Research Natural Area

Name: William G. Telfer

Location:

State: NM County: Lincoln Forest: Lincoln District: Smokey Bear
T. 10S R. 11 E S. 27, 28, 33, 34, 35

Geology:

Description:

Area underlain by igneous rocks: extrusive andesitic volcanics intruded by monzonitic stocks.

Reference:

New Mexico State Highway Department, 1972, Geology And Aggregate Resources District II; map 91: NM Hwy Dept., Santa Fe, NM

Climate:

TES Gradient: Lac 7/ϕ

Precipitation: ___ Annual: 30 in. Warm season (May - Oct.)= 68 % Cool Season (Nov. - Apr.)= 32 %

10,000-10,600

Mean Annual Snow: 71 in.

Mean Temperature: Annual 34 °F Jul. 50 °F Jan. 19 °F
Freeze Free Period: 60 days

Mean Temperature: Annual ___ °F Jul. ___ °F Jan. ___ °F
Freeze Free Period: ___ days

Trewartha climate type: E = Boreal

Reference: Forest Service, 1984, Terrestrial Ecosystem Handbook
Appendix B.: USDA FS R3

Soils:

ESTABLISHMENT REPORT

WILLIAM G. TELFER RESEARCH NATURAL AREA

USDA FOREST SERVICE
SOUTHWESTERN REGION
LINCOLN NATIONAL FOREST
SMOKEY BEAR RANGER DISTRICT
LINCOLN COUNTY, NEW MEXICO

Prepared by: _____Date_____
William W. Dunmire, The Nature Conservancy
Mollie S. Toll, Department of Biology,
University of New Mexico

Recommended by: _____Date_____
Steve Sams, District Ranger
Smokey Bear Ranger District

Recommended by: _____Date_____
James R. Abbott, Forest Supervisor
Lincoln National Forest

Recommended by: _____Date_____
John W. Russell, Chairman
Southwestern Research Natural Area Committee

Recommended by: _____Date_____
Sotero Muniz, Regional Forester
Southwestern Region

Recommended by: _____Date_____
Charles M. Loveless, Station Director
Rocky Mountain Forest and Range Experiment
Station

ESTABLISHMENT RECORD

for

WILLIAM G. TELFER RESEARCH NATURAL AREA

within

Lincoln National Forest

Lincoln County, New Mexico

INTRODUCTION

The William G. Telfer Research Natural Area (RNA) comprises approximately 727 acres (294 hectares) in the Sacramento Mountains of south central New Mexico. The proposed RNA is located in the Lincoln National Forest, in Lincoln County, and is National Forest land reserved from the public domain.

In 1982, the area came into consideration for establishment of RNA status, in response to requests for expansion of the nearby Sierra Blanca Ski Area (now known as Ski Apache). The proposed RNA of 727 acres (294 hectares) represents a compromise between needs to accommodate increasing demand for skiing, and the need to protect North America's largest specimens of corkbark fir (Abies lasiocarpa var. arizonica) in a unique mosaic of subalpine communities.

The William G. Telfer Research Natural Area is named to honor a Forest Service entomologist who lost his life in an airplane accident on July 21, 1984 in the White Mountain Wilderness. A tireless and enthusiastic worker, Telfer's last months were devoted to western spruce budworm management on the Lincoln National Forest.

LAND MANAGEMENT PLANNING

The need for representation of this biotic community was identified in the Southwestern Regional Guide (August 1983). The Lincoln National Forest Plan (USFS 1986a) recommends that approximately 727 acres (294 hectares) of spruce-fir forest and associated high elevation plant communities be designated for establishment as a Research Natural Area. The environmental analysis conducted as part of the planning process supports the recommendation to establish this Research Natural Area.

JUSTIFICATION STATEMENT FOR ESTABLISHMENT OF AREA

William G. Telfer Research Natural Area was identified primarily as an outstanding example of a corkbark fir forest. This is an important high elevation forest ecosystem in the Southwest.

The forest vegetation of the proposed RNA exists in a variety of seral conditions, from old-growth vegetation in near-climax state to recent invasion of subalpine fir (Abies lasiocarpa) and spruce (Picea engelmannii) into both fire clearings and Festuca thurberi meadows. This mosaic of subalpine communities offers the opportunity of studying the complex and poorly understood relationship between spruce-fir forest and grass meadows or aspen groves. Succession rates of spruce or corkbark fir and the ecology of succession are critical considerations of spruce- fir forest management. The magnificent stands of corkbark fir contain a unique ecotype of this species at the far southern range of its

distribution in North America, and the preservation and study of this important genotype is one of the prime justifications for this natural area. The American Forestry Association National Register of Big Trees shows the largest corkbark fir to be located in this RNA. Further arguments for establishment of this RNA entail its uniqueness as a virgin area and its high degree of endemism in both plant and animal species.

PRINCIPAL DISTINGUISHING FEATURES

This area contains the only representation of Abies lasiocarpa/Senecio sanguisorboides Habitat Type in the Federal RNA system. The southern most distribution in North America of subalpine communities occurs on the Sierra Blanca massif. This boreal forest is insular, for the nearest true subalpine forest is in the vicinity of Santa Fe Baldy about 120 miles (193 km) north, with intervening communities primarily of mixed conifer, ponderosa pine (Pinus ponderosa), pinyon-juniper (Pinus edulis-Juniperus spp.), and grassland vegetation. The long isolation (about 12,000 years) of vegetation at high elevations in the Sierra Blanca area has produced outstanding examples of speciation in many disjunct plant and animal populations. A number of endemic plants and animals occur, and the corkbark fir population is itself of considerable interest as a fast growing, long lived, robust ecotype in the southern Rocky Mountains. Despite its far south distribution and long isolation, the subalpine communities in the proposed RNA are representative of major forest and high meadow habitats in northern New Mexico and southern Colorado, and to a lesser extent, northern Arizona and adjacent Utah.

William G. Telfer RNA contains spruce-fir forests on sites and exposures mostly between 10,000 to 10,600 feet (3050 - 3200 m) elevation, totalling about 50% of the RNA. Old-growth stands are found on lower slopes. Meadows dominated by Thurber fescue or bluegrass (Poa pratensis) are found in openings in the forest, and along exposed ridges of Buck Mountain. Such meadows may have a critical role in watershed and erosion control. Stands of aspen (Populus tremuloides) mark the extent of a past fire on the rocky northern slopes of the RNA. An open forest of Douglas- fir (Pseudotsuga menziesii) and Thurber fescue occurs as forest border along upper slopes of Buck Mountain.

LOCATION

William G. Telfer RNA is located about 8 miles (12.9 km) northwest of Ruidoso, in south-central New Mexico (Map 1). The RNA can be found on the Nogal Peak quadrangle (USGS 7.5' map), Township 10S, Range 11E, Sections 27, 28, 33, 34, and 35, latitude 33° 24' N, longitude 105° 47.5' W. Easy access to the RNA is afforded by an all-weather road leading to Ski Apache on Sierra Blanca. From this road, William

Telfer is reached by a short walk on a jeep road leading to the Buck Mountain telecommunication facilities or a trail from the bottom of the ski area.

To access the RNA from the junction of SR 37 and US 70 in Ruidoso, travel north on N.M. Highway 37 for 9 miles (14.5 km) to the junction of State Route 532 leading to the ski area (Maps 1 and 2). Turn left (west) and drive 10.6 miles (17.1 km) to a primitive road turning off to the right. Measuring from the lodge at the ski area, this turn-off is 1.2 miles (1.9 km) along this road. The road is barricaded to public vehicle access, although it is maintained for access to the Buck Mountain electronic site. Park here and enter the RNA by foot along this primitive road. The crest trail, which bisects the road half way into the RNA, provides additional easy access to most parts of the Research Natural Area. The boundary is described as follows:

Beginning at the Standard section corner of Sections 34 and 35, on the Second Standard Parallel South, in T. 10S., R. 12E., NMPM;
THENCE, north, a distance of 5500 feet to a point on the Wilderness boundary designated AP 216 on the official Wilderness map, the point of beginning of this tract;
THENCE, a distance of 3000 feet to a point;
THENCE, S 40 00'W, a distance of 2640 feet to a point;
THENCE, N 80 00'W a distance of 3200 feet to the bottom of a canyon;
THENCE, southerly along bottom of canyon a distance of 1500 feet to the top of a ridge,
THENCE, S 30 00'E, a distance of 1200 feet to Wilderness Trail No. 25;
THENCE, southeast and east along said trail 1/2 mile to junction with Wilderness Trail No. 15;
THENCE, east, across top of ridge, 1700 feet more or less to the 10,000 feet elevation;
THENCE, southeasterly and southerly along contour to intersection with eastern right-of-way of State Highway No. 532;
THENCE, along right-of-way line of said highway 532 a distance of 1000 feet;
THENCE, east, a distance of 700 feet;
THENCE, north, a distance of 3500 feet to a point that lies midway between a loop in Forest Road No. 5625;
THENCE, N 80 00'W, a distance of 750 feet;
THENCE, north and east along contour to a point on the Wilderness boundary, designated AP 216, the point of beginning.

DESIGNATION ORDER

By virtue of the authority vested in me by the Secretary of Agriculture under regulations at 7 CFR 2.42, 36 CFR 251.23, and 36 CFR Part 219, I hereby establish the Canada Bonito Research Natural Area (RNA). It shall be comprised of approximately 300 acres of land in Los Alamos County, New Mexico, on the Espanola Ranger District of the Sante Fe National Forest, as described in the section of the Establishment Record entitled "Location."

The Regional Forester recommended the establishment of a RNA ("Canada Bonito") in the Record of Decision for the Sant Fe National Forest Land and Resource Management Plan (Forest Plan) in *19xx* (date of Record of Decision). That recommendation was the result of an analysis of the factors listed in 36 CFR 219.25 and Forest Service Manual 4063.41. Results of the Regional Forester's analysis are documented in the Forest Plan and Final Environmental Impact Statement which are available to the public.

The Regional Forester has reexamined the Canada Bonito area to examine whether the environmental effects of establishing the area as an RNA have not changed since 19xx. This analysis is documented in the attached environmental assessment. Based on the analysis in the environmental assessment, it is my decision to adopt Alternative A, to establish Canada Bonito as an RNA. Alternative A is selected because it provides long-term protection and recognition of a Thurber fescue meadow type. The Canada Bonito RNA will be managed in compliance with all relevant laws, regulations, and Forest Service Manual direction regarding RNA's, and in accordance with the management direction identified in the Forest Plan.

The alternative considered was Alternative B, the "No Action" alternative which would continue management of Canada Bonito as a "proposed" RNA. Alternative B was not selected because it would only provide short-term protection of the Canada Bonito area.

Alternative B is consistent with the Forest Plan. Although the proposed action (Alternative A) is consistent with the management direction, it is not consistent with the land allocation for the Canada Bonito Area in the Forest Plan. The Sante Fe Forest Plan is hereby amended to change the allocation of the Canada Bonito area from "Proposed" to Established RNA. This is a nonsignificant amendment of the Forest Plan (36 CFR 219.10(f)).

Legal notice of this decision will appear in the Federal Register. The Forest Supervisor of the Sante Fe National Forest shall notify the public of this decision and mail a copy of the Decision Notice and Designation Order to all persons on the Sante Fe Forest Plan mailing list.

(INSERT FONSI IF NOT SEPARATE DOCUMENT OR NOT PART OF EA)

FINDING OF NO SIGNIFICANT IMPACT

It has been determined through the environmental assessment that the proposed action is not a major Federal action that would significantly affect the quality of the human environment; therefore, an environmental impact statement is not needed. This determination is based on the following factors (40 CFR 1508.27):

A. Context.

Although this is an addition to the national system of RNA's, both short-term and long-term physical and biological effects are limited to the local area.

B. Intensity

1. There are no known effects on public health and safety.

2. There are no known effects on historic or cultural resources, actual or eligible National Register of Historic Places sites, park lands, prime farmlands, wetlands, or wild and scenic rivers. Effects on ecologically critical areas are minimal.

3. Effects on the human environment are not uncertain, do not involve unique or unknown risks, and are not likely to be highly controversial.

4. The action is not likely to establish a precedent for future actions with significant effects.

5. There are no known cumulative effects.

6. The proposed action would not adversely affect an endangered or threatened species or its critical habitat.

7. The proposed action is consistent with Federal, State, and local laws and requirements for the protection of the environment.

This decision is subject to appeal pursuant to 36 CFR Part 217. Two (2) copies of the Notice of Appeal must be in writing and submitted to:

The Secretary of Agriculture
14th & Independence Ave., S.W.
Washington, D.C. 20250

The Notice of Appeal prepared pursuant to 36 CFR 217.9(b) must be submitted within 45 days from the date of legal notice of this decision. Review by the Secretary is wholly discretionary. If the Secretary has not decided within 15 days of receiving the Notice of Appeal to review the Chief's decision, appellants will be notified that the Chief's decision is the final administrative decision of the U.S. Department of Agriculture (36 CFR 217.17(d)).

_____ _____

Chief Date

AREA BY COVER TYPES

The distribution of cover types was determined from field surveys conducted in September, 1986, and from interpretation of 1980 aerial photography. Table 1 outlines the estimated total area of vegetation types based on the Society of American Foresters forest type system (Eyre 1980) and the Küchler Potential Natural Vegetation system (Küchler 1964). Map 3 depicts the distribution of SAF types on the candidate research natural area.

Table 1. Estimated Areas of Vegetation Types in the William G. Telfer Research Natural Area.

Type	Society of American Foresters Cover Type[1]	Küchler PNV Type[2]	Surface Area Acres	Hectares
Engelmann Spruce-Subalpine Fir	SAF 206	K-20 Southwestern Spruce-Fir	360	145.5
Interior Douglas-fir	SAF 210	K-17 Douglas-fir	72	29.3
Aspen	SAF 217	K-17 Seral	138	56.0
Thurber Fescue Grassland	[none]	K-45 Alpine Meadows	150	60.8
Rock Talus	[none]	K-52 Shrubsteppe	7	2.6
		TOTAL:	727	294.2

[1]Eyre 1980.
[2]Küchler 1964.

PHYSICAL AND CLIMATIC CONDITIONS

The irregularly-shaped RNA is situated on the west, north, and south slopes of Buck Mountain. The RNA surrounds a ridge which drains on the north to the Rio Bonito, and on the south to the Rio Ruidoso. Elevation reaches approximately 10,600 feet (3231 m) on the sides of Buck Mountain and on an unnamed knob at the west end of the RNA; low elevations of about 9600 feet (2926 m) are found on the north boundary, and in a tributary to the Rio Ruidoso North Fork on the south boundary.

William G. Telfer RNA is located within a substantial mountain mass of subhumid to humid climate. The nearest long range weather station is at Ruidoso, approximately 8 miles (12.9 km) to the southeast. The following data was interpreted for the RNA from the Terrestrial Ecosystems Handbook maintained by the USFS Southwestern Regional Office. Considerable precipitation falls at this elevation, more than can be evaporated or used by the forests. Much of this moisture is a vital contribution to lower elevation moisture levels via stream flow. Just over two-thirds of the annual precipitation comes during the summer, frequently from local orographic and convectional storms. Average annual rainfall is 30 inches (762 mm). Cool season (November to April) precipitation includes cyclonic snow storms, with an average annual snowfall of 71 inches (180.3 cm). Mean annual temperature is a cool 34° F (1.1° C), with a July average of 50° F (10.0° C) and a January average of 19° F (-7.2° C). The frost free period is short, lasting an average of only 60 days.

DESCRIPTION OF VALUES

Flora

Corkbark fir (Abies lasiocarpa var. arizonica) is the dominant tree throughout the proposed RNA, except for several grassland meadow openings in the forest, exposed ridges, and some nearly pure stands of aspen. Old-growth stands contain the largest specimens of corkbark fir; diameter at breast height (DBH) of many individuals exceeds 4 feet (1.2 m) and heights reach over 120 feet (36.6 m). Engelmann spruce (Picea engelmannii) is codominant, but on steep north and east-facing slopes it may not reach 10 per cent of the tree cover.

Within this spruce-fir forest, shrubs are poorly to well represented and are almost always make up under 10 per cent of the ground cover. Ribes montigenum and R. wolfii are the principal species, followed by Sambucus glauca, Rubus strigosus, R. parviflorus, and Lonicera involucrata. Forbs tend to be luxuriant, with Senecio sanguisorboides providing the principal ground cover, along with many other herbaceous species. Except at the edges, Bromus ciliatus is the most common forest grass. As described by

Alexander et al. (1984), the spruce-fir forest appears to be exclusively Abies lasiocarpa/Senecio sanguisorboides habitat type (ABLA/SESA HT).

A dense stand of aspen (Populus tremuloides) occupies the rocky north slopes at the boundary of the RNA; this area burned many years ago. Abies lasiocarpa along with Picea engelmannii, Pseudotsuga menziesii, Acer glabrum and, rarely, Abies concolor are reproducing under the aspen. Holodiscus dumosus is a common shrub here along with the species mentioned above. The aspen community is projected to be ABLA/SESA HT.

The grassy openings in the forest and along the windswept ridges of Buck Mountain are dominated by fescue (Festuca thurberi and, to a lesser extent, F. ovina) with Danthonia sp. a common component. Two narrow endemics, Lupinus sierrae-blancae and Delphinium sierrae-blancae, are associated with the grasslands on Buck Mountain. All of the grasslands contain a wealth of other forbs and grasses.

At the southeastern end of the RNA, a more xeric forest grows on the south and west-facing slopes. In places Douglas fir and southwestern white pine (Pinus strobiformis) codominant, with the Douglas fir reaching old growth conditions. Other trees in this Interior Douglas fir SAF type are Picea engelmannii, Acer glabrum, Populus tremuloides, and occasional Robinia neomexicana. Lupinus sierrae-blancae is the most common shrub. Again, herbs are luxuriant, and Bromus ciliatus is the most common grass. Alexander et al. (1984) do not describe this habitat type for the Lincoln National Forest. The habitat type found in current literature most similar to this forest community is Pseudotsuga menziesii/Bromus ciliatus (PSME/BRCI HT) as described in Forest and Woodland Habitat Types of Southern New Mexico and Central Arizona (USFS 1986).

A common shrub in the eastern third of the proposed RNA, Lupinus sierrae-blancae, is on the New Mexico sensitive plant list. The presence of this and other narrow endemic plants (Delphinium sierrae-blancae, Castilleja wootoni) is no doubt an evolutionary expression of the insular character of the subalpine forest on Sierra Blanca.

The following plant list was compiled on September 17, 1986. Because of the lateness of season and high elevation (several weeks after the first heavy frost), the list is very meager, especially for forbs. Other plants of the area are given in Moir (1967) and Dye and Moir (1977).

Abbreviated Plant List for William Telfer RNA[1]

Latin Name	Common Name2
GRASSES AND GRASS-LIKE PLANTS:	
Blepharoneuron tricholepis	Pine dropseed
Bromus ciliatus	Hairy brome
Bromus inermis	Smooth brome
Carex sp.	Sedge
Dactylis glomerata	Orchardgrass
Danthonia sp.	Oatgrass
Festuca ovina	Sheep fescue
Festuca thurberi	Thurber fescue
Koeleria cristata	Junegrass
Muhlenbergia montana	Mountain muhly
Poa pratensis	Kentucky bluegrass
Sitanion hystrix	Bottlebrush squirreltail
FORBS:	
Achillea lanulosa	Western yarrow
Actaea rubra	Baneberry
Allium sp.	Onion
Campanula rotundifolia	Bluebell
Castilleja sp.	Paintbrush
Cirsium sp.	Thistle
Delphinium sierrae-blanca	Sierra Blanca larkspur
Epilobium angustifolium	Fireweed
Erigeron sp.	Fleabane
Erysimum capitatum	Western wallflower
Geranium caespitosum	Purple geranium
Iris missouriensis	Flag
Lesquerella sp.	Bladderpod
Ligusticum porteri	Loveroot
Lupinus sierrae-blancae	Sierra Blanca lupine
Mertensia sp.	Bluebells
Oreochrysum parryi	Parry goldenweed
Potentilla sp.	Cinquefoil
Sedum sp.	Stonecrop
Senecio sanguisorboides	Groundsel
Silene laciniata	Mexican silene

Smilacina racemosa	False solomonseal
Thalictrum fendleri	Meadowrue
Zygadenus elegans	Death camas

HALF-SHRUBS, SHRUBS, AND TREES:

Abies concolor	White fir
Abies lasiocarpa var. arizonica	Corkbark fir
Acer glabrum	Rocky Mountain maple
Artemisia franserioides	Ragweed sagebrush
Holodiscus dumosus	Ocean spray
Lonicera involucrata	Bearberry honeysuckle
Picea engelmannii	Engelmann spruce
Pinus strobiformis	Southwestern white pine
Populus tremuloides	Quaking aspen
Pseudotsuga menziesii	Douglas-fir
Ribes montigenum	Gooseberry currant
Ribes wolfii	Coyotes currant
Robinia neomexicana	New Mexico locust
Rubus parviflorus	Western thimbleberryRubus
strigosus	Red raspberry
Sambucus glauca	Smooth elder

[1]Observed by Bill Dunmire (The Nature Conservancy) on September 17, 1986
[2]Common names used according to USDA, Forest Service 1974, or Martin & Hutchins 1981.

Fauna

The Sacramento Mountain salamander (Aneides hardyi), a state endangered species, occurs within the RNA. No other rare, endangered or sensitive species are known to reside here.

The following animal list was derived from the RUN WILD III computer-stored data base (Lehmkuhl and Patton 1982; Patton 1979) from the following habitat type, for Lincoln County, New Mexico:

1. Spruce-subalpine fir series

2. Montane grassland biome; mixed meadow series

These habitat types currently in the data base most closely correspond to those occurring in the proposed RNA. The list displays species typically inhabiting these habitat types, and is not a list of species observed in the proposed RNA.

Potential Animal List for William G. Telfer RNA

Common Name	Latin Name
AMPHIBIANS:	
Salamander, Sacramento Mountain	Aneides hardyi
Salamander, tiger	Ambystoma tigrinum
Toad, Woodhouse's	Bufo woodhousei
BIRDS:	
Blackbird, redwinged	Agelaius phoeniceus
Bluebird, mountain	Sialia currucoides
Bluebird, western	Sialia mexicana
Dove, mourning	Zenaida macroura
Falcon, prairie	Falco mexicanus
Finch, house	Carpodacus mexicanus
Flicker, northern	Colaptes auratus
Flycatcher, olive-sided	Contopus borealis
Flycatcher, willow	Empidonax trailii
Goldfinch, lesser	Carduelis psaltria
Grouse, blue	Dendragapus obscurus
Hawk, Cooper's	Accipiter cooperii
Hawk, red-tailed	Buteo jamaicensis
Hawk, sharp-shinned	Accipiter striatus
Hummingbird, broad-tailed	Selasphorus platycercus
Hummingbird, rufous	Selasphorus rufus
Junco, dark-eyed	Junco hyemalis
Kestrel, American	Falco sparverius
Killdeer	Charadrius vociferus
Kinglet, golden-crowned	Regulus satrapa
Martin, purple	Progne subis
Nighthawk, common	Chordeiles minor
Nuthatch, Clark's	Nucifraga columbiana
Owl, flammulated	Otus flammeolus
Owl, great horned	Bubo virginianus
Owl, northern saw-whet	Aegolius acadicus

Owl, spotted	Strix occidentalis
Pipit, water	Anthus spinoletta
Pygmy-owl, northern	Glaucidium gnoma
Raven, common	Corvus corax
Robin, American	Turdus migratorius
Sparrow, chipping	Spizella passerina
Sparrow, house	Passer domesticus
Sparrow, vesper	Pooecetes gramineus
Sparrow, white-crowned	Zonotrichia leuchophrys
Swallow, barn	Hirundo rustica
Swallow, cliff	Hirundo pyrrhonota
Swallow, tree	Tachycineta bicolor
Swallow, violet-green	Tachycineta thalassina
Turkey, wild	Meleagris gallopavo
Vulture, turkey	Cathartes aura
Woodpecker, hairy	Picoides villosus
Wren, house	Troglodytes aedon
Wren, rock	Salpinctes obsoletus

MAMMALS:

Badger	Taxidea taxus
Bat, big brown	Eptesicus fuscus
Bear, black	Ursus americanus
Chipmunk, gray-footed	Tamias canipes
Chipmunk, least	Tamias minimus
Cottontail, Nuttall's	Sylvilagus nuttallii
Coyote	Canis latrans
Deer, mule	Odocoileus hemionus
Deer, white-tailed	Odocoileus virginianus
Gopher, Botta's pocket	Thomomys bottae
Mouse, deer	Peromyscus maniculatus
Mouse, northern grasshopper	Onychomys leucogaster
Mouse, western harvest	Reithrodontomys megalotis
Myotis, little brown	Myotis lucifugus
Myotis, long-legged	Myotis volans
Myotis, small-footed	Myotis leibii
Shrew, dwarf	Sorex nanus
Shrew, vagrant	Sorex vagrans
Skunk, hog-nosed	Conepatus mesoleucus
Skunk, striped	Mephitis mephitis
Squirrel, thirteen-lined ground	Spermophilus tridecemlineatus
Vole, long-tailed	Microtus longicaudus

Woodrat, Mexican	Neotoma mexicana
Woodrat, white-throated	Neotoma albigula

REPTILES:

Lizard, short-horned	Phrynosoma douglassi
Rattlesnake, western	Crotalus viridis
Snake, ringneck	Diadophis punctatus
Snake, western terrestrial garter	Thamnophis elegans

Geology

William G. Telfer RNA is located on the massive Sierra Blanca uplift. The igneous rocks of this uplift are composed of extrusive andesitic volcanics intruded by monzonitic stocks. The Three Rivers Stock is a breccia of late Tertiary age.

Soils

William G. Telfer RNA is located within the Caballo-Peso-Supervisor association, found dominantly on mountainous topography between altitudes of 7500 and 10,500 feet (2286.0 m to 3200.4 m) in south-central Lincoln County (NMSU 1971). A wide variety of igneous, metamorphic, and sedimentary rocks have contributed to the parent materials in which soils of this association are forming. The soils are typically dark-colored with a moderate to high content of organic matter, and are mildly alkaline to neutral and slightly acidic. The surface layers commonly contain small amounts of gravel and stones. With the exception of small rock outcrop areas, the soil supports a good cover of native vegetation dominated by trees. Dominant soils on the RNA are classified as Dystric Chryochrepts, loamy-skeletal, mixed.

Lands

All lands within the proposed RNA were included within the original Lincoln National Forest created on 7/26/1902. Lands on the north side of the ridge within the RNA were designated as part of the Rio Bonito Watershed on 6/13/1939. There are no known outstanding rights or rights-of-way within the proposed boundaries.

Cultural Resources

The entire RNA was surveyed for cultural resources in 1978 as part of a larger survey. One site, named Wizard's Roost, was recorded within the area. This unique site appears to have been a prehistoric shrine or observatory. It is listed on the National Register of Historic Places and should be protected from any potential disturbance. No

other cultural remains were found. Uses associated with Wizard's Roost should have little impact on the RNA.

IMPACTS AND POSSIBLE CONFLICTS

Mineral Resources

The area is known to have high potential for molybdenum. There have been no leases for mineral exploration. The southern half of the area (in Sections 33 and 34, Township 10S, Range 11E) is currently part of the Ski Apache area mineral withdrawal. If William Telfer is designated an RNA, a recommendation will be made to withdraw the rest of the RNA from mineral entry.

Grazing

This area has been closed to grazing since 1962. No grazing is allowed in the areas adjacent to the proposed RNA, so there is no need at this time for fencing to keep livestock out of the area.

Timber

The major ecosystems represented in this area are spruce-fir and Thurber fescue meadow. The proposed RNA has about 360 acres (146 hectares) of spruce-fir, 72 acres (29 hectares) of Douglas fir, and 138 acres (56 hectares) of aspen, all of which will be withdrawn from the timber base. The acres were excluded from timber management in the Forest Plan (USFS 1986b).

Total forest: 570 acres (231 hectares)
Total commercial forest: 0

Watershed Values

The RNA surrounds a ridge which separates the Rio Bonito watershed from the Rio Ruidoso watershed. Both watersheds are fifth order watersheds flowing east and joining at Hondo, NM to form the Rio Hondo, a tributary to the Pecos River. The RNA contributes high quality water to the Bonito Reservoir, a source of water for the Tularosa Basin communities. During the winter, the Soil Conservation Service operates a snow survey course in the area.

Recreation Values

Recreation use in this area includes big game hunting, hiking, and horseback riding on the Crest Trail and Trail No. 15. Trail use probably will not conflict with potential research projects. Hiking use is moderate on Trail No. 15 and low on the

Crest Trail; horseback riding is at low levels on both trails. The RNA is partially bounded by the Ski Apache access road, State Highway 532, which is a very popular scenic drive in summer and fall. A maintenance road for the Buck Mountain Electronic Site, Forest Road 5625, runs through the middle of the area, but is gated and closed to public access.

Wildlife and Plant Values

The area contains habitat for the Sacramento mountain salamander (Aneides hardyi). The Sierra Blanca lupine (Lupinus sierrae-blanca), a state sensitive species, is common on the grassy openings of the RNA.

Wilderness, Wild and Scenic River, National Recreation Area Values

This area was inventoried as potential wilderness in RARE I and RARE II. It was recommended for further study in RARE II, but was not included in the New Mexico Wilderness Act of 1980.

Transportation Plans

State Highway 532, located along part of the southern boundary of the proposed RNA, provides access to Ski Apache. Forest Road 5625 passes through the middle of the RNA to provide access to the Buck Mountain Electronic Site. This road is gated and closed to the public, but will be maintained for use by the electronic site permittees. Its minimum width and low maintenance standards preclude any serious ecological or hydrological impact on research area values.

Utility Corridor Plans

There is a 3 KV power line running through the proposed RNA from Ski Apache to the Buck Mountain Electronic Site. Maintenance of this line will have low standards and is not expected to have any significant impact on values within the RNA.

MANAGEMENT PLAN

The Lincoln National Forest Plan prescribes that there will be no harvest of firewood or other wood products, no livestock grazing, and no off-road vehicle travel on Research Natural Areas. Low intensity, dispersed recreation activities are permitted provided they do not significantly modify the area, or threaten or impair the research or educational value of the area. No new trails or roads may be constructed. No flora, fauna, or other materials may be collected other than for research approved by the Station Director.

1. Vegetation Management

Vegetation manipulation is allowed only when needed to preserve the vegetation for which the area is being established. The Forest Plan provides that all fires will be suppressed at 10 acres (4 hectares) or less, unless research purposes require other suppression objectives. Suppression action will be limited to the use of hand tools; fire retardant chemicals are prohibited unless necessary to protect life and property outside the study area.

ADMINISTRATIVE RECORDS AND PROTECTION

Administration and protection of the William G. Telfer RNA will be the responsibility of the Lincoln National Forest. The District Ranger, Smokey Bear District, Ruidoso, NM, has direct responsibility.

The Director of the Rocky Mountain Forest and Range Experiment Station, or his designee, will be responsible for any studies or research conducted in the area, and requests to conduct research in the area will be referred to him. He, or his designee, will evaluate research proposals and coordinate all studies and research in the area with the District Ranger. All plant and animal specimens collected in the course of research conducted in the area will be properly preserved and maintained within university or federal agency herbaria and museums, approved by the Rocky Mountain Station Director.

Records for the William G. Telfer RNA will be maintained in the following offices:

Regional Forester, Southwestern Region, Albuquerque, NM
Rocky Mountain Station, Fort Collins, CO
Lincoln National Forest, Alamogordo, NM
District Ranger, Smokey Bear District, Ruidoso, NM

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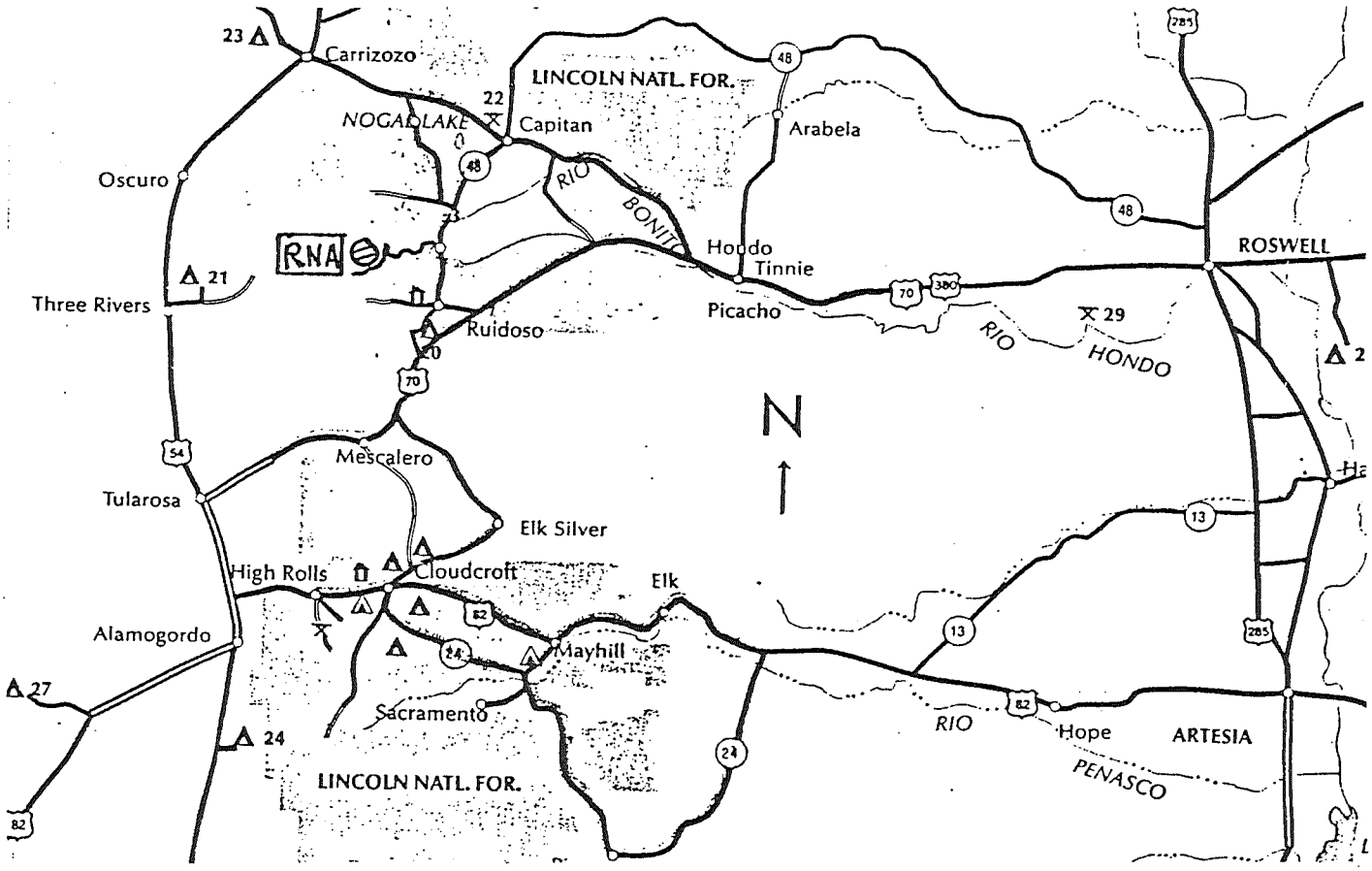
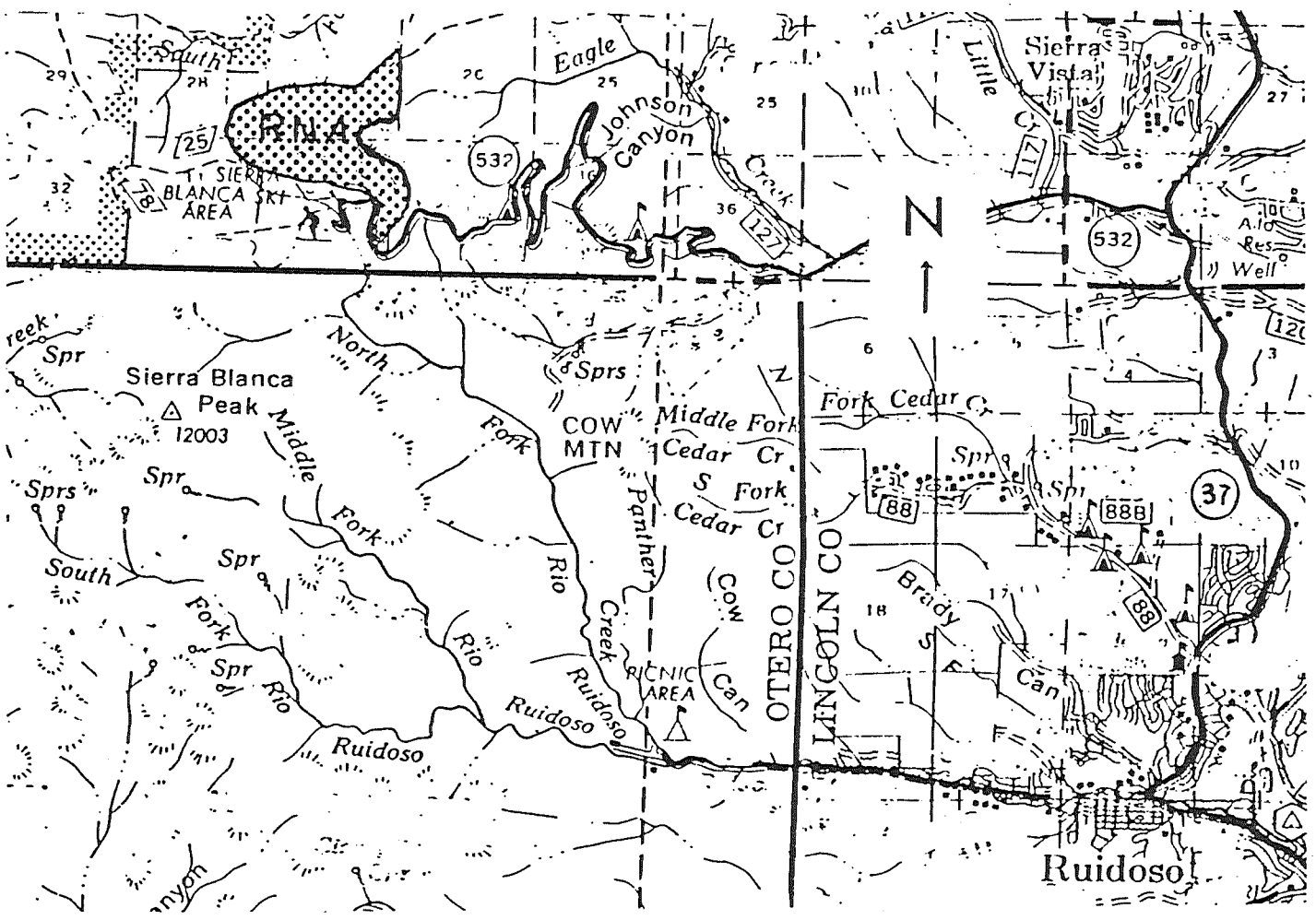
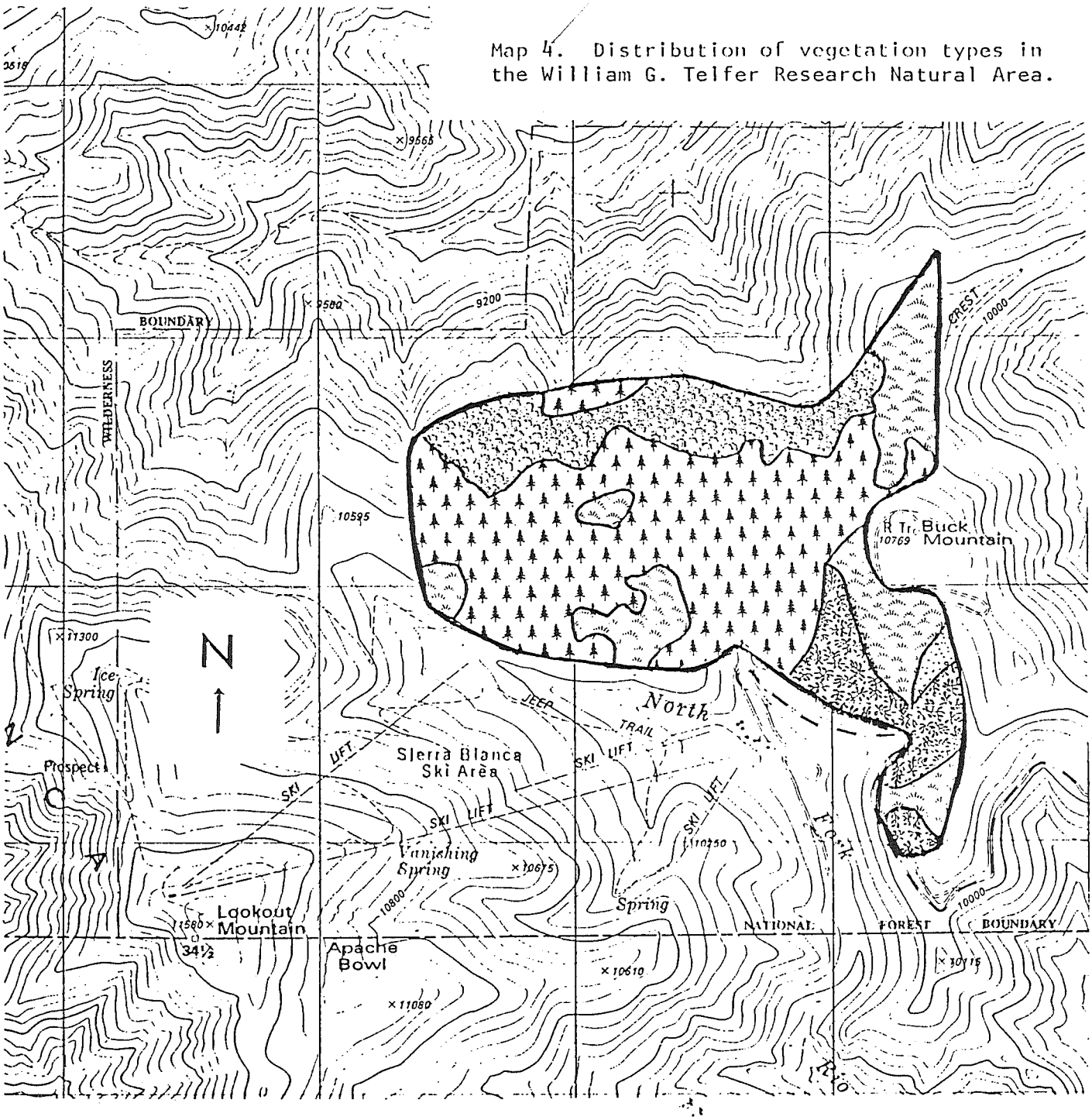


Map 1. Location of RNA (South Central New Mexico)



Map 2. Access Route to William G. Telfer RNA

Map 4. Distribution of vegetation types in the William G. Telfer Research Natural Area.



Map Symbol	Vegetation Type
	Engelmann spruce - subalpine fir SAF 206, K-20
	Interior Douglas - fir SAF 210, K-20
	Aspen SAF 217

Map Symbol	Vegetation Type
	Thurber Fescue Grassland K-45
	Rock Talus K-45

PC

DESIGNATION ORDER

By virtue of the authority vested in me by the Secretary of Agriculture under regulations 7 CFR 2.42 and 36 CFR 251.23, I hereby establish the William G. Telfer Research Natural Area. The William G. Telfer Research Natural Area shall be comprised of the following land: Beginning at the Standard section corner of Sections 34 and 35, on the Second Standard Parallel South, in T. 10S., R. 12E., NMPM;
THENCE, north, a distance of 5500 feet to a point on the Wilderness boundary designated AP 216 on the official Wilderness map, the point of beginning of this tract;
THENCE, a distance of 3000 feet to a point;
THENCE, S 40 00'W, a distance of 2640 feet to a point;
THENCE, N 80 00'W a distance of 3200 feet to the bottom of a canyon;
THENCE, southerly along bottom of canyon a distance of 1500 feet to the top of a ridge,
THENCE, S 30 00'E, a distance of 1200 feet to Wilderness Trail No. 25;
THENCE, southeast and east along said trail 1/2 mile to junction with Wilderness Trail No. 15;
THENCE, east, across top of ridge, 1700 feet more or less to the 10,000 feet elevation;
THENCE, southeasterly and southerly along contour to intersection with eastern right-of-way of State Highway No. 532;
THENCE, along right-of-way line of said highway 532 a distance of 1000 feet;
THENCE, east, a distance of 700 feet;
THENCE, north, a distance of 3500 feet to a point that lies midway between a loop in Forest Road No. 5625;
THENCE, N 80 00'W, a distance of 750 feet;
THENCE, north and east along contour to a point on the Wilderness boundary, designated AP 216, the point of beginning..

1) Regional Forester, Sotero Muniz, recommended the establishment of the William G. Telfer Research Natural Area in the Lincoln National Forest Land and Resource Plan. That recommendation was the result of an analysis of the factors listed in 36 CFR 219.25 and Forest Service Manual 4063.41. The results of the Regional Forester's analysis are documented in the Final Environmental Impact Statement for the National Forest Land and Resource Management Plan and the Establishment Record which are available to the public.

2) The William G. Telfer Research Natural Area will be managed in compliance with all relevant laws, regulations, and manual direction regarding Research Natural Areas. The William G. Telfer Research Natural Area will be administered in accordance with the management direction identified in the Establishment Record.

3) The Lincoln National Forest Land and Resource Management Plan is hereby amended to be consistent with the management direction identified in the Establishment Record and this designation order. Directions on pages__of the Lincoln National Forest Land and Resource Management Plan are replaced by the directions on pages____of the

Establishment Record. This direction will remain in effect unless amended pursuant to 36 CFR 219.10. This is a nonsignificant amendment of the Lincoln National Forest Land and Resource Management Plan.

The Forest Supervisor of the Lincoln National Forest shall notify the public of this amendment and will mail a copy of the Designation Order and amended direction to all persons on the Lincoln Land and Resource Management Plan mailing list.

Based on the environmental analysis documented in the National Forest Land and Resource Management Plan and the Establishment Record I find that the designation of the William G. Telfer Research Natural Area is not a major federal action significantly affecting the quality of the human environment.

This decision is subject to appeal pursuant to 36 CFR 211.18. A Notice of Appeal must be in writing and submitted to:

Chief
USDA, Forest Service
P.O. Box 96090
Washington, D.C. 20013-6090

change appeal directions

The Notice of Appeal must be submitted within 45 days form the date of this decision. Within five days of receipt, the Chief will transmit the Notice of Appeal and a copy of the Designation order to the Secretary of Agriculture for review at the Secretary's discretion. The appeal will be deemed denied if the Secretary takes no action within ten days of receiving the appeal.

_____ _____

Chief Date

ESTABLISHMENT REPORT

WILLIAM G. TELFER RESEARCH NATURAL AREA

USDA FOREST SERVICE
SOUTHWESTERN REGION
LINCOLN NATIONAL FOREST
SMOKEY BEAR RANGER DISTRICT
LINCOLN COUNTY, NEW MEXICO

Prepared by: _____Date_____
William W. Dunmire, The Nature Conservancy
Mollie S. Toll, Department of Biology,
University of New Mexico

Recommended by: _____Date_____
Steve Sams, District Ranger
Smokey Bear Ranger District

Recommended by: _____Date_____
James R. Abbott, Forest Supervisor
Lincoln National Forest

Recommended by: _____Date_____
John W. Russell, Chairman
Southwestern Research Natural Area Committee

Recommended by: _____Date_____
Sotero Muniz, Regional Forester
Southwestern Region

Recommended by: _____Date_____
Charles M. Loveless, Station Director
Rocky Mountain Forest and Range Experiment Station

ESTABLISHMENT RECORD

for

WILLIAM G. TELFER RESEARCH NATURAL AREA

within

Lincoln National Forest

Lincoln County, New Mexico

INTRODUCTION

The William G. Telfer Research Natural Area (RNA) comprises approximately 727 acres (294 hectares) in the Sacramento Mountains of south central New Mexico. The proposed RNA is located in the Lincoln National Forest, in Lincoln County, and is National Forest land reserved from the public domain.

In 1982, the area came into consideration for establishment of RNA status, in response to requests for expansion of the nearby Sierra Blanca Ski Area (now known as Ski Apache). The proposed RNA of 727 acres (294 hectares) represents a compromise between needs to accommodate increasing demand for skiing, and the need to protect North America's largest specimens of corkbark fir (Abies lasiocarpa var. arizonica) in a unique mosaic of subalpine communities.

The William G. Telfer Research Natural Area is named to honor a Forest Service entomologist who lost his life in an airplane accident on July 21, 1984 in the White Mountain Wilderness. A tireless and enthusiastic worker, Telfer's last months were devoted to western spruce budworm management on the Lincoln National Forest.

LAND MANAGEMENT PLANNING

The need for representation of this biotic community was identified in the Southwestern Regional Guide (August 1983). The Lincoln National Forest Plan (USFS 1986a) recommends that approximately 727 acres (294 hectares) of spruce-fir forest and associated high elevation plant communities be designated for establishment as a Research Natural Area. The environmental analysis conducted as part of the planning process supports the recommendation to establish this Research Natural Area.

JUSTIFICATION STATEMENT FOR ESTABLISHMENT OF AREA

William G. Telfer Research Natural Area was identified primarily as an outstanding example of a corkbark fir forest. This is an important high elevation forest ecosystem in the Southwest.

The forest vegetation of the proposed RNA exists in a variety of seral conditions, from old-growth vegetation in near-climax state to recent invasion of subalpine fir (Abies lasiocarpa) and spruce (Picea engelmannii) into both fire clearings and Festuca thurberi meadows. This mosaic of subalpine communities offers the opportunity of studying the complex and poorly understood relationship between spruce-fir forest and grass meadows or aspen groves. Succession rates of spruce or corkbark fir and the ecology of succession are critical considerations of spruce- fir forest management. The magnificent stands of corkbark fir contain a unique ecotype of this species at the far southern range of its distribution in North America, and the preservation and study of this important genotype is one of the prime justifications for this natural area. The American Forestry Association National Register of Big Trees shows the largest corkbark fir to be located in this RNA. Further arguments for establishment of this RNA entail its uniqueness as a

virgin area and its high degree of endemism in both plant and animal species.

PRINCIPAL DISTINGUISHING FEATURES

This area contains the only representation of Abies lasiocarpa/Senecio sanguisorboides Habitat Type in the Federal RNA system. The southern most distribution in North America of subalpine communities occurs on the Sierra Blanca massif. This boreal forest is insular, for the nearest true subalpine forest is in the vicinity of Santa Fe Baldy about 120 miles (193 km) north, with intervening communities primarily of mixed conifer, ponderosa pine (Pinus ponderosa), pinyon-juniper (Pinus edulis-Juniperus spp.), and grassland vegetation. The long isolation (about 12,000 years) of vegetation at high elevations in the Sierra Blanca area has produced outstanding examples of speciation in many disjunct plant and animal populations. A number of endemic plants and animals occur, and the corkbark fir population is itself of considerable interest as a fast-growing, long-lived, robust ecotype in the southern Rocky Mountains. Despite its far-south distribution and long isolation, the subalpine communities in the proposed RNA are representative of major forest and high meadow habitats in northern New Mexico and southern Colorado, and to a lesser extent, northern Arizona and adjacent Utah.

William G. Telfer RNA contains spruce-fir forests on sites and exposures mostly between 10,000 - 10,600 feet (3050 - 3200 m) elevation, totalling about 50% of the RNA. Old-growth stands are found on lower slopes. Meadows dominated by Thurber fescue or bluegrass (Poa pratensis) are found in openings in the forest, and along exposed ridges of Buck Mountain. Such meadows may have a critical role in watershed and erosion control. Stands of aspen (Populus tremuloides) mark the extent of a past fire on the rocky northern slopes of the RNA. An open forest of Douglas- fir (Pseudotsuga menziesii) and Thurber fescue occurs as forest border along upper slopes of Buck Mountain.

LOCATION

William G. Telfer RNA is located about 8 miles (12.9 km) northwest of Ruidoso, in south-central New Mexico (Map 1). The RNA can be found on the Nogal Peak quadrangle (USGS 7.5' map), Township 10S, Range 11E, Sections 27, 28, 33, 34, and 35, latitude 33° 24' N, longitude 105° 47.5' W. Easy access to the RNA is afforded by an all-weather road leading to Ski Apache on Sierra Blanca. From this road, William Telfer is reached by a short walk on a jeep road leading to the Buck Mountain telecommunication facilities or a trail from the bottom of the ski area.

To access the RNA from the junction of SR 37 and US 70 in Ruidoso, travel north on N.M. Highway 37 for 9 miles (14.5 km) to the junction of State Route 532 leading to the ski area (Maps 2 and 3). Turn left (west) and drive 10.6 miles (17.1 km) to a primitive road turning off to the right. Measuring from the lodge at the ski area, this turn-off is 1.2 miles (1.9 km) along this road. The road is barricaded to public vehicle access, although it is maintained for access to the Buck Mountain electronic site.

Park here and enter the RNA by foot along this primitive road. The crest trail, which bisects the road half way into the RNA, provides additional easy access to most parts of the Research Natural Area. The boundary is described as follows:

Beginning at the Standard section corner of Sections 34 and 35, on the Second Standard Parallel South, in T. 10S., R. 12E., NMPM;
THENCE, north, a distance of 5500 feet to a point on the Wilderness boundary designated AP 216 on the official Wilderness map, the point of beginning of this tract;
THENCE, a distance of 3000 feet to a point;
THENCE, S 40 00'W, a distance of 2640 feet to a point;
THENCE, N 80 00'W a distance of 3200 feet to the bottom of a canyon;
THENCE, southerly along bottom of canyon a distance of 1500 feet to the top of a ridge,
THENCE, S 30 00'E, a distance of 1200 feet to Wilderness Trail No. 25;
THENCE, southeast and east along said trail 1/2 mile to junction with Wilderness Trail No. 15;
THENCE, east, across top of ridge, 1700 feet more or less to the 10,000 feet elevation;
THENCE, southeasterly and southerly along contour to intersection with eastern right-of-way of State Highway No. 532;
THENCE, along right-of-way line of said highway 532 a distance of 1000 feet;
THENCE, east, a distance of 700 feet;
THENCE, north, a distance of 3500 feet to a point that lies midway between a loop in Forest Road No. 5625;
THENCE, N 80 00'W, a distance of 750 feet;
THENCE, north and east along contour to a point on the Wilderness boundary, designated AP 216, the point of beginning.

AREA BY COVER TYPES

The distribution of cover types was determined from field surveys conducted in September, 1986 and from interpretation of 1980 aerial photography. Table 1 outlines the estimated total area of vegetation types based on the Society of American Foresters forest type system (Eyre 1980) and the Küchler Potential Natural Vegetation system (Küchler 1964). Map 4 depicts the distribution of SAF types on the candidate research natural area.

Table 1. Estimated Areas of Vegetation Types in the William G. Telfer Research Natural Area.

Type	Society of American Foresters Cover Type[1]	Küchler PNV Type[2]	Surface Area Acres	Hectares
Engelmann Spruce-Subalpine Fir	SAF 206	K-20 Southwestern	360	145.5

		Spruce-Fir		
Interior Douglas-fir	SAF 210	~~K-20~~	72	29.3
Aspen	SAF ~~217~~	~~K-45~~	138	56.0
Thurber Fescue Grassland	[none]	K-45 Alpine Meadows	150	60.8
Rock Talus	[none]	K-52	7	2.6
		TOTAL:	727	294.2

[1]Eyre 1980.
[2]Küchler 1964.

PHYSICAL AND CLIMATIC CONDITIONS

The irregularly-shaped RNA is situated on the west, north, and south slopes of Buck Mountain. The RNA surrounds a ridge which drains on the north to the Rio Bonito, and on the south to the Rio Ruidoso. Elevation reaches approximately 10,600 feet (3231 m) on the sides of Buck Mountain and on an unnamed knob at the west end of the RNA; low elevations of about 9600 feet (2926 m) are found on the north boundary, and in a tributary to the Rio Ruidoso North Fork on the south boundary.

William G. Telfer RNA is located within a substantial mountain mass of subhumid to humid climate. The nearest long range weather station is at Ruidoso, approximately 8 miles (12.9 km) to the southeast. The following data was interpreted for the RNA from the Terrestrial Ecosystems Handbook maintained by the USFS Southwestern Regional Office. Considerable precipitation falls at this elevation, more than can be evaporated or used by the forests. Much of this moisture is a vital contribution to lower elevation moisture levels via stream flow. Just over two-thirds of the annual precipitation comes during the summer, frequently from local orographic and convectional storms. Average annual rainfall is 30 inches (762 mm). Cool season (November to April) precipitation includes cyclonic snow storms, with an average annual snowfall of 71 inches (180.3 cm). Mean annual temperature is a cool 34° F (1.1° C), with a July average of 50° F (10.0° C) and a January average of 19° F (-7.2° C). The frost free period is short, lasting an average of only 60 days.

DESCRIPTION OF VALUES

Flora

Corkbark fir (Abies lasiocarpa var. arizonica) is the dominant tree throughout the proposed RNA, except for several grassland meadow openings in the forest, exposed ridges, and some nearly pure stands of aspen. Old-growth stands contain the largest specimens of corkbark fir; Dbh of many individuals exceeds 4 feet (122 cm) and heights reach over 120 feet (36.6 m). Engelmann spruce (Picea engelmannii) is codominant, but on steep north and east-facing slopes it may not reach 10 per cent of the tree cover.

Within this spruce - fir forest, shrubs are poorly to well represented but almost always under 10 per cent of the ground cover. Ribes montigenum and R. wolfii are the principal species, followed by Sambucus glauca, Rubus strigosus, R. parviflorus, and Lonicera involucrata. Forbs tend to be luxuriant, with Senecio sanguisorboides providing the principal ground cover, along with many other herbaceous species. Except at the edges, Bromus ciliatus is the most common forest grass. As described by Alexander et al. (1984), the spruce - fir forest appears to be exclusively Abies lasiocarpa/Senecio sanguisorboides habitat type (ABLA/SESA HT).

A dense stand of aspen (Populus tremuloides) occupies the rocky north slopes at the boundary of the RNA; this

area burned many years ago. Abies lasiocarpa along with Picea engelmannii, Pseudotsuga menziesii, Acer glabrum and, rarely, Abies concolor are reproducing under the aspen. Holodiscus dumosus is a common shrub here along with the species mentioned above. The aspen community is projected to be ABLA/SESA HT.

The grassy openings in the forest and along the windswept ridges of Buck Mountain are dominated by fescue (Festuca thurberi and to a lesser extent F. ovina) with Danthonia sp. a common component. Two narrow, endemics Lupinus sierrae-blancae and Delphinium sierrae-blancae, are associated with the grasslands on Buck Mountain. All of the grasslands contain a wealth of other forbs and grasses.

At the southeastern end of the RNA, a more xeric forest grows on the south and west-facing slopes. In places Douglas-fir and southwestern white pine (Pinus strobiformis) codominate, with the Douglas-fir reaching old growth conditions. Other trees in this Interior Douglas-fir SAF type are Picea engelmannii, Acer glabrum, Populus tremuloides, and occasional Robinea neomexicana. Lupinus sierrae-blancae is the most common shrub. Herbs are luxuriant, and Bromus ciliatus is the most common grass. Alexander et al. (1984) do not describe this habitat type for the Lincoln National Forest. The habitat type found in current literature most similar to this forest community is Pseudotsuga menziesii/Bromus ciliatus (PSME/BRCI HT) as described in Forest and Woodland Habitat Types of Southern New Mexico and Central Arizona (USFS 1986).

A common shrub in the eastern third of the proposed RNA, Lupinus sierrae-blancae, is on the New Mexico sensitive plant list. The presence of this and other narrow endemic plants (Delphinium sierrae-blancae, Castilleja wootoni) is no doubt an evolutionary expression of the insular character of the subalpine forest on Sierra Blanca.

The following plant list was compiled on September 17, 1986. Because of the lateness of season and high elevation (several weeks after the first heavy frost), the list is very meager, especially for forbs. Other plants of the area are given in Moir (1967) and Dye and Moir (1977).

Abbreviated Plant List for William Telfer RNA[1]

Latin Name	Common Name2
GRASSES AND GRASS-LIKE PLANTS:	
Blepharoneuron tricholepis	Pine dropseed
Bromus ciliatus	Hairy brome
Bromus inermis	Smooth brome
Carex sp.	Sedge
Dactylis glomerata	Orchardgrass
Danthonia sp.	Oatgrass
Festuca ovina	Sheep fescue
Festuca thurberi	Thurber fescue
Koeleria cristata	Junegrass
Muhlenbergia montana	Mountain muhly
Poa pratensis	Kentucky bluegrass
Sitanion hystrix	Bottlebrush squirreltail
FORBS:	
Achillea lanulosa	Western yarrow
Actaea rubra	Baneberry
Allium sp.	Onion
Campanula rotundifolia	Bluebell
Castilleja sp.	Paintbrush
Cirsium sp.	Thistle
Delphinium sierrae-blanca	Sierra Blanca larkspur
Epilobium angustifolium	Fireweed
Erigeron sp.	Fleabane
Erysimum capitatum	Western wallflower
Geranium caespitosum	Purple geranium
Iris missouriensis	Flag
Lesquerella sp.	Bladderpod
Ligusticum porteri	Loveroot
Lupinus sierrae-blancae	Sierra Blanca lupine
Mertensia sp.	Bluebells
Oreochrysum parryi	Parry goldenweed
Potentilla sp.	Cinquefoil
Sedum sp.	Stonecrop
Senecio sanguisorboides	Groundsel
Silene laciniata	Mexican silene
Smilacina racemosa	False solomonseal
Thalictrum fendleri	Meadowrue

Zygadenus elegans	Death camas

HALF-SHRUBS, SHRUBS, AND TREES:

Abies concolor	White fir
Abies lasiocarpa var. arizonica	Corkbark fir
Acer glabrum	Rocky Mountain maple
Artemisia franserioides	Ragweed sagebrush
Holodiscus dumosus	Ocean spray
Lonicera involucrata	Bearberry honeysuckle
Picea engelmannii	Engelmann spruce
Pinus strobiformis	Southwestern white pine
Populus tremuloides	Quaking aspen
Pseudotsuga menziesii	Douglas-fir
Ribes montigenum	Gooseberry currant
Ribes wolfii	Coyotes currant
Robinia neomexicana	New Mexico locust
Rubus parviflorus	Western thimbleberry
Rubus strigosus	Red raspberry
Sambucus glauca	Smooth elder

[1]Observed by Bill Dunmire (The Nature Conservancy) on September 17, 1986
[2]Common names used according to USDA, Forest Service 1974, or Martin & Hutchins 1981.

Fauna

The Sacramento Mountain salamander (Aneides hardyi), a state endangered species, occurs within the RNA. No other rare, endangered or sensitive species are known to reside here.

The following animal list was derived from the RUN WILD III computer-stored data base (Lehmkuhl and Patton 1982; Patton 1979) from the following habitat type, for Lincoln County, New Mexico:

1. Spruce - subalpine fir series

2. Montane grassland biome; mixed meadow series

These habitat types currently in the data base most closely correspond to those occurring in the proposed RNA. The list displays species typically inhabiting these habitat types, and is not a list of species observed in the proposed RNA.

Potential Animal List for William G. Telfer RNA

Common Name	Latin Name
AMPHIBIANS:	
Salamander, Sacramento Mountain	Aneides hardyi
Salamander, tiger	Ambystoma tigrinum
Toad, Woodhouse's	Bufo woodhousei
BIRDS:	
Blackbird, redwinged	Agelaius phoeniceus
Bluebird, mountain	Sialia currucoides
Bluebird, western	Sialia mexicana
Dove, mourning	Zenaida macroura
Falcon, prairie	Falco mexicanus
Finch, house	Carpodacus mexicanus
Flicker, northern	Colaptes auratus
Flycatcher, olive-sided	Contopus borealis
Flycatcher, willow	Empidonax trailii
Goldfinch, lesser	Carduelis psaltria
Grouse, blue	Dendragapus obscurus
Hawk, Cooper's	Accipiter cooperii
Hawk, red-tailed	Buteo jamaicensis
Hawk, sharp-shinned	Accipiter striatus
Hummingbird, broad-tailed	Selasphorus platycercus
Hummingbird, rufous	Selasphorus rufus
Junco, dark-eyed	Junco hyemalis
Kestrel, American	Falco sparverius
Killdeer	Charadrius vociferus
Kinglet, golden-crowned	Regulus satrapa
Martin, purple	Progne subis
Nighthawk, common	Chordeiles minor
Nuthatch, Clark's	Nucifraga columbiana
Owl, flammulated	Otus flammeolus
Owl, great horned	Bubo virginianus
Owl, northern saw-whet	Aegolius acadicus
Owl, spotted	Strix occidentalis
Pipit, water	Anthus spinoletta
Pygmy-owl, northern	Glaucidium gnoma
Raven, common	Corvus corax
Robin, American	Turdus migratorius

Sparrow, chipping	Spizella passerina
Sparrow, house	Passer domesticus
Sparrow, vesper	Pooecetes gramineus
Sparrow, white-crowned leuchophrys	Zonotrichia
Swallow, barn	Hirundo rustica
Swallow, cliff	Hirundo pyrrhonota
Swallow, tree	Tachycineta bicolor
Swallow, violet-green thalassina	Tachycineta
Turkey, wild	Meleagris gallopavo
Vulture, turkey	Cathartes aura
Woodpecker, hairy	Picoides villosus
Wren, house	Troglodytes aedon
Wren, rock	Salpinctes obsoletus

MAMMALS:

Badger	Taxidea taxus
Bat, big brown	Eptesicus fuscus
Bear, black	Ursus americanus
Chipmunk, gray-footed	Tamias canipes
Chipmunk, least	Tamias minimus
Cottontail, Nuttall's	Sylvilagus nuttallii
Coyote	Canis latrans
Deer, mule	Odocoileus hemionus
Deer, white-tailed	Odocoileus virginianus
Gopher, Botta's pocket	Thomomys bottae
Mouse, deer	Peromyscus maniculatus
Mouse, northern grasshopper	Onychomys leucogaster
Mouse, western harvest	Reithrodontomys megalotis
Myotis, little brown	Myotis lucifugus
Myotis, long-legged	Myotis volans
Myotis, small-footed	Myotis leibii
Shrew, dwarf	Sorex nanus
Shrew, vagrant	Sorex vagrans
Skunk, hog-nosed	Conepatus mesoleucus
Skunk, striped	Mephitis mephitis
Squirrel, thirteen-lined ground	Spermophilus tridecemlineatus
Vole, long-tailed	Microtus longicaudus
Woodrat, Mexican	Neotoma mexicana
Woodrat, white-throated	Neotoma albigula

REPTILES:

Lizard, short-horned	Phrynosoma douglassi
Rattlesnake, western	Crotalus viridis
Snake, ringneck	Diadophis punctatus
Snake, western terrestrial garter	Thamnophis elegans

Geology

William G. Telfer RNA is located on the massive Sierra Blanca uplift. The igneous rocks of this uplift are composed of extrusive andesitic volcanics intruded by monzonitic stocks. The Three Rivers Stock is a breccia of late Tertiary age.

Soils

William G. Telfer RNA is located within the Caballo-Peso-Supervisor association, found dominantly on mountainous topography between altitudes of 7500 and 10,500 feet (2286.0 m to 3200.4 m) in south-central Lincoln County (NMSU 1971). A wide variety of igneous, metamorphic, and sedimentary rocks have contributed to the parent materials in which soils of this association are forming. The soils are typically dark-colored with a moderate to high content of organic matter, and are mildly alkaline to neutral and slightly acidic. The surface layers commonly contain small amounts of gravel and stones. With the exception of small rock outcrop areas, the soil supports a good cover of native vegetation dominated by trees. Dominant soils on the RNA are classified as Dystric Chryochrepts, loamy-skeletal, mixed.

Lands

All lands within the proposed RNA were included within the original Lincoln National Forest created on 7/26/1902. Lands on the north side of the ridge within the RNA were designated as part of the Rio Bonito Watershed on 6/13/1939. There are no known outstanding rights or rights- of-way within the proposed boundaries.

Cultural Resources

The entire RNA was surveyed for cultural resources in 1978 as part of a larger survey. One site, named Wizard's Roost, was recorded within the area. This unique site appears to have been a prehistoric shrine or observatory. It is listed on the National Register of historic places and should be protected from any potential disturbance. No other cultural remains were found. Uses associated with Wizard's Roost should have little impact on the RNA.

IMPACTS AND POSSIBLE CONFLICTS

Mineral Resources

The area is known to have high potential for molybdenum. There have been no leases for mineral exploration. The southern half of the area (in Sections 33 and 34, Township 10S, Range 11E) is currently part of the Ski Apache area mineral withdrawal. If William Telfer is designated an RNA, a recommendation will be made to withdraw the rest of the RNA from mineral entry.

Grazing

This area has been closed to grazing since 1962. No grazing is allowed in the areas adjacent to the proposed

RNA, so there is no need at this time for fencing to keep livestock out of the area.

Timber

The major ecosystems represented in this area are spruce-fir and Thurber fescue meadow. The proposed RNA has about 360 acres (146 hectares) of spruce-fir, 72 acres (29 hectares) of Douglas-fir, and 138 acres (56 hectares) of aspen, all of which will be withdrawn from the timber base. The acres were excluded from timber management in the Forest Plan (USFS 1986b).

Total forest: 570 acres (231 hectares)

Total commercial forest: 0

Watershed Values

The RNA surrounds a ridge which separates the Rio Bonito watershed from the Rio Ruidoso watershed. Both watersheds are fifth order watersheds flowing east and joining at Hondo, NM to form the Rio Hondo, a tributary to the Pecos River. The RNA contributes high quality water to the Bonito Reservoir, a source of water for the Tularosa Basin communities. During the winter, SCS operates a snow survey course in the area.

Recreation Values

Recreation use in this area includes big game hunting, and hiking and horseback riding on the Crest Trail and Trail No. 15. Trail use probably will not conflict with potential research projects. Hiking use is moderate on Trail No. 15 and low on the Crest Trail; horseback riding is at low levels on both trails. The RNA is partially bounded by the Ski Apache access road, State Highway 532, which is a very popular scenic drive in summer and fall. A maintenance road for the Buck Mountain Electronic Site, Forest Road 5625, runs through the middle of the area, but is gated and closed to public access.

Wildlife and Plant Values

The area contains habitat for the Sacramento mountain salamander (Aneides hardyi). The Sierra Blanca lupine (Lupinus sierrae-blanca), a state sensitive species, is common on the grassy openings of the RNA.

Wilderness, Wild and Scenic River, National Recreation Area Values

This area was inventoried as potential wilderness in RARE I and RARE II, was recommended for further study in RARE II, but was not included in the New Mexico Wilderness Act of 1980.

Transportation Plans

State Highway 532, located along part of the southern boundary of the proposed RNA, provides access to Ski Apache. Forest Road 5625 passes through the middle of the RNA to provide access to the Buck Mountain Electronic Site. This road is gated and closed to the public, but will be maintained for use by the electronic site permittees. Its minimum width and low maintenance standards preclude any serious ecological or hydrological impact on research area values.

Utility Corridor Plans

There is a 3 KV power line running through the proposed RNA from Ski Apache to the Buck Mountain Electronic Site. Maintenance of this line will have low standards and is not expected to have any significant impact on values within the RNA.

MANAGEMENT PLAN

The Lincoln National Forest Plan prescribes that there will be no harvest of firewood or other wood products, no livestock grazing, and no off-road vehicle travel on Research Natural Areas. Low intensity, dispersed recreation activities are permitted provided they do not significantly modify the area, or threaten or impair the research or educational value of the area. No new trails or roads may be constructed. No flora, fauna, or other materials may be collected other than for research approved by the Station Director.

1. Vegetation Management

Vegetation manipulation is allowed only when needed to preserve the vegetation for which the area is being established. The Forest Plan provides that all fires will be suppressed at 10 acres (4 hectares) or less, unless research purposes require other suppression objectives. Suppression action will be limited to the use of hand tools; fire retardant chemicals are prohibited unless necessary to protect life and property outside the study area.

ADMINISTRATIVE RECORDS AND PROTECTION

Administration and protection of the William G. Telfer RNA will be the responsibility of the Lincoln National Forest. The District Ranger, Smokey Bear District, Ruidoso, NM has direct responsibility.

The Director of the Rocky Mountain Forest and Range Experiment Station, or his designee, will be responsible for any studies or research conducted in the area, and requests to conduct research in the area will be referred to him.

ESTABLISHMENT RECORD

for

WILLIAM G. TELFER RESEARCH NATURAL AREA

within

Lincoln National Forest

Lincoln County, New Mexico

INTRODUCTION

The William G. Telfer Research Natural Area (RNA) comprises approximately 727 acres (294 hectares) in the Sacramento Mountains of south central New Mexico. The proposed RNA is located in the Lincoln National Forest, in Lincoln County, and is National Forest land reserved from the public domain.

In 1982, the area came into consideration for establishment of RNA status, in response to requests for expansion of the nearby Sierra Blanca Ski Area (now known as Ski Apache). The proposed RNA of 727 acres (294 hectares) represents a compromise between needs to accommodate increasing demand for skiing, and the need to protect North America's largest specimens of corkbark fir (Abies lasiocarpa var. arizonica) in a unique mosaic of subalpine communities.

The William G. Telfer Research Natural Area is named to honor a Forest Service entomologist who lost his life in an airplane accident on July 21, 1984 in the White Mountain Wilderness. A tireless and enthusiastic worker, Telfer's last months were devoted to western spruce budworm management on the Lincoln National Forest.

Land Management Planning

The need for representation of this biotic community was identified in the Southwestern Regional Guide (August 1983). The Lincoln National Forest Plan (USFS 1986a) recommends that approximately 727 acres (294 hectares) of spruce-fir forest and associated high elevation plant communities be designated for establishment as a Research Natural Area. The environmental analysis conducted as part of the planning process supports the recommendation to establish this Research Natural Area.

JUSTIFICATION STATEMENT FOR ESTABLISHMENT OF AREA

William G. Telfer Research Natural Area was identified primarily as an outstanding example of a corkbark fir forest. This is an important high elevation forest ecosystem in the Southwest.

The forest vegetation of the proposed RNA exists in a variety of seral conditions, from old-growth vegetation in near-climax state to recent invasion of subalpine fir (Abies lasiocarpa) and spruce (Picea engelmannii) into both fire clearings and Festuca thurberi meadows. This mosaic of subalpine communities offers the opportunity of studying the complex and poorly understood relationship between spruce-fir forest and grass meadows or aspen groves. Succession rates of spruce or corkbark fir and the ecology of succession are critical considerations of spruce- fir forest management. The magnificent stands of corkbark fir contain a unique ecotype of this species at the far southern range of its distribution in North America, and the preservation and study of this important genotype is one

of the prime justifications for this natural area. The American Forestry Association National Register of Big Trees shows the largest corkbark fir to be located in this RNA. Further arguments for establishment of this RNA entail its uniqueness as a virgin area and its high degree of endemism in both plant and animal species.

PRINCIPAL DISTINGUISHING FEATURES

This area contains the only representation of Abies lasiocarpa/Senecio sanguisorboides Habitat Type in the Federal RNA system. The southern most distribution in North America of subalpine communities occurs on the Sierra Blanca massif. This boreal forest is
insular, for the nearest true subalpine forest is in the vicinity of Santa Fe Baldy about 120 miles (193 km) north, with intervening communities primarily of mixed conifer, ponderosa pine (Pinus ponderosa), pinyon-juniper (Pinus edulis-Juniperus spp.), and grassland vegetation. The long isolation (about 12,000 years) of vegetation at high elevations in the Sierra Blanca area has produced outstanding examples of speciation in many disjunct plant and animal populations. A number of endemic plants and animals occur, and the corkbark fir population is itself of considerable interest as a fast-growing, long-lived, robust ecotype in the southern Rocky Mountains. Despite its far-south distribution and long isolation, the subalpine communities in the proposed RNA are representative of major forest and high meadow habitats in northern New Mexico and southern Colorado, and to a lesser extent, northern Arizona and adjacent Utah.

William G. Telfer RNA contains spruce-fir forests on sites and exposures mostly between 10,000 - 10,600 feet (3050 - 3200 m) elevation, totalling about 50% of the RNA. Old-growth stands are found on lower slopes. Meadows dominated by Thurber fescue or bluegrass (Poa pratensis) are found in openings in the forest, and along exposed ridges of Buck Mountain. Such meadows may have a critical role in watershed and erosion control. Stands of aspen (Populus tremuloides) mark the extent of a past fire on the rocky northern slopes of the RNA. An open forest of Douglas- fir (Pseudotsuga menziesii) and Thurber fescue occurs as forest border along upper slopes of Buck Mountain.

LOCATION

William G. Telfer RNA is located about 8 miles (12.9 km) northwest of Ruidoso, in south-central New Mexico (Map 1). The RNA can be found on the Nogal Peak quadrangle (USGS 7.5′ map), Township 10S, Range 11E, Sections 27, 28, 33, 34, and 35, latitude 33° 24′ N, longitude 105° 47.5′ W. Easy access to the RNA is afforded by an all-weather road leading to Ski Apache on Sierra Blanca. From this road, William Telfer is reached by a short walk on a jeep road leading to the Buck Mountain telecommunication facilities or a trail from the bottom of the ski area.

To access the RNA → From the junction of SR 37 and US 70 in Ruidoso, travel north on N.M. Highway 37 for 9 miles (14.5 km) to the junction of State Route 532 leading to the ski area (Maps 2 and 3). Turn left (west) and drive 10.6 miles (17.1 km) to a primitive road turning off to the right. Measuring from the lodge at the ski area, this turn-off is 1.2 miles (1.9 km) along this road. The road is barricaded to public vehicle access, although it is maintained for access to the Buck Mountain electronic site. Park here and enter the RNA by foot along this primitive road. The crest trail, which bisects the road half way into the RNA, provides additional easy access to most parts of the Research Natural Area. ~~The north-facing slopes along the north perimeter of the RNA are steep and heavily wooded, but even this terrain is traversed fairly easily.~~

The boundary is described as follows: ← add attached

AREA BY COVER TYPES

The distribution of cover types was determined from field surveys conducted in September, 1986 and from interpretation of 1980 aerial photography. Table 1 outlines the estimated total area of vegetation types based on the Society of American Foresters forest type system (Eyre 1980) and the Küchler Potential Natural Vegetation system (Küchler 1964). Map 4 depicts the distribution of SAF types on the candidate research natural area.

Approved Boundary Description

Boundary of William Telfer Research Natural Area.

Beginning at the Standard section corner of sections 34 and 35, on the Second Standard Parallel South, in T.10 S., R.12 E., NMPM,

Thence: NORTH, a distance of 5500 feet to a point on the Wilderness boundary designated AP 216 on the official Wilderness map, the point of beginning of this tract.

Thence:

NORTH, a distance of 3000 feet to a point,

Thence:

S 40 00'W, a distance of 2640 feet to a point,

Thence:

N 80 00'W, a distance of 3200 feet to the bottom of a canyon,

Thence:

Southerly along bottom of canyon a distance of 1500 feet to the top of a ridge,

Thence:

S 30 00'E, a distance of 1200 ft to Wilderness Trail No.25

Thence:

Southeast and east along said trail 1/2 mile to junction with Wilderness Trail No.15

Thence:

East, across top of ridge, 1700 feet more or less to the 10,000 feet elevation,

Thence:

Southeasterly and southerly along contour to intersection with eastern right-of-way of State Highway No. 532.

Thence:

Along right-of-way line of said highway 532 a distance of 1000 feet,

Thence:

East, a distance of 700 feet,

Thence:

North, a distance of 3500 feet to a point that lies midway between a loop in Forest Road No. 5625.

Thence:

N 80 00'W, a distance of 750 feet,

Thence

North and east along contour to a point on the Wilderness boundary, designated AP 216, the point of beginning

Table 1. Estimated Areas of Vegetation Types in the William G. Telfer Research Natural Area.

Type	Society of American Foresters Cover Type[1]	Küchler PNV Type[2]	Surface Area Acres	Hectares
Engelmann Spruce-Subalpine Fir	SAF 206	K-21 Southwestern Spruce-Fir	360	145.5
Interior Douglas-fir	SAF 210	K-21	72	29.3
Aspen	SAF 217	K-21	138	56.0
Thurber Fescue Grassland	[none]	K-52 Alpine Meadows	150	60.8
Rock Talus	[none]	K-52	7	2.6
		TOTAL:	727	294.2

[1]Eyre 1980.
[2]Küchler 1964.

PHYSICAL AND CLIMATIC CONDITIONS

The irregularly-shaped RNA is situated on the west, north, and south slopes of Buck Mountain. The RNA surrounds a ridge which drains on the north to the Rio Bonito, and on the south to the Rio Ruidoso. Elevation reaches approximately 10,600 feet (3231 m) on the sides of Buck Mountain and on an unnamed knob at the west end of the RNA; low elevations of about 9600 feet (2926 m) are found on the north boundary, and in a tributary to the Rio Ruidoso North Fork on the south boundary.

William G. Telfer RNA is located within a substantial mountain mass of subhumid to humid climate. The nearest long range weather station is at Ruidoso, approximately 8 miles (12.9 km) to the southeast. The following data was interpreted for the RNA from the Terrestrial Ecosystems Handbook maintained by the USFS Southwestern Regional Office. Considerable precipitation falls at this elevation, more than can be evaporated or used by the forests. Much of this moisture is a vital contribution to lower elevation moisture levels via stream flow. Just over two-thirds of the annual precipitation comes during the summer, frequently from local orographic and convectional storms. Average annual rainfall is 30 inches (762 mm). Cool season (November to April) precipitation includes cyclonic snow storms, with an average annual snowfall of 71 inches (180.3 cm). Mean annual temperature is a cool 34° F (1.1° C), with a July average

of 50° F (10.0° C) and a January average of 19° F (-7.2° C). The frost free period is short, lasting an average of only 60 days.

DESCRIPTION OF VALUES

Flora

Corkbark fir (Abies lasiocarpa var. arizonica) is the dominant tree throughout the proposed RNA, except for several grassland meadow openings in the forest, exposed ridges, and some nearly pure stands of aspen. Old-growth stands contain the largest specimens of corkbark fir; Dbh of many individuals exceeds 4 feet (122 cm) and heights reach over 120 feet (36.6 m). Engelmann spruce (Picea engelmannii) is codominant, but on steep north and east-facing slopes it may not reach 10 per cent of the tree cover.

Within this spruce - fir forest, shrubs are poorly to well represented but almost always under 10 per cent of the ground cover. Ribes montigenum and R. wolfii are the principal species, followed by Sambucus glauca, Rubus strigosus, R. parviflorus, and Lonicera involucrata. Forbs tend to be luxuriant, with Senecio sanguisorboides providing the principal ground cover, along with many other herbaceous species. Except at the edges, Bromus ciliatus is the most common forest grass. As described by Alexander et al. (1984), the spruce - fir forest appears to be exclusively Abies lasiocarpa/Senecio sanguisorboides habitat type (ABLA/SESA HT).

A dense stand of aspen (Populus tremuloides) occupies the rocky north slopes at the boundary of the RNA; this area burned many years ago. Abies lasiocarpa along with Picea engelmannii, Pseudotsuga menziesii, Acer glabrum and, rarely, Abies concolor are reproducing under the aspen. Holodiscus dumosus is a common shrub here along with the species mentioned above. The aspen community is projected to be ABLA/SESA HT.

The grassy openings in the forest and along the windswept ridges of Buck Mountain are dominated by fescue (Festuca thurberi and to a lesser extent F. ovina) with Danthonia sp. a common component. Two narrow, endemics Lupinus sierrae-blancae and Delphinium sierrae-blancae, are associated with the grasslands on Buck Mountain. All of the grasslands contain a wealth of other forbs and grasses.

At the southeastern end of the RNA, a more xeric forest grows on the south and west-facing slopes. In places Douglas-fir and southwestern white pine (Pinus strobiformis) codominate, with the Douglas-fir reaching old growth conditions. Other trees in this Interior Douglas-fir SAF type are Picea engelmannii, Acer glabrum, Populus tremuloides, and occasional Robinea neomexicana. Lupinus sierrae-blancae is the most common shrub. Herbs are luxuriant, and Bromus ciliatus is the most common grass. Alexander et al. (1984) do not describe this habitat type for the Lincoln National Forest. The habitat type found in current literature most similar to this forest community is Pseudotsuga menziesii/Bromus ciliatus (PSME/BRCI HT) as described in Forest

and Woodland Habitat Types of Southern New Mexico and Central Arizona (USFS 1986).

A common shrub in the eastern third of the proposed RNA, Lupinus sierrae-blancae, is on the New Mexico sensitive plant list. The presence of this and other narrow endemic plants (Delphinium sierrae-blancae, Castilleja wootoni) is no doubt an evolutionary expression of the insular character of the subalpine forest on Sierra Blanca.

The following plant list was compiled on September 17, 1986. Because of the lateness of season and high elevation (several weeks after the first heavy frost), the list is very meager, especially for forbs. Other plants of the area are given in Moir (1967) and Dye and Moir (1977).

Abbreviated Plant List for William Telfer RNA[1]

Latin Name	Common Name[2]
GRASSES AND GRASS-LIKE PLANTS:	
Blepharoneuron tricholepis	Pine dropseed
Bromus ciliatus	Hairy brome
Bromus inermis	Smooth brome
Carex sp.	Sedge
Dactylis glomerata	Orchardgrass
Danthonia sp.	Oatgrass
Festuca ovina	Sheep fescue
Festuca thurberi	Thurber fescue
Koeleria cristata	Junegrass
Muhlenbergia montana	Mountain muhly
Poa pratensis	Kentucky bluegrass
Sitanion hystrix	Bottlebrush squirreltail
FORBS:	
Achillea lanulosa	Western yarrow
Actaea rubra	Baneberry
Allium sp.	Onion
Campanula rotundifolia	Bluebell
Castilleja sp.	Paintbrush
Cirsium sp.	Thistle
Delphinium sierrae-blanca	Sierra Blanca larkspur
Epilobium angustifolium	Fireweed
Erigeron sp.	Fleabane
Erysimum capitatum	Western wallflower
Geranium caespitosum	Purple geranium
Iris missouriensis	Flag
Lesquerella sp.	Bladderpod
Ligusticum porteri	Loveroot
Lupinus sierrae-blancae	Sierra Blanca lupine
Mertensia sp.	Bluebells
Oreochrysum parryi	Parry goldenweed
Potentilla sp.	Cinquefoil
Sedum sp.	Stonecrop
Senecio sanguisorboides	Groundsel
Silene laciniata	Mexican silene
Smilacina racemosa	False solomonseal
Thalictrum fendleri	Meadowrue
Zygadenus elegans	Death camas
HALF-SHRUBS, SHRUBS, AND TREES:	
Abies concolor	White fir
Abies lasiocarpa var. arizonica	Corkbark fir

Acer glabrum	Rocky Mountain maple
Artemisia franserioides	Ragweed sagebrush
Holodiscus dumosus	Ocean spray
Lonicera involucrata	Bearberry honeysuckle
Picea engelmannii	Engelmann spruce
Pinus strobiformis	Southwestern white pine
Populus tremuloides	Quaking aspen
Pseudotsuga menziesii	Douglas-fir
Ribes montigenum	Gooseberry currant
Ribes wolfii	Coyotes currant
Robinia neomexicana	New Mexico locust
Rubus parviflorus	Western thimbleberry
Rubus strigosus	Red raspberry
Sambucus glauca	Smooth elder

[1]Observed by Bill Dunmire (The Nature Conservancy) on September 17, 1986

[2]Common names used according to USDA, Forest Service 1974, or Martin & Hutchins 1981.

Fauna

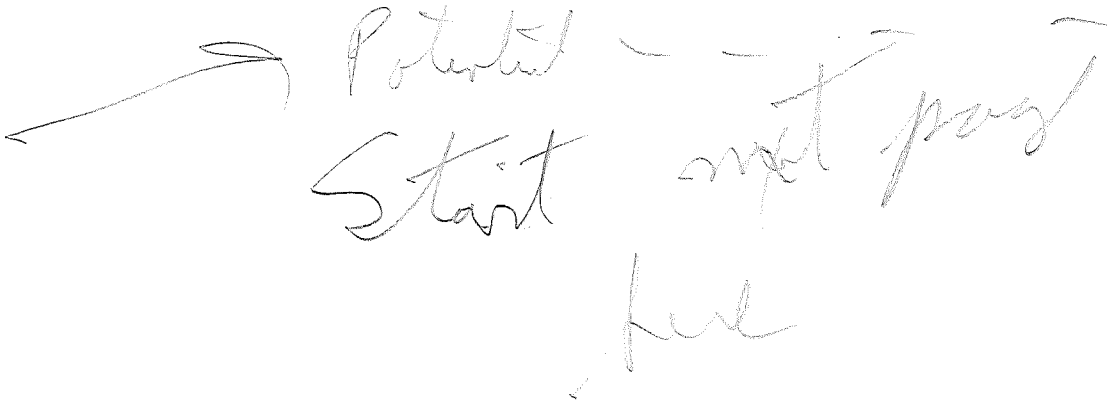
The Sacramento Mountain salamander (Aneides hardyi), a state endangered species, occurs within the RNA. No other rare, endangered or sensitive species are known to reside here.

The following animal list was derived from the RUN WILD III computer-stored data base (Lehmkuhl and Patton 1982; Patton 1979) from the following habitat type, for Lincoln County, New Mexico:

1. Spruce - subalpine fir series

2. Montane grassland biome; mixed meadow series

These habitat types currently in the data base most closely correspond to those occurring in the proposed RNA. The list displays species typically inhabiting these habitat types, and is not a list of species observed in the proposed RNA.



Potential Animal List for William G. Telfer RNA

Common Name	Latin Name
AMPHIBIANS:	
Salamander, Sacramento Mountain	Aneides hardyi
Salamander, tiger	Ambystoma tigrinum
Toad, Woodhouse's	Bufo woodhousei
BIRDS:	
Blackbird, redwinged	Agelaius phoeniceus
Bluebird, mountain	Sialia currucoides
Bluebird, western	Sialia mexicana
Dove, mourning	Zenaida macroura
Falcon, prairie	Falco mexicanus
Finch, house	Carpodacus mexicanus
Flicker, northern	Colaptes auratus
Flycatcher, olive-sided	Contopus borealis
Flycatcher, willow	Empidonax trailii
Goldfinch, lesser	Carduelis psaltria
Grouse, blue	Dendragapus obscurus
Hawk, Cooper's	Accipiter cooperii
Hawk, red-tailed	Buteo jamaicensis
Hawk, sharp-shinned	Accipiter striatus
Hummingbird, broad-tailed	Selasphorus platycercus
Hummingbird, rufous	Selasphorus rufus
Junco, dark-eyed	Junco hyemalis
Kestrel, American	Falco sparverius
Killdeer	Charadrius vociferus
Kinglet, golden-crowned	Regulus satrapa
Martin, purple	Progne subis
Nighthawk, common	Chordeiles minor
Nuthatch, Clark's	Nucifraga columbiana
Owl, flammulated	Otus flammeolus
Owl, great horned	Bubo virginianus
Owl, northern saw-whet	Aegolius acadicus
Owl, spotted	Strix occidentalis
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Swallow, barn	Hirundo rustica
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Swallow, tree	Tachycineta bicolor
Swallow, violet-green	Tachycineta thalassina

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Vulture, turkey	Cathartes aura
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Skunk, striped	Mephitis mephitis
Squirrel, thirteen-lined ground	Spermophilus tridecemlineatus
Vole, long-tailed	Microtus longicaudus
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Geology

William G. Telfer RNA is located on the massive Sierra Blanca uplift. The igneous rocks of this uplift are composed of extrusive andesitic volcanics intruded by monzonitic stocks. The Three Rivers Stock is a breccia of late Tertiary age.

Soils

William G. Telfer RNA is located within the Caballo-Peso-Supervisor association, found dominantly on mountainous topography between altitudes of 7500 and 10,500 feet (2286.0 m to 3200.4 m) in south-central Lincoln County (NMSU 1971). A wide variety of igneous, metamorphic, and sedimentary rocks have contributed to the parent materials in which soils of this association are forming. The soils are typically dark-colored with a moderate to high content of organic matter, and are mildly alkaline to neutral and slightly acidic. The surface layers commonly contain small amounts of gravel and stones. With the exception of small rock outcrop areas, the soil supports a good cover of native vegetation dominated by trees. Dominant soils on the RNA are classified as Dystric Chryochrepts, loamy-skeletal, mixed.

Lands

All lands within the proposed RNA were included within the original Lincoln National Forest created on 7/26/1902. Lands on the north side of the ridge within the RNA were designated as part of the Rio Bonito Watershed on 6/13/1939. There are no known outstanding rights or rights- of-way within the proposed boundaries.

Cultural Resources

The entire RNA was surveyed for cultural resources in 1978 as part of a larger survey. One site, named Wizard's Roost, was recorded within the area. This unique site appears to have been a prehistoric shrine or observatory. It is listed on the National Register of historic places and should be protected from any potential disturbance. No other cultural remains were found. Uses associated with Wizards Roost should have little impact on the RNA.

IMPACTS AND POSSIBLE CONFLICTS

Mineral Resources

The area is known to have high potential for molybdenum. There have been no leases for mineral exploration. The southern half of the area (in Sections 33 and 34, Township 10S, Range 11E) is currently part of the Ski Apache area mineral withdrawal. If William Telfer is designated an RNA, a recommendation will be made to withdraw the rest of the RNA from mineral entry.

Grazing

This area has been closed to grazing since 1962. No grazing is allowed in the areas adjacent to the proposed

RNA, so there is no need at this time for fencing to keep livestock out of the area.

Timber

The major ecosystems represented in this area are spruce-fir and Thurber fescue meadow. The proposed RNA has about 360 acres (146 hectares) of spruce-fir, 72 acres (29 hectares) of Douglas-fir, and 138 acres (56 hectares) of aspen, all of which will be withdrawn from the timber base. The acres were excluded from timber management in the Forest Plan (USFS 1986b).

Total forest: 570 acres (231 hectares)
Total commercial forest: 0

Watershed Values

The RNA surrounds a ridge which separates the Rio Bonito watershed from the Rio Ruidoso watershed. Both watersheds are fifth order watersheds flowing east and joining at Hondo, NM to form the Rio Hondo, a tributary to the Pecos River. The RNA contributes high quality water to the Bonito Reservoir, a source of water for the Tularosa Basin communities. During the winter, SCS operates a snow survey course in the area.

Recreation Values

Recreation use in this area includes big game hunting, and hiking and horseback riding on the Crest Trail and Trail No. 15. Trail use probably will not conflict with potential research projects. Hiking use is moderate on Trail No. 15 and low on the Crest Trail; horseback riding is at low levels on both trails. The RNA is partially bounded by the Ski Apache access road, State Highway 532, which is a very popular scenic drive in summer and fall. A maintenance road for the Buck Mountain Electronic Site, Forest Road 5625, runs through the middle of the area, but is gated and closed to public access.

Wildlife and Plant Values

The area contains habitat for the Sacramento mountain salamander (Aneides hardyi). The Sierra Blanca lupine (Lupinus sierrae-blanca), a state sensitive species, is common on the grassy openings of the RNA.

Wilderness, Wild and Scenic River, National Recreation Area Values

This area was inventoried as potential wilderness in RARE I and RARE II, was recommended for further study in RARE II, but was not included in the New Mexico Wilderness Act of 1980.

Transportation Plans

State Highway 532, located along part of the southern boundary of the proposed RNA, provides access to Ski Apache. Forest Road 5625 passes through the middle of the RNA to provide access to the Buck Mountain Electronic Site. This road is gated and closed to the public, but will be maintained for use by the electronic site permittees. Its minimum width and low maintenance standards preclude any serious ecological or hydrological impact on research area values.

Utility Corridor Plans

There is a 3 KV power line running through the proposed RNA from Ski Apache to the Buck Mountain Electronic Site. Maintenance of this line will have low standards and is not expected to have any significant impact on values within the RNA.

MANAGEMENT PLAN

The Lincoln National Forest Plan prescribes that there will be no harvest of firewood or other wood products, no livestock grazing, and no off-road vehicle travel on Research Natural Areas. Low intensity, dispersed recreation activities are permitted provided they do not significantly modify the area, or threaten or impair the research or educational value of the area. No new trails or roads may be constructed. No flora, fauna, or other materials may be collected other than for research approved by the Station Director.

1. Vegetation Management

Vegetation manipulation is allowed only when needed to preserve the vegetation for which the area is being established. The Forest Plan provides that all fires will be suppressed at 10 acres (4 hectares) or less, unless research purposes require other suppression objectives. Suppression action will be limited to the use of hand tools; fire retardant chemicals are prohibited unless necessary to protect life and property outside the study area.

ADMINISTRATIVE RECORDS AND PROTECTION

Administration and protection of the William G. Telfer RNA will be the responsibility of the Lincoln National Forest. The District Ranger, Smokey Bear District, Ruidoso, NM has direct responsibility.

The Director of the Rocky Mountain Forest and Range Experiment Station, or his designee, will be responsible for any studies or research conducted in the area, and requests to conduct research in the area will be referred to him.

He, or his designee, will evaluate research proposals and coordinate all studies and research in the area with the District Ranger. All plant and animal specimens collected in the course of research conducted in the area will be properly preserved and maintained within university or federal agency herbaria and museums, approved by the Rocky Mountain Station Director.

Records for the William G. Telfer RNA will be maintained in the following offices:

Regional Forester, Southwestern Region, Albuquerque, NM
Rocky Mountain Station, Fort Collins, CO
Lincoln National Forest, Alamogordo, NM
District Ranger, Smokey Bear District, Ruidoso, NM

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DESIGNATION ORDER

By virtue of the authority vested in me by the Secretary of Agriculture under regulations 7 CFR 2.42 and 36 CFR 251.23, I hereby establish the William G. Telfer Research Natural Area. The William G. Telfer Research Natural Area shall be comprised of the land described in the "Location" section of this report.

1) Regional Forester, Sotero Muniz, recommended the establishment of the William G. Telfer Research Natural Area in the Lincoln National Forest Land and Resource Plan. That recommendation was the result of an analysis of the factors listed in 36 CFR 219.25 and Forest Service Manual 4063.41. The results of the Regional Forester's analysis are documented in the Final Environmental Impact Statement for the National Forest Land and Resource Management Plan and the Establishment Record which are available to the public.

2) The William G. Telfer Research Natural Area will be managed in compliance with all relevant laws, regulations, and manual direction regarding Research Natural Areas. The William G. Telfer Research Natural Area will be administered in accordance with the management direction identified in the Establishment Record.

3) The Lincoln National Forest Land and Resource Management Plan is hereby amended to be consistent with the management direction identified in the Establishment Record and this designation order. Directions from the Lincoln National Forest Land and Resource Management Plan are replaced by the directions given in the Establishment Record. This direction will remain in effect unless amended pursuant to 36 CFR 219.10. This is a nonsignificant amendment of the Lincoln National Forest Land and Resource Management Plan.

The Forest Supervisor of the Lincoln National Forest shall notify the public of this amendment and will mail a copy of the Designation Order and amended direction to all persons on the Lincoln Land and Resource Management Plan mailing list.

Based on the environmental analysis documented in the National Forest Land and Resource Management Plan and the Establishment Record I find that the designation of the William G. Telfer Research Natural Area is not a major federal action significantly affecting the quality of the human environment.

This decision is subject to appeal pursuant to 36 CFR 217. A Notice of Appeal must be in writing and submitted to:

The Secretary of Agriculture
14th & Independence Ave., S.W.
Washington, D.C. 20250

Any appeal of this decision must include the information required by 36 CFR Part 217.9 including the reasons for appeal. Two (2) copies of the Notice of Appeal must be filed with the Secretary of Agriculture within 45 days from the date of legal notice of this decision. Review by the Secretary is wholly discretionary. If the Secretary has not decided within 15 days of receiving the Notice of Appeal to review the Chief's decision, appellants will be notified that the Chief's decision is the final administrative decision of the U.S. Department of Agriculture (36 CFR 217.7(a)).

_____ _____

Chief Date

ESTABLISHMENT REPORT

WILLIAM G. TELFER RESEARCH NATURAL AREA

USDA FOREST SERVICE
SOUTHWESTERN REGION
LINCOLN NATIONAL FOREST
SMOKEY BEAR RANGER DISTRICT
LINCOLN COUNTY, NEW MEXICO

Prepared by: _____Date_____
William W. Dunmire, The Nature Conservancy
Mollie S. Toll, Department of Biology,
University of New Mexico

Recommended by: _____Date_____
Steve Sams, District Ranger
Smokey Bear Ranger District

Recommended by: _____Date_____
James R. Abbott, Forest Supervisor
Lincoln National Forest

Recommended by: _____Date_____
John W. Russell, Chairman
Southwestern Research Natural Area Committee

Recommended by: _____Date_____
Sotero Muniz, Regional Forester
Southwestern Region

Recommended by: _____Date_____
Charles M. Loveless, Station Director
Rocky Mountain Forest and Range Experiment
Station

ESTABLISHMENT RECORD

for

WILLIAM G. TELFER RESEARCH NATURAL AREA

within

Lincoln National Forest

Lincoln County, New Mexico

INTRODUCTION

The William G. Telfer Research Natural Area (RNA) comprises approximately 727 acres (294 hectares) in the Sacramento Mountains of south central New Mexico. The proposed RNA is located in the Lincoln National Forest, in Lincoln County, and is National Forest land reserved from the public domain.

In 1982, the area came into consideration for establishment of RNA status, in response to requests for expansion of the nearby Sierra Blanca Ski Area (now known as Ski Apache). The proposed RNA of 727 acres (294 hectares) represents a compromise between needs to accommodate increasing demand for skiing, and the need to protect North America's largest specimens of corkbark fir (Abies lasiocarpa var. arizonica) in a unique mosaic of subalpine communities.

The William G. Telfer Research Natural Area is named to honor a Forest Service entomologist who lost his life in an airplane accident on July 21, 1984 in the White Mountain Wilderness. A tireless and enthusiastic worker, Telfer's last months were devoted to western spruce budworm management on the Lincoln National Forest.

LAND MANAGEMENT PLANNING

The need for representation of this biotic community was identified in the Southwestern Regional Guide (August 1983). The Lincoln National Forest Plan (USFS 1986a) recommends that approximately 727 acres (294 hectares) of spruce-fir forest and associated high elevation plant communities be designated for establishment as a Research Natural Area. The environmental analysis conducted as part of the planning process supports the recommendation to establish this Research Natural Area.

JUSTIFICATION STATEMENT FOR ESTABLISHMENT OF AREA

William G. Telfer Research Natural Area was identified primarily as an outstanding example of a corkbark fir forest. This is an important high elevation forest ecosystem in the Southwest.

The forest vegetation of the proposed RNA exists in a variety of seral conditions, from old-growth vegetation in near-climax state to recent invasion of subalpine fir (Abies lasiocarpa) and spruce (Picea engelmannii) into both fire clearings and Festuca thurberi meadows. This mosaic of subalpine communities offers the opportunity of studying the complex and poorly understood relationship between spruce-fir forest and grass meadows or aspen groves. Succession rates of spruce or corkbark fir and the ecology of succession are critical considerations of spruce- fir forest management. The magnificent stands of corkbark fir contain a unique ecotype of this species at the far southern range of its distribution in North America, and the preservation and study of this important genotype is one of the prime justifications for this natural area. The American Forestry Association National Register of Big Trees shows the largest corkbark fir to be located

in this RNA. Further arguments for establishment of this RNA entail its uniqueness as a virgin area and its high degree of endemism in both plant and animal species.

PRINCIPAL DISTINGUISHING FEATURES

This area contains the only representation of Abies lasiocarpa/Senecio sanguisorboides Habitat Type in the Federal RNA system. The southern most distribution in North America of subalpine communities occurs on the Sierra Blanca massif. This boreal forest is insular, for the nearest true subalpine forest is in the vicinity of Santa Fe Baldy about 120 miles (193 km) north, with intervening communities primarily of mixed conifer, ponderosa pine (Pinus ponderosa), pinyon-juniper (Pinus edulis-Juniperus spp.), and grassland vegetation. The long isolation (about 12,000 years) of vegetation at high elevations in the Sierra Blanca area has produced outstanding examples of speciation in many disjunct plant and animal populations. A number of endemic plants and animals occur, and the corkbark fir population is itself of considerable interest as a fast growing, long lived, robust ecotype in the southern Rocky Mountains. Despite its far south distribution and long isolation, the subalpine communities in the proposed RNA are representative of major forest and high meadow habitats in northern New Mexico and southern Colorado, and to a lesser extent, northern Arizona and adjacent Utah.

William G. Telfer RNA contains spruce-fir forests on sites and exposures mostly between 10,000 to 10,600 feet (3050 - 3200 m) elevation, totalling about 50% of the RNA. Old-growth stands are found on lower slopes. Meadows dominated by Thurber fescue or bluegrass (Poa pratensis) are found in openings in the forest, and along exposed ridges of Buck Mountain. Such meadows may have a critical role in watershed and erosion control. Stands of aspen (Populus tremuloides) mark the extent of a past fire on the rocky northern slopes of the RNA. An open forest of Douglas- fir (Pseudotsuga menziesii) and Thurber fescue occurs as forest border along upper slopes of Buck Mountain.

LOCATION

William G. Telfer RNA is located about 8 miles (12.9 km) northwest of Ruidoso, in south-central New Mexico (Map 1). The RNA can be found on the Nogal Peak quadrangle (USGS 7.5' map), Township 10S, Range 11E, Sections 27, 28, 33, 34, and 35, latitude 33° 24' N, longitude 105° 47.5' W. Easy access to the RNA is afforded by an all-weather road leading to Ski Apache on Sierra Blanca. From this road, William Telfer is reached by a short walk on a jeep road leading to the Buck Mountain telecommunication facilities or a trail from the bottom of the ski area.

To access the RNA from the junction of SR 37 and US 70 in Ruidoso, travel north on N.M. Highway 37 for 9 miles (14.5 km) to the junction of State Route 532 leading to the ski area (Maps 1 and 2). Turn left (west) and drive 10.6 miles (17.1 km)

Table 1. Estimated Areas of Vegetation Types in the William G. Telfer Research Natural Area.

Type	Society of American Foresters Cover Type[1]	Küchler PNV Type[2]	Surface Area Acres	Hectares
Engelmann Spruce-Subalpine Fir	SAF 206	K-20 Southwestern Spruce-Fir	360	145.5
Interior Douglas-fir	SAF 210	K-17 Douglas-fir	72	29.3
Aspen	SAF 217	K-17 Seral	138	56.0
Thurber Fescue Grassland	[none]	K-45 Alpine Meadows	150	60.8
Rock Talus	[none]	K-52 Shrubsteppe	7	2.6
		TOTAL:	727	294.2

[1]Eyre 1980.
[2]Küchler 1964.

PHYSICAL AND CLIMATIC CONDITIONS

The irregularly-shaped RNA is situated on the west, north, and south slopes of Buck Mountain. The RNA surrounds a ridge which drains on the north to the Rio Bonito, and on the south to the Rio Ruidoso. Elevation reaches approximately 10,600 feet (3231 m) on the sides of Buck Mountain and on an unnamed knob at the west end of the RNA; low elevations of about 9600 feet (2926 m) are found on the north boundary, and in a tributary to the Rio Ruidoso North Fork on the south boundary.

William G. Telfer RNA is located within a substantial mountain mass of subhumid to humid climate. The nearest long range weather station is at Ruidoso, approximately 8 miles (12.9 km) to the southeast. The following data was interpreted for the RNA from the Terrestrial Ecosystems Handbook maintained by the USFS

Southwestern Regional Office. Considerable precipitation falls at this elevation, more than can be evaporated or used by the forests. Much of this moisture is a vital contribution to lower elevation moisture levels via stream flow. Just over two-thirds of the annual precipitation comes during the summer, frequently from local orographic and convectional storms. Average annual rainfall is 30 inches (762 mm). Cool season (November to April) precipitation includes cyclonic snow storms, with an average annual snowfall of 71 inches (180.3 cm). Mean annual temperature is a cool 34° F (1.1° C), with a July average of 50° F (10.0° C) and a January average of 19° F (-7.2° C). The frost free period is short, lasting an average of only 60 days.

DESCRIPTION OF VALUES

Flora

Corkbark fir (Abies lasiocarpa var. arizonica) is the dominant tree throughout the proposed RNA, except for several grassland meadow openings in the forest, exposed ridges, and some nearly pure stands of aspen. Old-growth stands contain the largest specimens of corkbark fir; diameter at breast height (DBH) of many individuals exceeds 4 feet (1.2 m) and heights reach over 120 feet (36.6 m). Engelmann spruce (Picea engelmannii) is codominant, but on steep north and east-facing slopes it may not reach 10 per cent of the tree cover.

Within this spruce-fir forest, shrubs are poorly to well represented and are almost always make up under 10 per cent of the ground cover. Ribes montigenum and R. wolfii are the principal species, followed by Sambucus glauca, Rubus strigosus, R. parviflorus, and Lonicera involucrata. Forbs tend to be luxuriant, with Senecio sanguisorboides providing the principal ground cover, along with many other herbaceous species. Except at the edges, Bromus ciliatus is the most common forest grass. As described by Alexander et al. (1984), the spruce-fir forest appears to be exclusively Abies lasiocarpa/Senecio sanguisorboides habitat type (ABLA/SESA HT).

A dense stand of aspen (Populus tremuloides) occupies the rocky north slopes at the boundary of the RNA; this area burned many years ago. Abies lasiocarpa along with Picea engelmannii, Pseudotsuga menziesii, Acer glabrum and, rarely, Abies concolor are reproducing under the aspen. Holodiscus dumosus is a common shrub here along with the species mentioned above. The aspen community is projected to be ABLA/SESA HT.

The grassy openings in the forest and along the windswept ridges of Buck Mountain are dominated by fescue (Festuca thurberi and, to a lesser extent, F. ovina) with Danthonia sp. a common component. Two narrow endemics, Lupinus sierrae-blancae and Delphinium sierrae-blancae, are associated with the grasslands on Buck Mountain. All of the grasslands contain a wealth of other forbs and grasses.

At the southeastern end of the RNA, a more xeric forest grows on the south and west-facing slopes. In places Douglas fir and southwestern white pine (Pinus strobiformis) codominant, with the Douglas fir reaching old growth conditions. Other

trees in this Interior Douglas fir SAF type are Picea engelmannii, Acer glabrum, Populus tremuloides, and occasional Robinia neomexicana. Lupinus sierrae-blancae is the most common shrub. Again, herbs are luxuriant, and Bromus ciliatus is the most common grass. Alexander et al. (1984) do not describe this habitat type for the Lincoln National Forest. The habitat type found in current literature most similar to this forest community is Pseudotsuga menziesii/Bromus ciliatus (PSME/BRCI HT) as described in Forest and Woodland Habitat Types of Southern New Mexico and Central Arizona (USFS 1986).

A common shrub in the eastern third of the proposed RNA, Lupinus sierrae-blancae, is on the New Mexico sensitive plant list. The presence of this and other narrow endemic plants (Delphinium sierrae-blancae, Castilleja wootoni) is no doubt an evolutionary expression of the insular character of the subalpine forest on Sierra Blanca.

The following plant list was compiled on September 17, 1986. Because of the lateness of season and high elevation (several weeks after the first heavy frost), the list is very meager, especially for forbs. Other plants of the area are given in Moir (1967) and Dye and Moir (1977).

Abbreviated Plant List for William Telfer RNA[1]

Latin Name	Common Name2
GRASSES AND GRASS-LIKE PLANTS:	
Blepharoneuron tricholepis	Pine dropseed
Bromus ciliatus	Hairy brome
Bromus inermis	Smooth brome
Carex sp.	Sedge
Dactylis glomerata	Orchardgrass
Danthonia sp.	Oatgrass
Festuca ovina	Sheep fescue
Festuca thurberi	Thurber fescue
Koeleria cristata	Junegrass
Muhlenbergia montana	Mountain muhly
Poa pratensis	Kentucky bluegrass
Sitanion hystrix	Bottlebrush squirreltail
FORBS:	
Achillea lanulosa	Western yarrow
Actaea rubra	Baneberry
Allium sp.	Onion
Campanula rotundifolia	Bluebell

Castilleja sp.	Paintbrush
Cirsium sp.	Thistle
Delphinium sierrae-blanca	Sierra Blanca larkspur
Epilobium angustifolium	Fireweed
Erigeron sp.	Fleabane
Erysimum capitatum	Western wallflower
Geranium caespitosum	Purple geranium
Iris missouriensis	Flag
Lesquerella sp.	Bladderpod
Ligusticum porteri	Loveroot
Lupinus sierrae-blancae	Sierra Blanca lupine
Mertensia sp.	Bluebells
Oreochrysum parryi	Parry goldenweed
Potentilla sp.	Cinquefoil
Sedum sp.	Stonecrop
Senecio sanguisorboides	Groundsel
Silene laciniata	Mexican silene
Smilacina racemosa	False solomonseal
Thalictrum fendleri	Meadowrue
Zygadenus elegans	Death camas

HALF-SHRUBS, SHRUBS, AND TREES:

Abies concolor	White fir
Abies lasiocarpa var. arizonica	Corkbark fir
Acer glabrum	Rocky Mountain maple
Artemisia franserioides	Ragweed sagebrush
Holodiscus dumosus	Ocean spray
Lonicera involucrata	Bearberry honeysuckle
Picea engelmannii	Engelmann spruce
Pinus strobiformis	Southwestern white pine
Populus tremuloides	Quaking aspen
Pseudotsuga menziesii	Douglas-fir
Ribes montigenum	Gooseberry currant
Ribes wolfii	Coyotes currant
Robinia neomexicana	New Mexico locust
Rubus parviflorus	Western thimbleberry

Rubus strigosus	Red raspberry
Sambucus glauca	Smooth elder

[1]Observed by Bill Dunmire (The Nature Conservancy) on September 17, 1986
[2]Common names used according to USDA, Forest Service 1974, or Martin & Hutchins 1981.

Fauna

The Sacramento Mountain salamander (Aneides hardyi), a state endangered species, occurs within the RNA. No other rare, endangered or sensitive species are known to reside here.

The following animal list was derived from the RUN WILD III computer-stored data base (Lehmkuhl and Patton 1982; Patton 1979) from the following habitat type, for Lincoln County, New Mexico:

1. Spruce-subalpine fir series

2. Montane grassland biome; mixed meadow series

These habitat types currently in the data base most closely correspond to those occurring in the proposed RNA. The list displays species typically inhabiting these habitat types, and is not a list of species observed in the proposed RNA.

Potential Animal List for William G. Telfer RNA

Common Name	Latin Name
AMPHIBIANS:	
Salamander, Sacramento Mountain	Aneides hardyi
Salamander, tiger	Ambystoma tigrinum
Toad, Woodhouse's	Bufo woodhousei
BIRDS:	
Blackbird, redwinged	Agelaius phoeniceus
Bluebird, mountain	Sialia currucoides
Bluebird, western	Sialia mexicana
Dove, mourning	Zenaida macroura

Falcon, prairie	Falco mexicanus
Finch, house	Carpodacus mexicanus
Flicker, northern	Colaptes auratus
Flycatcher, olive-sided	Contopus borealis
Flycatcher, willow	Empidonax trailii
Goldfinch, lesser	Carduelis psaltria
Grouse, blue	Dendragapus obscurus
Hawk, Cooper's	Accipiter cooperii
Hawk, red-tailed	Buteo jamaicensis
Hawk, sharp-shinned	Accipiter striatus
Hummingbird, broad-tailed	Selasphorus platycercus
Hummingbird, rufous	Selasphorus rufus
Junco, dark-eyed	Junco hyemalis
Kestrel, American	Falco sparverius
Killdeer	Charadrius vociferus
Kinglet, golden-crowned	Regulus satrapa
Martin, purple	Progne subis
Nighthawk, common	Chordeiles minor
Nuthatch, Clark's	Nucifraga columbiana
Owl, flammulated	Otus flammeolus
Owl, great horned	Bubo virginianus
Owl, northern saw-whet	Aegolius acadicus
Owl, spotted	Strix occidentalis
Pipit, water	Anthus spinoletta
Pygmy-owl, northern	Glaucidium gnoma
Raven, common	Corvus corax
Robin, American	Turdus migratorius
Sparrow, chipping	Spizella passerina
Sparrow, house	Passer domesticus
Sparrow, vesper	Pooecetes gramineus
Sparrow, white-crowned	Zonotrichia leuchophrys
Swallow, barn	Hirundo rustica
Swallow, cliff	Hirundo pyrrhonota
Swallow, tree	Tachycineta bicolor
Swallow, violet-green	Tachycineta thalassina
Turkey, wild	Meleagris gallopavo
Vulture, turkey	Cathartes aura
Woodpecker, hairy	Picoides villosus
Wren, house	Troglodytes aedon
Wren, rock	Salpinctes obsoletus

MAMMALS:

Badger	Taxidea taxus
Bat, big brown	Eptesicus fuscus
Bear, black	Ursus americanus
Chipmunk, gray-footed	Tamias canipes
Chipmunk, least	Tamias minimus
Cottontail, Nuttall's	Sylvilagus nuttallii
Coyote	Canis latrans
Deer, mule	Odocoileus hemionus
Deer, white-tailed	Odocoileus virginianus
Gopher, Botta's pocket	Thomomys bottae
Mouse, deer	Peromyscus maniculatus
Mouse, northern grasshopper	Onychomys leucogaster
Mouse, western harvest	Reithrodontomys megalotis
Myotis, little brown	Myotis lucifugus
Myotis, long-legged	Myotis volans
Myotis, small-footed	Myotis leibii
Shrew, dwarf	Sorex nanus
Shrew, vagrant	Sorex vagrans
Skunk, hog-nosed	Conepatus mesoleucus
Skunk, striped	Mephitis mephitis
Squirrel, thirteen-lined ground	Spermophilus tridecemlineatus
Vole, long-tailed	Microtus longicaudus
Woodrat, Mexican	Neotoma mexicana
Woodrat, white-throated	Neotoma albigula

REPTILES:

Lizard, short-horned	Phrynosoma douglassi
Rattlesnake, western	Crotalus viridis
Snake, ringneck	Diadophis punctatus
Snake, western terrestrial garter	Thamnophis elegans

Geology

William G. Telfer RNA is located on the massive Sierra Blanca uplift. The igneous rocks of this uplift are composed of extrusive andesitic volcanics intruded by monzonitic stocks. The Three Rivers Stock is a breccia of late Tertiary age.

Soils

William G. Telfer RNA is located within the Caballo-Peso-Supervisor association, found dominantly on mountainous topography between altitudes of 7500 and 10,500 feet (2286.0 m to 3200.4 m) in south-central Lincoln County (NMSU 1971). A wide variety of igneous, metamorphic, and sedimentary rocks have contributed to the parent materials in which soils of this association are forming. The soils are typically dark-colored with a moderate to high content of organic matter, and are mildly alkaline to neutral and slightly acidic. The surface layers commonly contain small amounts of gravel and stones. With the exception of small rock outcrop areas, the soil supports a good cover of native vegetation dominated by trees. Dominant soils on the RNA are classified as Dystric Chryochrepts, loamy-skeletal, mixed.

Lands

All lands within the proposed RNA were included within the original Lincoln National Forest created on 7/26/1902. Lands on the north side of the ridge within the RNA were designated as part of the Rio Bonito Watershed on 6/13/1939. There are no known outstanding rights or rights-of-way within the proposed boundaries.

Cultural Resources

The entire RNA was surveyed for cultural resources in 1978 as part of a larger survey. One site, named Wizard's Roost, was recorded within the area. This unique site appears to have been a prehistoric shrine or observatory. It is listed on the National Register of Historic Places and should be protected from any potential disturbance. No other cultural remains were found. Uses associated with Wizard's Roost should have little impact on the RNA.

IMPACTS AND POSSIBLE CONFLICTS

Mineral Resources

The area is known to have high potential for molybdenum. There have been no leases for mineral exploration. The southern half of the area (in Sections 33 and 34, Township 10S, Range 11E) is currently part of the Ski Apache area mineral withdrawal. If William Telfer is designated an RNA, a recommendation will be made to withdraw the rest of the RNA from mineral entry.

Grazing

This area has been closed to grazing since 1962. No grazing is allowed in the areas adjacent to the proposed RNA, so there is no need at this time for fencing to keep livestock out of the area.

Timber

The major ecosystems represented in this area are spruce-fir and Thurber fescue meadow. The proposed RNA has about 360 acres (146 hectares) of spruce-fir, 72 acres (29 hectares) of Douglas fir, and 138 acres (56 hectares) of aspen, all of which will be withdrawn from the timber base. The acres were excluded from timber management in the Forest Plan (USFS 1986b).

Total forest: 570 acres (231 hectares)

Total commercial forest: 0

Watershed Values

The RNA surrounds a ridge which separates the Rio Bonito watershed from the Rio Ruidoso watershed. Both watersheds are fifth order watersheds flowing east and joining at Hondo, NM to form the Rio Hondo, a tributary to the Pecos River. The RNA contributes high quality water to the Bonito Reservoir, a source of water for the Tularosa Basin communities. During the winter, the Soil Conservation Service operates a snow survey course in the area.

Recreation Values

Recreation use in this area includes big game hunting, hiking, and horseback riding on the Crest Trail and Trail No. 15. Trail use probably will not conflict with potential research projects. Hiking use is moderate on Trail No. 15 and low on the Crest Trail; horseback riding is at low levels on both trails. The RNA is partially bounded by the Ski Apache access road, State Highway 532, which is a very popular scenic drive in summer and fall. A maintenance road for the Buck Mountain Electronic Site, Forest Road 5625, runs through the middle of the area, but is gated and closed to public access.

Wildlife and Plant Values

The area contains habitat for the Sacramento mountain salamander (Aneides hardyi). The Sierra Blanca lupine (Lupinus sierrae-blanca), a state sensitive species, is common on the grassy openings of the RNA.

Wilderness, Wild and Scenic River, National Recreation Area Values

This area was inventoried as potential wilderness in RARE I and RARE II. It was recommended for further study in RARE II, but was not included in the New Mexico Wilderness Act of 1980.

Transportation Plans

State Highway 532, located along part of the southern boundary of the proposed RNA, provides access to Ski Apache. Forest Road 5625 passes through the middle of the RNA to provide access to the Buck Mountain Electronic Site. This road is gated and closed to the public, but will be maintained for use by the electronic site permittees. Its minimum width and low maintenance standards preclude any serious ecological or hydrological impact on research area values.

Utility Corridor Plans

There is a 3 KV power line running through the proposed RNA from Ski Apache to the Buck Mountain Electronic Site. Maintenance of this line will have low standards and is not expected to have any significant impact on values within the RNA.

MANAGEMENT PLAN

The Lincoln National Forest Plan prescribes that there will be no harvest of firewood or other wood products, no livestock grazing, and no off-road vehicle travel on Research Natural Areas. Low intensity, dispersed recreation activities are permitted provided they do not significantly modify the area, or threaten or impair the research or educational value of the area. No new trails or roads may be constructed. No flora, fauna, or other materials may be collected other than for research approved by the Station Director.

1. Vegetation Management

Vegetation manipulation is allowed only when needed to preserve the vegetation for which the area is being established. The Forest Plan provides that all fires will be suppressed at 10 acres (4 hectares) or less, unless research purposes require other suppression objectives. Suppression action will be limited to the use of hand tools; fire retardant chemicals are prohibited unless necessary to protect life and property outside the study area.

ADMINISTRATIVE RECORDS AND PROTECTION

Administration and protection of the William G. Telfer RNA will be the responsibility of the Lincoln National Forest. The District Ranger, Smokey Bear District, Ruidoso, NM, has direct responsibility.

The Director of the Rocky Mountain Forest and Range Experiment Station, or his designee, will be responsible for any studies or research conducted in the area, and requests to conduct research in the area will be referred to him. He, or his designee, will evaluate research proposals and coordinate all studies and research in the area with the District Ranger. All plant and animal specimens collected in the course of research conducted in the area will be properly preserved and maintained within university or federal agency herbaria and museums, approved by the Rocky Mountain Station Director.

Records for the William G. Telfer RNA will be maintained in the following offices:

Regional Forester, Southwestern Region, Albuquerque, NM
Rocky Mountain Station, Fort Collins, CO
Lincoln National Forest, Alamogordo, NM
District Ranger, Smokey Bear District, Ruidoso, NM

REFERENCES

Alexander, Billy G., Jr., Frank Ronco Jr., E. Lee Fitzhugh, and John A. Ludwig. 1984. A classification of forest habitat types of the Lincoln National Forest, New Mexico. USDA Forest Service, General Technical Report RM-104. Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colorado.

Dick-Peddie, William A., and William H. Moir. 1968. Sierra Blanca Corkbark Fir Research Natural Area. Ms. on file, USDA Forest Service, Southwestern Region, Albuquerque.

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Eyre, F.H., ed. 1980. Forest cover types of the United States and Canada. Society of American Foresters, Washington, D.C. 148 pp.

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Küchler, A.W. 1964. Potential natural vegetation of the coterminus United States. American Geographical Society, Special Publication 36. 119 pp.

Lehmkuhl, John F., and David R. Patton. 1984. Run Wild, Wildlife/Habitat relationships: user's manual for the Run Wild III data storage and retrieval system. USDA Forest Service, Southwestern Region, Wildlife Unit Technical Report. 68 pp.

Little, Elbert L., Jr. 1979. Checklist of United States trees. USDA Forest Service, Agricultural Handbook 541. Washington, D.C.

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Moir, W.H. 1967. The subalpine tall grass, Festuca thurberi, community of Sierra Blanca, New Mexico. Southwestern Naturalist 12:321-328.

Moir, W.H., and H.M. Smith. 1970. Occurrence of an American salamander, Aneides hardyi (Taylor), in tundra habitat. Arctic and Alpine Research 2(2):155-156.

New Mexico State Highway Department. 1972. Geology and aggregate resources, District II, Map 91. N.M. State Highway Department, Santa Fe.

New Mexico State University, Agricultural Experiment Station, in cooperation with Water Resources Institute, Soil Conservation Service, and Bureau of Reclamation. 1971. Soil associations and land classification for irrigation: Lincoln county. Agricultural Experiment Station Research Report 212. Las Cruces. 49 pp.

Patton, David R. 1979. RUN WILD II: a storage and retrieval system for wildlife data. Transactions of the North American Wildlife and National Research Conference 44:425-430.

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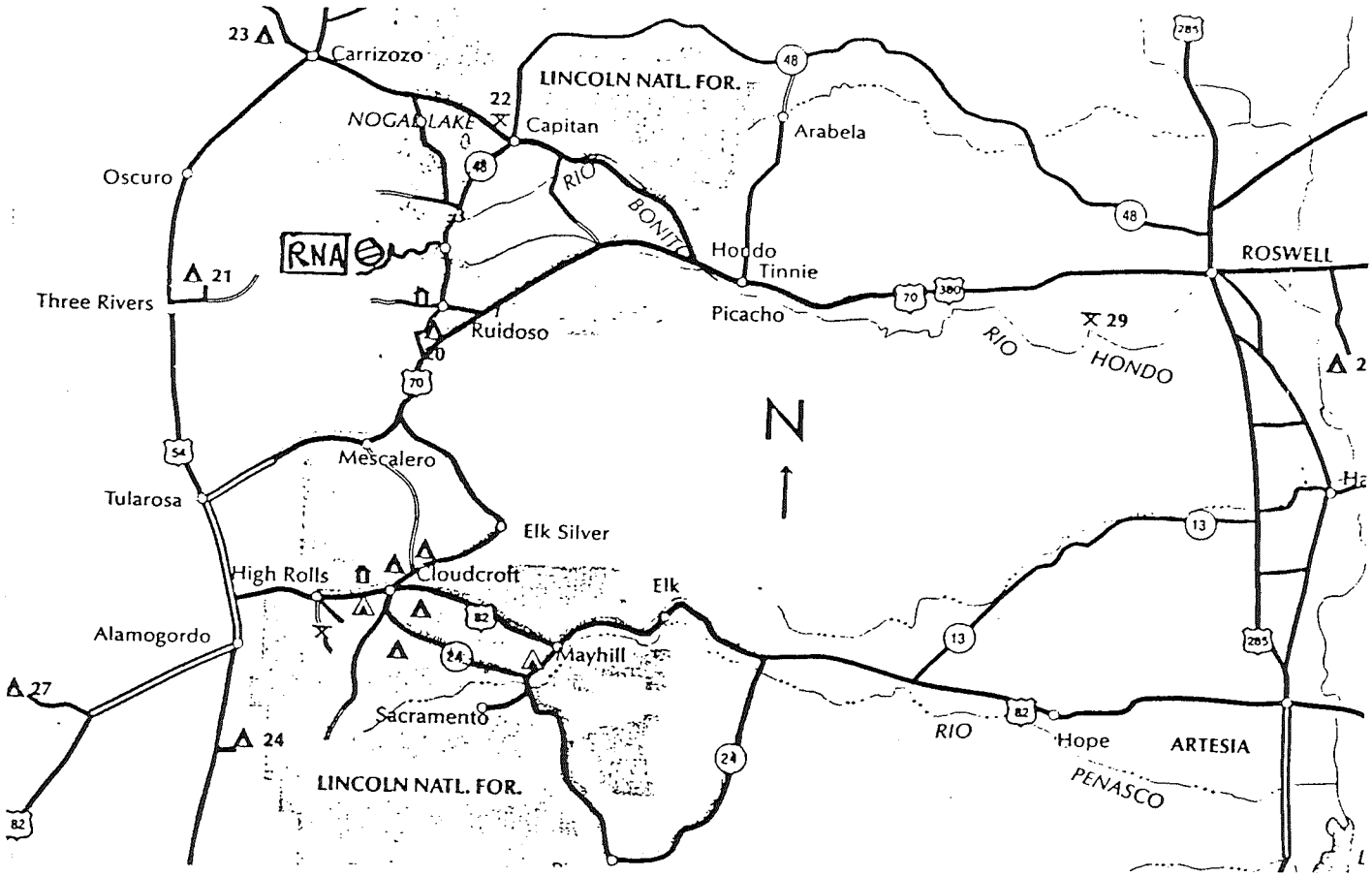
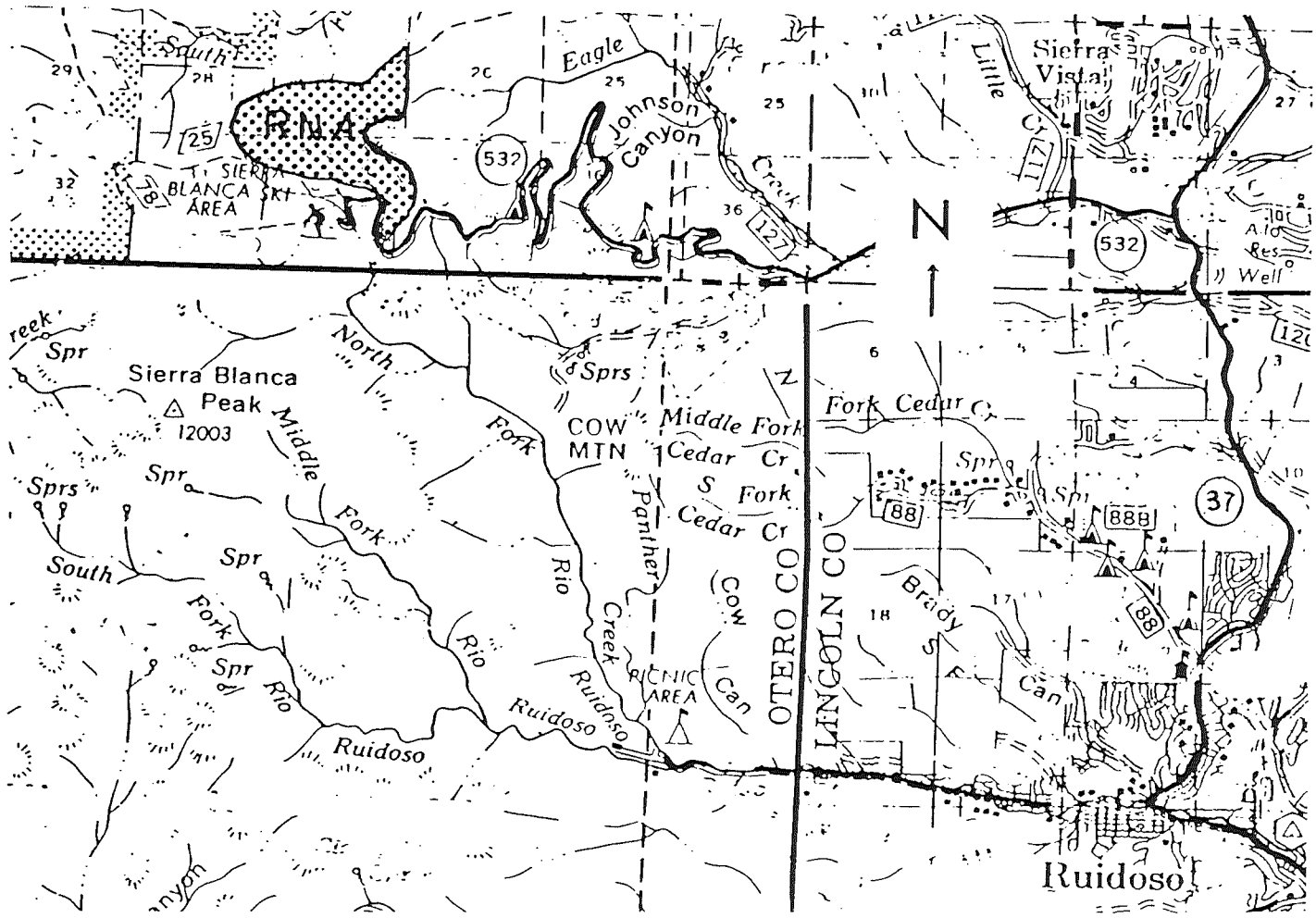
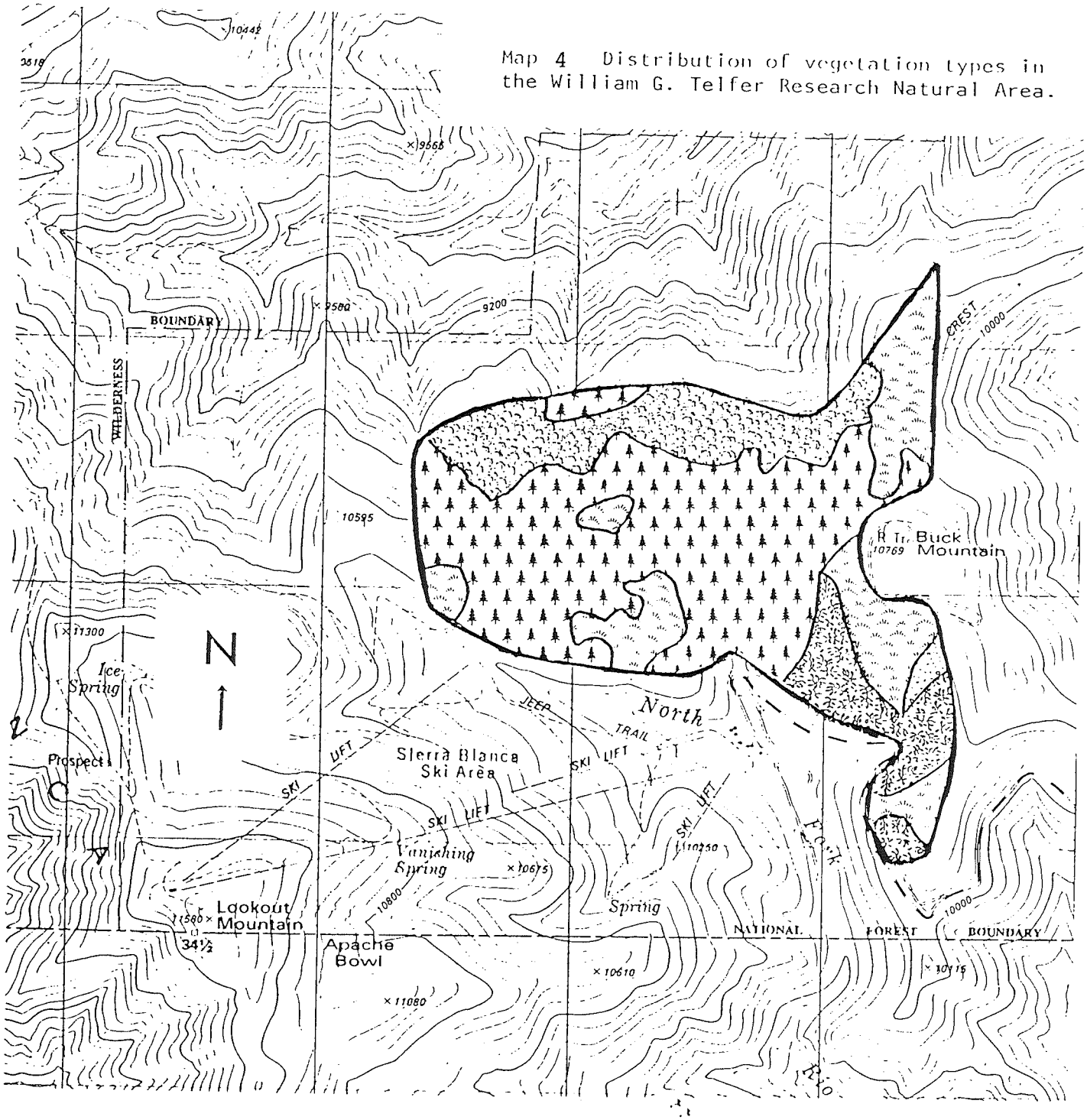


Map 1. Location of RNA (South Central New Mexico)



Map 2. Access Route to William G. Telfer RNA

Map 4 Distribution of vegetation types in the William G. Telfer Research Natural Area.



Map Symbol	Vegetation Type
	Engelmann spruce - subalpine fir SAF 206, K-20
	Interior Douglas - fir SAF 210, K-17
	Aspen SAF 217
	Thurber Fescue Grassland K-45
	Rock Talus K-52

He, or his designee, will evaluate research proposals and coordinate all studies and research in the area with the District Ranger. All plant and animal specimens collected in the course of research conducted in the area will be properly preserved and maintained within university or federal agency herbaria and museums, approved by the Rocky Mountain Station Director.

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Moir, W.H., and H.M. Smith. 1970. Occurrence of an American salamander, Aneides hardyi (Taylor), in tundra habitat. Arctic and Alpine Research 2(2):155-156.

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Patton, David R. 1979. RUN WILD II: a storage and retrieval system for wildlife data. Transactions of the North American Wildlife and National Research Conference 44:425-430.

Tuan, Yi-Fu, Cyril E. Everard, Jerold G. Widdison, and Iven Bennett. 1973. The climate of New Mexico. New Mexico State Planning Office, Santa Fe. 197 pp.

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USDA Forest Service. 1984. Progress report, Research Natural Areas: recommended representations for important ecosystems on National Forest System Land in the Southwestern Region. USDA Forest Service, Southwestern Region, Albuquerque. 90 pp.

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USDA Forest Service. 1986b. Forest and woodland habitat types (plant associations) of southern New Mexico and central Arizona (north of the Mogollon Rim). Edition 2. USDA Forest Service, Southwestern Region, Albuquerque. 71 pp.

DESIGNATION ORDER

By virtue of the authority vested in me by the Secretary of Agriculture under regulations 7 CFR 2.42 and 36 CFR 251.23, I hereby establish the William G. Telfer Research Natural Area. The William G. Telfer Research Natural Area shall be comprised of the following land: Beginning at the Standard section corner of Sections 34 and 35, on the Second Standard Parallel South, in T. 10S., R. 12E., NMPM;
THENCE, north, a distance of 5500 feet to a point on the Wilderness boundary designated AP 216 on the official Wilderness map, the point of beginning of this tract;
THENCE, a distance of 3000 feet to a point;
THENCE, S 40 00'W, a distance of 2640 feet to a point;
THENCE, N 80 00'W a distance of 3200 feet to the bottom of a canyon;
THENCE, southerly along bottom of canyon a distance of 1500 feet to the top of a ridge,
THENCE, S 30 00'E, a distance of 1200 feet to Wilderness Trail No. 25;
THENCE, southeast and east along said trail 1/2 mile to junction with Wilderness Trail No. 15;
THENCE, east, across top of ridge, 1700 feet more or less to the 10,000 feet elevation;
THENCE, southeasterly and southerly along contour to intersection with eastern right-of-way of State Highway No. 532;
THENCE, along right-of-way line of said highway 532 a distance of 1000 feet;
THENCE, east, a distance of 700 feet;
THENCE, north, a distance of 3500 feet to a point that lies midway between a loop in Forest Road No. 5625;
THENCE, N 80 00'W, a distance of 750 feet;
THENCE, north and east along contour to a point on the Wilderness boundary, designated AP 216, the point of beginning..

Regional Forester, Sotero Muniz, recommended the establishment of the William G. Telfer Research Natural Area in the Lincoln National Forest Land and Resource Plan. That recommendation was the result of an analysis of the factors listed in 36 CFR 219.25 and Forest Service Manual 4063.41. The results of the Regional Forester's analysis are documented in the Final Environmental Impact Statement for the National Forest Land and Resource Management Plan and the Establishment Record which are available to the public.

The William G. Telfer Research Natural Area will be managed in compliance with all relevant laws, regulations, and manual direction regarding Research Natural Areas. The William G. Telfer Research Natural Area will be administered in accordance with the management direction identified in the Establishment Record.

The Lincoln National Forest Land and Resource Management Plan is hereby amended to be consistent with the management direction identified in the Establishment Record and this designation order. Directions on pages__of the Lincoln National Forest Land and Resource Management Plan are replaced by the directions on pages____of the Establishment Record. This direction will remain in effect unless amended pursuant to 36 CFR 219.10. This is a nonsignificant amendment of the Lincoln National Forest Land and Resource Management Plan.

The Forest Supervisor of the Lincoln National Forest shall notify the public of this amendment and will mail a copy of the Designation Order and amended direction to all persons on the Lincoln Land and Resource Management Plan mailing list.

Based on the environmental analysis documented in the National Forest Land and Resource Management Plan and the Establishment Record I find that the designation of the William G. Telfer Research Natural Area is not a major federal action significantly affecting the quality of the human environment.

This decision is subject to appeal pursuant to 36 CFR 211.18. A Notice of Appeal must be in writing and submitted to:

Chief
USDA, Forest Service
P.O. Box 96090
Washington, D.C. 20013-6090

The Notice of Appeal must be submitted within 45 days form the date of this decision. Within five days of receipt, the Chief will transmit the Notice of Appeal and a copy of the Designation order to the Secretary of Agriculture for review at the Secretary's discretion. The appeal will be deemed denied if the Secretary takes no action within ten days of receiving the appeal.

_____ _____

Chief Date

ADALUPE MOUNTAIN RESEARCH NATURAL AREA

Lincoln

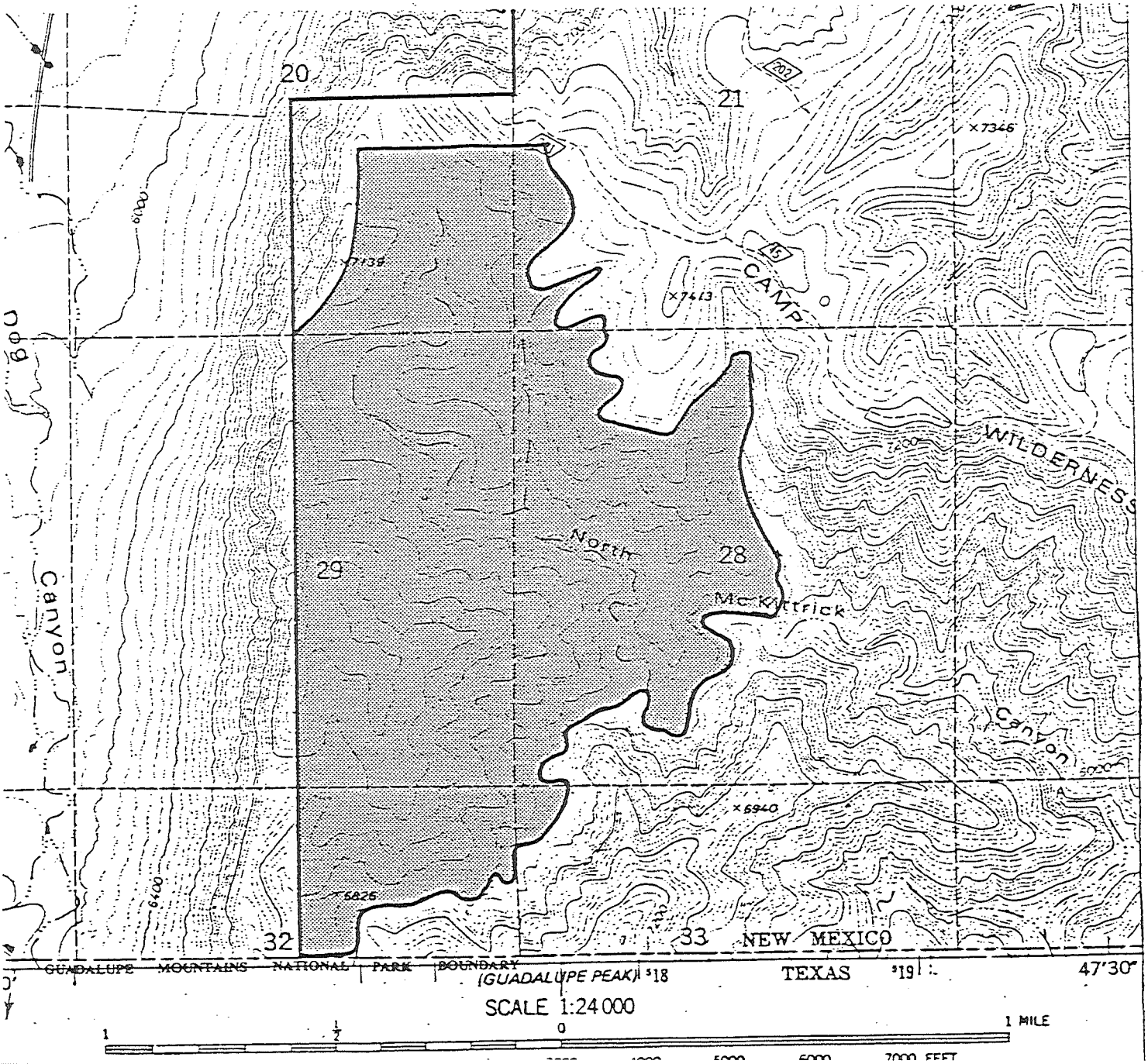
ıcoln National Forest, Guadalupe District

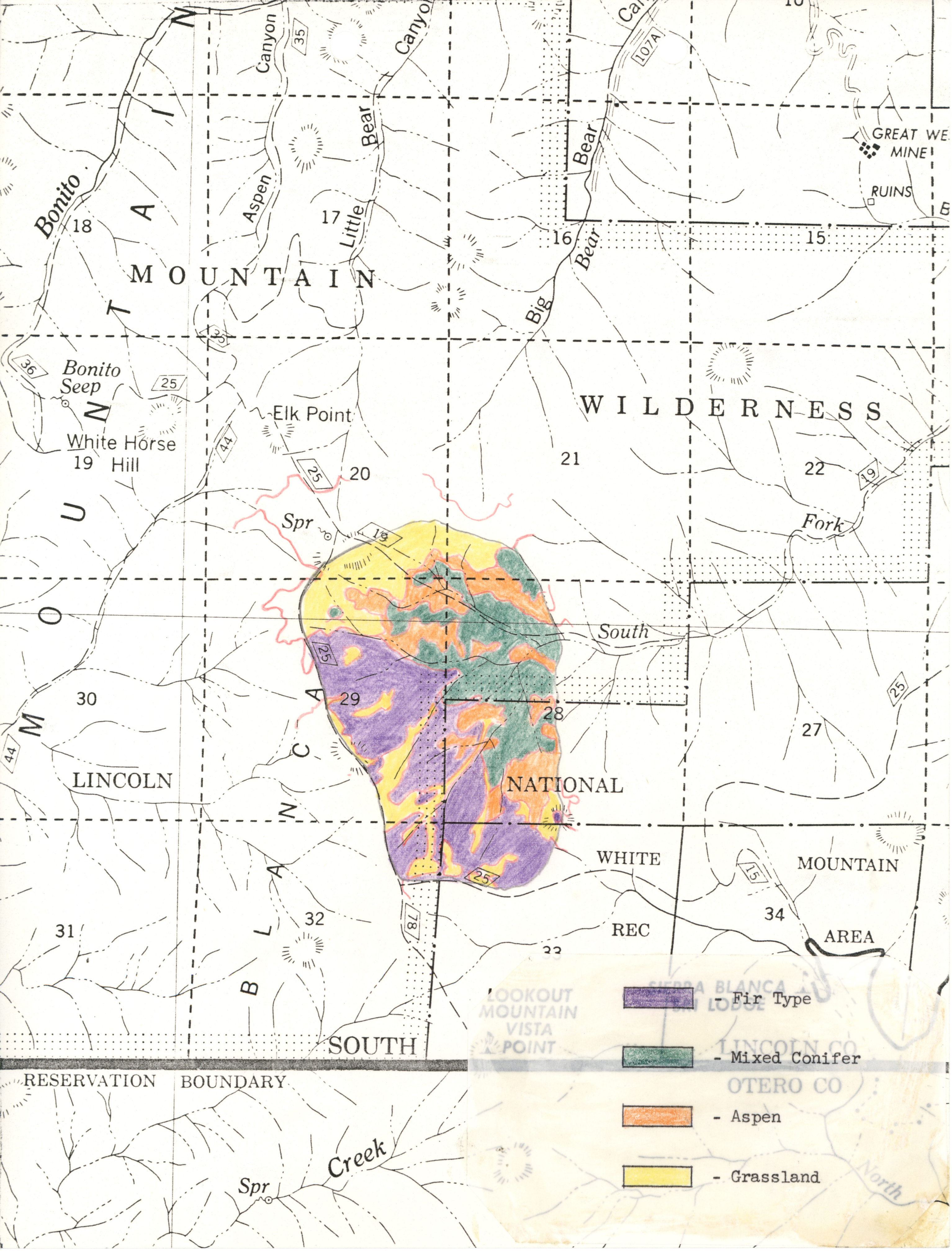
imary Ecosystem: 133.34 mountain mahogany

7 acres (335 ha)

is ecosystem is dominated by mountain mahogany. It is a relatively young and and it is far enough from water that it does not receive livestock use. her plants in the association are sacahuista, sotol, wavyleaf oak, New Mexico hly, deergrass and some pinon.

ere are many areas in Region Three that produce mountain mahogany. However, st of them are heavily overused by livestock and big game. This area has particularly healthy and vigorous stand of mahogany.





MOUNTAIN
WILDERNESS
Bonito
Canyon
Aspen
Little Bear
Big Bear
Bonito Seep
Elk Point
White Horse Hill
GREAT WE
MINE
RUINS
Spr
South
Fork
LINCOLN
NATIONAL
WHITE
MOUNTAIN
REC
AREA
SOUTH
RESERVATION BOUNDARY
Creek
BLANCA
LOOKOUT MOUNTAIN VISTA POINT
LINCOLN CO
OTERO CO
North
- Fir Type
- Mixed Conifer
- Aspen
- Grassland

Photo 1. Northwest toward the William G. Telfer RNA from the Ski Apache (Sierra Blanca) ski area. RNA is just above the upper switchback of the road seen in the middle distance.

Photo 2. North toward Buck Mountain on the east edge of the RNA. Open area is principally Thurber fescue/Danthonia grassland; trees are mostly Douglas-fir with rock talus field on right.

Photo 3. North toward knoll 0.7 miles (1.1 km) southeast of Buck Mountain just outside the RNA. Shrubs in the foreground are principally Lupinus sierrae-blancae.

Photo 4. North toward northeast corner of RNA with Engelmann spruce invading the Thurber fescue grassland at the edge of a dense aspen stand just below the grassy knoll.

Photo 5. A dense stand of aspen occupies the rocky, north-facing slopes of the north boundary of the RNA with Thurber fescue grassland in the foreground. Runs of the Ski Apache ski area visible on the distant ridge outside the RNA.

Photo 6. The edges of the aspen grove facing the Thurber fescue grassland are heavily browsed by deer with no apparent encroachment by aspen into the grassland.

Photo 7. Corkbark fir-Engelmann spruce forest in the heart of the RNA. Here we have classic Abies lasiocarpa/Senecio sanguisorboides Habitat Type.

Photo 8. A massive corkbark fir (Abies lasiocarpa) with a DBH exceeding 4 feet (1.2 M). The RNA contains record specimens of this species.

Photo 9. Beyond the Thurber fescue grassy opening is an almost pure stand of corkbark fir on this east-facing slope. A relic clump of aspen is seen in the distance.

Photo 10. A more xeric forest with some old growth Douglas-fir grows in the southeastern end of the RNA on south and west-facing slopes.

CORKBARK FIR RESEARCH NATURAL AREA

Head of South Fork
Rio Bonito

Looking down South Fork
Rio Bonito from crest

corkbark fir

USDA-FOREST SERVICE

PHOTOGRAPHIC RECORD

(See FSM 1643.52)

PHOTOGRAPHER	DATE SUBMITTED
William W. Dunmire	Oct. 23, 1987
HEADQUARTERS UNIT	**LOCATION**

INITIAL DISTRIBUTION OF PRINTS AND FORM 1600-1:

☐ WO ☐ RO ☐ DIV. ☐ FOREST ☐ DISTRICT ☐ PHOTOGRAPHER Date _____

INSTRUCTIONS: Submit to Washington Office in quadruplicate. Permanent numbers will be assigned and the forms will be distributed as follows: (1) Washington Office, (2) RO or Station, (3) Forest or Center and (4) Photographer.

PHOTOGRAPH NUMBER		SELECTED FOR W.O. PHOTO LIBRARY	DATE OF EXPOSURE	LOCATION (State, Forest, District and County)	CONCISE DESCRIPTION OF VIEW	NEGATIVE (Show size and BW for black and white or C for color)
TEMP. (1)	PERMANENT (To be filled in by the WO) (2)	(3)	(4)	(5)	(6)	(7)
				ALL: New Mexico Lincoln NF Smokey Bear Dist. Lincoln Co.		ALL: 24x36mm color slides
1.			9-17-86		Northwest toward William G. Telfer RNA from Ski Apache ski area.	
2.			9-17-86		North toward the summit of Buck Mountain from State Route 532.	
3.			9-17-86		North toward grassy knoll, 0.7 miles southeast of Buck Mountain.	
4.			9-17-86		North toward northeast corner of William G. Telfer RNA on north flank of Buck Mountain.	
5.			9-17-86		Southwest from northeast corner of William G. Telfer RNA. Ski Apache ski area on distant skyline.	
6.			9-17-86		Aspen at edge of Thurber fescue grassland, northeast corner of William G. Telfer RNA.	
7.			9-17-86		Corkbark fir-Engelmann spruce forest along trail no. 25, interior of William G. Telfer RNA.	
8.			9-17-86		Giant corkbark fir growing near the center of William G. Telfer RNA.	
9.			9-17-86		Southwest toward knoll at west edge of William G. Telfer RNA with almost pure corkbark fir forest at edge of Thurber fescue grassland.	
10.			9-17-86		Southeast corner of William G. Telfer RNA with old growth Douglas-fir along service road to Buck Mountain.	