

Technical Report No. 36  
COMPREHENSIVE NETWORK SITE DESCRIPTION  
ALE

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GRASSLANDS BIOME  
U. S. International Biological Program

I. *Site name:* ALE

The Arid Land Ecology project land and facilities are owned by the U. S. Atomic Energy Commission and operated by the Pacific Northwest Laboratories, Battelle Memorial Institute, Richland, Washington.

II. *Location*

The project is located in southeastern Washington north and west of the confluence of the Yakima and Columbia Rivers, Benton County. The project can be reached via State Highway 240, ten miles NW of Richland. Access is restricted to personnel who have worked on research related objectives. Vehicular travel is limited to established roadways unless special permission is granted. Contact Dr. T. P. O'Farrell or Dr. William Rickard, Battelle-Northwest, Terrestrial Ecology Section, Richland, Washington 99352, phone 509-942-1111-X 25314, for arrangements to enter.

III. *Size and elevation*

The total land area involved is approximately 120 sq. miles, all in one piece, and is completely fenced. There are no public roadways through the area. Aerial surveillance is maintained against trespassing by contract with neighboring ranchers. Two abandoned cultivated fields each of several hundred acres in area are located in the Snively Basin (1700 ft elevation), and these represent 25 years of secondary succession in the virtual absence of grazing livestock.

IV. *Vegetation type*

The grassland appearance of the Snively Basin (ten sq. miles)

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is typical of xeric bunchgrasses, discrete clumps 2-3/m<sup>2</sup>, basal diameter 1-3 diam, with culms 4-6 diam tall. Prior to 1957 a sparse stand of big sagebrush grew superimposed over the bunchgrasses, but these were killed by an extensive range fire in the summer of 1957. The important plant species are shown below:

<u>Bunchgrass Areas</u>	<u>Old Field</u>
<i>Agropyron spicatum</i> Bluebunch wheatgrass	<i>Bromus tectorum</i> Cheatgrass
<i>Stipa comata</i> Needle and thread grass	<i>Tragopogon dubius</i> Yellow salsify
<i>S. thurberiana</i> Thurber's needle grass	<i>Microseris lanciniata</i> Cutleaf microseris
<i>Poa secunda</i> Sandberg bluegrass	<i>Sisymbrium altissium</i> Tumble mustard

Soil algae, fungi, lichens and mosses are not well known to us.

(Dr. S. Shushan and Mr. H. Jones have made some lichen collections from project ALE).

The common small mammals are pocket gophers (*Thomomys* sp.), pocket mice (*Perognathus parvus*), and deer mice (*Peromyscus maniculatus*). The common birds are meadow lark and horned lark. Sage grouse are present but scarce. Chuckars are locally abundant. Of the raptors the Swainson's hawk (summer) and marsh hawk (winter) are most often seen. The common reptile is the gopher snake, *Pituophis catenifer*.

A small group of mule deer utilizes the old fields especially in the autumn. Coyotes and bobcats are present but in unknown numbers.

The most abundant ground dwelling beetles are *Stenomorpha puncticollis*, *Pelecyporus densicollis* and *Eleodes hispilabris* (Tenebrionidae) and *Calosoma luxatum* (Carabidae). A large number of insect species are associated with the foliage. Dr. Wyatt Cone, Wash. State Univ. Entomologist has a good collection of insects from project ALE made over the past several years.

#### V. Climate

The climate of the ALE project is characterized by a hot, dry summer and a cool, moist winter. Annual precipitation at 700 ft above sea level is slightly less than seven inches. At elevations of 1700 ft annual precipitation is probably about ten inches. Most of the precipitation falls during winter, with snow accumulating to depths of several inches and may persist for several weeks.

Summer temperatures are hot. Maximum air temperatures of 110°F have been recorded in July. Winter temperature minimums range to -20°F, but mostly are much milder.

The nearest recording weather station is the Pacific Northwest Laboratory Meteorology Station located 25 miles NW of Richland and eight miles east of Snively Basin at 733 ft above sea level. Records have been maintained here for more than 20 years and include wind speed and direction, ppt, air and soil temperatures, incoming solar radiation, and relative humidity.

#### VI. Soils

The soils of the ALE project are variable. Ridge crests and steep slopes are characteristically stony (basalt outcrops). The

gentle slopes and valley bottoms consist of glaciofluvial and aeolian materials essentially free from stones in the upper meter of profile. Organic matter is low, i.e., less than 1% in the surface layer. Soil pH is about 6.8 in the surface diam and increased to more than eight at one meter in depth. Calcium and magnesium dominate the exchangeable cations.

# VII. *Physical facilities*

a. Field Laboratory (Rattlesnake Springs), 20 x 40 ft metal building. Desks, telephone, well water, toilet, heat, swamp cooler, electricity on line, drying oven, balances, soil sampling and hydrology equipment, etc.

b. Main Laboratory (100-F Area)

Animal quarters, growth chamber rooms, office space, chemical analysis, counting facilities for radioisotopes, etc.

c. On Site Personnel

<u>Name</u>	<u>Telephone Extension</u>
Mr. J. F. Cline	2-5626
Dr. L. L. Eberhardt	2-5126
Dr. R. O. Gilbert	--
Mr. J. D. Hedlund	2-5623
Mr. W. T. Hinds	2-7561
Dr. T. P. O'Farrell	2-5314
Dr. K. R. Price	2-5631
Dr. W. H. Rickard	2-5126

d. Off Site Facilities

Motels, camping and trailer space are available in Richland.

At this time no dormitory space is available on the ALE project.

However, there is space that could be developed for this.

#### VIII. *Other studies*

An aerial photomosaic is available for much of the area, but some parts are not adequately covered.

#### IX. *Publications*

Hines, W. T. and W. H. Rickard. 1968. Soil temperatures near a desert steppe shrub. *Northwest Sci.* 42:5-13.

O'Farrell, T. P. 1969. Effects of acute ionizing radiation on selected Pacific Northwest rodents, p. 157-165. *In* D. J. Nelson and F. C. Evans [ed.] Symposium on radioecology, Ann Arbor, Michigan. USAEC Rep. CONF-670503.

Rickard, W. H. 1962. Comparison of annual harvest yields in an arctic and a semidesert plant community. *Ecology* 43: 770-771.

Rickard, W. H. 1965a. Sodium and potassium accumulation by greasewood and hopsage leaves. *Bot. Gaz.* 126:116-119.

Rickard, W. H. 1965b. The influence of greasewood on soil moisture penetration and soil chemistry. *Northwest Sci.* 39:36-42.

Rickard, W. H. 1967. Seasonal soil moisture patterns in adjacent greasewood and sagebrush stands. *Ecology* 48:1034-1038.

Rickard, W. H. 1968. Field observations on the altitudinal distribution of the side-blotched lizard. *Northwest Sci.* 42:161-164.