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AN ECOLOGICAL DESCRIPTION OF AN ISOLATED

PINON PINE GROVE

by

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B.S., Northwest Missouri State College, 1943

A Thesis submitted to the Faculty of the Graduate  
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Department of Biology

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This Thesis for the M. S. degree by

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Department of

Biology

by

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Wright, Charles William (M. S., Biology)

An Ecological Description of an Isolated Pinon Pine Grove

Thesis directed by Prof. Edna L. Johnson

The northeastern-most stand of pinon pine in the United States occurs on a hogback twenty miles northwest of Ft. Collins, Colorado on U. S. Highway 287. This grove is 150 miles north of the northern-most continuous pinon stand east of the continental divide.

A comparative study of the temperatures, precipitation, and length of growing season of regions in Colorado where pinons grow indicate that the climatic conditions in the Ft. Collins region are suitable for the natural growth of pinons. The pinons are growing only in rock crevices and coarse well-drained soil which is similar to that of other pinon stands.

From the forty-three quadrats studied the following data were compiled: (1) of the 42.2 per cent crown cover of the grove, 39 per cent is pinon and 3.25 per cent juniper; (2) frequency of the different species is pinons 86 per cent; junipers 13.5 per cent, ponderosa pine 0.2 per cent; from borings the average age of the pinons was estimated to be 107 years; the diameters of the pinons at the two foot level averaged seven inches, and the average estimated height is thirteen feet, four inches.

The hypothesis that the grove resulted from an accidental or intentional planting that took place approximately 400 years ago is supported by the evidence derived from the plotting of the age groups. This study indicated that the grove spread from a small and old stand in the northwest corner of the grove.

This abstract of about 250 words is approved as to form and content. I recommend its publication.

Signed Elna P. Johnson  
Instructor in charge of dissertation

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## INTRODUCTION

The northeastern-most stand of pinon pine, Pinus edulis Engelm., in the United States has been the subject of scientific and local interest for many years. This pinon stand is located on the Owl Canyon hogback approximately twenty miles northeast of Ft. Collins, Colorado (Figs. 1 and 2). This is 150 miles north of the last continuous stand east of the Continental Divide. That stand is in the Colorado Springs area.

The origin of the grove near Ft. Collins is controversial. There are three hypotheses which attempt to explain it. The first hypothesis is that the grove is a relict stand from an arm of pinons that formerly extended northward from the Colorado Springs area. According to this hypothesis the trees in between have died out leaving the stand isolated. The second hypothesis is that the range of pinons is expanding and that the grove is an outpost of this expansion. The third hypothesis, suggested by Hay (7), is that the stand of pinons resulted from an accidental or intentional planting by the Indians of the area, who traded with their southern neighbors for the pinon nuts. No scientific data have been collected which would give evidence to support these hypotheses. Therefore, it has been difficult to evaluate their relative merits. This study, therefore, was to collect information which would give an ecological description of the grove. From

Fig. 1. Aerial photograph of hogback showing the main grove of the pinons and junipers. The inked-in area shows where the quarrying operations have been extended since the photograph was taken. The grove has been divided into subdivisions which are referred to by their numbers. The treeless areas in C1, L2 and L3 are covered with a good stand of grass.

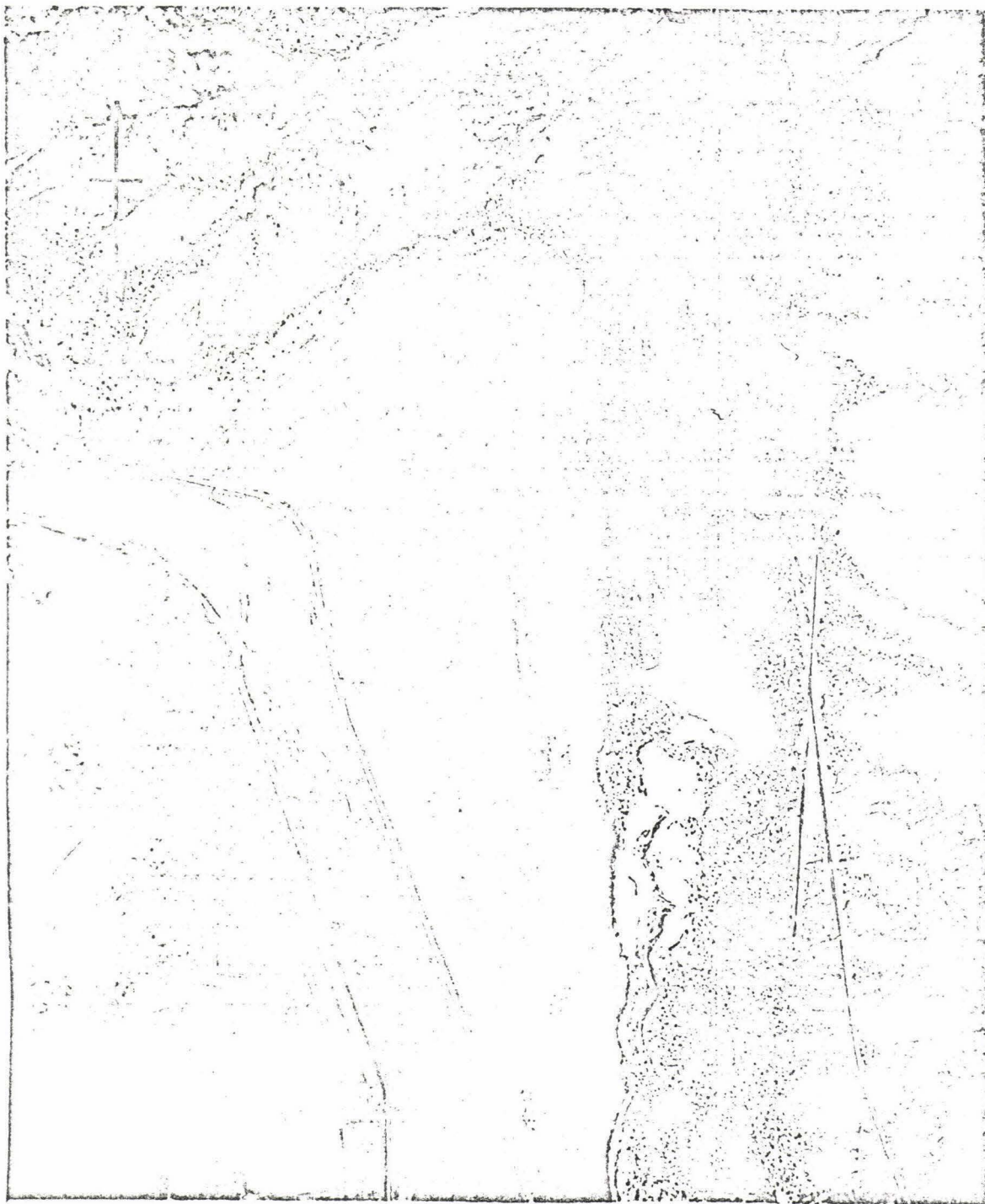




Fig. 2. A portion of an aerial photograph of the Owl Canyon hogback showing the pinon and juniper stand. The small black dots on the hog back represent the crowns of the pinons and junipers.

the data collected a logical explanation as to the origin of the grove may then be presented. This information includes the following: distribution of age groups of pinons; crown cover of species, expressed in per cent; frequency of species expressed in per cent; diameters at the height of two feet from the ground; and estimated height of the pinons.

The pinon pine, Pinus edulis Engelm. is a low, round-topped tree branched from near the base, four to six meters in height. The leaves, which are mostly in pairs (rarely in threes) are three to five centimeters long, rigid, curved or nearly straight, and spreading. Pinon cones are sessile, subglobose, and about five centimeters long. The tips of the cone scales are thick, truncated, raised-pyramidal without awns or prickles. The seeds are large, brown, wingless, and edible.

In Colorado the pinons are locally abundant on the western slope of the Rocky Mountains. On the eastern slope they are found in abundance in Las Animas and Huerfano counties in the south and from there extend northward along the Arkansas River drainage into Chaffee, Fremont, and El Paso Counties, reaching the northernmost continuous stand near Colorado Springs. Anderson (1) reports pinons growing on the "breaks" of Carrizo Creek in Baca County. The pinons thrive at general elevations of 5,000 to 7,500 feet, but they have been observed four

miles west of Mayville, in Chaffee County, Colorado, at approximately 9,000 feet. Emerson (5) states that the normal altitudinal distribution places the pinon in a position between the montane forest and the short grass plains. They appear most often in rocky places such as on the edges of mesas. The grove studied is located on a rocky hogback extending from approximately 5,800 feet altitude up to the highest point, which is 6,245 feet. The main part of the hogback slopes to the east, but in the northern part of the stand it slopes at an angle of about  $45^{\circ}$  to the north. The west boundary consists of a sheer cliff which varies from a few feet to perhaps fifty feet in height. (See Figure 3)

The pinons under investigation are growing only in rock crevices and coarse well-drained soil. Grasses and herbs are the only plants growing on the fine-textured soils of this isolated grove. In northwest New Mexico Emerson (5) found that pinon-juniper associations occur on many types of soils, which differ as to character and geological origin. He also found pinons growing in fine, compact adobe soils, but they were usually found in rocky places.

The root systems of the pinon and juniper are described by Emerson (5) as types which will readily grow in either rock crevices or in fine soil. In areas where the rocks do not interfere with the development of the root

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Fig. 3. Distribution of pinons in the State of Colorado Sweet and Spencer (9)

COLORADO OUTLINE MAP  
 University of Colorado Museum

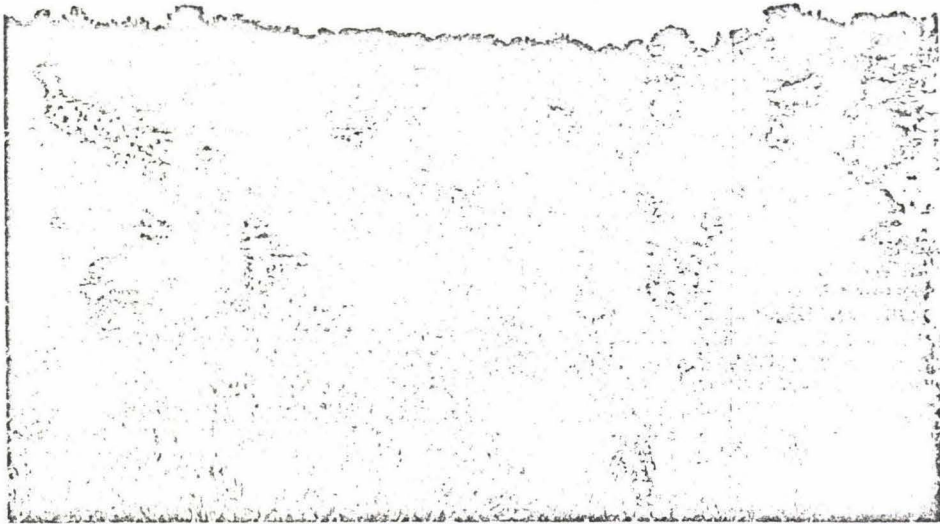
Contour interval 2000 feet from 5000 to 11000 feet.  
 13000 foot contours not shown.

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system, two distinct sets of roots are formed. The lower sets, which extend downward until they strike bedrock and then spread out along the rock surface, have practically no competition for water. The upper roots spread horizontally and are often from fifteen to thirty or forty centimeters below the surface of the soil. These roots are in direct competition with grass roots.

Emerson (5) suggests that the pinon-juniper association can not become established when in competition with grasses. Cottle (3) found that in Texas the woody plants, including pinons, could invade only where rocks or heavy grazing prevented full development of the grasslands. According to Phillips (9) reproduction is limited by: the relative frequency of seed crops; unfavorable climatic conditions with pinons being less resistant to unfavorable ecological conditions than the junipers; infertility of seeds, which is usually five to twenty per cent, but may be as high as eighty-five per cent; rapidity with which seed loses its viability; and loss of seeds eaten by rodents, birds, and man.

Phillips (9) observed that during the seedling stage the pinons grew better in the shade, but that later the seedlings grew well in the open and that the pinon is one of the most shade-intolerant of trees. Thus the groves have a characteristic orchard-like appearance (see Figs. 4 and 5). Crown cover in a pinon grove is usually about sixty per cent.



Figs. 4 and 5. The orchard-like appearance of the pinion grove showing the absence of a dense undergrowth is shown in these illustrations.

## DESCRIPTION OF AREA

### Topography and Geology

The main grove of pinon is growing on a hogback which, according to Davis (4), is of the Ingleside formation. The Ingleside formation is a distinct ridge-former, and its exposures usually occur as cap rocks for mesas and buttes. The Owl Canyon hogback was formed by an east-west pressure which caused a tilting to the east in the area, which accounts for the east-facing slope. At the time of tilting, there was also a strong north-south pressure which caused a shearing action which accounts for the sharp curve of the hogback to the west forming the north-facing slope.

There are three major types of lithology in this locality. There are massive sandstones, cross-bedded sandstones, and limestones. The following, according to Davis (4) is a geological cross section of Owl Canyon, south of the main grove of pinons:

- 29' Fine soft red cross-bedded sandstone.
- 20' Light pink crystalline limestone.
- 6" Dark red shale.
- 22' Gray limestone, very pure.
- 14' Hard red, very fine, thick plated cross-bedded sandstone.
- 18' Pinkish limestone.
- 12' Pinkish-red soft massive sandstone.
- 9' Fine-grained massive red sandstone showing delatatic cross-bedding.
- 6' Hard pink cross-bedded sandstone.

- 5' Pink limestone, slightly crystalline.
- 9' Light sandy limestone.
- 8' Very hard pink cross-bedded sandstone.
- 10' Very fine red cross-bedded sandstone, poorly consolidated.
- Fountain Arkose.

In the northern part of the hogback the top layer of fine, soft, red, cross-bedded sandstone and the 6 inch layer of dark red shale have disappeared, but the composition of the hogback remains essentially the same from Owl Canyon northward.

#### Soil

In a soil survey of the Ft. Collins area made by the Bureau of Chemistry and Soils of the United States Department of Agriculture, Sweet and Spencer (9) describe the area as being strips of mountainous slopes and their borders, with the main body of smooth land that is present being broken by a number of hills and ridges. Bare, rocky slopes, rocky ledges, and rocks being either strewn or embedded in the soil are common. These authors conclude that wherever soil has developed, it is very shallow, supporting a sparse growth of grass and, locally, small, hardy shrubs which form a pasture for livestock. On the hogback where the main grove of the pinons is located, there are only a few patches of well developed soil. The pinons do not grow in these areas, but are found growing in cracks in limestone or sandstone, or in areas where the surface contains large, broken pieces of rock. There is

an abrupt demarkation between the grasses which grow on the well developed soil and the trees which grow on the rocks. (Figs. 6, 7 and 8). Photographs of the grassy plots which are located in the subdivisions L1, L2, and C1 show this clearly (Fig. 1). These grassy plots have a soil depth two to two and one half feet in thickness as may be seen by examination of the well developed soil profile shown in Figure 6. The stand of grasses thins toward the outer margins of the grassy areas (Figs. 7 and 8).

Along the eastern and northern boundaries of the grove, fingers of soil extend up the hogback from the plains, supporting a prairie community of grasses and herbs. A large amount of rubble consisting of a mixture of limestone and sandstone has accumulated at the base of the cliff, on the west side of the grove. This talus supports an open stand of young trees (Fig. 9).

#### Climate

The climates of the Rangely, Colorado Springs, Mesa Verde, and Fort Collins areas were compared to determine whether or not the climatic conditions could be a limiting factor in the spread of pinons in the Ft. Collins area. The length of the growing seasons, maximum and minimum temperatures, and annual precipitation of the four regions were compared. In the Ft. Collins area the average date

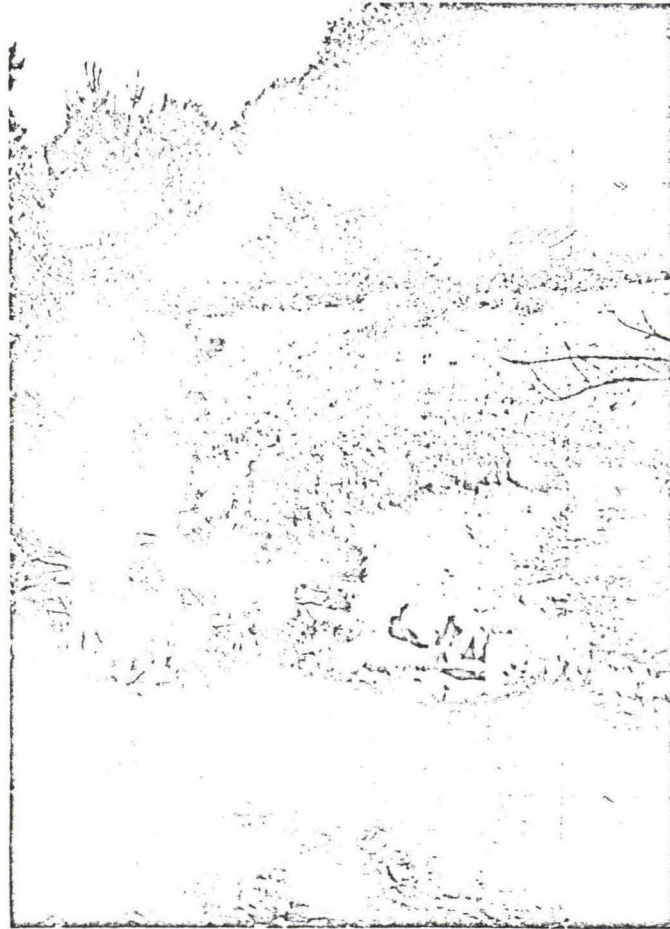


Fig. 6. This eroded cross section exposing a well developed soil profile, overlies a solid rock stratum. Note the growth of grasses on the soil and the stand of pinons on the rock.

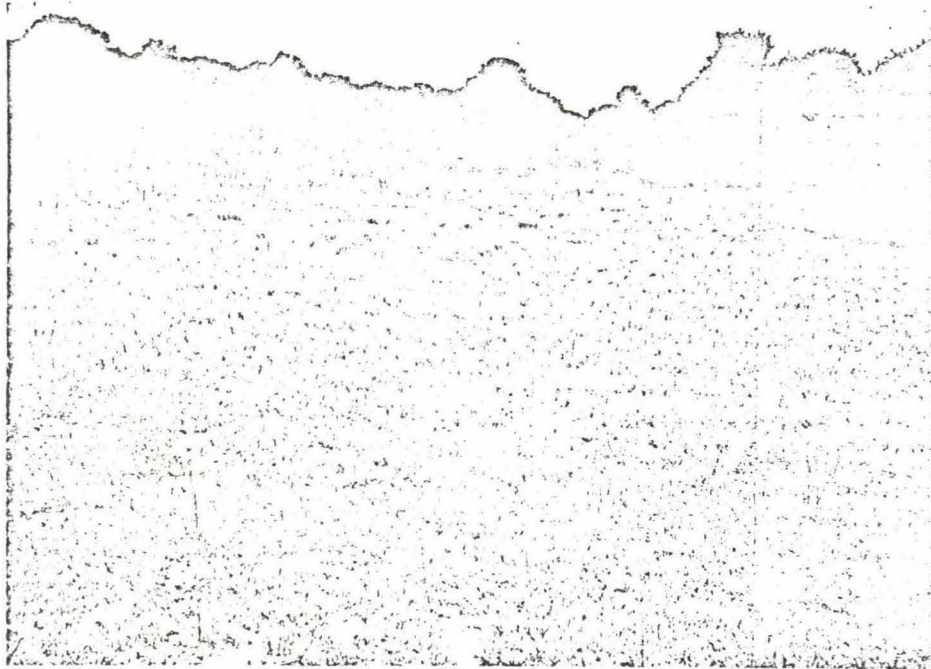


Fig. 7. A well developed stand of grass in subdivision C1.

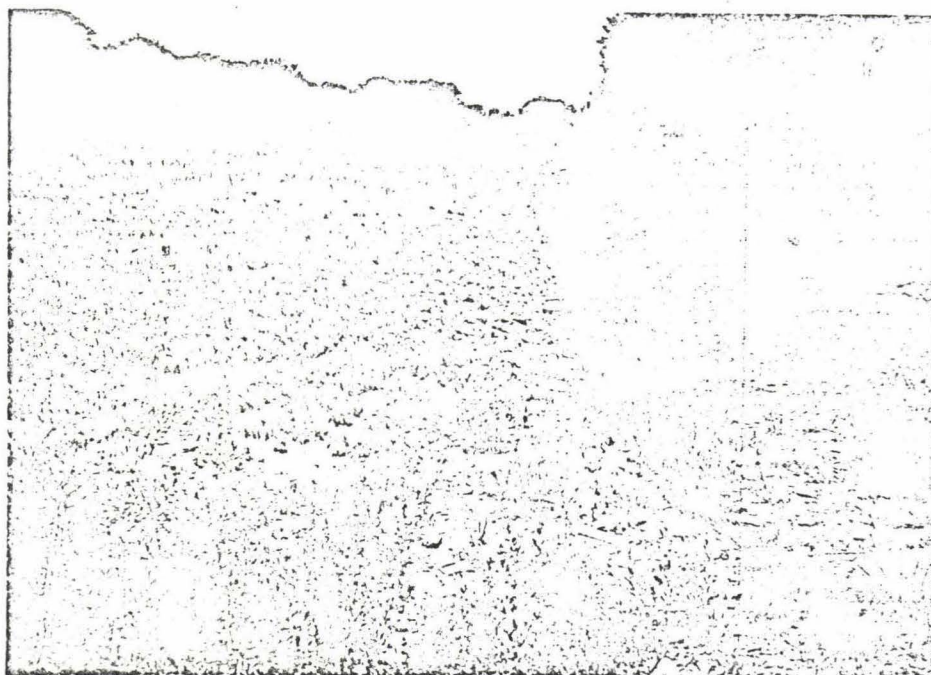


Fig. 8. Tension zone between grass and pinon-juniper association in subdivision C1.



Fig. 9. Young pinons and junipers growing on the rubble at the base of the cliff. The rubble is too rocky to support a growth of grass.

of the last killing frost in spring is May 7, and the average date of the first killing frost in fall is September 29, giving a growing season averaging 145 days. In comparison, the lengths of the growing seasons of other regions where pinions grow are as follows: Colorado Springs, 148 days; Mesa Verde, 167 days; and Rangely, 111 days. This comparison of the lengths of growing seasons indicates that the growing season in the Ft. Collins area is about the average for the other regions where pinons grow.

A comparison of the average temperature for the months of January and July and the average maximum and minimum temperatures in four areas in Colorado where pinons grow is given in Table I. These data show the maximum and minimum temperatures of the Ft. Collins area are about the same as in the Rangely area. The maximum and minimum temperatures in the four regions are: Ft. Collins 102°F. maximum, -38°F. minimum; Rangely 100°F. maximum, -37°F. minimum; Mesa Verde 102°F. maximum, -15°F. minimum; Colorado Springs 98°F. maximum, -27°F. minimum. Table II summarizes temperatures at Ft. Collins with the mean, absolute maximum, and absolute minimum for each month. The coldest month in the Ft. Collins area is January with a mean of 26.2°F. and the warmest is July with a mean of 68°F.

Table I. Comparison of average temperatures of four regions where pinons grow in Colorado. Data from Gittings (5)

Station	Temperature, °F			Maximum	Minimum
	Elevation in feet	January average	July average		
Colorado Springs	5000	34.3	58.0	88.0	-27.0
Verde	10000	27.0	70.8	104.0	-18.0
Fort Collins	4000	37.0	66.9	100.0	-21.0
Randley	9000	17.5	60.1	101.0	-27.0

Table II Table giving summary of temperatures at Ft. Collins, Colorado. Data from Sweet and Spencer (9).

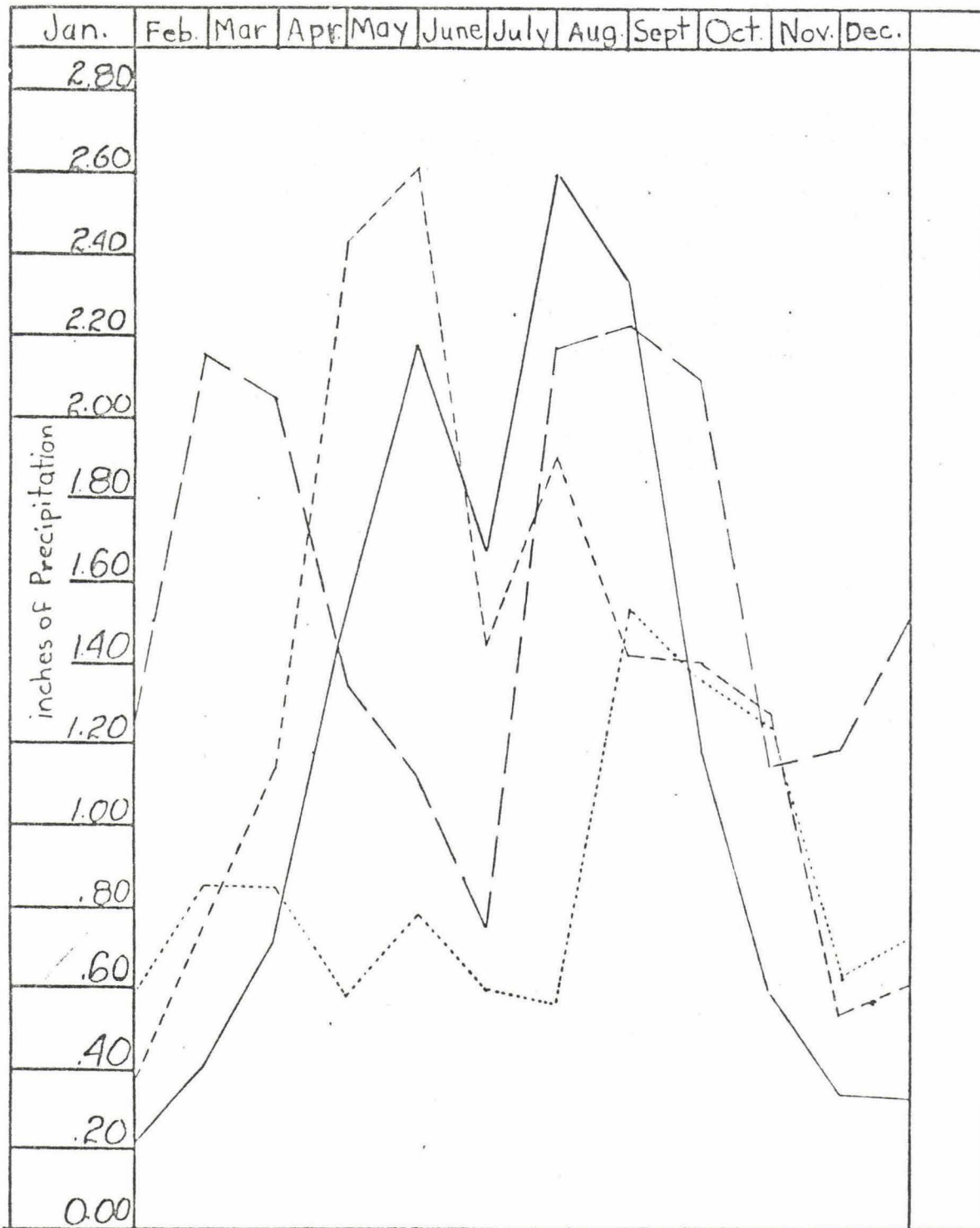
Month	Temperature, °F		
	Mean	Absolute maximum	Absolute minimum
December	27.0	77.0	-27.0
January	27.0	77.0	-41.0
February	27.0	77.0	-37.0
Winter average	27.0	77.0	-37.0
March	38.0	81.0	-27.0
April	41.0	87.0	-27.0
May	47.0	97.0	-17.0
Summer average	47.0	97.0	-17.0
June	57.0	107.0	-17.0
July	67.0	107.0	-17.0
August	57.0	100.0	-17.0
Summer average	61.0	107.0	-17.0
September	58.0	97.0	-17.0
October	49.0	87.0	-17.0
November	38.1	77.0	-17.0
Yearly average	47.0	97.0	-27.0
Yearly average	47.0	100.0	-27.0

There is an extreme range between the maximum and minimum temperatures in the Ft. Collins area, but it may be noted that the range is not greater than that found at Rangely. Therefore extremes of temperatures do not appear to prevent the expansion of the pinon grove in the Ft. Collins Area.

The average precipitation per month recorded at La Porte, Colorado Springs, Mesa Verde, and Rangely are given in Figure 10. Rangely is the driest of the four areas with an annual precipitation of 10.36 inches while Mesa Verde has the greatest precipitation with an annual average of 19.09 inches. Colorado Springs has an annual precipitation of 14.9 inches and La Porte has an annual average of 15.95 inches. The area of the isolated grove has an average precipitation greater than many areas where pinons grow in abundance, therefore precipitation is not a limiting factor.

#### Mechanical Damage

Most of the mechanical damage to the pinon grove has been through quarrying operations; additional injury has been caused by woodgatherers and through the action of snow and ice. The quarrying of the limestone on which the pinons are growing and the construction of the Colorado-Southern Railroad siding to facilitate the transportation of the limestone to the sugar refineries, are the greatest sources of mechanical damage to the pinons. An enlarged portion of a United States Department of Agriculture



Colorado Springs —————  
 Mesa Verde - - - - -  
 La Porte - - - - -  
 Rangely . . . . .

Fig. 10. Comparison of the average precipitation in four regions of Colorado where pinons grow. Data from Gittings(5)

photograph that was taken on June 28, 1938 , (Fig. 1), shows the boundary of the limestone quarry at that time. The changes in the boundary of the area made in the last eleven years are shown by the inked-in area. The quarry is shown as a large light area toward the south end of the grove.

In quarrying the limestone the trees are cleared by the use of a bull-dozer, holes are then drilled into the limestone for the placement of explosives, and the rock is blasted out. Additional damage is done to trees by the laying of pipelines which carry compressed air. Other trees are used for construction of quarry equipment.

At all points in the grove there can be seen evidences of the cutting of large limbs and entire trees for fuel. The cured pinon wood makes an excellent fire; it forms good coals and does not pop as many of the pine woods do when burning. Figures 11 and 12 show large trees that have been damaged extensively by wood gatherers. Because there was no other wood supply available without going into the mountains, this grove has been the wood supply for the surrounding communities for many years. According to Professor B. O. Longyear, Professor Emeritus of Forestry of the Colorado State College of Agriculture and Mechanic Arts, there were a number of Mexican laborers employed in the area of the grove for some years, and they were responsible for much of the older damage to the pinons.



Fig. 11. Damage by woodgatherers



Fig. 12. Damage by woodgatherers.

Junipers are subject to damage by breakage caused by snow and ice. Thirteen of the forty-nine mature junipers in the quadrats studied were so broken and damaged that it was impossible to secure reliable increment borings.

#### Biotic Factors

The grove has also been damaged by the action of certain animals. The porcupines have had the greatest destructive effect on the mature pinons because of their habits of gnawing great areas of bark from trunks and limbs. Other animals which have an effect upon the grove are those which feed upon the nuts. These include certain birds, insects, squirrels, mice and other rodents.

## METHODS

In order to determine the spread of the grove, the distribution of the age groups in the grove had to be established. An aerial photograph was used to separate the grove into ten subdivisions. Four quadrats were taken at random through the center of each subdivision. These quadrats gave a sampling of the grove from different elevations and from both the east-facing and north-facing slopes. The following information was secured from these quadrat studies: age of the trees; the percent of ground covered by the crowns of the trees; numerical abundance, or the number of individuals of each species; frequency of individual species in samples taken, expressed in per cent; diameter of the trees at the height of two feet from the ground.

In locating the individual quadrats, care had to be taken to prevent any intentional choice of area. The quadrats were thirty-three feet square or one-fortieth of an acre in area.

The individual trees were located in each quadrat by the use of a cord sixty six feet long knotted into ten equal sections. This line extended along two sides of the quadrat and the knots served as a device by which the tree could be plotted on a chart by triangulation

from the marker knots in the line. As an example, a tree may have been located as being two knots over and three knots down in the quadrat.

The diameters of the trees were determined by the use of a diametric tape which read in inches and tenths of inches. Because the pinons often branched quite close to the ground the diameters were taken at the height of two feet instead of breast height. If the tree branched at the ground level the diameter was taken of the largest branch. The bushy nature of the pinons made it necessary to clear the limbs from one side of the tree.

The age of the individual trees was determined by the counting of annual rings on the cores secured by the use of an increment borer. These cores were taken in all pinons over an inch and a half in diameter and in junipers over one inch in diameter. All others of a smaller diameter were recorded as reproductions and were considered only in the per cent of cover and frequency.

Copies of the original data sheets are available for examination.

## RESULTS OF QUADRAT STUDIES

In the forty-three quadrats studied there were 501 trees. The pinons were represented by 274 mature and 157 smaller than one and one-half inches in diameter for a total of 431 individuals. The junipers totaled sixty-nine in all with forty-nine mature and twenty-nine under one inch in diameter. The ponderosa pine was represented in the quadrats by one mature tree. These totals include results taken from three quadrats located in the southwest corner of the grove. From these data were calculated the percentage of crown cover and frequency of species. The cover, which is the area shaded by the crowns of the trees, of each subdivision is given in Table III as per cent (see Figures 13 and 14).

TABLE III  
THE PERCENTAGE OF COVER

Subdivision	Pinon (per cent)	Juniper (per cent)
T1	41.2	00.0
T2	34.0	2.1
T3	32.5	8.3
C1	45.3	3.0
C2	35.0	6.3
C3	33.9	2.0
L1	42.5	3.0
L2	43.8	4.3
L3	41.3	5.3
H	46.0	1.9

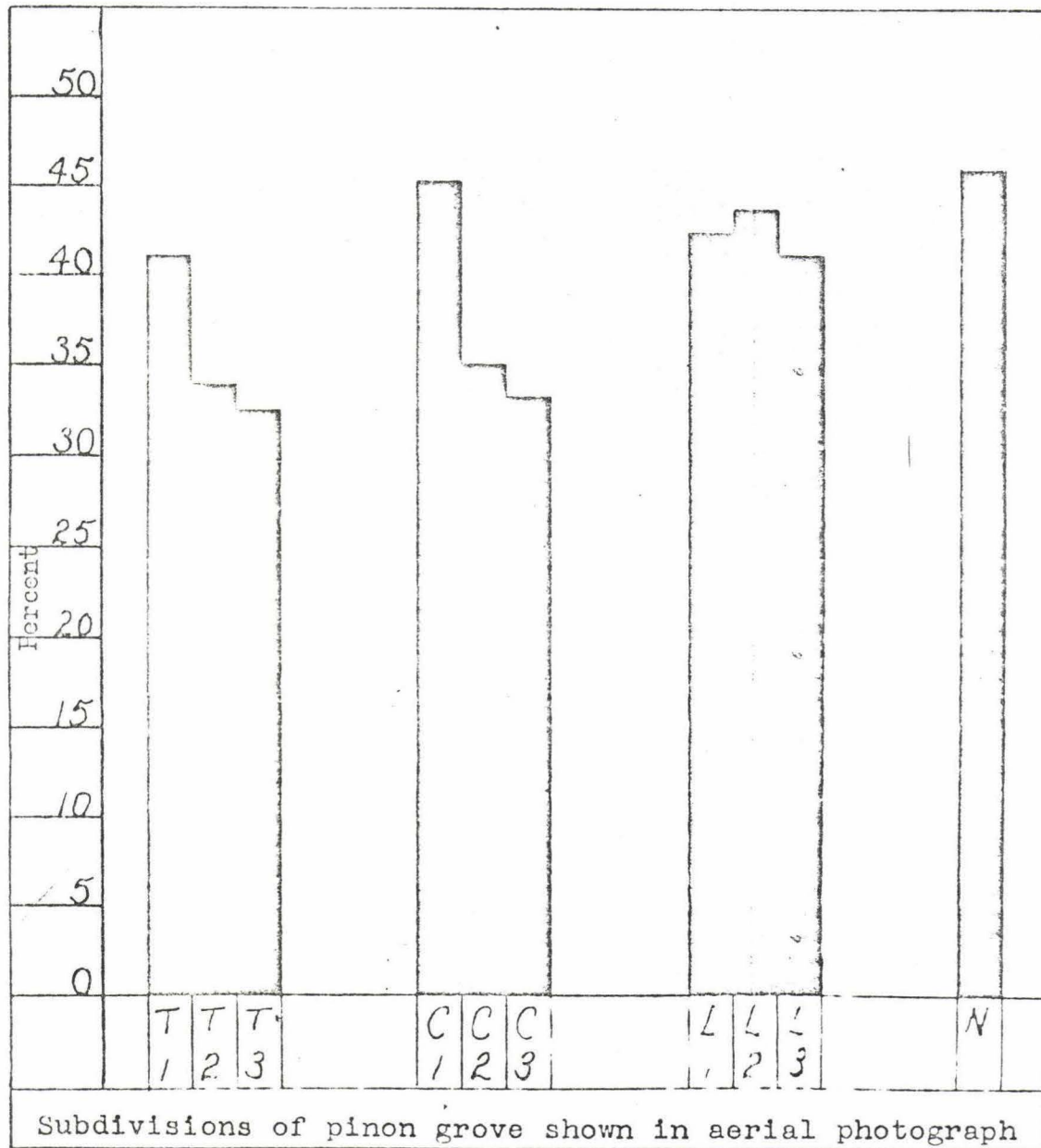


Fig.13. Per cent of pinon cover in subdivisions.  
Cover refers to the area shaded by the crowns of trees.

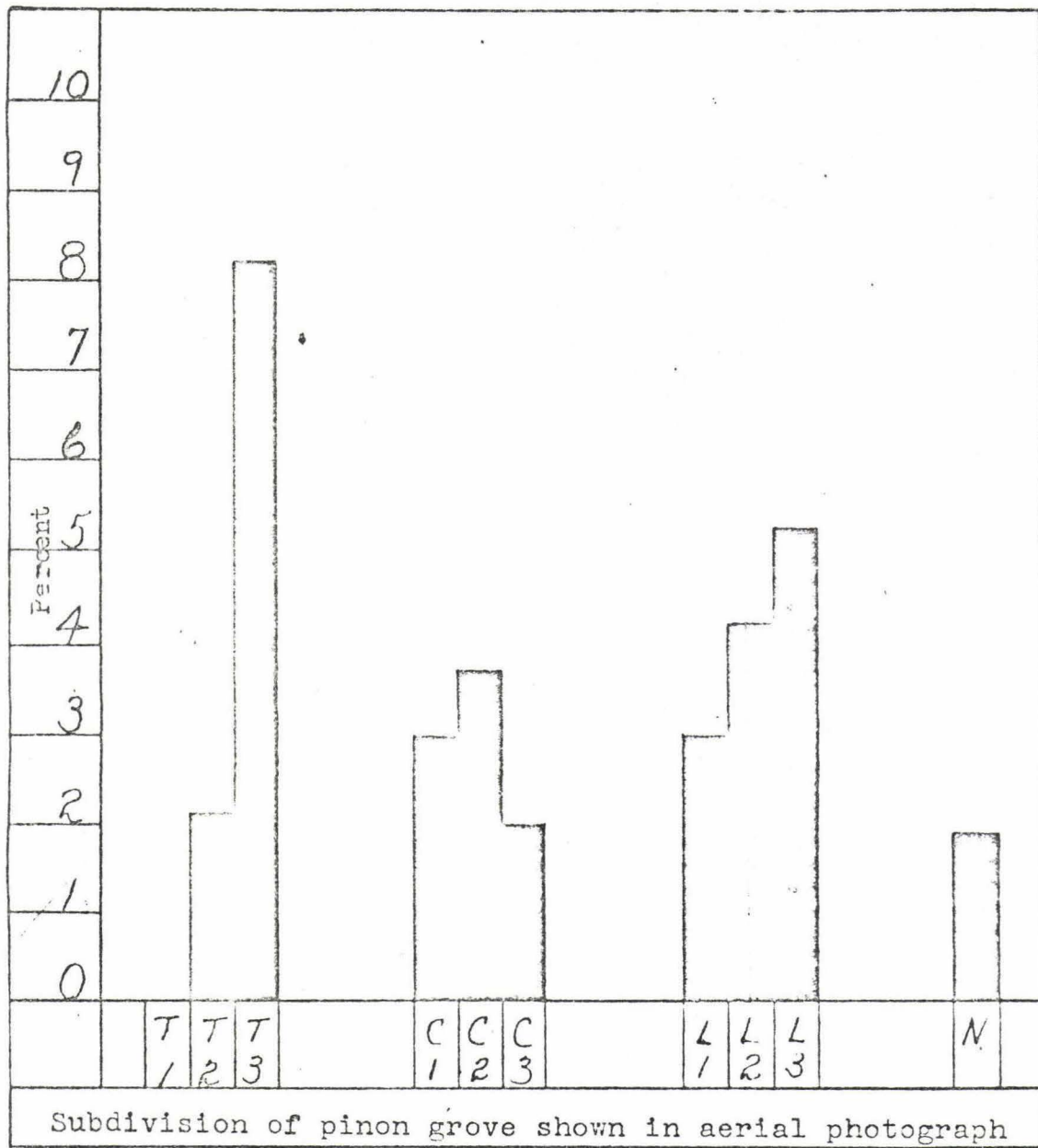


Fig. 14. Per cent of juniper crown cover in subdivisions.

The average crown cover for the entire grove is 42.3 per cent, with the pinons making up 39 per cent of this total and the junipers 3.3 per cent.

Frequency, which is the occurrence of individual species expressed in per cent is given in Table IV.

TABLE IV

FREQUENCY OF THE DIFFERENT  
SPECIES IN THE GROVE

Subdivision	Pinon (Per cent)	Juniper (Per cent)
T1	100.0	00.0
T2	93.7	6.3
T3	81.8	18.9
C1	89.9	10.1
C2	89.3	10.7
C3	80.7	19.3
L1	89.1	10.8
L2	72.2	27.8
L3	66.7	33.3
N	80.4	19.6

The frequency of the different species for the entire grove is as follows: pinons, 86 per cent; juniper 13.5 per cent; ponderosa pine 0.2 per cent (Figs. 15 and 16).

The average age of the pinons in each subdivision is given in Table V (see Fig. 17).

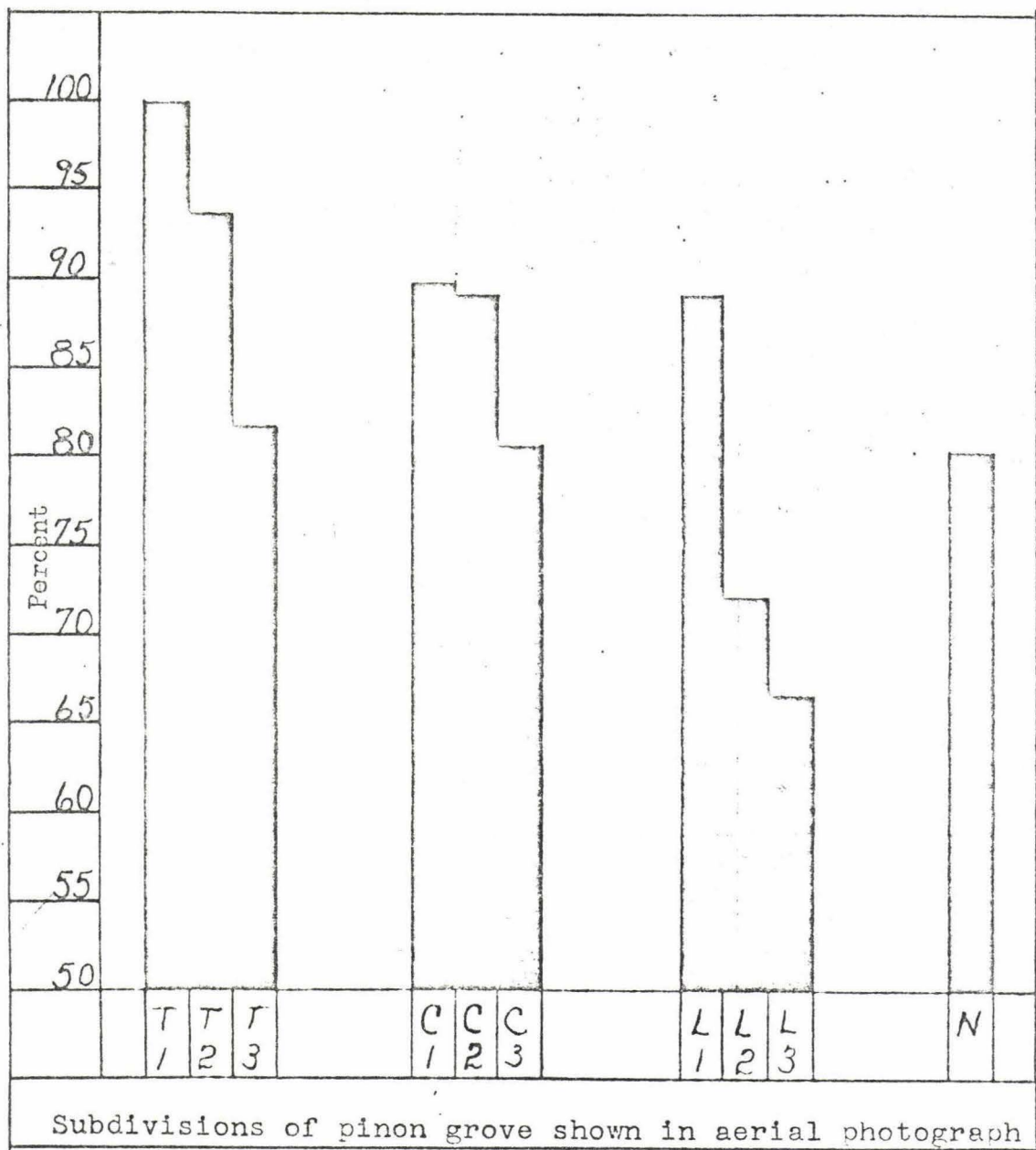


Fig. 15. Frequency of pinons or the occurrence expressed in percentage.

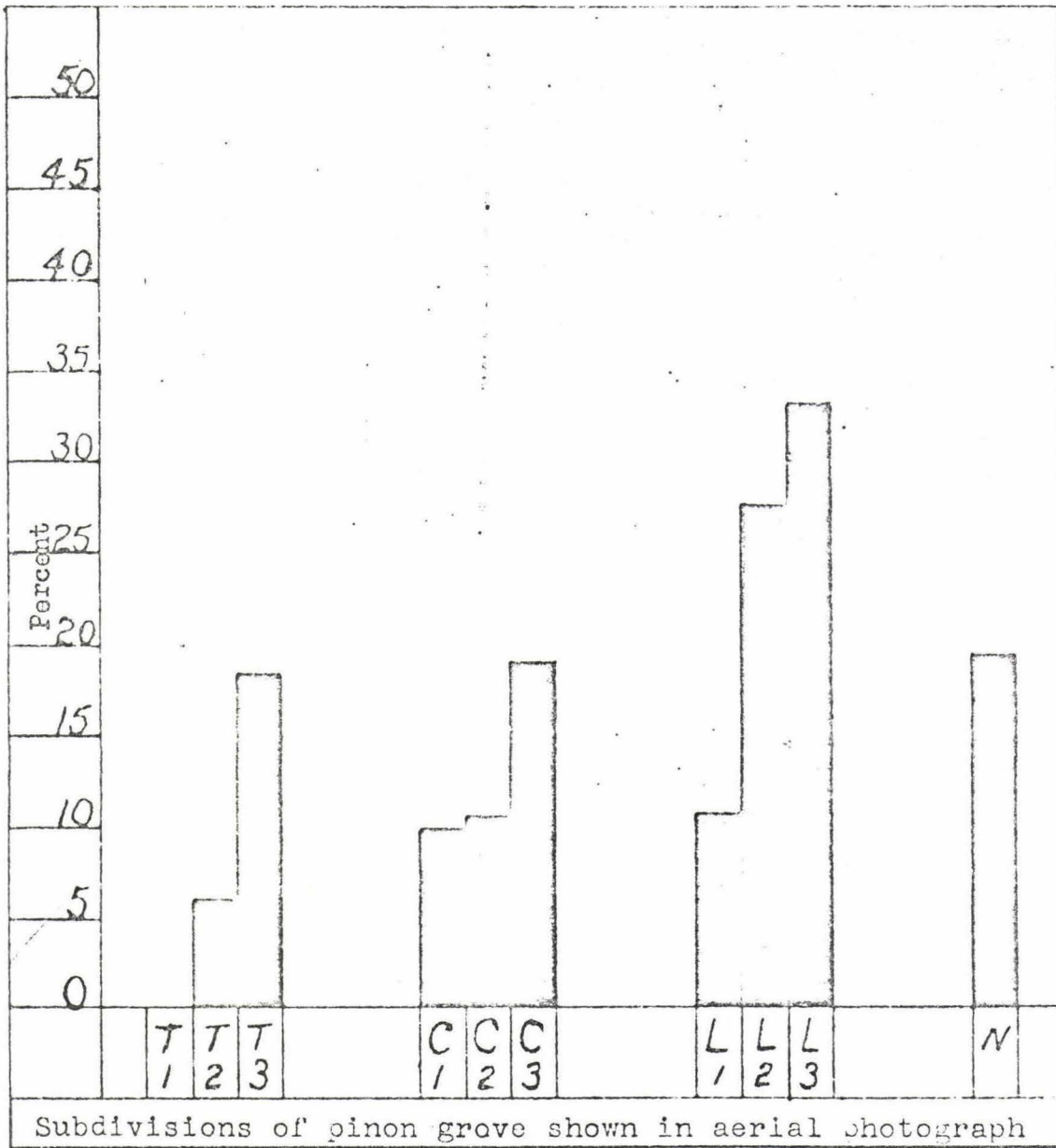


Fig. 16. Frequency of junipers or the occurrence expressed in percentage.

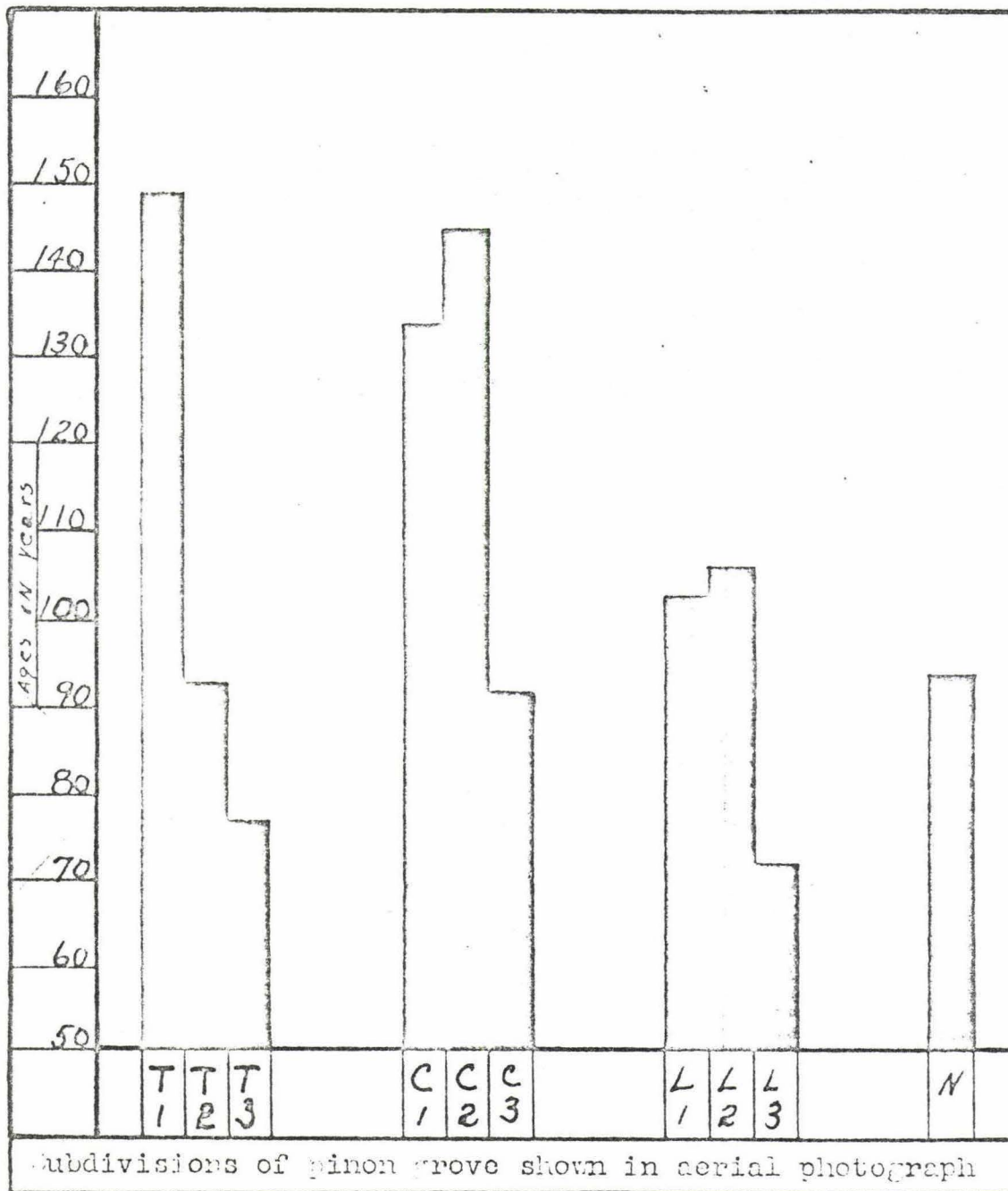


Fig. 17. Average age of pinons in different subdivisions.

TABLE V  
AVERAGE AGES OF PINONS IN THE GROVE

Subdivision	Average Ages
T1	149
T2	93
T3	77
C1	134
C2	145
C3	92
L1	103
L2	106
L3	72
N	94

The average age for all the pinons in the quadrats studied is 107. The average age of the thirty-six junipers from which borings were taken was determined to be 83 years, but that age may not be accurate because many of the larger junipers are broken and decayed.

The average age of pinons in different series of the subdivisions is shown in Figure 18. The series T1, C2, and L1, with an average age of 132 years, has the greatest average age of any series that extends down the slope in an east-west direction. An average of 124 years for series C1, C2, and C3 is the greatest for any series which extends in a north-south direction. These data indicate that the pioneer pinons of this grove established themselves on the east facing slope in the north-west part of the grove.

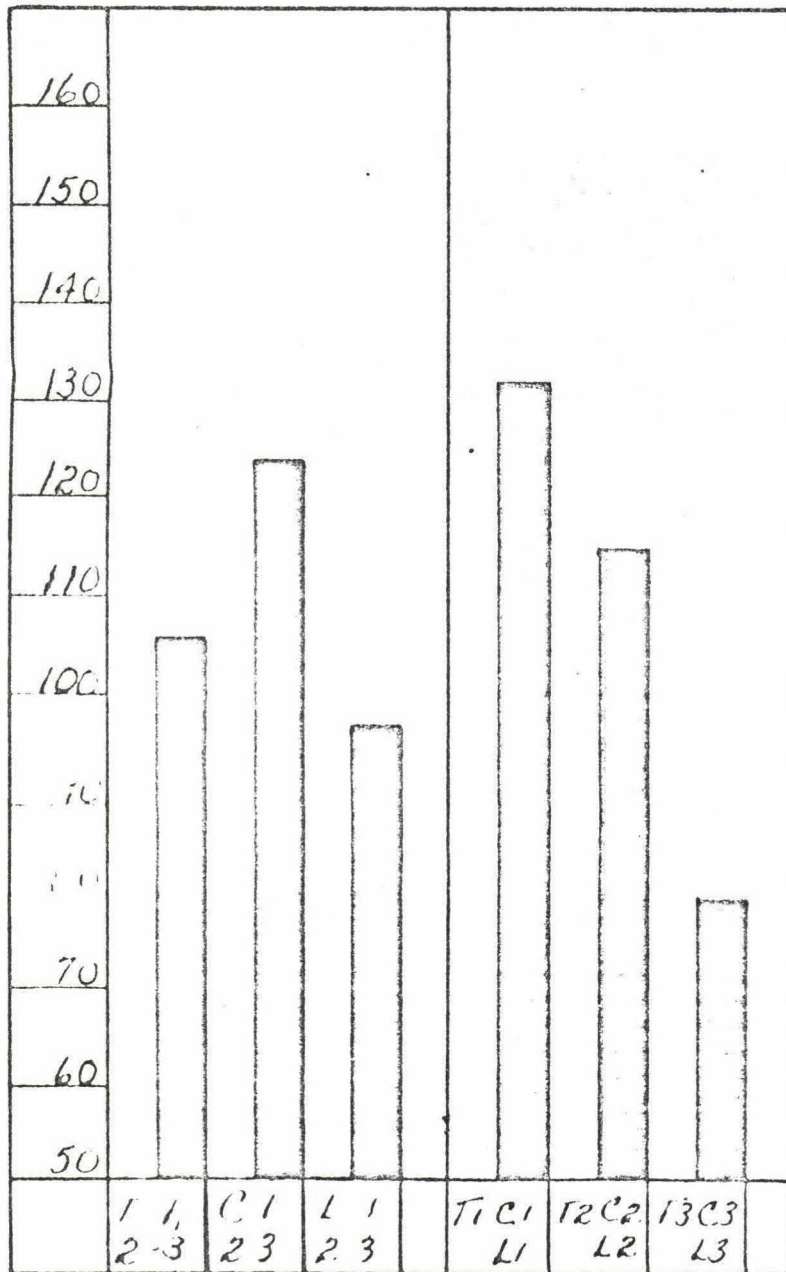


Fig. 18. Average age of pinons in different series of subdivisions.

The diameter of each pinon was taken at a height of two feet, and the height of the tree was estimated. The average diameters and estimated height in each of the subdivisions is given in Table VI (see Figs. 19 and 20).

TABLE VI  
DIAMETER AND ESTIMATED HEIGHT OF PINON TREES IN MEL GROVE

Subdivision	Diam. in Inches	Height in Feet
T1	7.4	11.0
T2	4.9	7.0
T3	5.3	10.1
C1	8.7	17.0
C2	8.7	15.0
C3	5.2	10.5
L1	6.1	12.6
L2	7.6	12.3
L3	6.5	11.2
N	7.6	7.0

The trees that are growing at the base of the cliff (Fig. 9). were sampled to find the ages of the largest ones. The trees sampled were found to be from fifty-nine to eighty-six years old and ranged from eight and one-half inches to eleven inches in diameter. The large size of the growth rings indicated a rapid growth. An example of this rapid growth was a tree only fifty-nine years old which was ten and one-half inches in diameter. The trees at the base of the cliff are young compared to the rest of the grove.

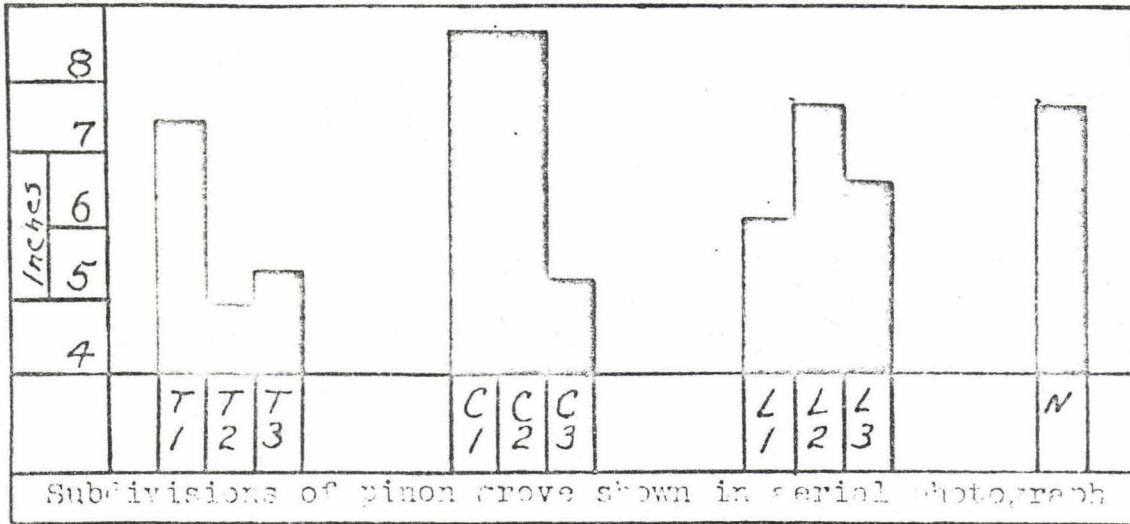


Fig. 19. Average diameter of pinons.

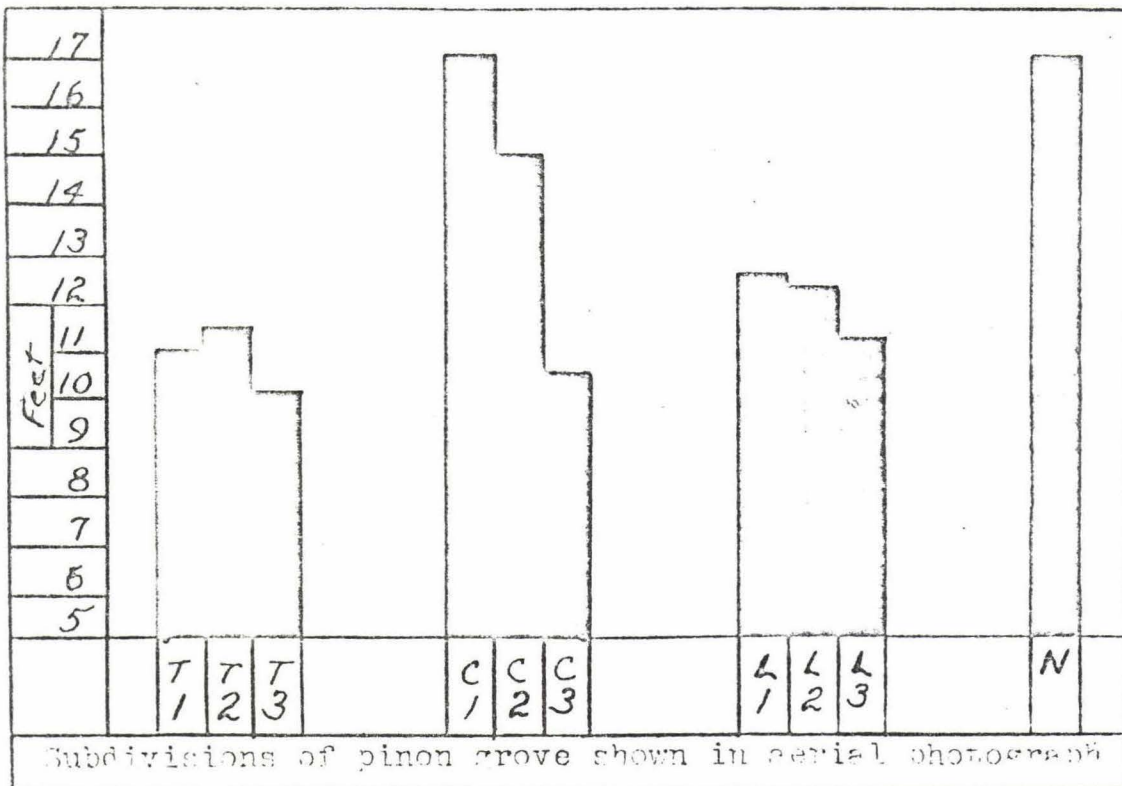


Fig. 20. Average height of pinons.

The ravine in which the largest and oldest trees of the grove are growing is on the boundary between subdivisions C1 and C2. From the "valley of giants" the grove has spread in all directions. Determinations of the ages and diameters of the unbranched trunks of six of the largest trees are given in Table VII. (See Figs. 21, 22, and 23.)

TABLE VII

THE DIAMETER AND AGE FOR EACH OF THE SIX  
LARGEST TREES OBSERVED BY THE AUTHOR

Tree number	Diameter	Age
1	20.7	327
2	21.3	372
3	22.0	341
4	19.7	317
5	22.8	346
6	29.0	369

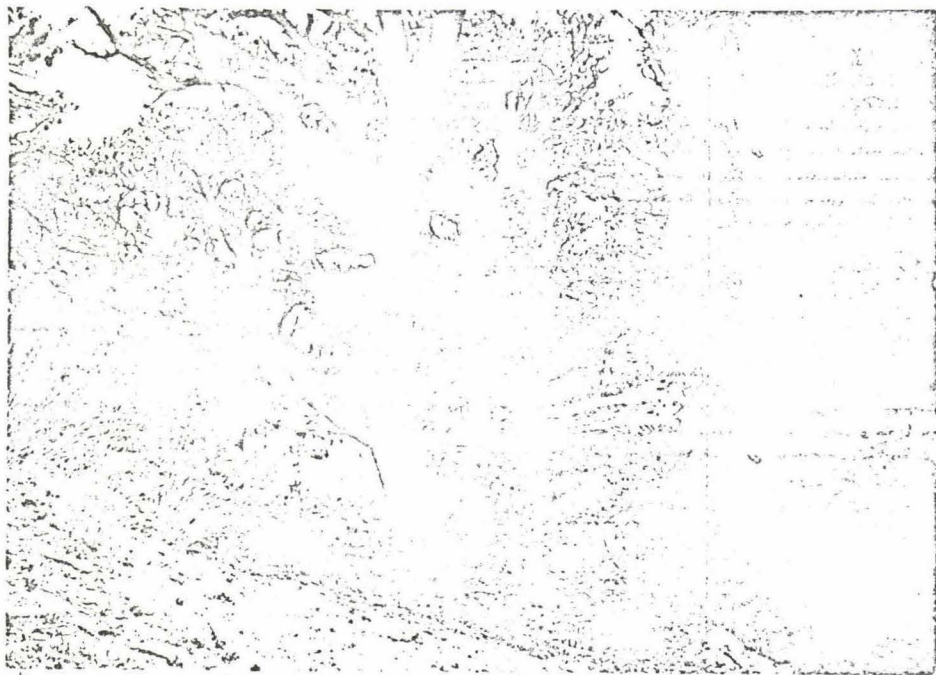


Fig. 21. Looking down the "valley of giants" showing several of the large trees. Note the hand axe in the tree to the right.



Fig. 22. Some of the large trees in the "valley of giants."

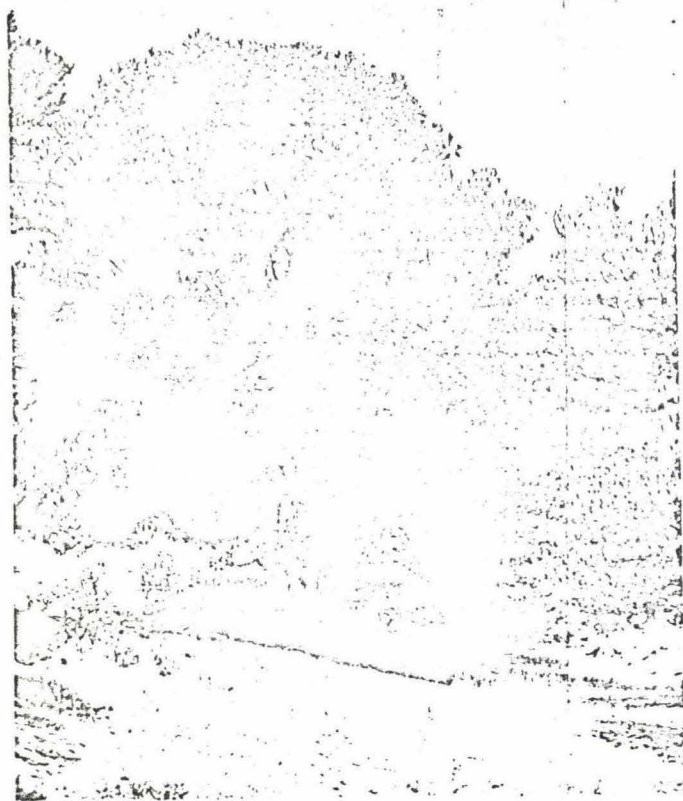


Fig. 23. The largest tree found which had a single trunk is twenty-nine inches in diameter and is approximately 570 years old. Notice the hand axe in the trunk.

## DISCUSSION

There is evidence both for and against the hypothesis that the grove is a relict stand. The ability of the grove to maintain itself indicates that the climate is suitable for a natural growth of pinons. The pinons of the grove are growing on the same type of soil that is found in other pinon stands. This soil is coarse and will not support a prairie community as the fine-textured soils of the area do. The closed communities that are found on the fine-textured soils form barriers to the pinons, thus limiting the grove locally by edaphic factors. The limestone cap rock of the hogback and the large amount of limestone in the talus slope apparently affect the growth of pinons. It possibly prevents the development of plants that would compete with the pinon seedlings. All of the evidence pointed out thus far indicates that this is a natural stand. There is evidence against the hypothesis that the grove is a relict stand. It is reported that the plants associated with the pinons of the Colorado Springs area differ from those in the pinon and juniper grove in the Ft. Collins area. No major disturbing force that would destroy all stands of pinons between the last continuous stand and the grove has been reported. A study of the age groups in the isolated grove indicates that the trees radiate outward from an old group of trees in the northwest

corner. These old trees probably represent the original planting. If the grove were a relict the distribution of age groups probably would not be as marked as is found in this isolated stand. The evaluation of the evidence, therefore, indicates that the grove is not a natural relict of an arm of pinon pine that extended up from the south.

The second hypothesis is that the range of the pinon is expanding. However, according to Cain ( 2 )

An expanding area tends to have a relatively continuous boundary and a homogeneous topography, whereas a contracting area tends to have a relatively discontinuous boundary and an irregular and broken topography. The degree to which these contrasts are true depends upon a variety of local features of habitat. The principal reasons for the above relationships are the fact that the expanding area has not reached effective barriers and that the contracting area leaves behind relict colonies in local situations where frequently edaphic or microclimatic conditions provide at least temporary compensation for a general climatic unfavorableness.

It may be seen from this description that the pattern of the grove is not typical of that of an expanding population. If the range of the pinons is expanding the continuous boundary is located in the Colorado Springs area. The distance between the last continuous stand and the area studied is too great to consider a peripheral outpost of an expanding population.

The evidence presented in this thesis supports the third hypothesis that the grove is an accidental or intentional planting. It is known that the Indians of the

Ft. Collins area traded with the Indians to the south; therefore, it is reasonable to assume that they brought the pinon nuts into the Ft. Collins area. These nuts may have been lost or planted on the hogback by the Indians. The seedlings established themselves easily on the bare rock of the hogback, possibly because they did not have to meet the competition of a closed community of grasses. This habitat is a natural one for the growth of pinon pines because it is in the altitudinal range of pinons, the soil is of a type that supports pinons in other regions, and the climate is favorable. The grove is not a typical pinon-juniper association because the species of plants that are associated with the pinons in the Colorado Springs area were not found in the grove. This indicates that the pinons were introduced separately. The distribution of the age groups indicates that the grove spread from a small and old stand, which is probably the area of the original planting, in the northwest corner of the grove. This spread was down a ravine which crosses the corner of subdivision C1 into C2, then curves northeast into subdivision L2 and L2 (see Fig. 1). Seeds of the pinon are heavy and depend upon gravity and animals for their dispersal. The pinon seeds apparently spread down the ravine by gravity and the animals carried them to higher ground.

## SUMMARY

The northeastern-most stand of pinon pine in the United States occurs on a hogback twenty miles northwest of Ft. Collins, Colorado, on U. S. Highway 287. This grove is 150 miles north of the northern-most continuous pinon stand east of the continental divide.

The ability of the grove to maintain itself indicates that the climate is suitable for a natural growth of pinons. The pinons of the grove are growing on the same type of soil that is found in other pinon stands. This soil is coarse and will not support a prairie community as the fine-textured soils of the area do. The closed communities that are found on the fine-textured soils form barriers to the pinons; therefore, the grove is limited locally by edaphic factors.

The grove has been subject to damage. Part of the damage has been caused by the extensive quarrying of limestone in the area. A number of the trees have been cut for quarry timbers and many large limbs have been used as fuel by migrant laborers. Extensive breakage of the junipers has been caused by ice and snow. A large number of the pinons have been injured by porcupines gnawing on the limbs.

By the use of aerial photographs the grove was separated into ten subdivisions. Quadrats within each subdivision were used to determine the average frequencies

MEMORANDUM

DATE: April 22, 1991  
TO: Jim Hubbard  
FROM: Ray Mehaffey *RM*  
SUBJECT: Owl Canyon/Brackenberry Management

I met with Dave Kuntz, Colorado Natural Areas Program, and Craig Bergman, Lory State Park, regarding these two contiguous properties. The meeting was held at my office on April 16th.

The transfer of the Brackenberry property to Colorado Department of Parks by the Division of Wildlife should take place this summer. Parks will be the single administrator of both properties.

As of the 16th of April, Craig will be the person responsible for the use permit system. The role of CSFS from this date on will be in an advisory capacity regarding Pinyon-Juniper management, insects and disease, and fire.

Drew Davis of LARCO Emergency Services met with us to discuss needs of the areas for fire control and fire management. He stated that politically, the Sheriff must suppress all fires. A detailed fire plan will be made part of the Natural Area Management Plan. It will be jointly prepared by LARCO, CSFS, and Parks, with Natural Area consideration in mind including: prescribed burning to improve native grasses and reduce hazards, fuels inventory, fireline construction limitation, fire prevention (including mowing along U.S. 287), Pinyon-Juniper re-establishment, and soil stabilization should a fire occur.

I will keep you posted on progress.

Craig's telephone number at Lory is: 493-1623 (for permits and inquiries).

Enclosure: copy of map

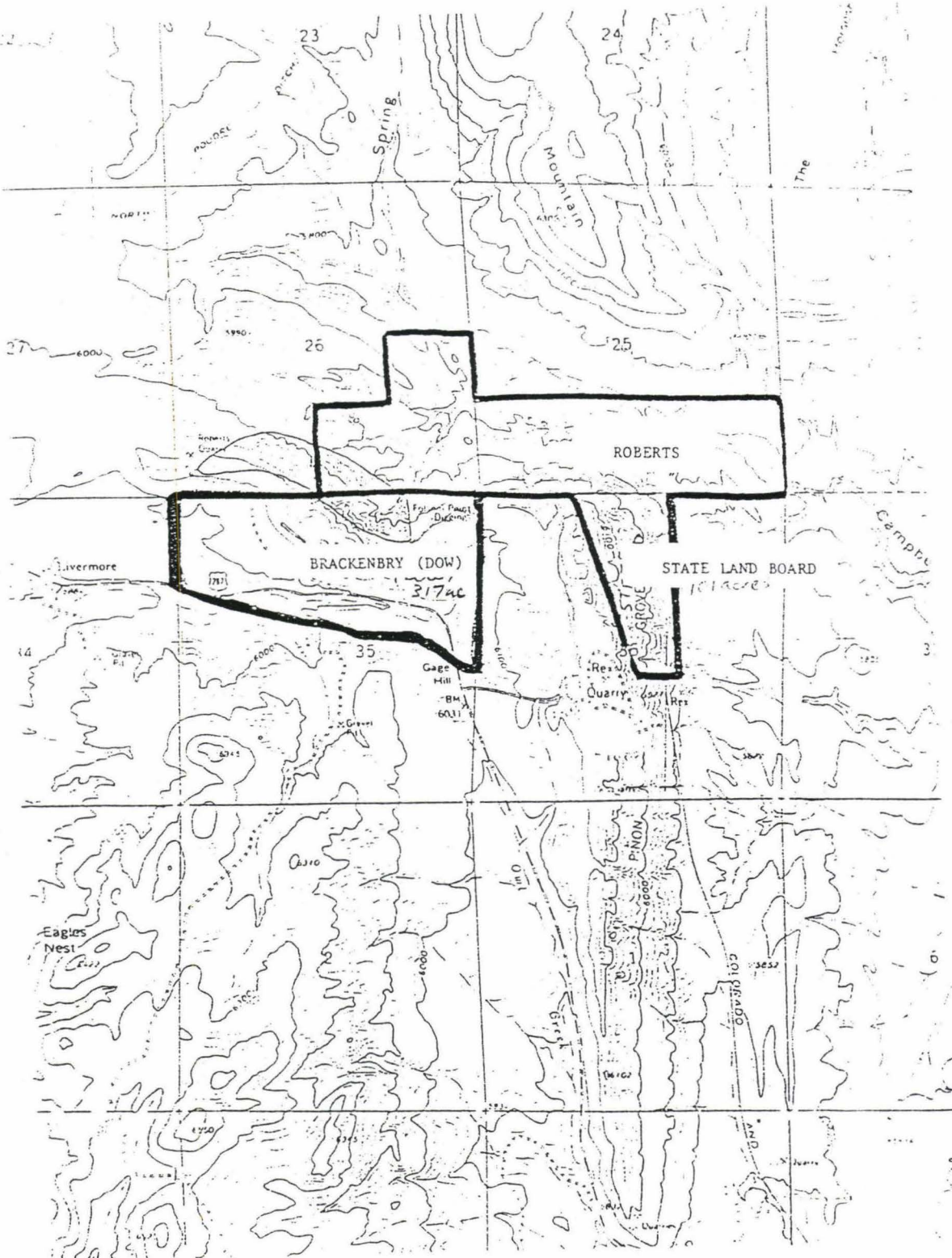
RLMkrp

4/14/91

EXHIBIT A  
OWL CANYON PINYON GROVE NATURAL AREA  
(Division of Wildlife)

Legal Description

All of that portion of Section 35, Township 10 North, Range 70 West, of the 6th P.M., lying north and east of the County Road, being 317 acres, more or less.



# STATE OF COLORADO

## DIVISION OF PARKS AND OUTDOOR RECREATION Colorado Natural Areas Program

1313 Sherman Street, Rm. 618  
Denver, Colorado 80203  
Phone (303) 866-3437  
FAX (303) 866-3206



### MEMORANDUM

**TO:** Owl Canyon Piñon Grove Management Committee

**FROM:** Jim Von Loh, Administrator, Colorado Natural Areas Program *JV*

**SUBJECT:** FINAL OWL CANYON PIÑON GROVE FIRE MANAGEMENT PLAN

**DATE:** December 10, 1992

Roy Romer  
Governor

Laurie A. Mathews  
Director

James D. Von Loh  
Program Administrator

Ken Salazar  
Director / DNR

At long last! Enclosed is a copy of the Final Owl Canyon Piñon Grove Fire Management Plan for your review. We hope the comments on the draft plan have been incorporated to everyone's liking.

Representatives from the Colorado Lien Company, the Colorado State Forest Service, the Division of Parks and the Larimer County Sheriff's Office will be signing the document at the following meeting: **Wednesday, January 20** at 10 am at 3842 S. Mason in Fort Collins. (North Region Headquarters for the Division of Parks and Outdoor Recreation). Once signed, the Fire Mgmt. Plan can be appended to the Owl Canyon Piñon Grove Management Plan.

If you have any comments on the enclosed fire plan please call me at 866-3203 x331 or Janet Coles at x330. Please let me know by January 15 if you plan on attending the meeting.

Thank you.

DEC 14 1992  
FT. COLLINS DISTRICT  
DF  
ADF  
FOR  
SEC  
DF  
TSI

*By [Signature]*  
*[Signature]*  
*File*

Colorado Natural Areas Council  
Robert R. Kelley, Member ♦ Helen Traylor, Member  
Jose Trujillo, Colorado Board of Parks and Outdoor Recreation  
Tina Jones, Member ♦ Louis Swift, Colorado Wildlife Commission  
Alden Naranjo, Member ♦ John Wilkes, Colorado Board of Land Commissioners

Printed on recycled paper.

## FINAL

### OWL CANYON PIÑON GROVE FIRE MANAGEMENT PLAN

#### PURPOSE OF FIRE MANAGEMENT PLAN

The purpose of the Owl Canyon Piñon Grove Fire Management Plan is to guide wildfire control, suppression, and management activities to achieve the approved management goals and objectives for the Owl Canyon Piñon Grove Natural Area.

The objectives of the Owl Canyon Piñon Grove Natural Area Fire Management Plan are to:

- 1) Conserve, perpetuate or restore the piñon grove to a condition which most nearly approximates a naturally functioning native plant community.
- 2) Use the least environmentally damaging fire control actions as possible.
- 3) Introduce prescribed fire in selected areas under strictly controlled conditions as appropriate to maintain natural ecological processes in the grassland and woodland communities.
- 4) Develop procedures and methods for designing and implementing a long-term prescribed burn plan within Owl Canyon Piñon Grove Natural Area to reduce the need for fire control and improve conditions for fire management.

#### AUTHORITY

The Colorado Division of Parks and Outdoor Recreation has management authority and responsibility for the Owl Canyon Piñon Grove Natural Area. The Larimer County Sheriff's Department has authority to control wildfires in Larimer County. The Larimer County Sheriff's Department will be the lead agency responsible for fire control at Owl Canyon Piñon Grove Natural Area. Larimer County will cooperate with the Colorado Division of Parks and Outdoor Recreation and the Colorado State Forest Service in implementing necessary and appropriate fire control measures.

#### PREVENTION

Public access and use of Owl Canyon Piñon Grove Natural Area will be permitted and controlled by the Colorado Division of Parks and Outdoor Recreation. Information on the use, role and prevention of fire will be part of educational presentations to public users and visitors by the Division of Parks. Prescribed fires will be used as appropriate to reduce wildfire hazard.

Landowners and surface lessees of the state school lands

within the designated natural area will employ all necessary, reasonable and prudent measures to prevent artificially ignited wildfires.

The Larimer County Sheriff's Department will investigate the causes of all wildfires ignited on the designated natural area. Investigation reports will be available upon request from Larimer County to all landowners of the designated natural area.

#### FIRE CONTROL AND SUPPRESSION

General guidelines for approved fire control and suppression actions at Owl Canyon Piñon Grove Natural Area are the following:

- 1) Larimer County Sheriff's Department is the fire response team leader and will coordinate all fire control and suppression activities on the designated natural area.
- 2) No mechanized equipment (e.g., bulldozers, backhoes, tractors) will be used in the piñon grove (wooded areas of the designated natural area). Fire trucks and tankers can use existing roads on the state school section (limestone quarry area) to access fires in the designated natural area.
- 3) Low impact fire control techniques will be used on the designated natural area to minimize surface disturbance. Minimum impact techniques include limiting fires to grass fuel types, use of natural fire breaks, limited construction of hand fire lines and cutting of trees only where necessary to prevent loss of human life or destruction of property.
- 4) Fire retardant use will be minimized. Retardant may be used primarily to prevent loss of human life or destruction of property.
- 5) A fire lane/break will be mowed and maintained by the Colorado Division of Parks and Outdoor Recreation inside the property fenceline on that portion of the designated natural area adjacent to U.S. Highway 287 (known as the Brackenbury property).
- 6) Preparation and implementation of a post-fire rehabilitation or reclamation plan is the responsibility of the Colorado Division of Parks and Outdoor Recreation. Local seed sources (from native plant species on the property) will be used for any re-seeding or re-stocking of native vegetation on the natural area following a fire.
- 7) Approval by the undersigned of these general guidelines for fire control and management at Owl Canyon Piñon Grove Natural Area constitutes agreement of these provisions.

PRESCRIBED FIRE

Prescribed burns will require separate prescribed burn plans prepared in cooperation with the Larimer County Sheriff's Department and the Colorado State Forest Service.

Prescribed fire will be used selectively, carefully and when appropriate as determined by the Owl Canyon Piñon Grove Natural Area Management Advisory Committee, Larimer County Sheriff's Department and Division of Parks and Outdoor Recreation. All prescribed burns will require specific prescribed burn plans. Each prescribed burn plan will (1) describe the treatment area, (2) list objectives of the burn, (3) list specifications for the burn, (4) include a completed pre-burn work checklist, (5) list public information and pre-burn contacts, (6) describe ignition procedures and organization, (7) specify environmental conditions and weather which will enable or preclude a burn from occurring, (7) describe appropriate on-site preparation on the day of the burn (test burn, briefing and communications, public and crew safety, escape contingency and medical response plan and post-fire mop-up and patrol) and (8) list equipment needed to conduct the burn.

FIRE PLAN REVIEW AND REVISION

The Owl Canyon Piñon Grove Natural Area Fire Management Plan will be reviewed annually, in the context of the review of the Owl Canyon Piñon Grove Management Plan, by the management advisory committee and recommendations made to landowners and the Colorado Division of Parks and Outdoor Recreation regarding any changes or revisions. The Colorado Division of Parks and Outdoor Recreation is responsible for coordinating with the appropriate state and county agencies to implement any changes in procedures, goals or responsibilities.

**APPROVED:**

**Colorado Division of Parks  
Outdoor Recreation**

**Larimer County Sheriff's Dept.**

\_\_\_\_\_  
Joe Maurier, Regional Manager

\_\_\_\_\_  
Richard E. Shockley, Sheriff

**Colorado State Forest Service**

**Colorado Lien Company**

\_\_\_\_\_  
Ray Mehaffey, District Forester

\_\_\_\_\_  
Sam Lien Fuchs, President

Date: \_\_\_\_\_

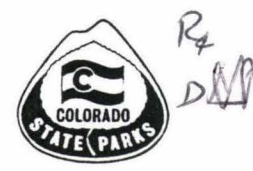
2370  
Owl Canyon

# STATE OF COLORADO

**DIVISION OF PARKS AND OUTDOOR RECREATION**  
**Colorado Natural Areas Program**

1313 Sherman Street, Rm. 618  
Denver, Colorado 80203  
Phone (303) 866-3437  
FAX (303) 866-3206

FEB 7 1993



## MEMORANDUM

**To:** Owl Canyon File  
**From:** Jim Von Loh, Natural Areas Program  
**Subject:** Fire Management Plan  
**Date:** February 4, 1993

Roy Romer  
Governor

Laurie A. Mathews  
Director

James D. Von Loh  
Program Administrator

Ken Salazar  
Director / DNR

Enclosed, along with this memorandum, is a signed copy of the Owl Canyon Pinyon Grove Fire Management Plan. Should you require an original document please contact me. Thank you all very much for your active participation in contributing to the management of this natural area.

To summarize, a meeting was held January 20, 1993 at the Colorado State Parks North Region office in Fort Collins. Two concerns voiced by the State Land Board were discussed:

- 1) Under PREVENTION: landowners and surface lessees are requested to perform reasonable and prudent measures to prevent artificially ignited wildfires, without signing the Plan. Response: The plan is signed by appropriate management and emergency service providers. Artificially ignited wildfires are subject to penalty under existing laws.
- 2) Under PRESCRIBED FIRE: add a sentence stating that the burn be coordinated with property owners and state lessees. Response: This coordination is covered under item (5) list public information and pre-burn contacts. In addition, it is a Larimer County requirement that burn permits are only allowed when snow cover is present, to reduce the probability of prescribed fire becoming wildfire.

**OWL CANYON PINYON GROVE NATURAL AREA**  
**Colorado Department of Natural Resources**  
**Division of Parks and Outdoor Recreation**  
**Natural Areas Program**

The Owl Canyon Pinyon Grove was designated a Colorado Natural Area in 1978, with additions in 1979 and 1985. The uniqueness and utility of this area were known for centuries by Native Americans. Current efforts to preserve this site were initiated about 1950, prior to the Natural Areas Act, passed in 1977.

Pinyon pine is the common tree species growing along the limestone hogback that forms the single rim of Owl Canyon. This dense grove is very unique, isolated by more than 100 miles from the nearest pinyon-juniper communities, and lies on the extreme northeastern edge of the pinyon pine range.

Is this pinyon pine community a declining relict of cooler and wetter Pleistocene climates or a result of an expanding range for pinyons? Probably neither - research to date (genetic, archaeological, and paleoecologic) supports the theory that the grove was planted by Native Americans between 400 and 1,000 years ago. Following the initial introduction of pinyons, the community has subsequently expanded to the south and west. Large pinyon pines found in the grove are up to three feet in diameter and are approximately 400 years old.

A rare exposure of marine limestone (a stratum of the Ingleside Formation), laid down in a shallow sea around 250 million years ago then uplifted to form the present hogback, supports the Owl Canyon Pinyon Grove. However, this limestone is also a valuable commodity and quarrying has removed limestone from the ridge since 1924. As a result, piles of overburden can be observed at the ridgetop. Quarried limestone from this site is exceptionally pure and is sold for use in the refining of sugar and as livestock feed supplement.

The densest portion of the pinyon grove (approximately 110 acres) will not be mined, but the remainder of the ridge will eventually be removed. Because of the fragility of the site, visits for purposes other than scientific research or education are discouraged. Entry to the site is through an active mining zone, therefore, caution is necessary. Visitors to the natural area are required to obtain a permit at Lory State Park, 708 Lodgepole Drive, Bellvue, Colorado, 80512 - (303/493-1623). Camping, hunting, hiking, recreational vehicles, fires, artifact collecting, and activities resulting in negative impacts to the area are not allowed.

Thank you for your interest in visiting Colorado's unique places. Please direct any questions or comments to the Colorado Natural Areas Program, Division of Parks and Outdoor Recreation; 1313 Sherman Street; Denver, Colorado, 80203 - (303/866-3203).

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**APPROVED:**

Colorado Division of Parks  
Outdoor Recreation

Joe Maurier  
Joe Maurier, Regional Manager

Larimer County Sheriff's Dept.

Richard E. Shockley  
Richard E. Shockley, Sheriff

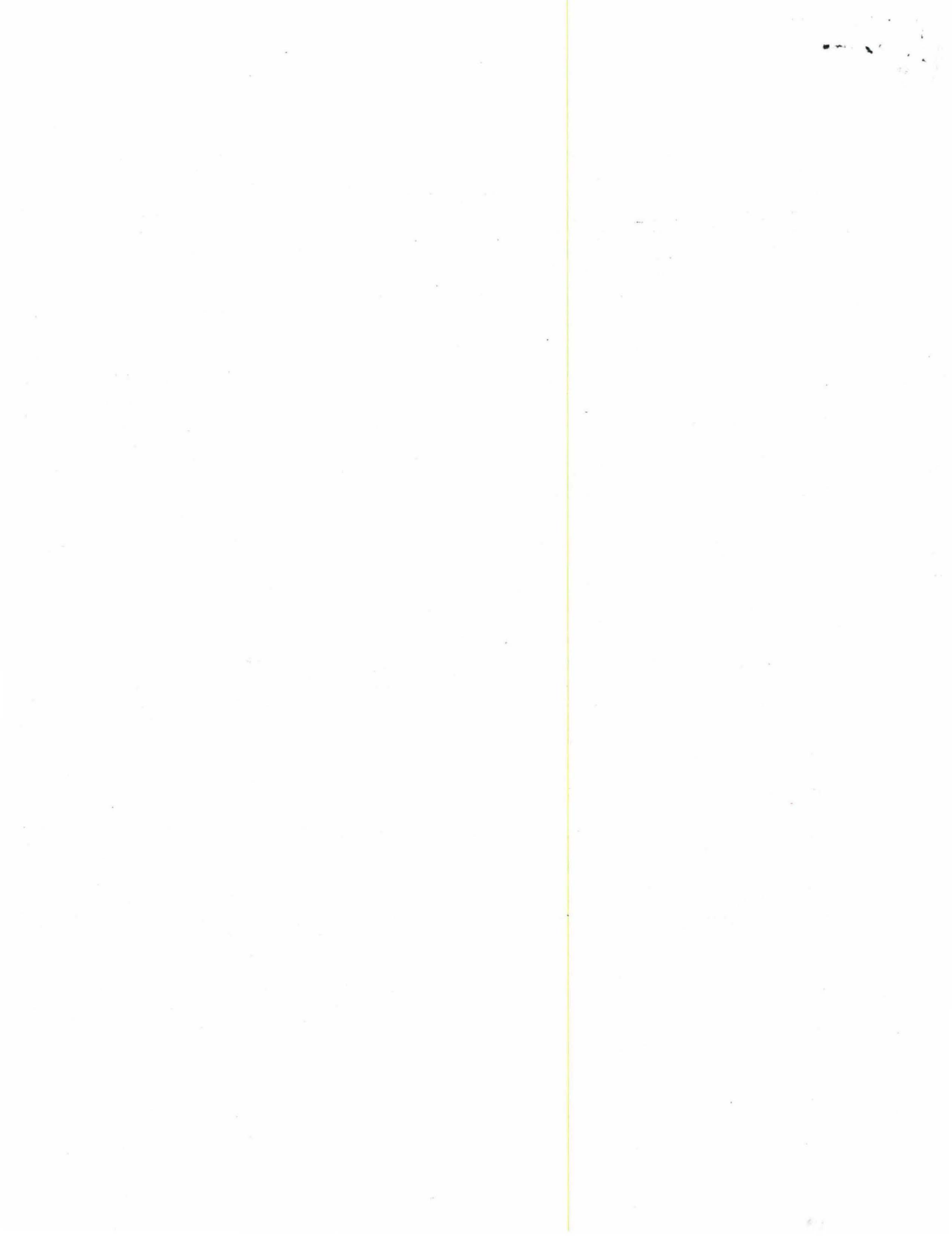
Colorado State Forest Service

Ray Mehaffey  
Ray Mehaffey, District Forester

Colorado Lien Company

Sam Lien Fuchs 1/12/93  
Sam Lien Fuchs, President

Date: FEBRUARY 4, 1993



## Lebeda,Boyd

---

**From:** Lebeda,Boyd  
**Sent:** Monday, January 31, 2011 2:12 PM  
**To:** Wood,Keith  
**Subject:** RE: Owl Canyon Pinon Grove

Hey Keith - Brian Kurzel is the Colorado Natural Areas Program Coordinator. He'd be the contact.

Contact:  
303-866-3203 ext. 4301  
[brian.kurzel@state.co.us](mailto:brian.kurzel@state.co.us)

FC District would be interested in seeing the Pinon Grove up close too. Let me know if you schedule something.

boyd

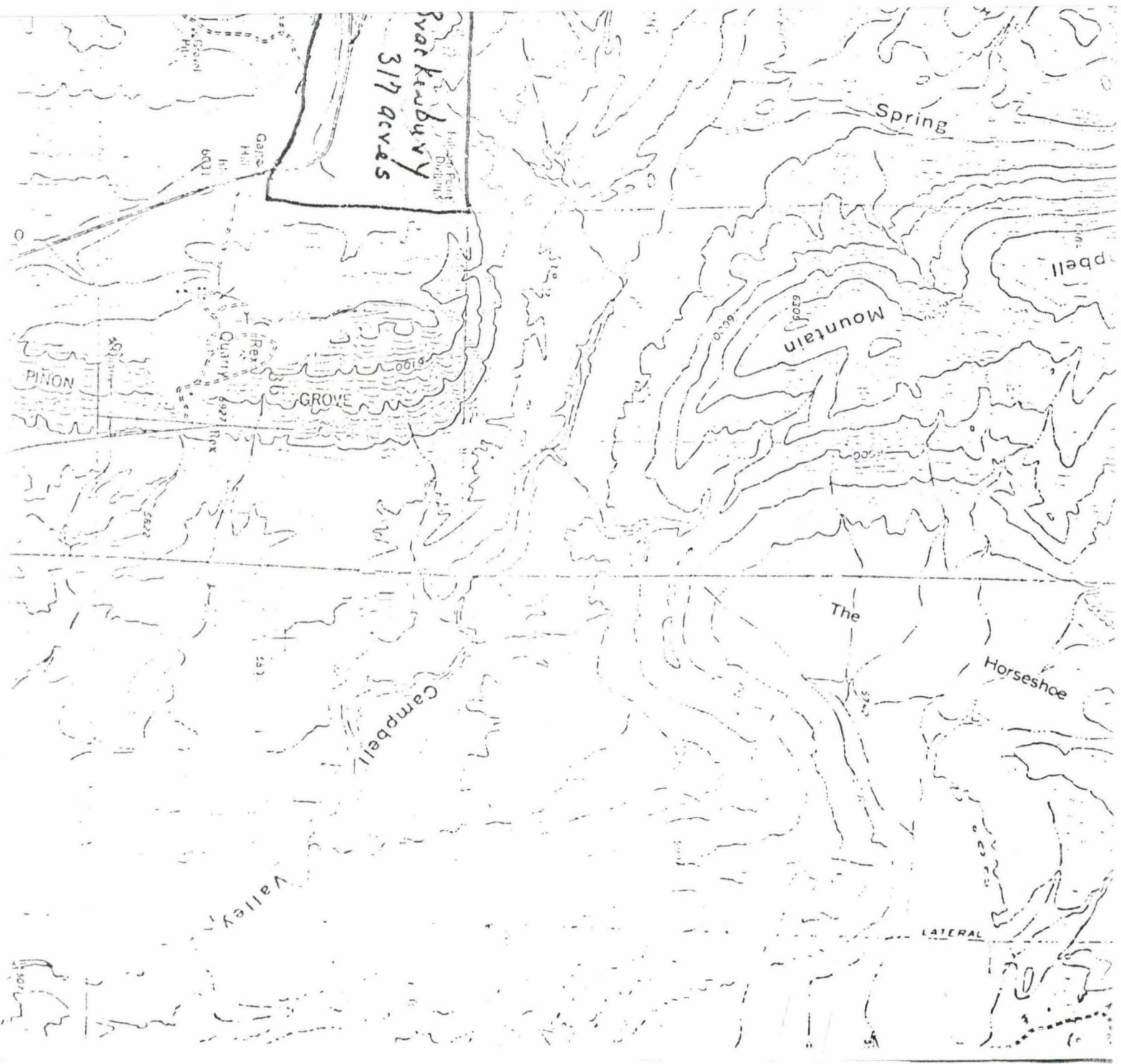
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**From:** Wood,Keith [<mailto:Keith.Wood@ColoState.EDU>]  
**Sent:** Friday, January 28, 2011 5:17 PM  
**To:** Boyd Lebeda ([blebeda@lamar.colostate.edu](mailto:blebeda@lamar.colostate.edu))  
**Subject:** Owl Canyon Pinon Grove

Hey Boyd,

Do you or any of your staff have a contact at the Pinyon Grove Natural Area/Archaeological Site? Reason I ask is we had a CTC calendar committee meeting today and we are thinking of doing an all Colorado native tree 2012 calendar for the 10<sup>th</sup> anniversary of that publication. We'd like to get that pinon grove in the calendar if possible. (Plus I've never been there and would like to check it out! So would Phil Hoefer and Becky Wegner). Anyway, let me know what you think and who I should contact. Thanks,

Keith Wood  
Colorado State Forest Service  
9769 W. 119th Drive, Suite 12  
Broomfield, CO 80021  
303-438-9338  
[Keith.Wood@ColoState.edu](mailto:Keith.Wood@ColoState.edu)



OWL CANYON PINON GROVE  
MANAGEMENT PLAN

OWL CANYON PINON GROVE  
MANAGEMENT PLAN

1. Area to be managed:

The Owl Canyon Pinon Grove is described in Appendix A and consists of two parts, one part owned by the State Board of Land Commissioners, and one part owned by J. Evan and Catherine Roberts. The approximate acreage to be managed is 341 acres.

The Owl Canyon Pinon Grove Natural Area is known as the northeasternmost stand of pinon pine (Pinus edulis) in North America. Considerable research on the grove has been carried out in the past in an attempt to discover its origin, but no theories presented have been conclusive. The pinon trees are quite old (200-500 years); however, reproduction is well dispersed throughout the stand.

The pinon are of widely differing ages and vary in size from seedlings less than one inch in diameter to mature trees over 16 inches in diameter. Porcupines, deer, coyotes, rabbits, several species of birds and insects and some squirrels inhabit the area either seasonally or year round. Pinon provide food and shelter for these species. Biota interact continually and evidence of this exists in dead and dying pinon killed by porcupine and mountain pine beetle.

The grove is growing on a sandstone hog-back known as the Morrison formation which is underlain by a deposit of limestone. Since the 1940s, this limestone has been quarried in parts of Section 36 to produce process chemicals for the refining of sugar beets. Holly Sugar Corporation has been the main lessee for this limestone.

Concern about the destruction of the pinon grove by quarrying began in 1950. Mr. and Mrs. J. Evan Roberts, long-time ranchers in the Livermore area,

have consistently promoted the protection and management of the grove as a natural area. Other groups have also shown interest in and support for preservation of the pinon grove.

Off-site activities associated with limestone quarrying may also be affecting the grove and careful monitoring of these activities is necessary to assure minimal impacts on natural processes.

The grove is of significant archeological interest. One developed archeological site exists on the area and others have been located by the State Archeologist. (A Folsom point find was made several years ago in an area adjacent to the grove in Section 35. This location is not a part of the currently designated natural area.)

2. Landowners:

State Board of Land Commissioners  
1313 Sherman St., Room 620  
Denver, Colorado 80203  
839-3453

J. Evans and Catherine Roberts  
Livermore, Colorado 80536

3. Managing Agency:

Colorado State Forest Service  
Colorado State University  
Fort Collins, Colorado 80523

Authority for Management Function:

That part of the Pinon Grove owned by the State Board of Land Commissioners and described in Appendix B, has been leased to Colorado State University (CSU), which in turn has designated the Colorado State Forest Service to manage the area. (Appendix B includes the Lease of State Lands and the Articles of Designation for the State Land in the Natural Area.)

That part of the Pinon Grove owned by J. Evan and Catherine Roberts, by agreement with the owners, will also be managed by the Colorado State Forest Service.

This plan is prepared in agreement with the lease between the Colorado State Board of Land Commissioners and CSU, and pursuant to the Articles of Designation for the Owl Canyon Pinon Grove (Roberts' Ranch) between the Colorado Department of Natural Resources and J. Evan and Catherine Roberts. (Appendix C).

4. Duration of Management Agreement:

The management agreement shall remain in effect unless the Articles of Designation for either of the two named parts are terminated, or CSU, as the lessee of the portion owned by the State Board of Land Commissioners, defaults. The plan will, however, be continually reviewed and updated. It shall also be flexible in nature to provide for contingencies.

5. Purpose of Management:

The Owl Canyon Pinon Grove Natural Area, with the addition of the Roberts' Ranch area, will be managed for scientific research and educational purposes. Consistent with these purposes, it is the policy of the Colorado State Forest Service and the Colorado Natural Areas Council to evaluate and limit any human activity that might interfere with the processes of nature.

6. Management Goals:

1. To protect the area from excessive human activity and to limit use of the area to scientific research and educational activities.
2. To observe processes of nature occurring on the area and to centralize documentation of research activities in readily retrievable form.
3. To monitor scientific and educational activities on the grove.
4. To monitor the physical condition of the grove.

7. Specific Management Activities:

- A. To protect the area from excessive human activity and to limit use of the area to scientific research and educational activities.

In order to insure that the property is being used for the purposes intended, a permit to conduct research or interpretive tours will be required. A sample permit is attached (see Appendix D). The permit request is to be filed with the Colorado State Forest Service, Colorado State University, Fort Collins, at least one week in advance of the date requested for a site visit. The permit request will be reviewed by CSFS for possible conflicting uses. Other departments may be called upon to provide information on suitability of the intended use, and CSFS will consult with Holly Sugar Corporation or its operating contractor prior to granting the permit. To obtain access to the Owl Canyon Pinon Grove, the approved permit must be presented to the Holly Sugar Corporation or its operating contractor at the office at the entrance to the grove. These permits may be granted to any individual or group for a specified number of visits or for a specified period of time as long as the intended use meets the intended purpose of management. A log of permit requests and approved permits shall be maintained continuously.

Access to the area will be by non-motorized means except on established roads where vehicles will be allowed. Failure to use the area as specified in the permit will result in permit cancellation.

No improvements on the Owl Canyon Pinon Grove are planned at this time. Should the Holly Sugar Corporation cease operations or should high demand for access to the area develop, improvements such as fencing may be required. It is anticipated that by limiting access to scientific and interpretive purposes, littering and refuse will be minimized.

B. To observe processes of nature occurring on the area and to centralize documentation of research activities in readily retrievable form.

Researchers shall be required to file an annual progress report describing the results of their research being conducted on the Pinon Grove. In addition, researchers will be requested to provide the Colorado State Forest Service

with a copy of the final report or research findings derived from work at the Pinon Grove.

C. To monitor scientific and educational activities on the Grove.

A review of the activities on the Grove will be conducted annually by the Colorado State Forest Service. A written report will be presented to the State Land Board, J. Evan and Catherine Roberts, the Colorado Natural Areas Program, and interested CSU departments.

D. To monitor the physical condition of the Pinon Grove.

CSFS will make periodic inspections (at least semiannually) to the grove to determine the Grove's condition. A report on the condition will be prepared annually as a part of C above.

8. Personnel required to carry out these responsibilities:

.1 FTE for administrative purposes is the anticipated need at this time. Should additional requirements be needed, CSFS will revise this plan and present requests for funding in normal budgeting processes. No additional operating or capital requirements are foreseen for FY 1980.

9. Funding Source:

Forest and Watershed funds (.1 FTE) to be administered by the Colorado State Forest Service.

Limiting and monitoring human activity to uses consistent with the scientific and educational purposes is the main objective of a management plan for the Owl Canyon Pinon Grove. CSFS hopes to contribute to scientific research and to provide a service for the State Board of Land Commissioners and the Colorado Natural Areas Program through the implementation of this plan.

Neil P. Sutherland  
Holly Sugar Corporation

\_\_\_\_\_  
Date

Carol G. Postmueller  
Colorado Natural Areas Program

October 2, 1979  
Date

Rowena Rogge  
Board of Land Commissioners

\_\_\_\_\_  
Date

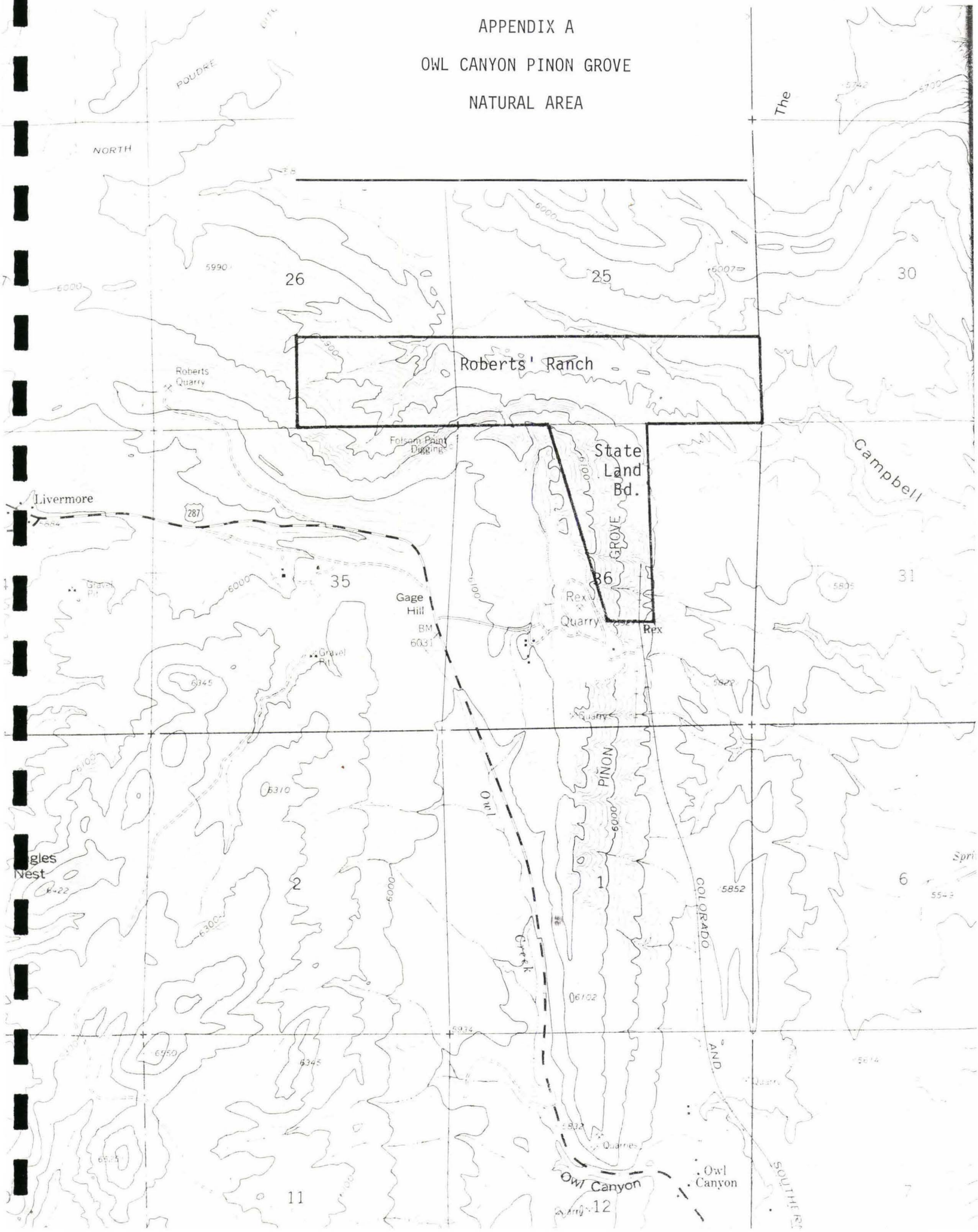
J. Evan Roberts  
Catherine Roberts  
J. Evan Roberts  
Catherine Roberts

\_\_\_\_\_  
Date

Thomas B. Bode  
Colorado State Forest Service

August 9, 1979  
Date

APPENDIX A  
OWL CANYON PINON GROVE  
NATURAL AREA



APPENDIX B

S-36778

LEASE OF STATE LANDS

THIS LEASE made this 3rd day of November, 1978, by and between the State of Colorado, BOARD of LAND COMMISSIONERS, hereinafter the Lessor, and the State of Colorado, Board of Agriculture for the use and benefit of COLORADO STATE UNIVERSITY, hereinafter the Lessee.

WHEREAS, the Lessor owns, controls and manages certain land situate in the County of Larimer, State of Colorado, to wit: T. 10 N., R. 70 W., 6th P.M., Sec. 36; and

WHEREAS, a Pinon Grove occupies a portion of said land; and

WHEREAS, the Lessor has entered into Articles of Designation by document signed on November 3, 1978 with the State of Colorado, Department of Natural Resources whereby said Pinon Grove has been designated a scientific and interpretative natural area to be known as the Owl Canyon Pinon Grove Natural Area; and

WHEREAS, the Lessor desires that the Pinon Grove Area be managed consistent with the purposes for which said area was designated a natural area; and

WHEREAS, the Lessee desires and has the necessary resources to manage said area for said purposes as part of its educational training program; and

WHEREAS, the Lessee recognizes and desires to maintain the uniqueness of the Owl Canyon Pinon Grove Natural Area.

NOW THEREFORE, for and in consideration of the covenants below, it is hereby agreed that:

1. The Lessor shall lease the Pinon Grove Area to the Lessee for educational purposes and for purposes set forth in the Articles of Designation pertaining to said area. Said Articles, which include a legal description of the Pinon Grove Area, are attached hereto as Exhibit 1 and incorporated herein by reference.

RECORDED CD

2. This lease is subject to all the terms and conditions of the above-referenced Articles of Designation. Pursuant to said Articles, the Lessee shall prepare a comprehensive Management plan which shall at least address the following: the access to the Pinon Grove Area, measures taken to assure that access will only be as intended, scientific research to be undertaken on said area, interpretative use of the area, improvements proposed for said area, and any other matter which will affect the natural state of the area. Said plan shall be submitted to the Lessor and the Department of Natural Resources by no later than May 3, 1979 for approval.

3. The Lessee shall pay the Lessor, at the office of the Lessor, the sum of fifty (50) dollars per year as rental each and every year, in advance, during the term of this lease. Rental will be subject to review and revision annually. To have and to hold, the above premises for a term of ten years, from the 3rd day of November, 1978 to the 3rd day of November, 1988.

4. During the term of this lease the Lessor shall not sell, lease, or grant rights-of-way across the leased premises unless said action would not substantially interfere with the purposes for which this lease was executed.

5. The Lessee may use water produced on the leased premises. However, the Lessor retains ownership to all water rights established thereon or with respect thereto. Any adjudication of such water rights shall be in the name of the Lessor.

6. This lease is only for the purposes set forth herein. In the event the Lessee uses or attempts to use said lease for any other purposes, without the Lessor's written consent, this Lease shall automatically terminate and all rights and privileges granted hereunder shall automatically revert to the Lessor.


7. This lease shall remain in full force and effect unless and until the Articles of Designation are terminated or the Lessee defaults. In either event, the Lessor may elect to terminate this lease with ninety (90) day's prior written notice to the Lessee. This lease may be terminated by the Lessee at any time with ninety (90) days prior written notice to the Lessor.


8. If this lease is terminated, the Lessee shall vacate the premises on or before the effective date of termination and shall remove all equipment, materials, improvements and the like placed thereon. Any equipment, materials, improvements and the like remaining on the property after the termination date shall automatically become the property of the Lessor. Upon termination, the area shall be restored to its condition prior to the execution of this lease.

9. This lease is personal in nature and shall not be assigned or sub-leased.

STATE BOARD OF AGRICULTURE


STATE BOARD OF LAND COMMISSIONERS

  
\_\_\_\_\_  
President

  
\_\_\_\_\_  
President

Attest:   
\_\_\_\_\_  
Secretary

  
\_\_\_\_\_  
Register

  
\_\_\_\_\_  
Engineer

(Seal)

(Seal)

NATURAL AREAS PROGRAM, DEPARTMENT OF NATURAL RESOURCES  
STATE OF COLORADO  
OWL CANYON PINYON GROVE NATURAL AREA

## ARTICLES OF DESIGNATION

These ARTICLES OF DESIGNATION, made this 31 day of November, 1978, by and between the STATE DEPARTMENT OF NATURAL RESOURCES, 1313 Sherman Street, Room 718, Denver, CO 80203, hereinafter the Department and the STATE BOARD OF LAND COMMISSIONERS, 1313 Sherman Street, Room 620, Denver, CO 80203, hereinafter the Board.

WHEREAS, the Board on behalf of the State of Colorado, controls and manages certain state owned lands, situate in the County of Larimer, State of Colorado, hereinafter the Property; and

WHEREAS, the Board declares that the highest and best use of the Property is that it be preserved and protected; and

WHEREAS, the Department is authorized by the Colorado Natural Areas Act, C.R.S. 1973, 36-10-101, et seq., hereinafter the Act, to administer a Colorado Natural Areas Program, hereinafter the Program; and

WHEREAS, the Act establishes a Natural Areas Council, hereinafter the Council, which advises the Department on the administration of the Program and which approves the designation of Natural Areas by the Department; and

WHEREAS, the Department has determined, pursuant to its criteria, that the Property is a natural area which would be desirable to include within the Colorado Natural Areas System as a designated Natural Area; and

WHEREAS, as a result of the attributes of the Property, the Property provides one or more of the benefits described in C.R.S. 1973, 36-10-104(1).

NOW THEREFORE, it is hereby agreed that:

1. Designation of Property as a Natural Area. Upon filing of these Articles of Designation with, and the acceptance of same by, the Department, with the advice and approval of the Council, the Property described in Exhibit A, attached hereto and incorporated herein by reference, shall become a designated scientific and interpretive natural area and thereby shall become part of the Colorado Natural Areas System. Said designated natural area shall be known as the Owl Canyon Pinyon Grove Natural Area.

2. Purpose of Designation. The Department has determined, upon recommendation by the Council, that the Property qualifies as a natural area to be included in the Colorado Natural Areas System due to the following:

- a. The Property contains a disjunct population of Pinus edulis (two needle pinyon) which is at the northeastern extremity of its range; and
- b. The Property serves as a study site, historic, present and future, for the biology of Pinus edulis and its associated habitat; and
- c. The Property contains populations of plant species which are of special interest, including uncommon xerophytic ferns such as Pellaea atropurpurea.

This particular property also contains a very important set of archeological sites which are clearly eligible for inclusion on the National and State Registers of Historic Places.

As a result of these attributes, the Property provides, among other benefits, the following benefits:

- a) It serves as an example of the native condition in studies relating to air, water, and soil quality and habitat productivity;
- b) It serves as resource material from which new knowledge may be derived and as a reservoir of genetic material which has present and future value to scientific inquiry;
- c) It provides habitat for rare plant species;
- d) It serves as an outdoor classroom and laboratory for scientific study by students of all ages; and
- e) It serves as an area of natural diversity which enriches the meaning and enjoyment of human life.

3. Rights and Duties of the Department. The Department shall list the Property as a designated natural area of the Colorado Natural Areas System and provide the Board with a Certificate indicating said designation. This designation evidences the desire of the Department that the Property be protected from impacts adversely affecting the attributes for which the Property is designated.

- a. Access. The degree of access granted to the Property will be addressed by the management plan described in Paragraph 4. Such granted access must be consistent with and promote the purposes of this Agreement.
- b. Inspection. The Department shall have the right to inspect the Property from time to time to confirm that it is being used solely for the purposes stated in Paragraph 4.

4. Rights and Duties of the Board. The Board, through its Lessee, shall maintain the Property solely as a natural area, for scientific, educational and aesthetic purposes, and keep the Property entirely in its natural state, excepting the undertaking of scientific research and establishment of such improvements as may be appropriate to effectuate the foregoing purposes without impairing the essential natural character. A comprehensive management plan will be prepared by the Board through its Lessee and submitted to the Department for approval within six months of the effective date of this agreement. The management of the Property shall be the responsibility of the Board through its Lessee pursuant to the policies and goals described in the management plan which, when approved, will be attached hereto and incorporated herein by reference. The Board shall notify the Department upon termination of or execution of any lease or any other document granting a property interest in the Property. All documents affecting the Property executed by the Board subsequent to the date of this Agreement shall be subject to this Agreement, which shall be attached thereto and incorporated therein by reference. Except as so stated, the Board may continue to exercise all of its legally mandated rights and duties regarding the Property.

5. Binding Effect. This Agreement shall be binding upon the parties hereto and upon any successors in interest to the Property. Any sale or transfer of the Property by the Board shall be subject to this Agreement which shall be attached to any document of purchase or transfer and incorporated therein by reference. The purchaser or transferee shall succeed to the Board's rights and duties hereunder.

( )

6. Default. If any party reasonably believes that any other party is in default in any of its obligations under this Agreement, it may give any other party written notice of the alleged default. Promptly thereafter, the parties shall confer and make a good faith effort to correct the default and to resolve any difference of opinion which may exist as to the respective rights and duties under this Agreement. Default by the Board or its Lessee may result in the removal of the Property from the Colorado Natural Areas System.

7. Termination. If any party desires to terminate this Agreement, it shall so notify any other party and give said other party (ies) an opportunity to confer regarding the reasons for termination. No less than 90 days after said initial notice, the notifying party may terminate this Agreement by notice to said other party (ies). At the Board's request, following termination of this Agreement, the Department shall execute and deliver to the Board a release of all its right, title, and interest in the Property arising out of this Agreement.

8. Notice. All notices to be given pursuant to this Agreement shall be in writing and shall be sent postage prepaid by registered or certified mail, return receipt requested to the addresses first listed above or to such other person or address as the party to be notified may have designated prior thereto by written notice to the other party. Any notice so mailed shall be effective upon receipt.

9. Amendments. These Articles may be amended in writing by the parties hereto with approval of the Council.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement on the day first written above.

STATE BOARD OF LAND COMMISSIONERS

By *Randy Rogers*  
President

\_\_\_\_\_  
Register  
*Robert J. McPherson*  
Engineer

STATE OF COLORADO  
DEPARTMENT OF NATURAL RESOURCES

By *Harris D. Sherman*  
Harris D. Sherman  
Executive Director

APPROVED:

NATURAL AREAS COUNCIL

By *Sue Cannon*  
Sue Cannon  
Chairman

APPROVED:

*James L. Wilson*  
Assistant Attorney General

PIÑON GROVE

Legal Description

A parcel of land being located in the West One-half of the Northeast One-quarter (W/2 NE/4), the Southeast One-quarter of the Northeast One-quarter (SE/4 NE/4), the East One-half of the Northwest One-quarter (E/2 NW/4), and the North One-half of the Southeast One-quarter (N/2 SE/4) of Section Thirty-six (Sec. 36), Township Ten North (T 10 N), Range Seventy West (R 70 W) of the Sixth Principal Meridian (6th P.M.) in Larimer County, State of Colorado;

Being more particularly described by metes and bounds as follows:

Beginning at a point on the north boundary line of said Sec. 36, said point being the north one-quarter corner of said Sec. 36;

Thence North  $89^{\circ} 42'$  West along the north boundary a distance of 450.0 feet to "Corner D";

Thence South  $13^{\circ} 58'$  East a distance of 3,448.0 feet to "Corner A";

Thence South  $88^{\circ} 39'$  East a distance of 403.0 feet to the centerline of railroad trackage ("Station A" of Right-of-way No. 515, Bk. 5);

Thence continuing South  $88^{\circ} 39'$  East a distance of 590.0 feet to "Corner B";

Thence North  $03^{\circ} 09'$  West a distance of 3353.5 feet to a point on the north boundary line of Sec. 36, said point being "Corner C";

Thence North  $89^{\circ} 42'$  West along the north boundary of said Sec. 36, a distance of 1190.0 feet to the point of beginning.

Containing 101 acres more or less.

EXCEPT, a rectangular parcel of land for purposes of ingress, egress and maintenance which extends fifty (50) feet to the East, one hundred (100) feet to the West, and one hundred (100) feet to the North of the Colorado and Southern Railroad Spur.

Bearings based on the assumption that the railroad spur (Right-of-Way #515, Bk 5) bears N  $03^{\circ} 21'$  E; North boundary assumed to be N  $89^{\circ} 42'$  W per original G.L.O survey notes, dated January 21, 1878.

This property is diagrammatically represented on the attached page 2.



## APPENDIX C

THE NATURAL AREAS PROGRAM  
DEPARTMENT OF NATURAL RESOURCES  
STATE OF COLORADO  
OWL CANYON PINYON GROVE NATURAL AREA (Roberts' Ranch)

### ARTICLES OF DESIGNATION

These ARTICLES OF DESIGNATION, made this 5th day of June, 1979, by and between the STATE DEPARTMENT OF NATURAL RESOURCES, 1313 Sherman Street, Room 718, Denver, Colorado 80203, hereinafter the Department, and Catherine and J. Evan Roberts, Livermore, Colorado, 80536, hereinafter referred to as the Owner.

WHEREAS, the Owners own certain land, situate in the County of Larimer, State of Colorado, hereinafter the Property; and

WHEREAS, said Property is similar to and adjacent to the Owl Canyon Pinyon Grove Natural Area; and

WHEREAS, the Owners desire that said Property be preserved and protected; and

WHEREAS, the Department is authorized to conduct and administer the provisions of the Colorado Natural Areas Act as set forth in Colorado Session Laws 1977, Ch. 471, Sec. 1 at 1624 (C.R.S. 1973, 36-10-101, et seq.); and

WHEREAS, the Natural Areas Act established a statewide Colorado Natural Areas Program to provide a means by which specific examples of Colorado's natural features and ecological phenomena can be identified, evaluated and protected through a statewide system of designated natural areas; and

WHEREAS, the Act establishes a Natural Areas Council, hereinafter the Council, which advises the Department on the administration of the Program and which approves the designation of Natural Areas by the Department; and

WHEREAS, the Department has determined, pursuant to its criteria, that the Property is a natural area which would be desirable to include within the Natural Areas System as a designated natural area; and

APPENDIX B

S-36778

LEASE OF STATE LANDS

THIS LEASE made this 3rd day of November, 1978, by and between the State of Colorado, BOARD of LAND COMMISSIONERS, hereinafter the Lessor, and the State of Colorado, Board of Agriculture for the use and benefit of COLORADO STATE UNIVERSITY, hereinafter the Lessee.

WHEREAS, the Lessor owns, controls and manages certain land situate in the County of Larimer, State of Colorado, to wit: T. 10 N., R. 70 W., 6th P.M., Sec. 36; and

WHEREAS, a Pinon Grove occupies a portion of said land; and

WHEREAS, the Lessor has entered into Articles of Designation by document signed on November 3, 1978 with the State of Colorado, Department of Natural Resources whereby said Pinon Grove has been designated a scientific and interpretative natural area to be known as the Owl Canyon Pinon Grove Natural Area; and

WHEREAS, the Lessor desires that the Pinon Grove Area be managed consistent with the purposes for which said area was designated a natural area; and

WHEREAS, the Lessee desires and has the necessary resources to manage said area for said purposes as part of its educational training program; and

WHEREAS, the Lessee recognizes and desires to maintain the uniqueness of the Owl Canyon Pinon Grove Natural Area.

NOW THEREFORE, for and in consideration of the covenants below, it is hereby agreed that:

1. The Lessor shall lease the Pinon Grove Area to the Lessee for educational purposes and for purposes set forth in the Articles of Designation pertaining to said area. Said Articles, which include a legal description of the Pinon Grove Area, are attached hereto as Exhibit 1 and incorporated herein by reference.

RECORDED

WHEREAS, as a result of the attributes of the Property, the Property provides one or more of the benefits described in C.R.S. 1973, 36-10-104 (1); and

WHEREAS, the existing Owl Canyon Pinyon Grove Natural Area, which is adjacent to said Property, is owned by the State Board of Land Commissioners and is managed by Colorado State University,

NOW THEREFORE, it is hereby agreed that:

1. Designation of Property as a Natural Area. Upon filing of these Articles of Designation with, and the acceptance of the same by, the Department, with the advice and approval of the Council, the Property described in Exhibit A, attached hereto and incorporated herein by reference shall become a designated scientific and interpretive natural area and thereby shall become part of the Colorado Natural Areas System. Said designated natural area shall be known as the Owl Canyon Pinyon Grove Natural Area (Roberts' Ranch).

2. Purpose of Designation. The Department has determined, upon recommendation by the Council, that the Property qualifies as a natural area to be included in the Colorado Natural Areas System due to the following:

- a. The Property contains a disjunct population of Pinus edulis (two needle pinyon) which is at the northeastern extremity of its range; and
- b. The Property serves as a study site, historic, present and future, for the biology of Pinus edulis and its associated habitat. As a result of these attributes, the Property provides, among other benefits, the following benefits:
  1. It serves as an example of the native condition in studies relating to air, water, and soil quality and habitat productivity;
  2. It serves as resource material from which new knowledge may be derived and as a reservoir of genetic material which has present and future value to scientific inquiry;

3. It serves as an outdoor classroom and laboratory for scientific study by students of all ages; and

4. It serves as an area of natural diversity which enriches the meaning and enjoyment of human life.

3. Rights and Duties of the Department. The Department shall list the Property as a designated natural area of the Colorado Natural Areas System and provide the Owners with a Certificate indicating said designation. This designation evidences the desire of the Department that the Property be protected from impacts adversely affecting the attributes for which the Property is designated.

a. Access. The degree of access granted to the Property will be addressed by the management plan described in Paragraph 4. Such granted access must be consistent with and promote the purposes of this Agreement.

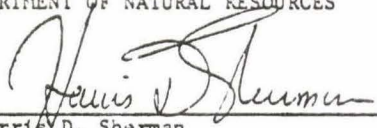
b. Inspection. The Department shall have the right to inspect the Property from time to time to confirm that it is being used solely for the purposes stated in Paragraph 4.

4. Rights and Duties of the Owners. The Owners shall assure that the Property remains solely as a natural area for scientific, educational, and aesthetic purposes, and shall keep the Property entirely in its natural state subject to the management provisions set forth in the comprehensive management plan prepared by Colorado State Forest Service for the Owl Canyon Pinyon Grove Natural Area in its entirety. The Property shall be managed by State Forest Service and shall be included in the management plan which shall be submitted to the Department for approval within three months of the effective date of this agreement, and which, when approved, will be attached hereto and incorporated herein by reference. All documents affecting the Property executed by the Owners subsequent to the date of this Agreement shall be subject to this Agreement, which shall be attached thereto and incorporated therein by reference. Except as so stated, the Owners may continue to exercise all of their rights and duties regarding the Property.

5. Binding Effect. This Agreement shall be binding upon the parties hereto and upon any successors in interest to the Property. Any sale or transfer

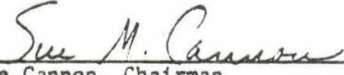


STATE OF COLORADO  
DEPARTMENT OF NATURAL RESOURCES

By   
Harris D. Sherman  
Executive Director

APPROVED:

NATURAL AREAS COUNCIL

By   
Sue Cannon, Chairman

APPROVED:

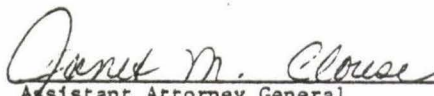
  
Assistant Attorney General

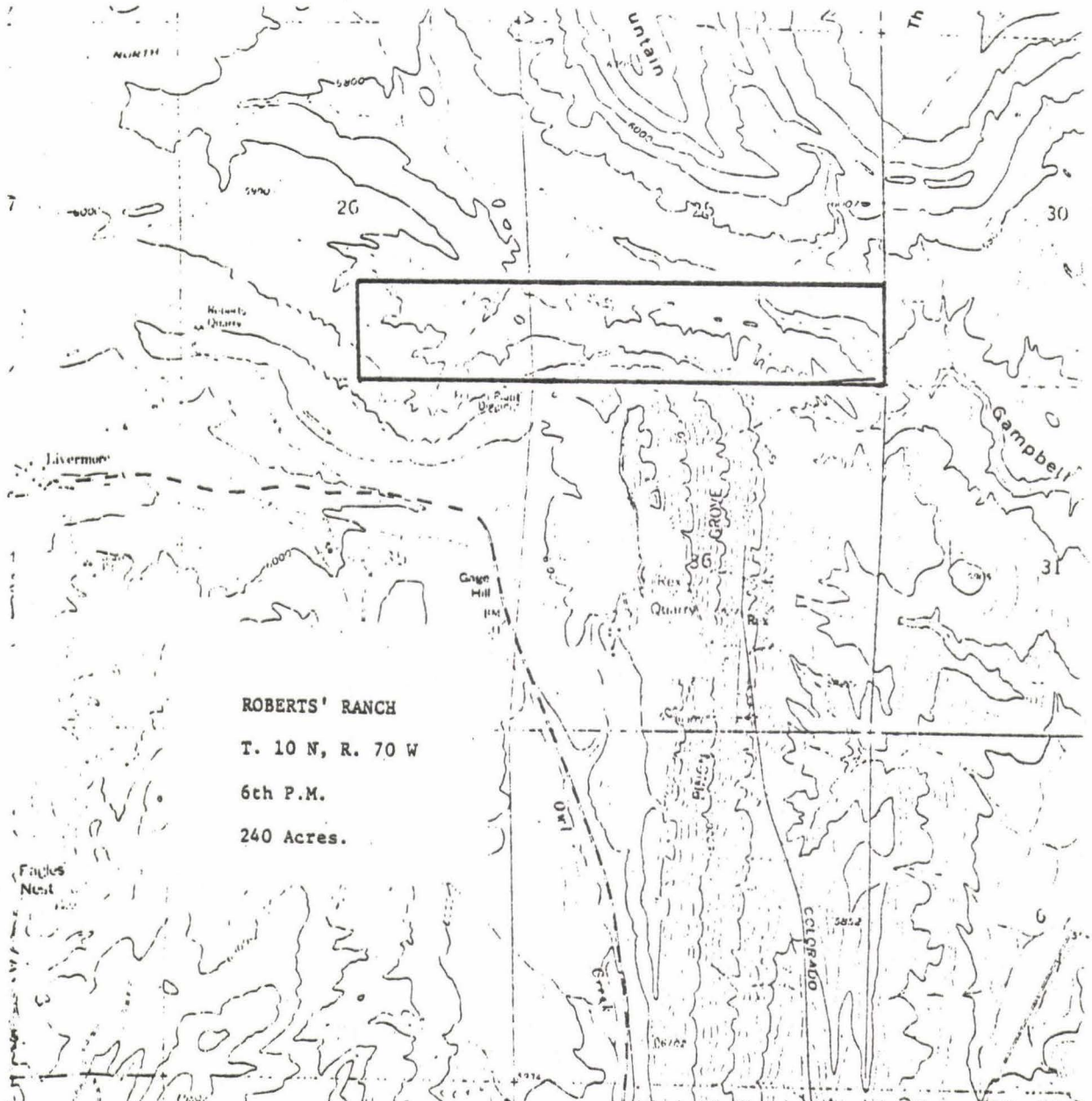
EXHIBIT A

OWL CANYON PINYON GROVE NATURAL AREA

(Roberts' Ranch)

Legal Description

A parcel of land being located in the South one-half of the South one-half (S/2, S/2) of Section Twenty-Five (Sec. 25); the South one-half of the Southeast one-quarter (S/2, SE/4); Township Ten North (T 10 N), Range Seventy West (R 70 W) of the Sixth Principal Meridian (6th P.M.) in Larimer County, State of Colorado.



APPENDIX D

APPLICATION FOR USE PERMIT

OWL CANYON PINYON GROVE NATURAL AREA

APPLICANT: \_\_\_\_\_

GROUP REPRESENTED: \_\_\_\_\_

ADDRESS: \_\_\_\_\_  
Street City State Zip

PHONE: \_\_\_\_\_

PERIOD OF TIME FOR WHICH PERMIT IS REQUESTED: \_\_\_ / \_\_\_ / \_\_\_ - \_\_\_ / \_\_\_ / \_\_\_

EXPECTED NUMBER OF VISITS: \_\_\_\_\_ SIZE OF GROUP \_\_\_\_\_

Describe intended use, research or observations to be made:

1. Purpose: \_\_\_\_\_

\_\_\_\_\_

2. Specific Objectives: \_\_\_\_\_

\_\_\_\_\_

3. Methods: \_\_\_\_\_

\_\_\_\_\_

Except by special permission, the applicant agrees to remove all evidence of human activity created by the applicant or applicant's group before expiration of the permit and to report any irregularities to the Colorado State Forest Service. The applicant and the applicant's group holds the following: the Department of Natural Resources (including the Colorado Natural Areas Program, the Colorado Natural Areas Council and the State Board of Land Commissioners), the Colorado State Forest Service, and Evan and Catherine Roberts, and Holly Sugar Corporation and its operating contractor harmless from any and all liability or claims from damages that may arise from access to and use of the Owl Canyon Pinyon Grove Natural Area.

Applicant's Signature \_\_\_\_\_ Date: \_\_\_\_\_

Submit to:  
Colorado State Forest Service  
Colorado State University  
Fort Collins, Colorado 80523

APPENDIX D

OWL CANYON PINYON GROVE NATURAL AREA

PERMIT FOR USE

PERMIT APPLICANT: \_\_\_\_\_ PERMIT NO. \_\_\_\_\_

ADDRESS: \_\_\_\_\_ DATE: \_\_\_\_\_

\_\_\_\_\_

PERMIT PERIOD: \_\_\_/\_\_\_/\_\_\_ - \_\_\_/\_\_\_/\_\_\_

NO. OF VISITS: \_\_\_\_\_

SIZE OF GROUP: \_\_\_\_\_

PERMIT DENIED: \_\_\_\_\_

REASON FOR DENIAL: \_\_\_\_\_

\_\_\_\_\_

PERMIT APPROVED: \_\_\_\_\_

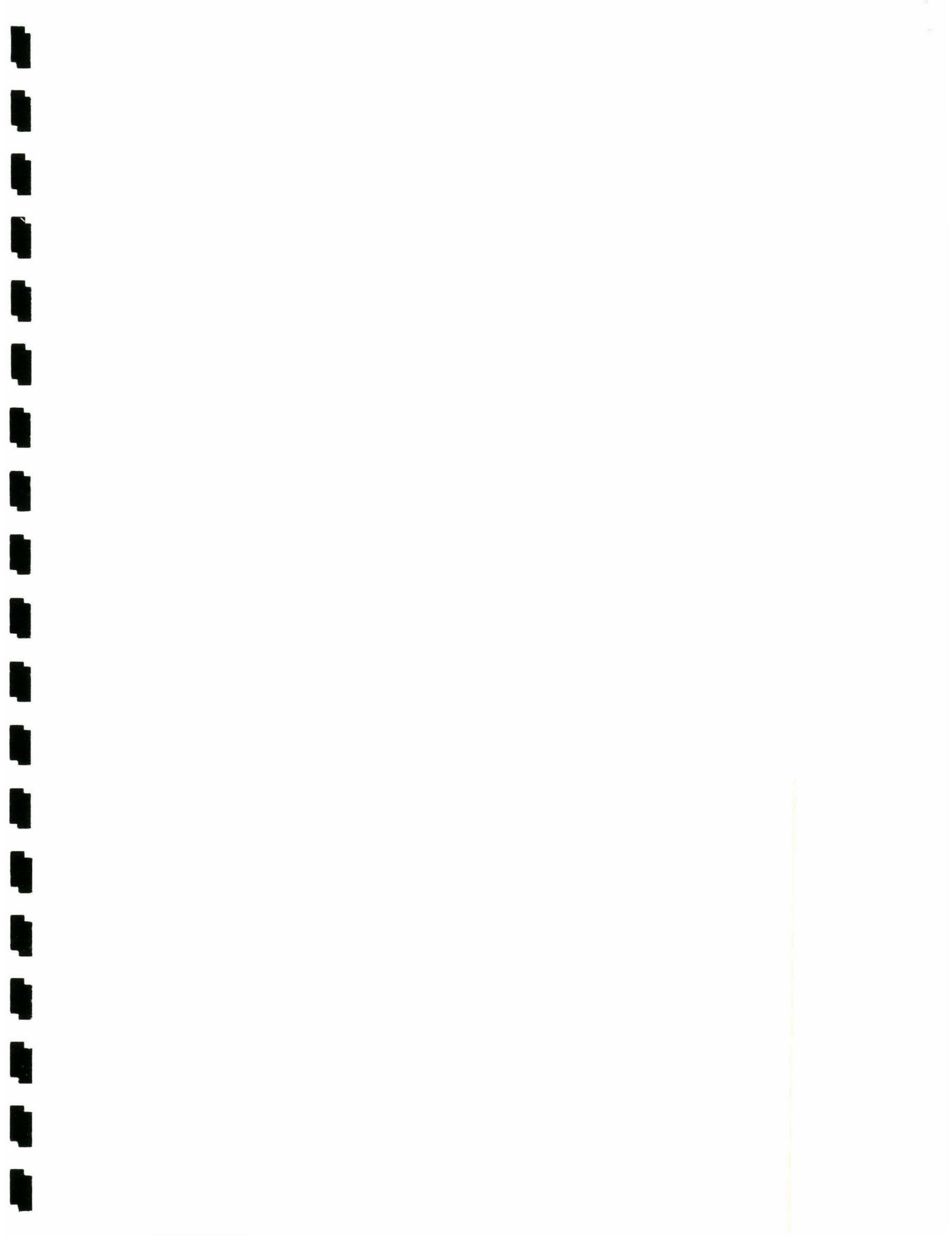
OTHER REFERRALS OR RECOMMENDATIONS:

\_\_\_\_\_  
Colorado State Forest Service  
Administrator

I have read and agree to the terms and conditions for use of the Owl Canyon Pinyon Grove Natural Area as set forth in the Application for Use Permit.

Applicant's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Applicant must sign Permit and present to the Holly Sugar Corporation or its operating contractor at the entrance to the Pinyon Grove,



OWL CANYON PINON GROVE  
MANAGEMENT PLAN

OWL CANYON PINON GROVE  
MANAGEMENT PLAN

1. Area to be managed:

The Owl Canyon Pinon Grove is described in Appendix A and consists of two parts, one part owned by the State Board of Land Commissioners, and one part owned by J. Evan and Catherine Roberts. The approximate acreage to be managed is 202 acres.

The Owl Canyon Pinon Grove Natural Area is known as the northeasternmost stand of pinon pine (Pinus edulis) in North America. Considerable research on the grove has been carried out in the past in an attempt to discover its origin, but no theories presented have been conclusive. The pinon trees are quite old (200-500 years); however, reproduction is well dispersed throughout the stand.

The pinon are of widely differing ages and vary in size from seedlings less than one inch in diameter to mature trees over 16 inches in diameter. Porcupines, deer, coyotes, rabbits, several species of birds and insects and some squirrels inhabit the area either seasonally or year round. Pinon provide food and shelter for these species. Biota interact continually and evidence of this exists in dead and dying pinon killed by porcupine and mountain pine beetle.

The grove is growing on a sandstone hog-back known as the Morrison formation which is underlain by a deposit of limestone. Since the 1940s, this limestone has been quarried in parts of Section 36 to produce process chemicals for the refining of sugar beets. Holly Sugar Co., Inc. has been the main lessee for this limestone.

Concern about the destruction of the pinon grove by quarrying began in 1950. Mr. and Mrs. J. Evan Roberts, long-time ranchers in the Livermore area,

have consistently promoted the protection and management of the grove as a natural area. Other groups have also shown interest in and support for preservation of the pinon grove.

Off-site activities associated with limestone quarrying may also be affecting the grove and careful monitoring of these activities is necessary to assure minimal impacts on natural processes.

The grove is of significant archeological interest. One developed archeologic site exists on the area and others have been located by the State Archeologist. (A Folsom point find was made several years ago in an area adjacent to the grove in Section 35. This location is not a part of the currently designated natural area.)

2. Landowners:

State Board of Land Commissioners  
1313 Sherman St., Room 620  
Denver, Colorado 80203  
839-3453

J. Evans and Catherine Roberts  
Livermore, Colorado 80536

3. Managing Agency:

Colorado State Forest Service  
Colorado State University  
Fort Collins, Colorado 80523

Authority for Management Function:

That part of the Pinon Grove owned by the State Board of Land Commissioners and described in Appendix B, has been leased to Colorado State University (CSU), which in turn has designated the Colorado State Forest Service to manage the area.

That part of the Pinon Grove owned by J. Evan and Catherine Roberts, by agreement with the owners, will also be managed by the Colorado State Forest Service.

This plan is prepared in agreement with the lease between the Colorado State Board of Land Commissioners and CSU, and pursuant to the Articles of Designation for the Owl Canyon Pinon Grove (Roberts Ranch) between the Colorado Department of Natural Resources and J. Evan and Catherine Roberts. (Appendix C - forthcoming)

4. Duration of Management Agreement:

The management agreement shall remain in effect unless the Articles of Designation for either of the two named parts are terminated, or CSU, as the lessee of the portion owned by the State Board of Land Commissioners, defaults. The plan will, however, be continually reviewed and updated. It shall also be flexible in nature to provide for contingencies.

5. Purpose of Management:

The Owl Canyon Pinon Grove Natural Area, with the addition of the Roberts Ranch area, will be managed for scientific research and educational purposes. Consistent with these purposes, it is the policy of the Colorado State Forest Service and the Colorado Natural Areas Council to evaluate and limit any human activity that might interfere with the processes of nature.

6. Management Goals:

1. To protect the area from excessive human activity and to limit use of the area to scientific research and educational activities.
2. To observe processes of nature occurring in the area to centralize documentation of research activities in readily retrievable form.
3. To monitor scientific and educational activities on the grove.
4. To monitor the physical condition of the grove.

7. Specific Management Activities:

- A. To protect the area from excessive human activity and to limit use of the area to scientific research and educational activities.

In order to insure that the property is being used for the purposes intended, a permit to conduct research or interpretive tours will be required. A sample permit is attached (see Appendix D). The permit request is to be filed with the Colorado State Forest Service, Colorado State University, Fort Collins, at least one week in advance of the date requested for a site visit. The permit request will be reviewed by CSFS for possible conflicting uses. Other departments may be called upon to provide information on suitability of the area for the intended use. The signature of the CSFS representative constitutes approval of the permit. To obtain access to the Owl Canyon Pinon Grove, the approved permit must be presented to the Colorado Lein Co. at their office at the entrance to the grove. These permits may be granted to any individual or group for a specified number of visits or for a specified period of time as long as the intended use meets the intended purpose of management. A log of permit requests and approved permits shall be maintained continuously.

Access to the area will be by non-motorized means except on established roads where vehicles will be allowed. Failure to use the area as specified in the permit will result in permit cancellation.

No improvements on the Owl Canyon Pinon Grove are planned at this time. Should the Colorado Lein Co. cease operations or should high demand for access to the area develop, improvements such as fencing may be required. It is anticipated that by limiting access to scientific and interpretive purposes, littering and refuse will be minimized.

B. To observe processes of nature occurring on the area and to centralize documentation of research activities in readily retrievable form.

Researchers shall be required to file an annual progress report describing the results of their research being conducted on the Pinon Grove. In addition, researchers will be requested to provide the Colorado State Forest Service

with a copy of the final report or research findings derived from work at the Pinon Grove.

C. To monitor scientific and educational activities on the Grove.

A review of the activities on the Grove will be conducted annually by the Colorado State Forest Service. A written report will be presented to the State Land Board, J. Evan and Catherine Roberts, the Colorado Natural Areas Program, and interested CSU departments.

D. To monitor the physical condition of the Pinon Grove.

CSFS will make periodic inspections (at least semiannually) to the grove to determine the Grove's condition. A report on the condition will be prepared annually as a part of C above.

8. Personnel required to carry out these responsibilities:

.1 FTE for administrative purposes is the anticipated need at this time. Should additional requirements be needed, CSFS will revise this plan and present requests for funding in normal budgeting processes. No additional operating or capital requirements are foreseen for FY 1980.

9. Funding Source:

Forest and Watershed funds (.1 FTE) to be administered by the Colorado State Forest Service.

Limiting and monitoring human activity to uses consistent with the scientific and educational purposes is the main objective of a management plan for the Owl Canyon Pinon Grove. CSFS hopes to contribute to scientific research and to provide a service for the State Board of Land Commissioners and the Colorado Natural Areas Program through the implementation of this plan.

\_\_\_\_\_  
Colorado Natural Areas Program

\_\_\_\_\_  
Date

\_\_\_\_\_  
Board of Land Commissioners

\_\_\_\_\_  
Date

*J. Evan Roberts*  
*Catherine Roberts*

\_\_\_\_\_  
J. Evan Roberts  
Catherine Roberts

\_\_\_\_\_  
Date

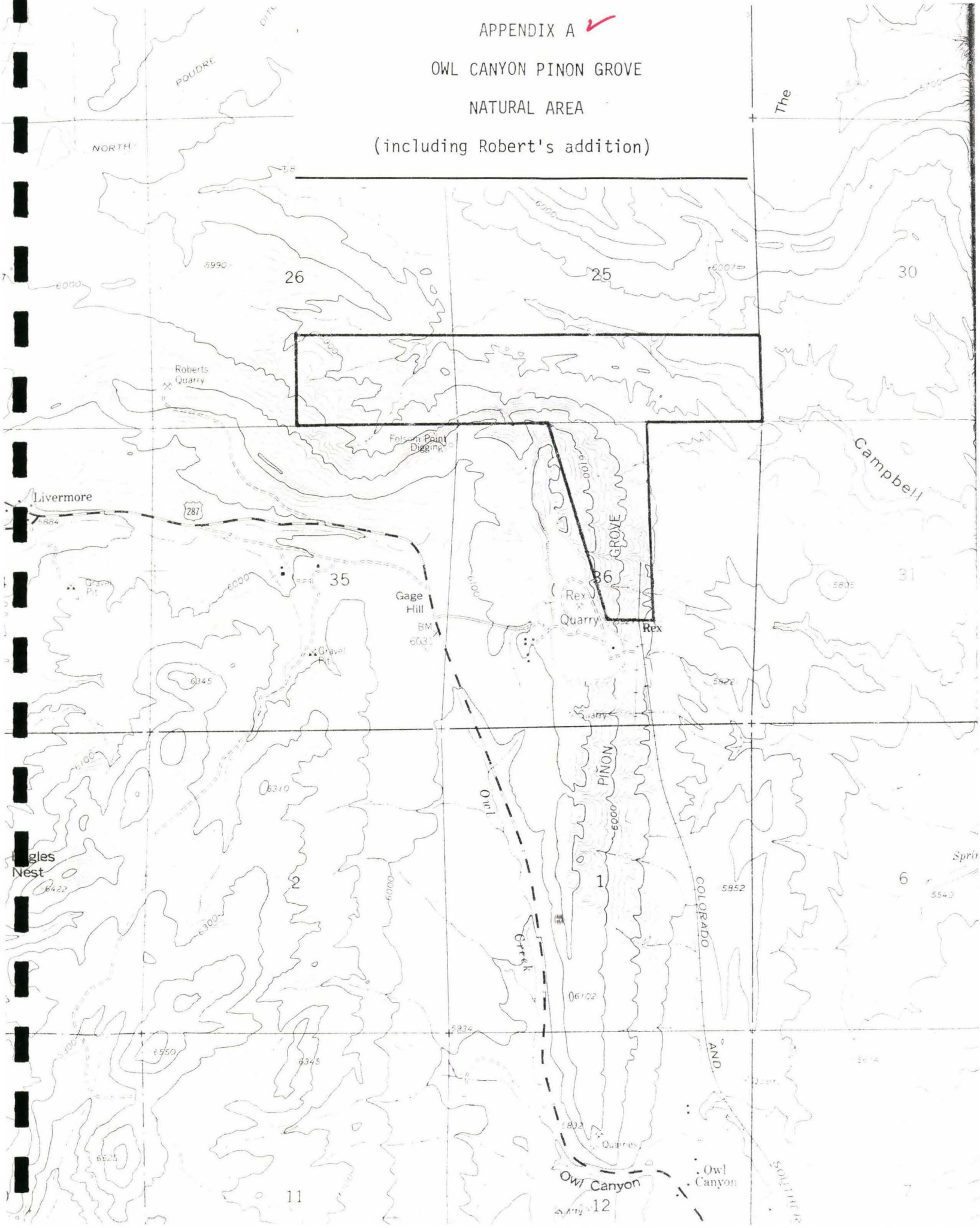
*Thomas B. Bruden*  
\_\_\_\_\_  
Colorado State Forest Service

*August 9, 1979*  
\_\_\_\_\_  
Date

APPENDIX A ✓

OWL CANYON PINON GROVE  
NATURAL AREA

(including Robert's addition)



APPENDIX B

S-36778

LEASE OF STATE LANDS

THIS LEASE made this 3rd day of November, 1978, by and between the State of Colorado, BOARD of LAND COMMISSIONERS, hereinafter the Lessor, and the State of Colorado, Board of Agriculture for the use and benefit of COLORADO STATE UNIVERSITY, hereinafter the Lessee.

WHEREAS, the Lessor owns, controls and manages certain land situate in the County of Larimer, State of Colorado, to wit: T. 10 N., R. 70 W., 6th P.M., Sec. 36; and

WHEREAS, a Pinon Grove occupies a portion of said land; and

WHEREAS, the Lessor has entered into Articles of Designation by document signed on November 3, 1978 with the State of Colorado, Department of Natural Resources whereby said Pinon Grove has been designated a scientific and interpretative natural area to be known as the Owl Canyon Pinon Grove Natural Area; and

WHEREAS, the Lessor desires that the Pinon Grove Area be managed consistent with the purposes for which said area was designated a natural area; and

WHEREAS, the Lessee desires and has the necessary resources to manage said area for said purposes as part of its educational training program; and

WHEREAS, the Lessee recognizes and desires to maintain the uniqueness of the Owl Canyon Pinon Grove Natural Area.

NOW THEREFORE, for and in consideration of the covenants below, it is hereby agreed that:

1. The Lessor shall lease the Pinon Grove Area to the Lessee for educational purposes and for purposes set forth in the Articles of Designation pertaining to said area. Said Articles, which include a legal description of the Pinon Grove Area, are attached hereto as Exhibit 1 and incorporated herein by reference.

RECORDED CD

2. This lease is subject to all the terms and conditions of the above-referenced Articles of Designation. Pursuant to said Articles, the Lessee shall prepare a comprehensive Management plan which shall at least address the following: the access to the Pinon Grove Area, measures taken to assure that access will only be as intended, scientific research to be undertaken on said area, interpretative use of the area, improvements proposed for said area, and any other matter which will affect the natural state of the area. Said plan shall be submitted to the Lessor and the Department of Natural Resources by no later than May 3, 1979 for approval.

3. The Lessee shall pay the Lessor, at the office of the Lessor, the sum of fifty (50) dollars per year as rental each and every year, in advance, during the term of this lease. Rental will be subject to review and revision annually. To have and to hold, the above premises for a term of ten years, from the 3rd day of November, 1978 to the 3rd day of November, 1988.

4. During the term of this lease the Lessor shall not sell, lease, or grant rights-of-way across the leased premises unless said action would not substantially interfere with the purposes for which this lease was executed.

5. The Lessee may use water produced on the leased premises. However, the Lessor retains ownership to all water rights established thereon or with respect thereto. Any adjudication of such water rights shall be in the name of the Lessor.

6. This lease is only for the purposes set forth herein. In the event the Lessee uses or attempts to use said lease for any other purposes, without the Lessor's written consent, this Lease shall automatically terminate and all rights and privileges granted hereunder shall automatically revert to the Lessor.


7. This lease shall remain in full force and effect unless and until the Articles of Designation are terminated or the Lessee defaults. In either event, the Lessor may elect to terminate this lease with ninety (90) day's prior written notice to the Lessee. This lease may be terminated by the Lessee at any time with ninety (90) days prior written notice to the Lessor.

8. If this lease is terminated, the Lessee shall vacate the premises on or before the effective date of termination and shall remove all equipment, materials, improvements and the like placed thereon. Any equipment, materials, improvements and the like remaining on the property after the termination date shall automatically become the property of the Lessor. Upon termination, the area shall be restored to its condition prior to the execution of this lease.

9. This lease is personal in nature and shall not be assigned or sub-leased.

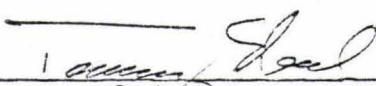
STATE BOARD OF AGRICULTURE


STATE BOARD OF LAND COMMISSIONERS

  
\_\_\_\_\_  
President

  
\_\_\_\_\_  
President

Attest:   
\_\_\_\_\_  
Secretary

  
\_\_\_\_\_  
Register

  
\_\_\_\_\_  
Engineer

(Seal)

(Seal)

NATURAL AREAS PROGRAM, DEPARTMENT OF NATURAL RESOURCES  
 STATE OF COLORADO  
 OWL CANYON PINYON GROVE NATURAL AREA

## ARTICLES OF DESIGNATION

These ARTICLES OF DESIGNATION, made this 31 day of November, 1978, by and between the STATE DEPARTMENT OF NATURAL RESOURCES, 1313 Sherman Street, Room 718, Denver, CO 80203, hereinafter the Department and the STATE BOARD OF LAND COMMISSIONERS, 1313 Sherman Street, Room 620, Denver, CO 80203, hereinafter the Board.

WHEREAS, the Board on behalf of the State of Colorado, controls and manages certain state owned lands, situate in the County of Larimer, State of Colorado, hereinafter the Property; and

WHEREAS, the Board declares that the highest and best use of the Property is that it be preserved and protected; and

WHEREAS, the Department is authorized by the Colorado Natural Areas Act, C.R.S. 1973, 36-10-101, et seq., hereinafter the Act, to administer a Colorado Natural Areas Program, hereinafter the Program; and

WHEREAS, the Act establishes a Natural Areas Council, hereinafter the Council, which advises the Department on the administration of the Program and which approves the designation of Natural Areas by the Department; and

WHEREAS, the Department has determined, pursuant to its criteria, that the Property is a natural area which would be desirable to include within the Colorado Natural Areas System as a designated Natural Area; and

WHEREAS, as a result of the attributes of the Property, the Property provides one or more of the benefits described in C.R.S. 1973, 36-10-104(1).

NOW THEREFORE, it is hereby agreed that:

1. Designation of Property as a Natural Area. Upon filing of these Articles of Designation with, and the acceptance of same by, the Department, with the advice and approval of the Council, the Property described in Exhibit A, attached hereto and incorporated herein by reference, shall become a designated scientific and interpretive natural area and thereby shall become part of the Colorado Natural Areas System. Said designated natural area shall be known as the Owl Canyon Pinon Grove Natural Area.

2. Purpose of Designation. The Department has determined, upon recommendation by the Council, that the Property qualifies as a natural area to be included in the Colorado Natural Areas System due to the following:

- a. The Property contains a disjunct population of Pinus edulis (two needle pinyon) which is at the northeastern extremity of its range; and
- b. The Property serves as a study site, historic, present and future, for the biology of Pinus edulis and its associated habitat; and
- c. The Property contains populations of plant species which are of special interest, including uncommon xerophytic ferns such as Pellaea atropurpurea.

This particular property also contains a very important set of archeological sites which are clearly eligible for inclusion on the National and State Registers of Historic Places.

As a result of these attributes, the Property provides, among other benefits, the following benefits:

- a) It serves as an example of the native condition in studies relating to air, water, and soil quality and habitat productivity;
- b) It serves as resource material from which new knowledge may be derived and as a reservoir of genetic material which has present and future value to scientific inquiry;
- c) It provides habitat for rare plant species;
- d) It serves as an outdoor classroom and laboratory for scientific study by students of all ages; and
- e) It serves as an area of natural diversity which enriches the meaning and enjoyment of human life.

3. Rights and Duties of the Department. The Department shall list the Property as a designated natural area of the Colorado Natural Areas System and provide the Board with a Certificate indicating said designation. This designation evidences the desire of the Department that the Property be protected from impacts adversely affecting the attributes for which the Property is designated.

- a. Access. The degree of access granted to the Property will be addressed by the management plan described in Paragraph 4. Such granted access must be consistent with and promote the purposes of this Agreement.
- b. Inspection. The Department shall have the right to inspect the Property from time to time to confirm that it is being used solely for the purposes stated in Paragraph 4.
4. Rights and Duties of the Board. The Board, through its Lessee, shall maintain the Property solely as a natural area, for scientific, educational and aesthetic purposes, and keep the Property entirely in its natural state, excepting the undertaking of scientific research and establishment of such improvements as may be appropriate to effectuate the foregoing purposes without impairing the essential natural character. A comprehensive management plan will be prepared by the Board through its Lessee and submitted to the Department for approval within six months of the effective date of this agreement. The management of the Property shall be the responsibility of the Board through its Lessee pursuant to the policies and goals described in the management plan which, when approved, will be attached hereto and incorporated herein by reference. The Board shall notify the Department upon termination of or execution of any lease or any other document granting a property interest in the Property. All documents affecting the Property executed by the Board subsequent to the date of this Agreement shall be subject to this Agreement, which shall be attached thereto and incorporated therein by reference. Except as so stated, the Board may continue to exercise all of its legally mandated rights and duties regarding the Property.
5. Binding Effect. This Agreement shall be binding upon the parties hereto and upon any successors in interest to the Property. Any sale or transfer of the Property by the Board shall be subject to this Agreement which shall be attached to any document of purchase or transfer and incorporated therein by reference. The purchaser or transferee shall succeed to the Board's rights and duties hereunder.

( )

6. Default. If any party reasonably believes that any other party is in default in any of its obligations under this Agreement, it may give any other party written notice of the alleged default. Promptly thereafter, the parties shall confer and make a good faith effort to correct the default and to resolve any difference of opinion which may exist as to the respective rights and duties under this Agreement. Default by the Board or its Lessee may result in the removal of the Property from the Colorado Natural Areas System.

7. Termination. If any party desires to terminate this Agreement, it shall so notify any other party and give said other party (ies) an opportunity to confer regarding the reasons for termination. No less than 90 days after said initial notice, the notifying party may terminate this Agreement by notice to said other party (ies). At the Board's request, following termination of this Agreement, the Department shall execute and deliver to the Board a release of all its right, title, and interest in the Property arising out of this Agreement.

8. Notice. All notices to be given pursuant to this Agreement shall be in writing and shall be sent postage prepaid by registered or certified mail, return receipt requested to the addresses first listed above or to such other person or address as the party to be notified may have designated prior thereto by written notice to the other party. Any notice so mailed shall be effective upon receipt.

9. Amendments. These Articles may be amended in writing by the parties hereto with approval of the Council.



PIÑON GROVE

Legal Description

A parcel of land being located in the West One-half of the Northeast One-quarter (W/2 NE/4), the Southeast One-quarter of the Northeast One-quarter (SE/4 NE/4), the East One-half of the Northwest One-quarter (E/2 NW/4), and the North One-half of the Southeast One-quarter (N/2 SE/4) of Section Thirty-six (Sec. 36), Township Ten North (T 10 N), Range Seventy West (R 70 W) of the Sixth Principal Meridian (6th P.M.) in Larimer County, State of Colorado;

Being more particularly described by metes and bounds as follows:

Beginning at a point on the north boundary line of said Sec. 36, said point being the north one-quarter corner of said Sec. 36;

Thence North  $89^{\circ} 42'$  West along the north boundary a distance of 450.0 feet to "Corner D";

Thence South  $13^{\circ} 58'$  East a distance of 3,448.0 feet to "Corner A";

Thence South  $88^{\circ} 39'$  East a distance of 403.0 feet to the centerline of railroad trackage ("Station A" of Right-of-way No. 515, Bk. 5);

Thence continuing South  $88^{\circ} 39'$  East a distance of 590.0 feet to "Corner B";

Thence North  $03^{\circ} 09'$  West a distance of 3353.5 feet to a point on the north boundary line of Sec. 36, said point being "Corner C";

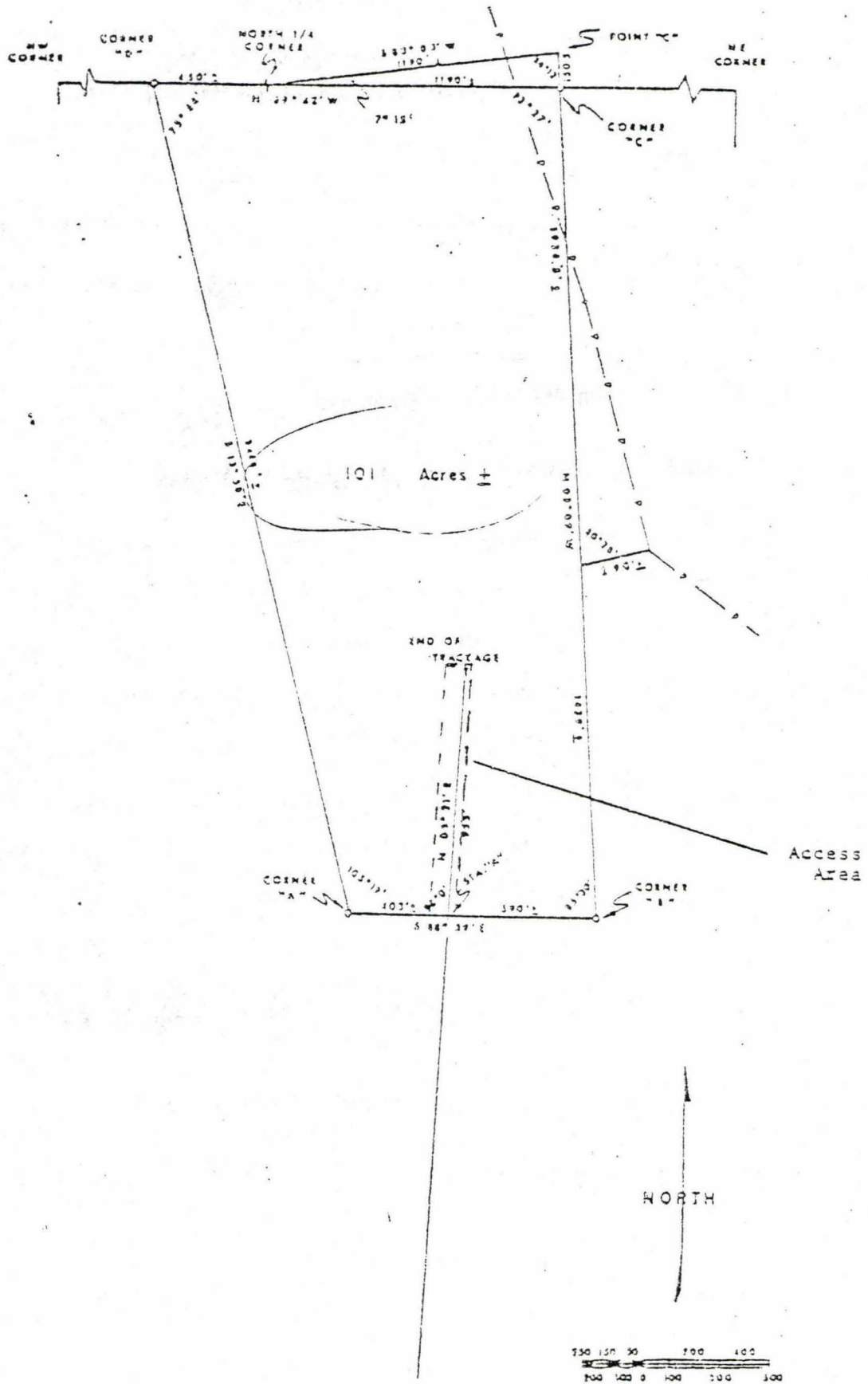
Thence North  $89^{\circ} 42'$  West along the north boundary of said Sec. 36, a distance of 1190.0 feet to the point of beginning.

Containing 101 acres more or less.

EXCEPT, a rectangular parcel of land for purposes of ingress, egress and maintenance which extends fifty (50) feet to the East, one hundred (100) feet to the West, and one hundred (100) feet to the North of the Colorado and Southern Railroad Spur.

Bearings based on the assumption that the railroad spur (Right-of-Way #515, Bk 5) bears N  $03^{\circ} 21'$  E; North boundary assumed to be N  $89^{\circ} 42'$  W per original G.L.O survey notes, dated January 21, 1878.

This property is diagrammatically represented on the attached page 2.



APPENDIX C  
APPLICATION FOR USE  
OWL CANYON PINON GROVE NATURAL AREA

Name of Applicant \_\_\_\_\_

Group Represented \_\_\_\_\_ Size of Group \_\_\_\_\_

Address \_\_\_\_\_  
Street Town State

Phone Number \_\_\_\_\_

Period of time for which permit is requested \_\_\_\_\_ - \_\_\_\_\_  
From To

Describe intended use, research or observations to be made.

A. Objectives \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

B. Methods \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Expected number of visits \_\_\_\_\_ . Size of group \_\_\_\_\_

Except by special permission, the applicant agrees to remove all evidence of human activity created by the applicant or applicants group before expiration of the permit and report any irregularities to CSFS.

Permittee Signature \_\_\_\_\_

Permit Number \_\_\_\_\_ Date \_\_\_\_\_

Permission \_\_\_\_\_  
Granted Denied Permittee

Reason for denial:

Colorado State Forest Service Other Referrals CSU Natural Areas Committee  
Administrator

