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Some Aspects of Plant and Animal Distribution as Affected by Geologic Formations

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The observations on all five categories of communications shall shed some light on the differences in "carrying power" of signals and in understanding between species within an ecological web.

The species of wild ungulates selected for our proposed research are the Wapiti elk (*Cervus canadensis*), the Wyoming moose (*Alces alces*) and the bison (*Bison bison*). The animals will be observed in normal undisturbed condition and also in periods of stress and social change. Stress situations are used by us as an experimental device to reveal group structure and behaviors not readily revealed under other conditions. As a by-product of this project we expect to secure some longitudinal case histories of typical and deviate wild ungulates under observation.

Extension of the field research into the fall months will provide a definite advantage over the limited usual summer research periods by permitting the observation of the most crucial period of interaction, the ungulate mating season.

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Research conducted in the summer of 1963 was a continuation of a three year study initiated in 1961. The study areas have been described in the 1962 Biological Research Station report.

From the last of July until the end of August a total of 67 northern pocket gophers (*Thomomys talpoides*) were collected and frozen for analytical work. The flowers, leaves, stems and roots of *Agoseris*, *Lupinus*, *Achillea*, and *Erigeron* were collected and frozen for laboratory analysis. Five quarts of soil were collected on each area for soil analysis and plant growth experiments. Four rock samples were taken from each area to determine elemental composition of the parent rock strata. The comparative results of pocket gopher mound census for 1962-63 are given in the following table.

<table>
<thead>
<tr>
<th>Area and Formation</th>
<th>1962 Gophers per Acre</th>
<th>1963 Gophers per Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Huckleberry Ridge</td>
<td>149</td>
<td>85</td>
</tr>
<tr>
<td>Huckleberry Exclosure (Cloverly-Morrison)</td>
<td>150</td>
<td>67</td>
</tr>
<tr>
<td>Big Game Ridge</td>
<td>102</td>
<td>101</td>
</tr>
<tr>
<td>Big Game Exclosure (Harebell)</td>
<td>56</td>
<td>90</td>
</tr>
<tr>
<td>Two Ocean Plateau (Wiggins)</td>
<td>104</td>
<td>96</td>
</tr>
<tr>
<td>Pitchstone Plateau (Rhyolite)</td>
<td>20</td>
<td>22</td>
</tr>
<tr>
<td>Moran (Glacial-Alluvial)</td>
<td>131</td>
<td>119</td>
</tr>
</tbody>
</table>

Research will be continued at the University of Wyoming concerning radiation and isotope accumulation, fat analysis, true element analysis, and chromatography analysis of various plant and animal tissues.