cited Bailey (1900) and Cooper (1868), who reported its habitat as high prairie or shortgrass plains. Hall considered sagebrush an important food item for Lagurus, which would partly explain its affinity for stands of Artemisia where the leaves, twigs, and bark would be closer to the surface of the ground. Moore (1943) collected Lagurus curtatus pauperrimus in eastern Oregon where Artemisia tridentata and A. nova formed the predominant cover.

Although the greatest trapping effort on the Hanford Reservation between 1966–1971 was sustained in the Artemisia-Poa association, only four Lagurus were taken. I suggest that the distribution of Lagurus curtatus is related to the occurrence of Artemisia tridentata when the sagebrush grows in association with large bunchgrasses such as Agropyron.

Fig. 2.—Photographs of two trapping sites at different elevations where Lagurus curtatus were captured. The reference staff is marked in decimeters. Note that these sites have Artemisia tridentata and Agropyron spicatum.
spicatum; the latter being an indicator of more mesic conditions than occur at lower elevations where Poa secunda is the dominant perennial grass. Moore (1943) listed Poa secunda, Collinsia parviflora, Sitanion hystrix, and other grasses and forbs as important food items. He found little evidence indicating that sagebrush was fed upon.

The occurrence of Lagurus curtatus in Benton County, Washington, does not explain the enigma of why sagebrush voles have not been captured in the area surrounding the type locality in adjacent Walla Walla County. Perhaps Lagurus will be trapped in the higher elevations of the Rattlesnake and Horse Heaven hills where they extend into Walla Walla County. However, the Columbia River, which has been an effective barrier to the free movements of other small mammals (Dalquest, 1948), breaks the continuity of these ridges at Wallula Gap. Modern agricultural practices have greatly reduced the Lagurus habitat in Walla Walla County since 1860 and few relict populations may persist.

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LITERATURE CITED


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