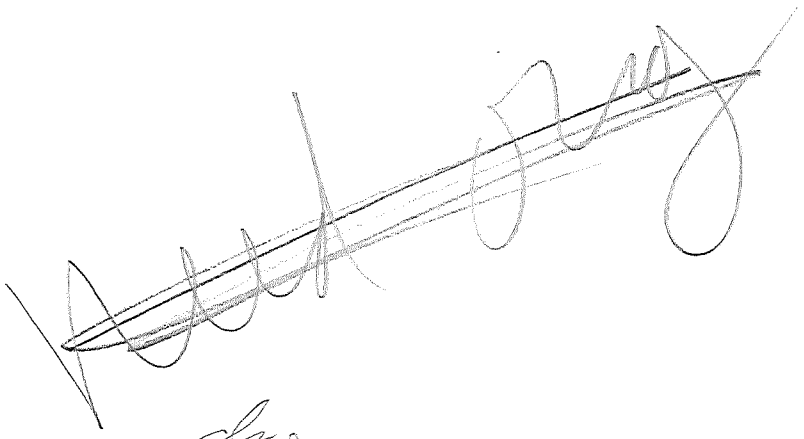
DESIGNATION ORDER

By virtue of the authority vested in me by the Secretary of Agriculture under regulations 7 CFR 2.60(a) and 36 CFR 251.23, I hereby designate as the Upper McKittrick Research Natural Area the lands described in the following establishment record prepared by William W. Dunmire and Mollie S. Toll, dated October 19, 1987. These lands shall hereafter be administered as a research natural area subject to the above regulations and instructions issued thereunder.

_____ _____

Chief Date



Dropped for RWA consideration due to local resistance

ESTABLISHMENT REPORT

UPPER MCKITTRICK RESEARCH NATURAL AREA

USDA FOREST SERVICE
SOUTHWESTERN REGION
LINCOLN NATIONAL FOREST
GUALDALUPE RANGER DISTRICT
EDDY 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_____
Larry Sansom, District Ranger
Guadalupe 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

UPPER MCKITTRICK RESEARCH NATURAL AREA

within

Lincoln National Forest

Eddy County, New Mexico

INTRODUCTION

The Upper McKittrick Research Natural Area (RNA) comprises approximately 827 acres (334.7 hectares) in the Guadalupe Mountains at the southern border of New Mexico, adjacent to Texas. The proposed RNA is located in the Lincoln National Forest, in Eddy County, and is National Forest land reserved from the public domain.

Many areas in the Forest Service Southwestern Region are covered by a mountain mahogany vegetation type, but most have been heavily grazed in the past and are currently used for this purpose. However, this area is far enough from water that it does not receive livestock use. It is, in addition,an extensive stand of mountain mahogany and associated chapparal shrubs, as yet unrepresented in the Southwestern Region RNA system. Upper McKittrick was reviewed by the RNA regional committee in spring, 1982, and was determined to be the most suitable representation of this ecosystem available.

LAND MANAGEMENT PLANNING

The need for representation of shrubland biotic communities was identified in the Southwestern Regional Guide (August 1983). The Lincoln National Forest Plan (USFS 1986a) recommends that approximately 827 acres (334.7 hectares) of the Upper McKittrick drainage in Management Area 3A 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

Upper McKittrick Research Natural Area has been identified as an outstanding example of a mountain mahogany community. This is an important chapparal ecosystem in the Southwest.

In addition to providing a good representation of a mountain mahogany community, in good condition and with a minimal livestock use history, Upper McKittrick Canyon RNA includes smaller ponderosa pine (Pinus ponderosa) and pinyon-juniper (Pinus edulis-Juniperus sp.) woodland communities, and riparian woodland. The high floral abundance and diversity, together with geographic position and considerable variability in topographic relief and aspect, provide a rich array of factors for study of the impact of the Chihuahuan Desert influence on floral and faunal composition.

PRINCIPAL DISTINGUISHING FEATURES

Upper McKittrick is surrounded by steep, shrub covered limestone cliffs. Most of the area is dominated by mountain mahogany together with wavyleaf oak (Quercus undulata) and other associated chapparal shrubs, grasses and a variety of forbs. Pinyon-juniper woodland is found above the RNA to the northeast, and pockets of ponderosa pine on north-facing slopes lining the canyon. Vegetation along the narrow canyon bottoms includes large trees and abundant and varied herbs and grasses.

LOCATION (Lincoln National Forest)

Upper McKittrick is on the Texas-New Mexico border about 40 miles (64.3 km) southwesst of Carlsbad, New Mexico (Map 1). It adjoins Guadalupe Mountains National Park, to the south in Texas. The RNA can be found on the El Paso Gap quadrangle (USGS 7.5' map), Township 26S, Range 21E, Sections 20, 21, 28, 29, 32, and 33, latitude 32 degrees 1' N, longitude 104 degrees 49' W.

The boundaries of this RNA in rugged canyon topography are complicated (Maps 2 and 3). Commencing from a point about 500 feet south of the southeast corner of the northwest quarter of section 20, the boundary goes more or less southerly along the 7200 ft contour into a tributary drainage of North McKittrick Canyon in the north half of section 28. It then proceeds southerly along the bottom of this drainage into North McKittrick Canyon. The boundary then proceeds westerly and southerly up North McKittrick Canyon in such a manner as to include the riparian vegetation of this canyon. At the confluence of North McKittrick Canyon with a tributary drainage in the southwest 1/4 of section 28, the boundary follows this tributary, mostly in section 32, to the Forest border. It then follows west and north along the Forest border to a point approximately 1/2 mile south of the southwest corner of the northeast quarter of section 20. From here the boundary proceeds northeasterly up a gentle ridge to a point about 500 feet south and 600 feet east of the southwest corner of the northeast quarter of section 20. The boundary then proceeds east to the point of beginning.

Access to the RNA requires a four-wheel drive vehicle and a rugged hike to reach the interior of the RNA. From U.S. Highway 285, take N.M. Highway 137 heading southwest to Sitting Bulls Falls and Little Dog Canyon (Maps 1 and 2). This junction is 12 miles (19.3 km) north of Carlsbad and 24 miles (38.6 km) south of Artesia. Proceed 32.5 miles (52.3 km) on Highway 137 to where Forest Road 540 (the "Guadalupe Rim Road") turns off on the left (east). Follow this gravel road 12.4 miles (20.0 km) to a "Y", and take the right fork which is a primitive road. Proceed 0.3 miles (0.5 km) further and turn right at the next fork. Continue 0.2 miles (0.3 km), where you will leave your vehicle. At this point you are a short distance from the north boundary of the RNA. From here there is a nearly 1000 foot (304.8 m) descent down the scrub-covered limestone slopes into Upper North McKittrick Canyon. Virtually all of the RNA is negotiable on foot, but care must be taken in picking a route through this rugged limestone terrain.

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From here there is a nearly 1000 foot (304.8 m) descent down the scrub-covered limestone slopes into Upper North McKittrick Canyon. Virtually all of the RNA is negotiable on foot, but care must be taken in picking a route through this rugged limestone terrain.

It may be easier to reach the upper southern portion of the RNA directly from Upper Dog Canyon Road, approximately 6 miles (9.7 km) south of El Paso Gap, just north of where this road enters Guadalupe Mountains National Park. This route has not been explored, but would involve a vertical ascent of about 1000 feet (304.8 m) cross-country to the crest of the Guadalupe rim, and then a drop into the somewhat more gentle terrain east of the rim within the RNA.

out

The boundy is described as follows:

See Add attached

AREA BY COVER TYPES

The distribution of cover types was determined from a field survey conducted in the summer of 1986 and from interpretation of 1976 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 Upper McKittrick Research Natural Area.

Type	Society of American Foresters Cover Type[1]	Küchler PNV Type[2]	Surface Area Acres	Hectares
Ponderosa Pine	SAF 237	K-18 Pine - Douglas-fir Forest	88	35.6
Pinyon - Juniper	SAF 239	K-31 Oak - Juniper Woodland	29	11.7
Western Live Oak	SAF 241	K-31	664	268.7
Riparian Woodland	[none]	[none]	46	18.6
		TOTAL:	827	334.6

[1]Eyre 1980.
[2]Küchler 1964.

PHYSICAL AND CLIMATIC CONDITIONS

The proposed RNA is located on a ridge between North McKittrick and Upper Dog Canyons, about one mile (1.6 km) north of the Texas border. Elevations range from 6600 feet (2011.7 m) in the bottom of North McKittrick Canyon, to 7400 feet (2255.5 m) at the ridge summit, to the southwest. From the RNA, there is a steep drop-off, down scrub covered limestone cliffs, to Upper Dog Canyon to the west, and an equally steep ascent to the southeast.

Climate in this part of far southern New Mexico varies considerably over short distances. Low elevation flatlands around Carlsbad and much of Eddy County are characterized as arid Chihuahuan Desert, with high temperatures, extended frostfree season and very low moisture levels, while the Guadalupe Mountain range enjoys subhumid conditions and intervening areas are semi-

arid. The nearest long range weather station, at Carlsbad about 40 miles (64.3 km) northeast, records weather conditions very different from those at Upper McKittrick. The following data were interpreted for the RNA from the Terrestrial Ecosystems Handbook maintained by the USFS Southwestern Regional Office. Average annual rainfall for Upper McKittrick is 16 inches (406 mm); much of this falls during summer months as local orographic and convectional storms. Average annual snowfall is 31 inches (78.7 cm). Perennial or semi- perennial water flow in Upper McKittrick Creek is a critical component in presence and maintenance of the distinctive plant communities in the RNA. Mean annual temperature is 48° F (8.9° C), with a July average of 64° F (17.8° C) and a January average of 31° F (-0.6° C). The frost free period lasts an average of 150 days.

DESCRIPTION OF VALUES

Flora

At the time of preparation of the Establishment Record, no publication adequately described the habitat types occurring on Upper McKittrick Canyon RNA. The following description is based therefore on SAF forest types.

Virtually all the RNA is located on steep limestone terraced substrate, and much of it can be classed vegetatively as scarp woodland or scarp shrubland. Most of the area is dominated by a mountain mahogany (Cercocarpus montanus) shrub cover on slopes of all aspects. Wavyleaf oak (Quercus undulata) is codominant, becoming relatively more frequent on the north-facing slopes. Other common shrubs include beargrass (Nolina microcarpa), yellowleaf silktassel (Garrya flavescens), sotol (Dasylirion leiophyllum), New Mexico agave (Agave neomexicana), and desert ceanothus (Ceanothus greggii). Aristida sp., Eragrostis intermedia, and Bouteloua curtipendula are the most common grasses. Forbs are well represented; among the most common are Thelesperma longipes, Hedyotis nigricans, Sisyrinchium occidentale, and Polygala alba. Widely scattered pinyon (Pinus edulis) grows on most of these slopes; where the slopes become north-facing, ponderosa pine (Pinus ponderosa) and alligator juniper (Juniperus deppeana) are occasionally found.

A pinyon-juniper patch occurs on a flat at the northwest corner of the RNA, the only site where blue grama (Bouteloua gracilis) and wolftail (Lycurus phleoides) grasses were noted. Above the RNA on the northeast boundary is a pinyon-juniper woodland. Patches of this type extend down into the RNA at the upper end of several drainages. A ponderosa pine type occurs on several north-facing slopes above the main McKittrick drainage. Quercus undulata replaces Cercocarpus as the dominant shrub here. Ponderosa drops out wherever the slopes become east or west-facing.

The Upper McKittrick Canyon mainstem and most of the side canyons support a riparian woodland type exhibiting great plant diversity with a strong Chihuahuan influence. Bigtooth maple (Acer grandidentatum) tends to be the dominant tree, with codominants of chinkapin oak (Quercus muhlenbergia), serviceberry

(Amelanchier goldmanii), Texas madrone (Arbutus texana), or southwestern white pine (Pinus strobiformis). Other occasional to common trees include Rocky Mountain juniper (Juniperus scopulorum), some of which attain huge size in the canyon bottoms; Douglas fir (Pseudotsuga menziesii); wolf hop hornbeam (Ostrya knowltonii); and pinyon. Common shrubs in the bottoms include wavyleaf and Gambel oaks (Quercus undulata and Q. gambelii), mountain mahogany, desert ceanothus, white honeysuckle (Lonicera albiflora), apache-plume (Fallugia paradoxa), canyon grape (Vitis arizonica), selloa (Selloa glutinosa), and squawberry (Rhus trilobata).

Herbaceous vegetation is luxuriant in these canyons with a great diversity of forbs. Common species include Silene lacineata, Viguiera dentata, and Hedyotis nigricans. Grasses are equally well-represented, among them Muhlenbergia pauciflora, M. emersleyi, Eragrostis intermedia, Sorghastrum nutans, and Stipa sp.

There are no endangered, threatened, or sensitive plant species known on the proposed RNA.

The following plant list was compiled during the field survey on September 19, 1986. Time and lateness of the season permitted only a cursory survey.

Abbreviated Plant List for Upper McKittrick RNA[1]

Latin Name	Common Name[2]
GRASSES AND GRASS-LIKE PLANTS:	
Andropogon gerardii	big bluestem
Andropogon scoparius	Little bluestem
Aristida sp.	Three-awn
Blepharoneuron tricholepis	Pine dropseed
Bouteloua curtipendula	Sideoats grama
Bouteloua gracilis	Blue grama
Eragrostis intermedia	Plains lovegrass
Lycurus phleoides	Wolftail
Muhlenbergia dubia	Pine muhly
Muhlenbergia emersleyi	Bullgrass
Muhlenbergia pauciflora	New Mexico muhly
Piptochaetium fimbriatum	Pinyon ricegrass
Sitanion hystrix	Bottlebrush squirreltail
Sorghastrum nutans	Yellow Indiangrass
Stipa sp.	Needlegrass
FORBS:	
Allium cernuum	Nodding onion
Castilleja sp.	Paintbrush
Euphorbia heterophylla	Painted lady
Hedyotis nigricans	Bluets
Ipomopsis aggregata	Skyrocket
Liatris punctata	Gayfeather
Penstemon cardinalis	Beardtongue
Polygala alba	White milkwort
Salvia lycioides	Sage
Sedum sp.	Stonecrop
Silene lacineata	Mexican silene
Sisyrinchium occidentale	Blue-eyed grass
Thelesperma longipes	Coatex greenthread
Verbena sp.	Verbena
HALF-SHRUBS, SHRUBS, AND TREES:	
Acer grandidentatum	Bigtooth maple
Agave lechuguilla	Lechuguilla
Agave neomexicana	New Mexico agave
Amelanchier goldmanii	Serviceberry
Arbutus texana	Texas madrone
Brickellia sp.	Flythicket
Ceanothus greggii	Desert ceanothus
Cercocarpus montanus	Mountain mahogany
Dalea frutescens	Black indigobush
Dasylirion leiophyllum	Sotol
Echinocereus sp.	Hedgehog cactus

Fallugia paradoxa	Apache-plume
Fendlera rupicola	Cliff fendlerbush
Garrya flavescens	Yellowleaf silktassel
Juniperus deppeana	Alligator-bark juniper
Juniperus scopulorum	Rocky Mountain juniper
Lonicera albiflora	White honeysuckle
Nolina microcarpa	Beargrass
Opuntia engelmannii	Engelmann pricklypear
Opuntia imbricata	Cholla
Ostrya knowltonii	Wolf hophornbean
Pinus edulis	Pinyon pine
Pinus ponderosa	Ponderosa pine
Pinus strobiformis	Southwestern white pine
Pseudotsuga menziesii	Douglas-fir
Quercus gambelii	Gambel oak
Quercus muhlenbergia	Chinkapin oak
Quercus undulata	Wavyleaf oak
Rhus trilobata	Squawberry
Sapindus drummondii	Western soapberry
Selloa glutinosa	Selloa
Symphoricarpus longiflorus	Longflower snowberry
Viguiera dentata	Goldeneye
Vitis arizonica	Canyon grape
Yucca baccata	Datil yucca

[1]Observed by Bill Dunmire (The Nature Conservancy) and Larry Sansom (Guadalupe District Ranger, Lincoln National Forest) on September 19, 1986.
[2]Common names used according to USDA, Forest Service 1974, or Martin & Hutchins 1981.

Fauna

Upper McKittrick Canyon is potential habitat for several rare, endangered, or sensitive animal species. There have been no biological surveys covering this specific area; however, the following animal species are known to occur in similar habitats in the general vicinity of Upper McKittrick Canyon: peregrine falcon, spotted owl, gray vireo, varied bunting, mottled rock rattlesnake, trans-pecos rat snake, plain- bellied water snake, western ribbon snake, and eastern barking frog.

Most of the area is too steep and rocky for prime deer habitat. The only other ungulate inhabiting the Guadalupe Mountains at this time (1986) is the introduced Barbary sheep, but they are very infrequently seen. Upper McKittrick Creek has a perennial or semi-perennial flow within the RNA; therefore a variety of riparian animal species can be expected 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 Eddy County, New Mexico:

1. Pinyon - juniper series; Juniperus deppeana association

2. Madrean evergreen woodland biome

3. Interior chaparral biome; Cercocarpus association

These habitat types currently in the data base most closely correspond to those occurring in the proposed RNA.

Potential Animal List for Upper McKittrick Canyon RNA

AMPHIBIANS:

Frog, barking	*Hylactophryne augusti*
Spadefoot, western	*Scaphiopus hammondi*
Toad, red-spotted	*Bufo punctatus*

BIRDS:

Bunting, lazuli	*Passerina amoena*
Bushtit	*Psaltriparus minimus*
Dove, mourning	*Zenaida macroura*
Falcon, peregrine	*Falco peregrinus*
Finch, house	*Carpodacus mexicanus*
Flicker, northern	*Colaptes auratus*
Gnatcatcher, blue-gray	*Polioptila caerulea*
Hawk, Cooper's	*Accipiter cooperii*
Hummingbird, broad-tailed	*Selasphorus platycercus*
Hummingbird, rufous	*Selasphorus rufus*
Jay, scrub	*Aphelocoma coerulescens*
Jay, Steller's	*Cyanocitta stelleri*
Kestrel, American	*Falco sparverius*
Mockingbird, northern	*Mimus polyglottos*
Owl, great horned	*Bubo virginianus*
Owl, long-eared	*Asio otus*
Owl, spotted	*Strix occidentalis*
Pigeon, band-tailed	*Columba fasciata*
Poorwill, common	*Phalaenoptilus nuttallii*
Quail, scaled	*Callipepla squamata*
Raven, common	*Corvus corax*
Sparrow, black-chinned	*Spizella atrogularis*
Sparrow, black-throated	*Amphispiza bilineata*
Sparrow, rufous-crowned	*Aimophila ruficeps*
Starling, European	*Sturnus vulgaris*
Swallow, barn	*Hirundo rustica*
Swallow, cliff	*Hirundo pyrrhonota*
Thrasher, crissal	*Toxostoma dorsale*
Titmouse,plain	*Parus inornatus*
Towhee, brown	*Pipilo fuscus*
Towhee, green-tailed	*Pipilo chlorurus*
Towhee, rufous-sided	*Pipilo erythrophthalmus*
Vireo, solitary	*Vireo solitarius*
Warbler, black-throated gray	*Dendroica nigrescens*
Warbler, orange-crowned	*Vermivora celata*
Warbler, Virginia's	*Vermivora virginiae*
Waxwing, cedar	*Bombycilla cedrorum*
Wren, canyon	*Catherpes mexicanus*
Wren, rock	*Salpinctes obsoletus*

MAMMALS:

Badger	Taxidea taxus
Bat, Brazilian free-tailed	Tadarida brasiliensis
Bear, black	Ursus americanus
Cottontail, desert	Sylvilagus audubonii
Coyote	Canis latrans
Deer, mule	Odocoileus hemionus
Elk	Cervus elaphus
Fox, kit	Vulpes macrotis
Jackrabbit, black-tailed	Lepus californicus
Lion, mountain	Felis concolor
Mouse, western harvest	Reithrodontomys megalotis
Myotis, fringed	Myotis thysanodes
Myotis, small-footed	Myotis leibii
Raccoon	Procyon lotor
Ringtail	Bassariscus astutus
Sheep, Barbary	Ammotragus lervia
Skunk, hog-nosed	Conepatus mesoleucus
Skunk, striped	Mephitis mephitis
Squirrel, rock	Spermophilus variegatus
Woodrat, white-throated	Neotoma albigula

REPTILES:

Lizard, collared	Crotaphytus collaris
Lizard, crevice spiny	Sceloporus poinsetti
Lizard, eastern fence	Sceloporus undulatus
Lizard, greater earless	Cophosaurus texanus
Lizard, lesser earless	Holbrookia maculata
Lizard, side-blotched	Uta stansburiana
Rattlesnake, blacktail	Crotalus molossus
Rattlesnake, western	Crotalus viridis
Skink, great plains	Eumeces obsoletus
Skink, many-lined	Eumeces multivirgatus
Snake, blackneck garter	Thamnophis cyrtopsis
Snake, gopher	Pituophis melanoleucus
Snake, Mexican blackhead	Tantilla atriceps
Snake, mountain patchnose	Salvadora grahamiae
Snake, ringneck	Diadophis punctatus
Whiptail, western	Cnemidophorus tigris

Geology

The steep limestone cliffs in the vicinity of Upper McKittrick are predominantly carbonate rocks of the Artesia Group (Hayes 1964). The Seven Rivers Formation is characterized by yellowish-gray dolomite with minor very pale orange quartzose siltstone cemented with dolomite. The Queen Formation consists of very pale orange, very finely textured dolomite and calcareous dolomite, together with very pale orange, very fine-grained sandstone and siltstone. Also present are elements of the Grayburg Formation, with very pale orange, very finely textured dolomite and calcareous dolomite, together with pale orange, very fine-grained calcareous or dolomitic quartz sandstone.

Soils

Upper McKittrick is found on Calciustolls-Rock Land (NMSU 1978:125- 127), an association consisting of soils and land types on mountain footslopes and limestone hills in the south central part of the state, mostly at elevations from 5000 to 7000 feet (1524 to 2134 m). The soils, dominantly shallow, stony and rocky, are underlain by limestone bedrock and less commonly by other sedimentary rocks. Deeper soils occur in flood plains contiguous to drainageways. The Lithic Calciustolls commonly occur on rolling uplands. These soils have a surface layer of dark grayish-brown to brown calcareous stony loam., grading to the underlying limestone bedrock at 6 to 20 inches (15.2 to 50.8 cm). Rock Land typically occurs on steep canyon walls and escarpments, and comprises about 30 per cent of the association. It consists dominantly of a complex of shallow soils and outcrops of limestone and occasionally other sedimentary rocks. The outcrops occur as vertical or near vertical exposures and ledges. Also present in the RNA are Lithic Haplustolls, forming residually in materials of sandstone and shale origin. These soils occur on sloping and rolling upland ridges and hills, and have a thin brown noncalcareous cobbly loam surface layer over a brown very cobbly sandy clay loam subsoil.

Lands

All lands within the proposed RNA were included within the original Guadalupe Forest created on April 19, 1907. There are no known outstanding rights or rights-of-way within the proposed boundaries.

Cultural

No cultural resource surveys have been conducted within this RNA. Surveys that have been conducted nearby indicate that small lithic scatters, possibly associated with mescal pits or ring middens, may be present. These sites are found commonly throughout the Guadalupes. Rock shelters and pictograph panels may also occur, primarily along the canyon sides. No permanent or year-round habitation sites have been found in this area. The Guadalupe Mountains appear to have been used primarily for hunting and gathering activities. Upon establishment as an RNA,

the area will be withdrawn from any archeological research that would in any way modify the existing biological resources.

IMPACTS AND POSSIBLE CONFLICTS

Mineral Resources

The proposed RNA occurs within the Guadalupe Escarpment Wilderness Study Area (WSA). The WSA has been classified by the USGS as having 'Inferred Identified Economic Oil and Gas Potential'. There have been no oil and gas lease applications for the proposed RNA, but 16 applications are pending for most of the remaining land in the WSA. If the Upper McKittrick area is designated as an RNA, a recommendation will be made to withdraw the area from mineral entry.

Grazing

In the early 1900's, goats grazed the area. The area is currently within the Soldier Springs Allotment, but grazing rarely occurs here now, due to the lack of water and difficult access for sheep and cows.

Timber

Forest species, including ponderosa pine, pinyon pine, and juniper, are sparse throughout the area, and none of the proposed RNA is included in the timber base. As trees are sparse and the area is difficult to get to, the potential for firewood harvest is virtually nil.

Watershed Values

This area is drained primarily by the North McKittrick Canyon south into the Pecos River drainage in Texas. This canyon is part of the South Guadalupe fifth order watershed. The water ceases to flow on the surface a few miles below the RNA.

Recreation Values

The area contains a very little used pedestrian trail, which ascends the canyon. There is no vehicular use in the area, and no conflicts between recreation use and potential research is anticipated.

Wildlife and Plant Values

The area contains potential habitat for the endangered plant species, Sneed's pincushion cactus (Coryphantha sneedii var. sneedii). No populations have been located yet. The McKittrick pennyroyal (Hedeoma apiculatum), a federally threatened species, has been found near and perhaps within the area. Exact boundary identification of the RNA is needed to verify where the population exists. There is also potential habitat here for several other state sensitive plants which are known to occur within a few miles of the RNA.

Wilderness, Wild and Scenic River, National Recreation Area Values

The area is contained within the Guadalupe Escarpment Wilderness Study Area. A recommendation will be made to Congress to not designate this area as wilderness.

Transportation Plans

The north edge of the RNA is within about 2 miles (3.2 km) of a Forest Road. A spur route and trail allow four-wheel drive vehicles to drive within 0.5 mile (0.8 km) of the area. The trail continues to the area, but becomes impassable to vehicles. There is no unauthorized vehicular travel in the area, and there are no transportation plans that would adversely affect the proposed RNA.

Utility Corridor Plans

No existing or planned utility corridors occur in the vicinity of the RNA.

Other

A small fenced exclosure was installed in the northwest corner of the area by the Forest Service in the 1950's for a vegetation study. This exclosure has historical value and does not interfere with RNA obligations.

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, and recreation signs or marking are prohibited within the area. 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.

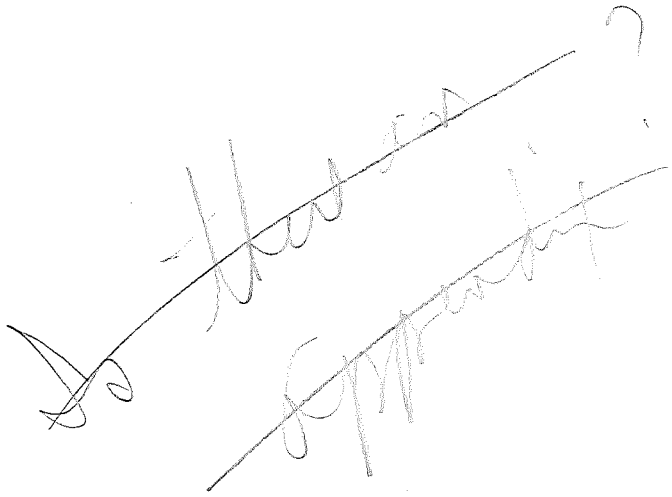
ADMINISTRATIVE RECORDS AND PROTECTION

Administration and protection of the Upper McKittrick RNA will be the responsibility of the Lincoln National Forest. The District Ranger, Guadalupe District, Carlsbad, 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 Upper McKittrick 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, Guadalupe District, Carlsbad, NM



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add Maps 1, 2, 3, 4

check in Map 4

add Folio & Foreword

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 Upper McKittrick Research Natural Area. The Upper McKittrick Research Natural Area shall be comprised of the following land: Beginning at a point on the Texas-New Mexico State line, said point being the closing corner of the meridional centerline of section 32, T 26S., R 21E., NMPM;
THENCE, north along the meridional centerlines of section 32 and 29 a distance of 7275 feet to the 1/4 section corner of sections 29 and 32,
THENCE, N 38 00'E, a distance of 1000 feet more or less to the highest point on a ridge, said point being shown 7139 on FS Quadrangle 473 SE;
THENCE, N 14 00'E, a distance of 1400 feet more or less to the highest point of a hill,;
THENCE, east, a distance of 1800 feet more or less to a point on the section line between section 20 and 21;
THENCE, south along the section line a distance of 500 feet more or less to its intersection with the 7200 feet contour line;
THENCE, along the 7200 feet contour line southeasterly and northeasterly to a point at the head of a canyon, said point lying approximately 500 feet north of the 1/4 section corner of sections 21 and 28;
THENCE, southerly along the bottom of said canyon 400 feet more or less to the junction with McKittrick Canyon;
THENCE, following the bottom of McKittrick Canyon southwesterly to its junction with the Texas-NM State line;
THENCE, westerly along the State line a distance of 650 feet more or less to the Point of Beginning.

Regional Forester, Sotero Muniz, recommended the establishment of the Upper McKittrick 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 Upper McKittrick Research Natural Area will be managed in compliance with all relevant laws, regulations, and manual direction regarding Research Natural Areas. The Upper McKittrick 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 Upper McKittrick 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

ESTABLISHMENT RECORD

for

UPPER MCKITTRICK RESEARCH NATURAL AREA

within

Lincoln National Forest

Eddy County, New Mexico

INTRODUCTION

The Upper McKittrick Research Natural Area (RNA) comprises approximately 827 acres (334.7 hectares) in the Guadalupe Mountains at the southern border of New Mexico, adjacent to Texas. The proposed RNA is located in the Lincoln National Forest, in Eddy County, and is National Forest land reserved from the public domain.

Many areas in the Forest Service Southwestern Region are covered by a mountain mahogany vegetation type, but most have been heavily grazed in the past and are currently used for this purpose. However, this area is far enough from water that it does not receive livestock use. It is, in addition,an extensive stand of mountain mahogany and associated chapparal shrubs, as yet unrepresented in the Southwestern Region RNA system. Upper McKittrick was reviewed by the RNA regional committee in spring, 1982, and was determined to be the most suitable representation of this ecosystem available.

Land Management Planning

The need for representation of shrubland biotic communities was identified in the Southwestern Regional Guide (August 1983). The Lincoln National Forest Plan (USFS 1986a) recommends that approximately 827 acres (334.7 hectares) of the Upper McKittrick drainage in Management Area 3A 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

Upper McKittrick Research Natural Area has been identified as an outstanding example of a mountain mahogany community. This is an important chapparal ecosystem in the Southwest.

In addition to providing a good representation of a mountain mahogany community, in good condition and with a minimal livestock use history, Upper McKittrick Canyon RNA includes smaller ponderosa pine (Pinus ponderosa) and pinyon-juniper (Pinus edulis-Juniperus sp.) woodland communities, and riparian woodland. The high floral abundance and diversity, together with geographic position and considerable variability in topographic relief and aspect, provide a rich array of factors for study of the impact of the Chihuahuan Desert influence on floral and faunal composition.

PRINCIPAL DISTINGUISHING FEATURES

Upper McKittrick is surrounded by steep, shrub covered limestone cliffs. Most of the area is dominated by mountain mahogany together with wavyleaf oak (Quercus undulata) and other associated chapparal shrubs, grasses and a variety of forbs. Pinyon-juniper woodland is found above the RNA to the northeast, and pockets of ponderosa pine on north-facing slopes lining the canyon. Vegetation along the narrow canyon bottoms includes large trees and abundant and varied herbs and grasses.

LOCATION (Lincoln National Forest)

Upper McKittrick is on the Texas-New Mexico border about 40 miles (64.3 km) southwesst of Carlsbad, New Mexico (Map 1). It adjoins Guadalupe Mountains National Park, to the south in Texas. The RNA can be found on the El Paso Gap quadrangle (USGS 7.5' map), Township 26S, Range 21E, Sections 20, 21, 28, 29, 32, and 33, latitude 32 degrees 1' N, longitude 104 degrees 49' W.

The boundaries of this RNA in rugged canyon topography are complicated (Maps 2 and 3). Commencing from a point about 500 feet south of the southeast corner of the northwest quarter of section 20, the boundary goes more or less southerly along the 7200 ft contour into a tributary drainage of North McKittrick Canyon in the north half of section 28. It then proceeds southerly along the bottom of this drainage into North McKittrick Canyon. The boundary then proceeds westerly and southerly up North McKittrick Canyon in such a manner as to include the riparian vegetation of this canyon. At the confluence of North McKittrick Canyon with a tributary drainage in the southwest 1/4 of section 28, the boundary follows this tributary, mostly in section 32, to the Forest border. It then follows west and north along the Forest border to a point approximately 1/2 mile south of the southwest corner of the northeast quarter of section 20. From here the boundary proceeds northeasterly up a gentle ridge to a point about 500 feet south and 600 feet east of the southwest corner of the northeast quarter of section 20. The boundary then proceeds east to the point of beginning.

Access to the RNA requires a four-wheel drive vehicle and a rugged hike to reach the interior of the RNA. From U.S. Highway 285, take N.M. Highway 137 heading southwest to Sitting Bulls Falls and Little Dog Canyon (Maps 1 and 2). This junction is 12 miles (19.3 km) north of Carlsbad and 24 miles (38.6 km) south of Artesia. Proceed 32.5 miles (52.3 km) on Highway 137 to where Forest Road 540 (the "Guadalupe Rim Road") turns off on the left (east). Follow this gravel road 12.4 miles (20.0 km) to a "Y", and take the right fork which is a primitive road. Proceed 0.3 miles (0.5 km) further and turn right at the next fork. Continue 0.2 miles (0.3 km), where you will leave your vehicle. At this point you are a short distance from the north boundary of the RNA. From here there is a nearly 1000 foot (304.8 m) descent down the scrub-covered limestone slopes into Upper North McKittrick Canyon. Virtually all of the RNA is negotiable on foot, but care must be taken in picking a route through this rugged limestone terrain.

AREA BY COVER TYPES

The distribution of cover types was determined from a field survey conducted in the summer of 1986 and from interpretation of 1976 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 Upper McKittrick Research Natural Area.

Type	Society of American Foresters Cover Type[1]	Küchler PNV Type[2]	Surface Area Acres	Hectares
Ponderosa Pine	SAF 237	K-17 Pine - Douglas-fir Forest	88	35.6
Pinyon - Juniper	SAF 239	K-27 Oak - Juniper Woodland	29	11.7
Western Live Oak	SAF 241	K-27	664	268.7
Riparian Woodland	[none]	[none]	46	18.6
		TOTAL:	827	334.6

[1]Eyre 1980.
[2]Küchler 1964.

PHYSICAL AND CLIMATIC CONDITIONS

The proposed RNA is located on a ridge between North McKittrick and Upper Dog Canyons, about one mile (1.6 km) north of the Texas border. Elevations range from 6600 feet (2011.7 m) in the bottom of North McKittrick Canyon, to 7400 feet (2255.5 m) at the ridge summit, to the southwest. From the RNA, there is a steep drop-off, down scrub covered limestone cliffs, to Upper Dog Canyon to the west, and an equally steep ascent to the southeast.

Climate in this part of far southern New Mexico varies considerably over short distances. Low elevation flatlands around Carlsbad and much of Eddy County are characterized as arid Chihuahuan Desert, with high temperatures, extended frostfree season and very low moisture levels, while the Guadalupe Mountain range enjoys subhumid conditions and

intervening areas are semi-arid. The nearest long range weather station, at Carlsbad about 40 miles (64.3 km) northeast, records weather conditions very different from those at Upper McKittrick. The following data were interpreted for the RNA from the Terrestrial Ecosystems Handbook maintained by the USFS Southwestern Regional Office. Average annual rainfall for Upper McKittrick is 16 inches (406 mm); much of this falls during summer months as local orographic and convectional storms. Average annual snowfall is 31 inches (78.7 cm). Perennial or semi-perennial water flow in Upper McKittrick Creek is a critical component in presence and maintenance of the distinctive plant communities in the RNA. Mean annual temperature is 48° F (8.9° C), with a July average of 64° F (17.8° C) and a January average of 31° F (-0.6° C). The frost free period lasts an average of 150 days.

DESCRIPTION OF VALUES

Flora

At the time of preparation of the Establishment Record, no publication adequately described the habitat types occurring on Upper McKittrick Canyon RNA. The following description is based therefore on SAF forest types.

Virtually all the RNA is located on steep limestone terraced substrate, and much of it can be classed vegetatively as scarp woodland or scarp shrubland. Most of the area is dominated by a mountain mahogany (Cercocarpus montanus) shrub cover on slopes of all aspects. Wavyleaf oak (Quercus undulata) is codominant, becoming relatively more frequent on the north-facing slopes. Other common shrubs include beargrass (Nolina microcarpa), yellowleaf silktassel (Garrya flavescens), sotol (Dasylirion leiophyllum), New Mexico agave (Agave neomexicana), and desert ceanothus (Ceanothus greggii). Aristida sp., Eragrostis intermedia, and Bouteloua curtipendula are the most common grasses. Forbs are well represented; among the most common are Thelesperma longipes, Hedyotis nigricans, Sisyrinchium occidentale, and Polygala alba. Widely scattered pinyon (Pinus edulis) grows on most of these slopes; where the slopes become north-facing, ponderosa pine (Pinus ponderosa) and alligator juniper (Juniperus deppeana) are occasionally found.

A pinyon-juniper patch occurs on a flat at the northwest corner of the RNA, the only site where blue grama (Bouteloua gracilis) and wolftail (Lycurus phleoides) grasses were noted. Above the RNA on the northeast boundary is a pinyon-juniper woodland. Patches of this type extend down into the RNA at the upper end of several drainages. A ponderosa pine type occurs on several north-facing slopes above the main McKittrick drainage. Quercus undulata replaces Cercocarpus as the dominant shrub here. Ponderosa drops out wherever the slopes become east or west-facing.

The Upper McKittrick Canyon mainstem and most of the side canyons support a riparian woodland type exhibiting great plant diversity with a strong Chihuahuan influence. Bigtooth maple (Acer grandidentatum) tends to be the dominant tree, with codominants of chinkapin oak (Quercus muhlenbergia), serviceberry (Amelanchier goldmanii), Texas madrone (Arbutus texana), or southwestern white pine (Pinus strobiformis). Other

occasional to common trees include Rocky Mountain juniper (Juniperus scopulorum), some of which attain huge size in the canyon bottoms; Douglas fir (Pseudotsuga menziesii); wolf hop hornbeam (Ostrya knowltonii); and pinyon. Common shrubs in the bottoms include wavyleaf and Gambel oaks (Quercus undulata and Q. gambelii), mountain mahogany, desert ceanothus, white honeysuckle (Lonicera albiflora), apache-plume (Fallugia paradoxa), canyon grape (Vitis arizonica), selloa (Selloa glutinosa), and squawberry (Rhus trilobata).

Herbaceous vegetation is luxuriant in these canyons with a great diversity of forbs. Common species include Silene lacineata, Viguiera dentata. and Hedyotis nigricans. Grasses are equally well-represented, among them Muhlenbergia pauciflora, M. emersleyi, Eragrostis intermedia, Sorghastrum nutans, and Stipa sp.

There are no endangered, threatened, or sensitive plant species known on the proposed RNA.

The following plant list was compiled during the field survey on September 19, 1986. Time and lateness of the season permitted only a cursory survey.

Abbreviated Plant List for Upper McKittrick RNA[1]

Latin Name	Common Name[2]
GRASSES AND GRASS-LIKE PLANTS:	
Andropogon gerardii	big bluestem
Andropogon scoparius	Little bluestem
Aristida sp.	Three-awn
Blepharoneuron tricholepis	Pine dropseed
Bouteloua curtipendula	Sideoats grama
Bouteloua gracilis	Blue grama
Eragrostis intermedia	Plains lovegrass
Lycurus phleoides	Wolftail
Muhlenbergia dubia	Pine muhly
Muhlenbergia emersleyi	Bullgrass
Muhlenbergia pauciflora	New Mexico muhly
Piptochaetium fimbriatum	Pinyon ricegrass
Sitanion hystrix	Bottlebrush squirreltail
Sorghastrum nutans	Yellow Indiangrass
Stipa sp.	Needlegrass
FORBS:	
Allium cernuum	Nodding onion
Castilleja sp.	Paintbrush
Euphorbia heterophylla	Painted lady
Hedyotis nigricans	Bluets
Ipomopsis aggregata	Skyrocket
Liatris punctata	Gayfeather
Penstemon cardinalis	Beardtongue
Polygala alba	White milkwort
Salvia lycioides	Sage
Sedum sp.	Stonecrop
Silene lacineata	Mexican silene
Sisyrinchium occidentale	Blue-eyed grass
Thelesperma longipes	Coatex greenthread
Verbena sp.	Verbena
HALF-SHRUBS, SHRUBS, AND TREES:	
Acer grandidentatum	Bigtooth maple
Agave lechuguilla	Lechuguilla
Agave neomexicana	New Mexico agave
Amelanchier goldmanii	Serviceberry
Arbutus texana	Texas madrone
Brickellia sp.	Flythicket
Ceanothus greggii	Desert ceanothus
Cercocarpus montanus	Mountain mahogany
Dalea frutescens	Black indigobush
Dasylirion leiophyllum	Sotol

Echinocereus sp.	Hedgehog cactus
Fallugia paradoxa	Apache-plume
Fendlera rupicola	Cliff fendlerbush
Garrya flavescens	Yellowleaf silktassel
Juniperus deppeana	Alligator-bark juniper
Juniperus scopulorum	Rocky Mountain juniper
Lonicera albiflora	White honeysuckle
Nolina microcarpa	Beargrass
Opuntia engelmannii	Engelmann pricklypear
Opuntia imbricata	Cholla
Ostrya knowltonii	Wolf hophornbean
Pinus edulis	Pinyon pine
Pinus ponderosa	Ponderosa pine
Pinus strobiformis	Southwestern white pine
Pseudotsuga menziesii	Douglas-fir
Quercus gambelii	Gambel oak
Quercus muhlenbergia	Chinkapin oak
Quercus undulata	Wavyleaf oak
Rhus trilobata	Squawberry
Sapindus drummondii	Western soapberry
Selloa glutinosa	Selloa
Symphoricarpus longiflorus	Longflower snowberry
Viguiera dentata	Goldeneye
Vitis arizonica	Canyon grape
Yucca baccata	Datil yucca

[1]Observed by Bill Dunmire (The Nature Conservancy) and Larry Sansom (Guadalupe District Ranger, Lincoln National Forest) on September 19, 1986.

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

Fauna

Upper McKittrick Canyon is potential habitat for several rare, endangered, or sensitive animal species. There have been no biological surveys covering this specific area; however, the following animal species are known to occur in similar habitats in the general vicinity of Upper McKittrick Canyon: peregrine falcon, spotted owl, gray vireo, varied bunting, mottled rock rattlesnake, trans-pecos rat snake, plain-bellied water snake, western ribbon snake, and eastern barking frog.

Most of the area is too steep and rocky for prime deer habitat. The only other ungulate inhabiting the Guadalupe Mountains at this time (1986) is the introduced Barbary sheep, but they are very infrequently seen. Upper McKittrick Creek has a perennial or semi-perennial flow within the RNA; therefore a variety of riparian animal species can be expected 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 Eddy County, New Mexico:

1. Pinyon - juniper series; Juniperus deppeana association

2. Madrean evergreen woodland biome

3. Interior chaparral biome; Cercocarpus association

These habitat types currently in the data base most closely correspond to those occurring in the proposed RNA.

Potential Animal List for Upper McKittrick Canyon RNA

AMPHIBIANS:

Frog, barking	*Hylactophryne augusti*
Spadefoot, western	*Scaphiopus hammondi*
Toad, red-spotted	*Bufo punctatus*

BIRDS:

Bunting, lazuli	*Passerina amoena*
Bushtit	*Psaltriparus minimus*
Dove, mourning	*Zenaida macroura*
Falcon, peregrine	*Falco peregrinus*
Finch, house	*Carpodacus mexicanus*
Flicker, northern	*Colaptes auratus*
Gnatcatcher, blue-gray	*Polioptila caerulea*
Hawk, Cooper's	*Accipiter cooperii*
Hummingbird, broad-tailed	*Selasphorus platycercus*
Hummingbird, rufous	*Selasphorus rufus*
Jay, scrub	*Aphelocoma coerulescens*
Jay, Steller's	*Cyanocitta stelleri*
Kestrel, American	*Falco sparverius*
Mockingbird, northern	*Mimus polyglottos*
Owl, great horned	*Bubo virginianus*
Owl, long-eared	*Asio otus*
Owl, spotted	*Strix occidentalis*
Pigeon, band-tailed	*Columba fasciata*
Poorwill, common	*Phalaenoptilus nuttallii*
Quail, scaled	*Callipepla squamata*
Raven, common	*Corvus corax*
Sparrow, black-chinned	*Spizella atrogularis*
Sparrow, black-throated	*Amphispiza bilineata*
Sparrow, rufous-crowned	*Aimophila ruficeps*
Starling, European	*Sturnus vulgaris*
Swallow, barn	*Hirundo rustica*
Swallow, cliff	*Hirundo pyrrhonota*
Thrasher, crissal	*Toxostoma dorsale*
Titmouse,plain	*Parus inornatus*
Towhee, brown	*Pipilo fuscus*
Towhee, green-tailed	*Pipilo chlorurus*
Towhee, rufous-sided	*Pipilo erythrophthalmus*
Vireo, solitary	*Vireo solitarius*
Warbler, black-throated gray	*Dendroica nigrescens*
Warbler, orange-crowned	*Vermivora celata*
Warbler, Virginia's	*Vermivora virginiae*
Waxwing, cedar	*Bombycilla cedrorum*
Wren, canyon	*Catherpes mexicanus*
Wren, rock	*Salpinctes obsoletus*

MAMMALS:

Badger	Taxidea taxus
Bat, Brazilian free-tailed	Tadarida brasiliensis
Bear, black	Ursus americanus
Cottontail, desert	Sylvilagus audubonii
Coyote	Canis latrans
Deer, mule	Odocoileus hemionus
Elk	Cervus elaphus
Fox, kit	Vulpes macrotis
Jackrabbit, black-tailed	Lepus californicus
Lion, mountain	Felis concolor
Mouse, western harvest	Reithrodontomys megalotis
Myotis, fringed	Myotis thysanodes
Myotis, small-footed	Myotis leibii
Raccoon	Procyon lotor
Ringtail	Bassariscus astutus
Sheep, Barbary	Ammotragus lervia
Skunk, hog-nosed	Conepatus mesoleucus
Skunk, striped	Mephitis mephitis
Squirrel, rock	Spermophilus variegatus
Woodrat, white-throated	Neotoma albigula

REPTILES:

Lizard, collared	Crotaphytus collaris
Lizard, crevice spiny	Sceloporus poinsetti
Lizard, eastern fence	Sceloporus undulatus
Lizard, greater earless	Cophosaurus texanus
Lizard, lesser earless	Holbrookia maculata
Lizard, side-blotched	Uta stansburiana
Rattlesnake, blacktail	Crotalus molossus
Rattlesnake, western	Crotalus viridis
Skink, great plains	Eumeces obsoletus
Skink, many-lined	Eumeces multivirgatus
Snake, blackneck garter	Thamnophis cyrtopsis
Snake, gopher	Pituophis melanoleucus
Snake, Mexican blackhead	Tantilla atriceps
Snake, mountain patchnose	Salvadora grahamiae
Snake, ringneck	Diadophis punctatus
Whiptail, western	Cnemidophorus tigris

Geology

The steep limestone cliffs in the vicinity of Upper McKittrick are predominantly carbonate rocks of the Artesia Group (Hayes 1964). The Seven Rivers Formation is characterized by yellowish-gray dolomite with minor very pale orange quartzose siltstone cemented with dolomite. The Queen Formation consists of very pale orange, very finely textured dolomite and calcareous dolomite, together with very pale orange, very fine-grained sandstone and siltstone. Also present are elements of the Grayburg Formation, with very pale orange, very finely textured dolomite and calcareous dolomite, together with pale orange, very fine-grained calcareous or dolomitic quartz sandstone.

Soils

Upper McKittrick is found on Calciustolls-Rock Land (NMSU 1978:125-127), an association consisting of soils and land types on mountain footslopes and limestone hills in the south central part of the state, mostly at elevations from 5000 to 7000 feet (1524 to 2134 m). The soils, dominantly shallow, stony and rocky, are underlain by limestone bedrock and less commonly by other sedimentary rocks. Deeper soils occur in flood plains contiguous to drainageways. The Lithic Calciustolls commonly occur on rolling uplands. These soils have a surface layer of dark grayish-brown to brown calcareous stony loam., grading to the underlying limestone bedrock at 6 to 20 inches (15.2 to 50.8 cm). Rock Land typically occurs on steep canyon walls and escarpments, and comprises about 30 per cent of the association. It consists dominantly of a complex of shallow soils and outcrops of limestone and occasionally other sedimentary rocks. The outcrops occur as vertical or near vertical exposures and ledges. Also present in the RNA are Lithic Haplustolls, forming residually in materials of sandstone and shale origin. These soils occur on sloping and rolling upland ridges and hills, and have a thin brown noncalcareous cobbly loam surface layer over a brown very cobbly sandy clay loam subsoil.

Lands

All lands within the proposed RNA were included within the original Guadalupe Forest created on April 19, 1907. There are no known outstanding rights or rights-of-way within the proposed boundaries.

Cultural

No cultural resource surveys have been conducted within this RNA. Surveys that have been conducted nearby indicate that small lithic scatters, possibly associated with mescal pits or ring middens, may be present. These sites are found commonly throughout the Guadalupes. Rock shelters and pictograph panels may also occur, primarily along the canyon sides. No permanent or year-round habitation sites have been found in this area. The Guadalupe Mountains appear to have been used primarily for hunting and gathering activities. Upon establishment as an RNA, the area will be withdrawn from any archeological research that would in any way modify the existing biological resources.

IMPACTS AND POSSIBLE CONFLICTS

Mineral Resources

The proposed RNA occurs within the Guadalupe Escarpment Wilderness Study Area (WSA). The WSA has been classified by the USGS as having 'Inferred Identified Economic Oil and Gas Potential'. There have been no oil and gas lease applications for the proposed RNA, but 16 applications are pending for most of the remaining land in the WSA. If the Upper McKittrick area is designated as an RNA, a recommendation will be made to withdraw the area from mineral entry.

Grazing

In the early 1900's, goats grazed the area. The area is currently within the Soldier Springs Allotment, but grazing rarely occurs here now, due to the lack of water and difficult access for sheep and cows.

Timber

Forest species, including ponderosa pine, pinyon pine, and juniper, are sparse throughout the area, and none of the proposed RNA is included in the timber base. As trees are sparse and the area is difficult to get to, the potential for firewood harvest is virtually nil.

Watershed Values

This area is drained primarily by the North McKittrick Canyon south into the Pecos River drainage in Texas. This canyon is part of the South Guadalupe fifth order watershed. The water ceases to flow on the surface a few miles below the RNA.

Recreation Values

The area contains a very little used pedestrian trail, which ascends the canyon. There is no vehicular use in the area, and no conflicts between recreation use and potential research is anticipated.

Wildlife and Plant Values

The area contains potential habitat for the endangered plant species, Sneed's pincushion cactus (Coryphantha sneedii var. sneedii). No populations have been located yet. The McKittrick pennyroyal (Hedeoma apiculatum), a federally threatened species, has been found near and perhaps within the area. Exact boundary identification of the RNA is needed to verify where the population exists. There is also potential habitat here for several other state sensitive plants which are known to occur within a few miles of the RNA.

Wilderness, Wild and Scenic River, National Recreation Area Values

The area is contained within the Guadalupe Escarpment Wilderness Study Area. A recommendation will be made to Congress to not designate this area as wilderness.

Transportation Plans

The north edge of the RNA is within about 2 miles (3.2 km) of a Forest Road. A spur route and trail allow four-wheel drive vehicles to drive within 0.5 mile (0.8 km) of the area. The trail continues to the area, but becomes impassable to vehicles. There is no unauthorized vehicular travel in the area, and there are no transportation plans that would adversely affect the proposed RNA.

Utility Corridor Plans

No existing or planned utility corridors occur in the vicinity of the RNA.

Other

A small fenced exclosure was installed in the northwest corner of the area by the Forest Service in the 1950's for a vegetation study. This exclosure has historical value and does not interfere with RNA obligations.

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, and recreation signs or marking are prohibited within the area. 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 Upper McKittrick RNA will be the responsibility of the Lincoln National Forest. The District Ranger, Guadalupe District, Carlsbad, 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 Upper McKittrick 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, Guadalupe District, Carlsbad, NM

REFERENCES

DeVelice, Robert L., John A. Ludwig, William H. Moir, and Frank Ronco, Jr. 1986. A classification of forest habitat types of northern New Mexico and southern Colorado. U.S.D.A. Forest Service General Technical Report RM-131, 59 pp. Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colo.

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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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.

Martin, William C., and Charles R. Hutchins. 1980. A flora of New Mexico. J. Cramer, Braunschweig, West Germany.

New Mexico State University, Agricultural Experiment Station. 1978. Soils of New Mexico. Agricultural Experiment Station Research Report 285. Las Cruces. 132 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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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.

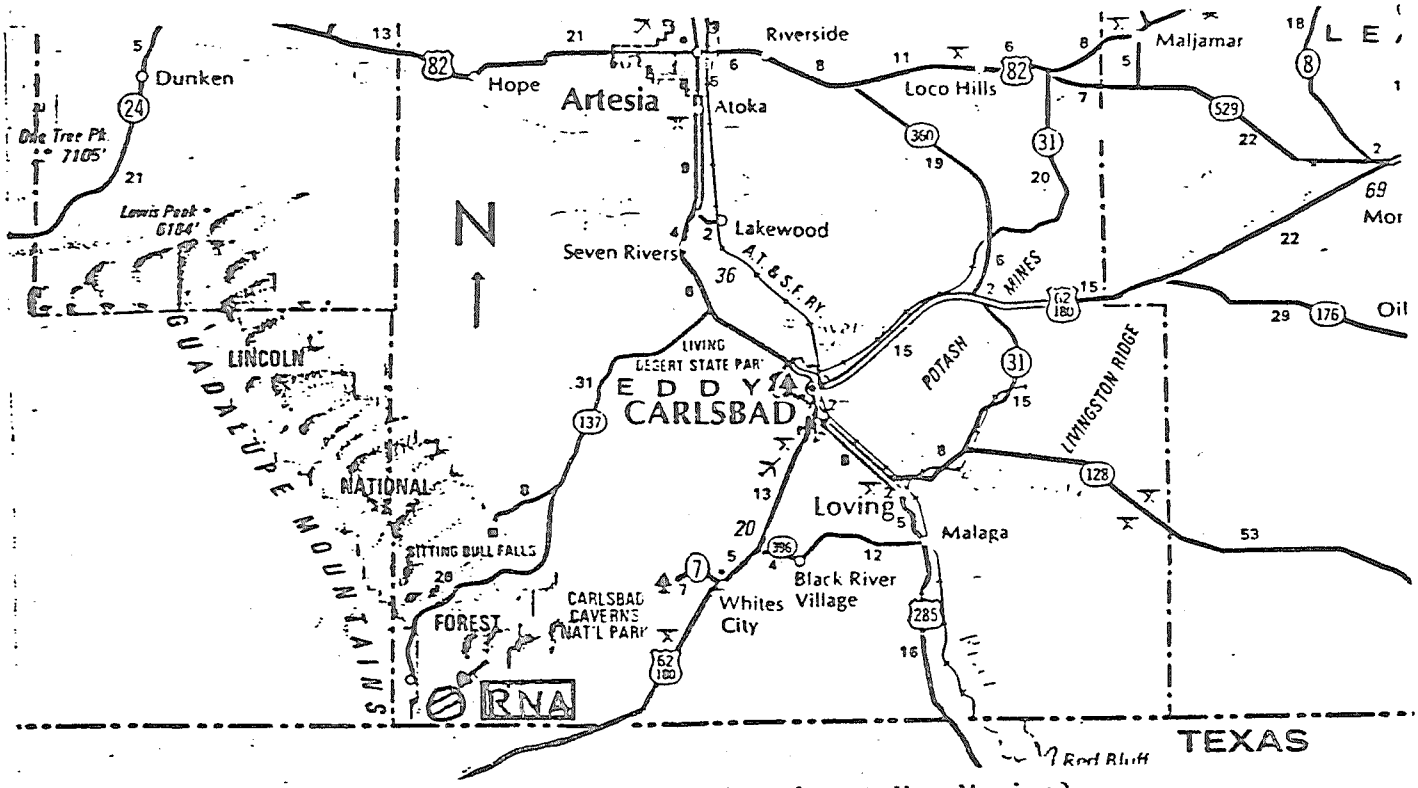
USDA Forest Service. 1986. Lincoln National Forest plan. USDA Forest Service, Southwestern Region, Albuquerque. 324 pp.

DESIGNATION ORDER

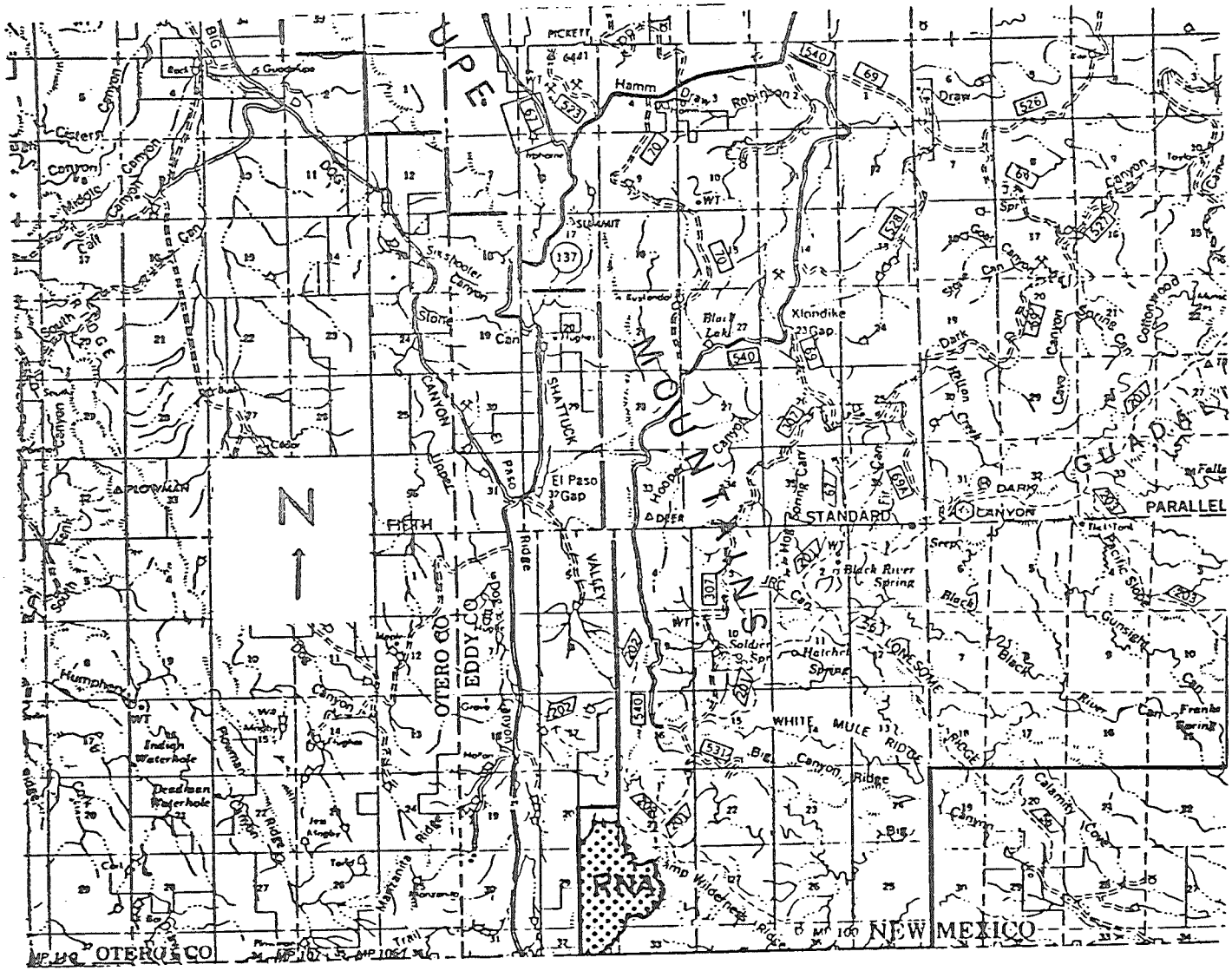
By virtue of the authority vested in me by the Secretary of Agriculture under regulations 7 CFR 2.60(a) and 36 CFR 251.23, I hereby designate as the Upper McKittrick Research Natural Area the lands described in the following establishment record prepared by William W. Dunmire and Mollie S. Toll, dated October 19, 1987. These lands shall hereafter be administered as a research natural area subject to the above regulations and instructions issued thereunder.

_____ _____

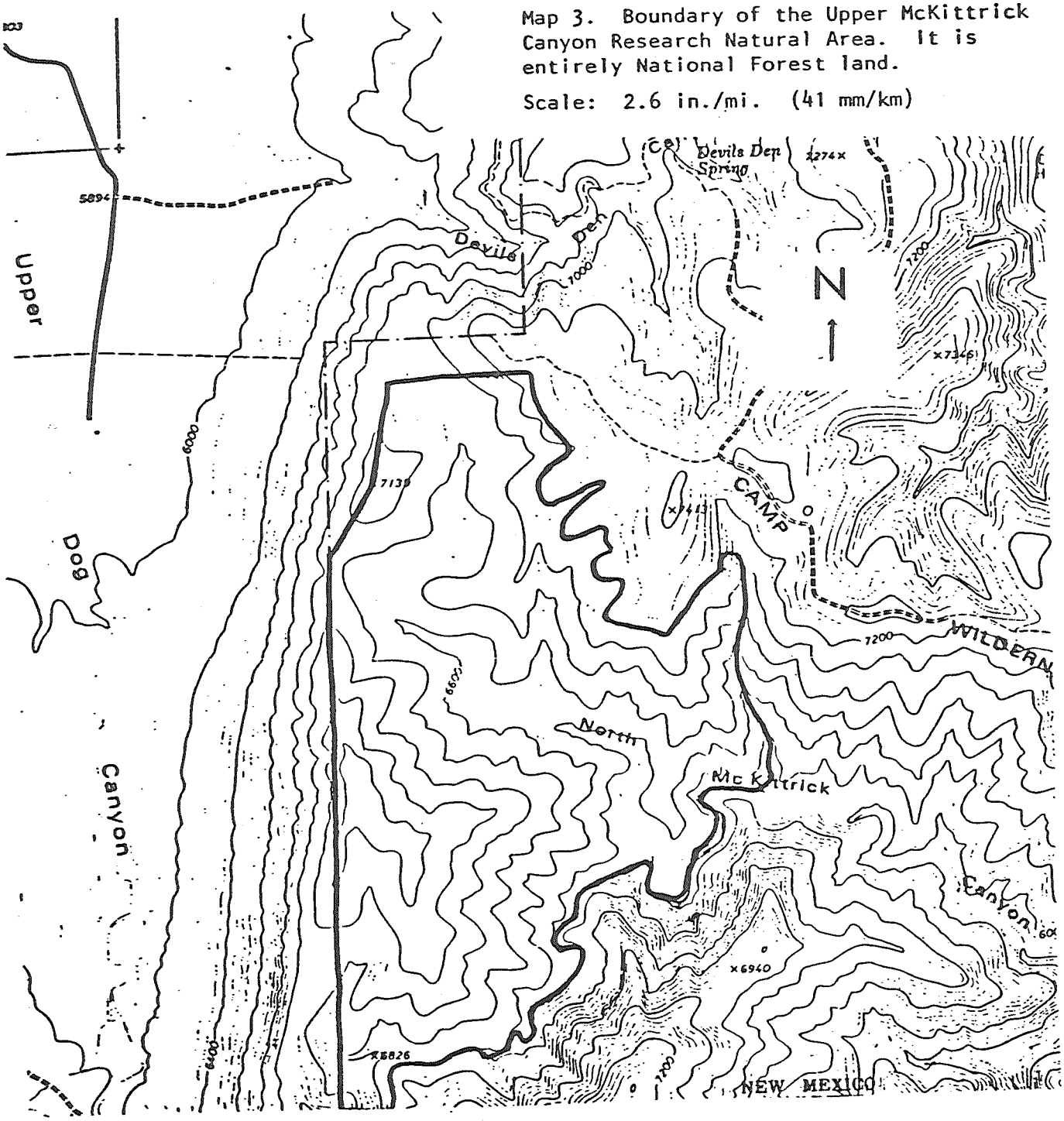
Chief Date



Map 1. Location of RNA (Southeast New Mexico)

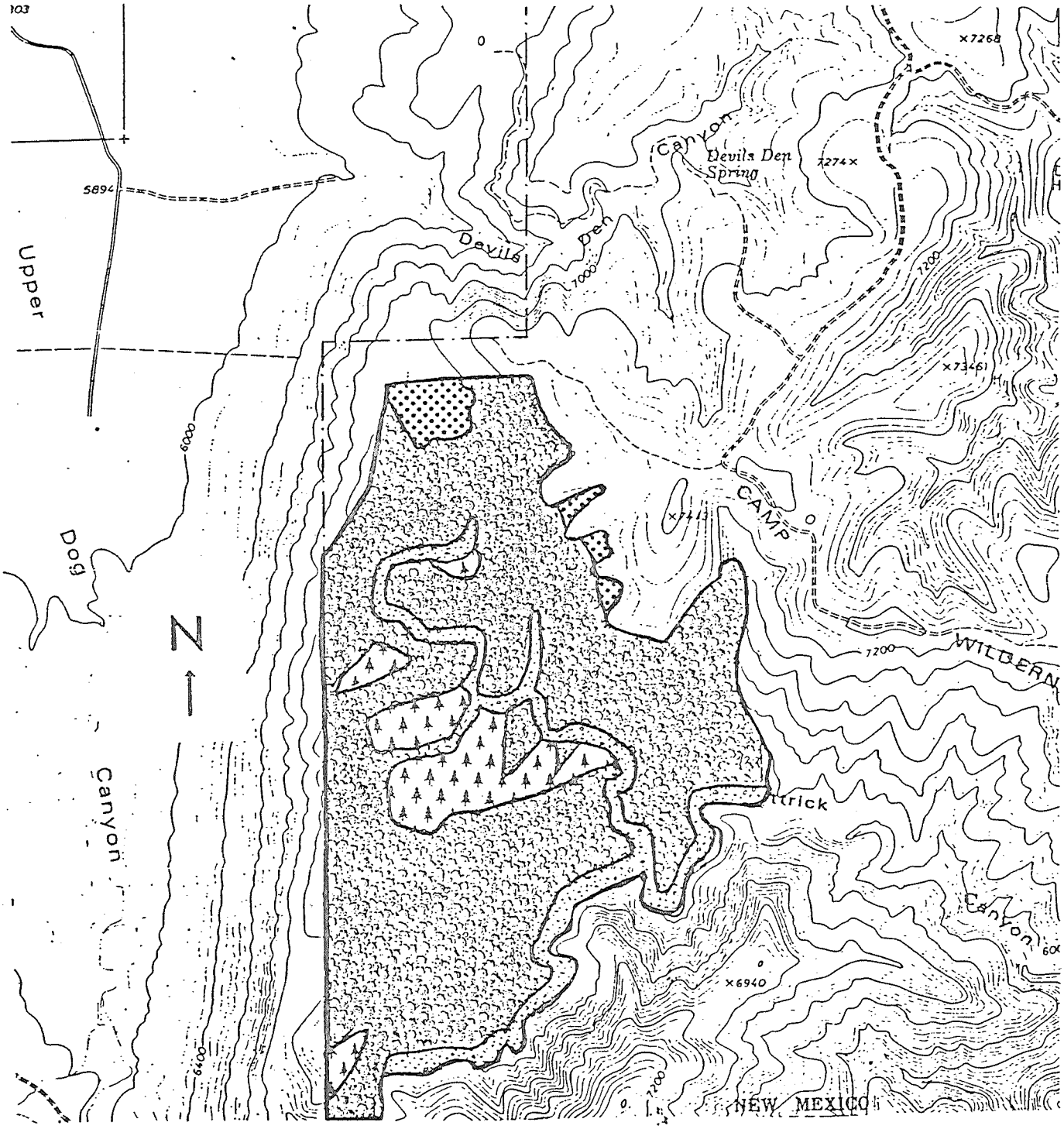


Map 2. Access Route to Upper McKittrick Canyon RNA



Map 3. Boundary of the Upper McKittrick Canyon Research Natural Area. It is entirely National Forest land.

Scale: 2.6 in./mi. (41 mm/km)



Map Symbol	Vegetation Type
	Ponderosa Pine SAF 237, K-17
	Pinyon-Juniper SAF 239, K-27

Map Symbol	Vegetation Type
	Western Live Oak SAF 241, K-31
	Riparian Woodland

Map 4. Distribution of vegetation types in the Upper McKittrick Canyon Research Natural Area.

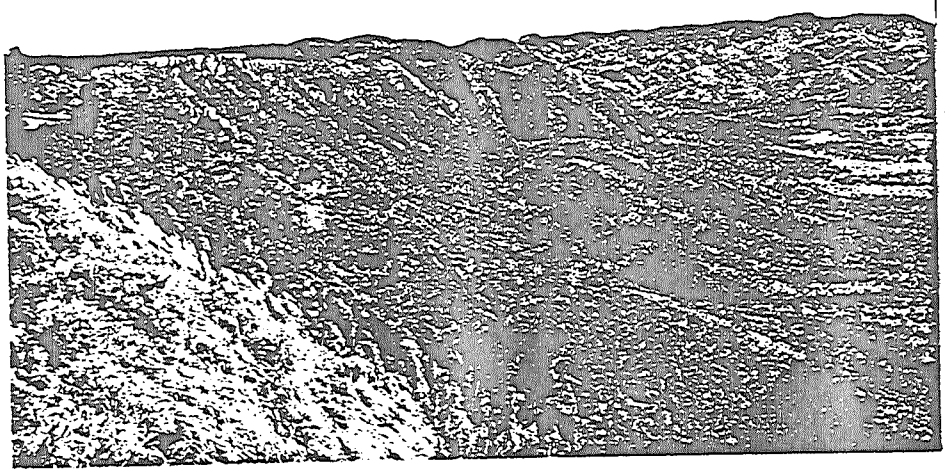


Photo 1. South from Forest Road 540. Upper McKittrick RNA is on left in the mid-distance. Upper Dog Canyon on right below is well outside the RNA.

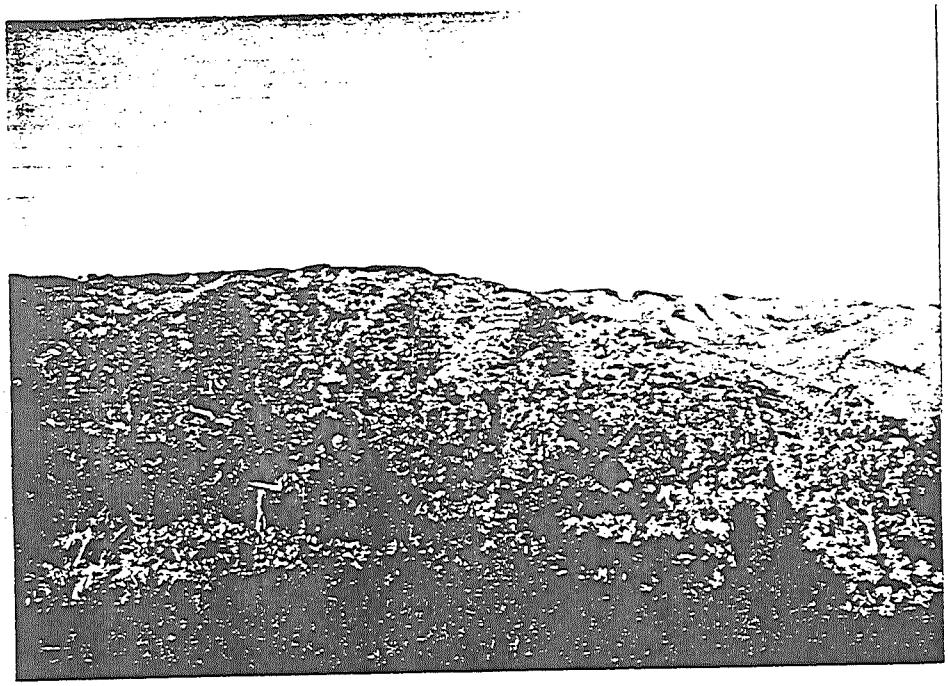


Photo 2. South-southwest toward RNA in mid-distance from forest road approximately 0.2 miles (0.3 km) from northeast boundary of RNA.

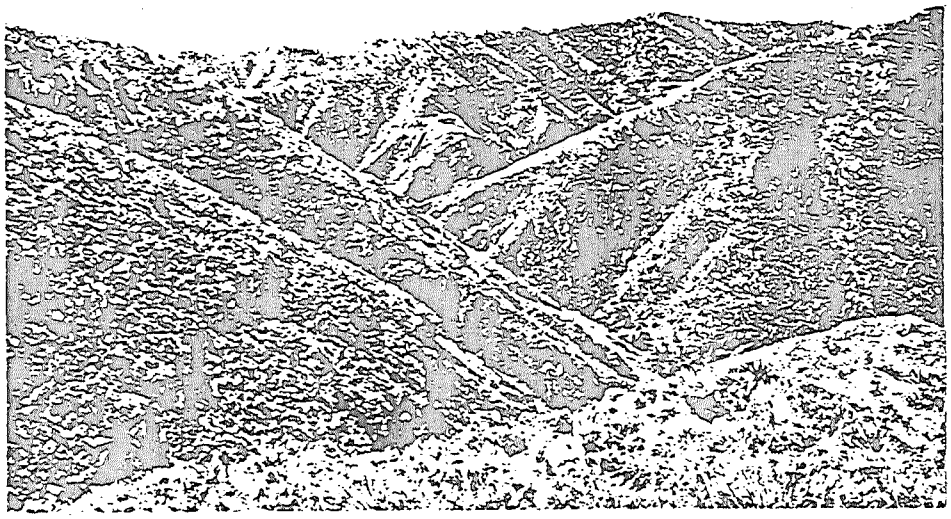


Photo 3. Southeast toward north McKittrick Canyon. All but distant slope is within RNA.

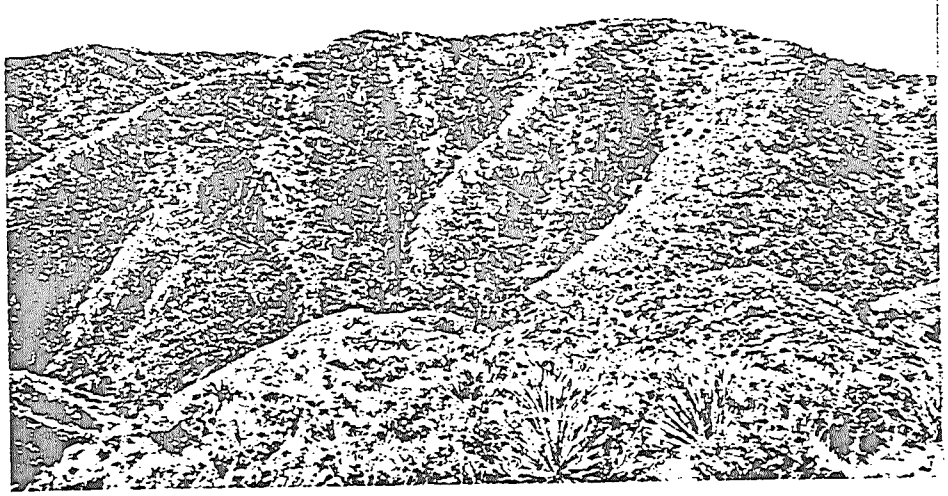


Photo 4. North-facing slope of north McKittrick Canyon exhibits patches of ponderosa pine on more mesic sites within the mountain-mahogany-wavyleaf oak shrub community. Photo is panorama continuation to the west of Photo 3.

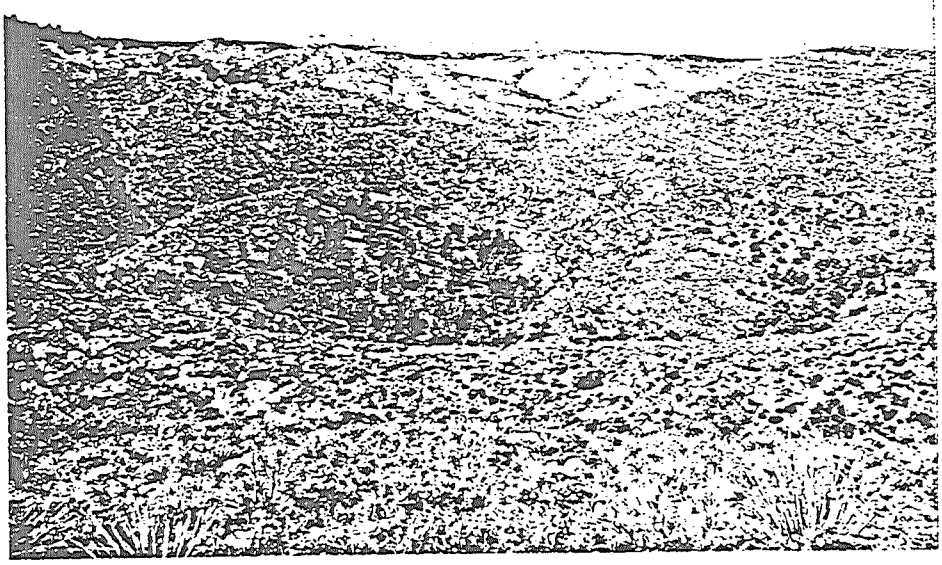


Photo 5. Southwest across north McKittrick Canyon with ponderosa pine on otherwise open shrub community on limestone strata (westward panoramic continuation of Photo 3 and 4).

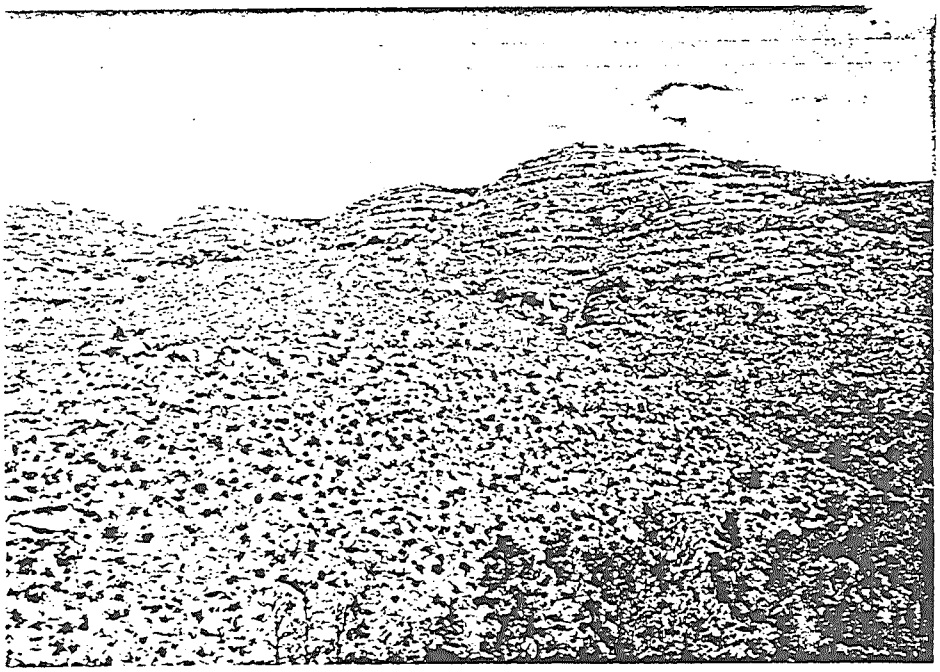


Photo 6. South-facing slopes exhibit mountain-mahogany-wavyleaf_oak communities on highly stratified limestone terrain.

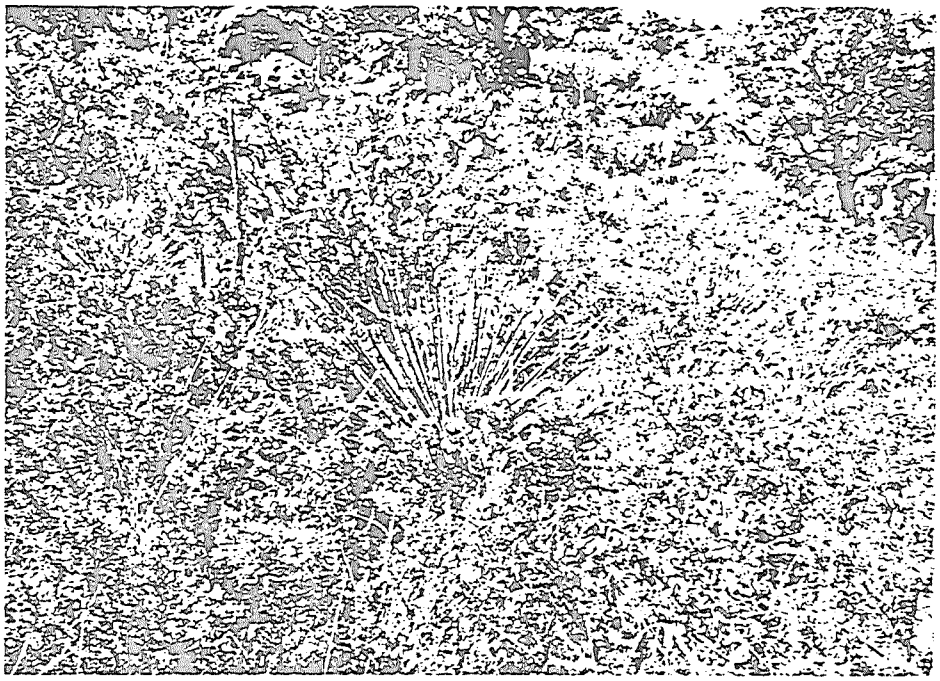


Photo 7. Mountain-mahogany shrub type includes Cercocarpus montanus, Quercus undulata and Dasylirion leiophyllum.

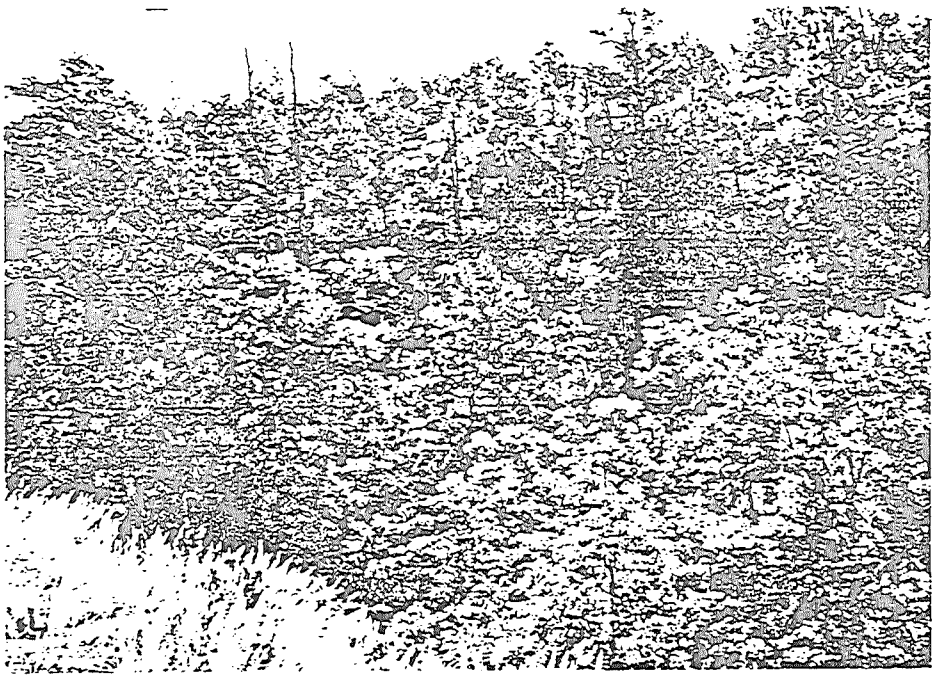


Photo 8. The Upper McKittrick Canyon mainstem and most of the side canyons support a riparian woodland type exhibiting great plant diversity including Texas madrone (Arbutus texana) seen in the foreground here.

Photo 9. Riparian woodland forest in upper drainage of north McKittrick Canyon exhibits Acer grandidentatum, Quercus muhlenbergia, Juniperus scopulorum and Pinus ponderosa.

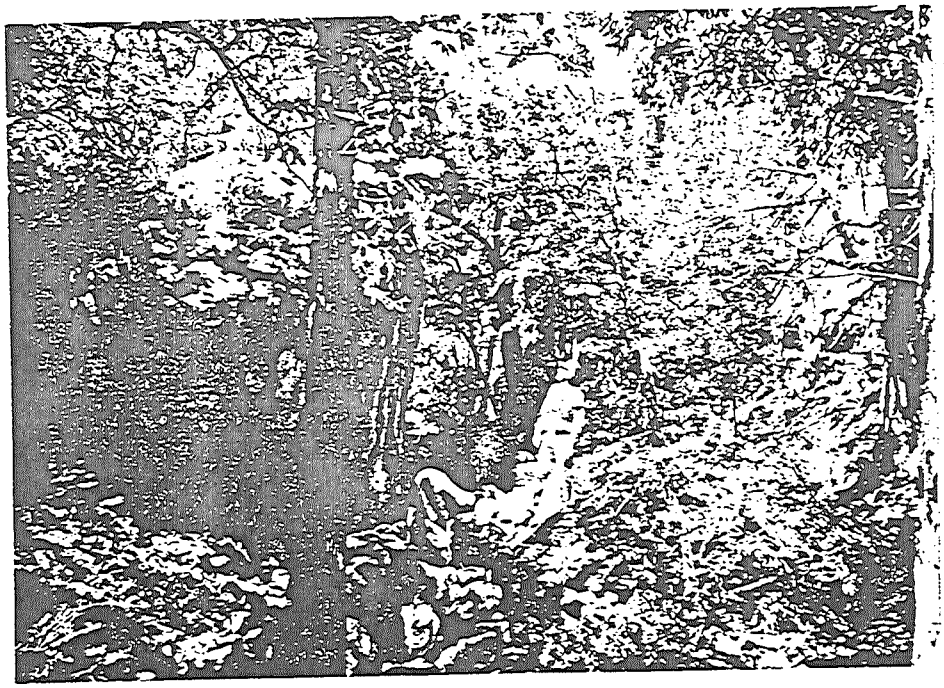


Photo 10. Main north McKittrick drainage bottom with Acer grandidentatum, Pseudotsuga menziesii, Quercus muhlenbergia and Juniperus scopulorum. Surface water is nearly perennial here.

USDA-FOREST SERVICE

PHOTOGRAPHIC RECORD

(See FSM 1643.52)

PHOTOGRAPHER: William W. Dunmire

DATE SUBMITTED: 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 TEMP. (1)	PERMANENT (To be filled in by the WO) (2)	SELECTED FOR W.O. PHOTO LIBRARY (3)	DATE OF EXPOSURE (4)	LOCATION (State, Forest, District and County) (5)	CONCISE DESCRIPTION OF VIEW (6)	NEGATIVE (Show size and BW for black and white or C for color) (7)
				ALL: New Mexico Lincoln NF Guadalupe Dist. Eddy Co.		ALL: 24x36mm color slides
1.			9/19/86		South toward Upper McKittrick RNA in left, mid-distance from Forest Road 540. Upper Dog Canyon on right; Guadalupe Mountains, Texas, in distance.	
2.			9/19/86		South-southwest toward RNA in mid-distance from forest road approximately 0.2 miles (0.3 km) from northeast boundary of Upper McKittrick RNA.	
3.			9/19/86		Southeast toward north McKittrick Canyon from south-facing slopes at north end of Upper McKittrick RNA.	
4.			9/19/86		South across north McKittrick Canyon to ridge dividing north and south branches of the canyon within Upper McKittrick RNA.	
5.			9/19/86		Southwest across north McKittrick Canyon from northeast side of Upper McKittrick RNA. (Photos 3-5 are east to west pans across the canyon.)	
6.			9/19/86		South-facing slopes above north McKittrick Canyon; northeast boundary of Upper McKittrick RNA in distance. North McKittrick riparian in right foreground.	
7.			9/19/86		Mountain-mahogany-wavyleaf oak community as typically found throughout Upper McKittrick RNA.	

USDA-FOREST SERVICE

PHOTOGRAPHIC RECORD

(See FSM 1643.52)

PHOTOGRAPHER: William W. Dunmire

DATE SUBMITTED: 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 Guadalupe Dist. Eddy Co.		ALL: 24x36mm color slides
8.			9/19/86		Side canyon at upper drainage of north McKittrick Canyon near northeast boundary of Upper McKittrick RNA.	
9.			9/19/86		Riparian woodland type in upper north McKittrick Canyon drainage near northeast boundary of Upper McKittrick RNA.	
0.			9/19/86		Upper McKittrick Canyon mainstem, central portion of Upper McKittrick RNA (District Ranger Larry Sansom).	

Ready for 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 Upper McKittrick Research Natural Area. The Upper McKittrick Research Natural Area shall be comprised of the ~~following~~ lands ~~Beginning at a point on the Texas-New Mexico State line, said point being the closing corner of the meridional centerline of section 32, T 26S., R 21E., NMPM;~~ described in the section of the Establishment Record entitled "Location."

THENCE, north along the meridional centerlines of section 32 and 29 a distance of 7275 feet to the 1/4 section corner of sections 29 and 32,
THENCE, N 38 00'E, a distance of 1000 feet more or less to the highest point on a ridge, said point being shown 7139 on FS Quadrangle 473 SE;
THENCE, N 14 00'E, a distance of 1400 feet more or less to the highest point of a hill,;
THENCE, east, a distance of 1800 feet more or less to a point on the section line between section 20 and 21;
THENCE, south along the section line a distance of 500 feet more or less to its intersection with the 7200 feet contour line;
THENCE, along the 7200 feet contour line southeasterly and northeasterly to a point at the head of a canyon, said point lying approximately 500 feet north of the 1/4 section corner of sections 21 and 28;
THENCE, southerly along the bottom of said canyon 400 feet more or less to the junction with McKittrick Canyon;
THENCE, following the bottom of McKittrick Canyon southwesterly to its junction with the Texas-NM State line;
THENCE, westerly along the State line a distance of 650 feet more or less to the Point of Beginning.

1) 2 spaces
The Regional Forester, Sotero Muniz, recommended the establishment of the Upper McKittrick 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 spaces
2) The Upper McKittrick Research Natural Area will be managed in compliance with all relevant laws, regulations, and manual direction regarding Research Natural Areas. The Upper McKittrick Research Natural Area will be administered in accordance with the management direction identified in the Establishment Record.

Space
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 Upper McKittrick 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

ESTABLISHMENT REPORT

UPPER MCKITTRICK RESEARCH NATURAL AREA

USDA FOREST SERVICE
SOUTHWESTERN REGION
LINCOLN NATIONAL FOREST
GUALDALUPE RANGER DISTRICT
EDDY 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_____
Larry Sansom, District Ranger
Guadalupe 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

UPPER MCKITTRICK RESEARCH NATURAL AREA

within

Lincoln National Forest

Eddy County, New Mexico

INTRODUCTION

The Upper McKittrick Research Natural Area (RNA) comprises approximately 827 acres (334.7 hectares) in the Guadalupe Mountains at the southern border of New Mexico, adjacent to Texas. The proposed RNA is located in the Lincoln National Forest, in Eddy County, and is National Forest land reserved from the public domain.

Many areas in the Forest Service Southwestern Region are covered by a mountain mahogany vegetation type, but most have been heavily grazed in the past and are currently used for this purpose. However, this area is far enough from water that it does not receive livestock use. It is, in addition, an extensive stand of mountain mahogany and associated chapparal shrubs, as yet unrepresented in the Southwestern Region RNA system. Upper McKittrick was reviewed by the RNA regional committee in spring, 1982, and was determined to be the most suitable representation of this ecosystem available.

LAND MANAGEMENT PLANNING

The need for representation of shrubland biotic communities was identified in the Southwestern Regional Guide (August 1983). The Lincoln National Forest Plan (USFS 1986a) recommends that approximately 827 acres (334.7 hectares) of the Upper McKittrick drainage in Management Area 3A 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

Upper McKittrick Research Natural Area has been identified as an outstanding example of a mountain mahogany community. This is an important chapparal ecosystem in the Southwest.

In addition to providing a good representation of a mountain mahogany community, in good condition and with a minimal livestock use history, Upper McKittrick Canyon RNA includes smaller ponderosa pine (Pinus ponderosa) and pinyon-juniper (Pinus edulis-Juniperus sp.) woodland communities, and riparian woodland. The high floral abundance and diversity, together with geographic position and considerable variability in topographic relief and aspect, provide a rich array of factors for study of the impact of the Chihuahuan Desert influence on floral and faunal composition.

PRINCIPAL DISTINGUISHING FEATURES

Upper McKittrick is surrounded by steep, shrub covered limestone cliffs. Most of the area is dominated by mountain mahogany together with wavyleaf oak (Quercus undulata) and other associated chapparal shrubs, grasses and a variety of forbs. Pinyon-juniper woodland is found above the RNA to the northeast, and pockets of ponderosa pine on north-facing slopes lining the canyon. Vegetation along the narrow canyon bottoms includes large trees and abundant and varied herbs and grasses.

LOCATION

Upper McKittrick is on the Texas-New Mexico border about 40 miles (64.3 km) southwest of Carlsbad, New Mexico (Map 1). It adjoins Guadalupe Mountains National Park, to the south in Texas. The RNA can be found on the El Paso Gap quadrangle (USGS 7.5' map), Township 26S, Range 21E, Sections 20, 21, 28, 29, 32 and 33, latitude 32° 1' N, longitude 104° 49' W The boundary is described as follows:

Beginning at a point on the Texas-New Mexico State line, said point being the closing corner of the meridional centerline of section 32, T 26S., R 21E., NMPM;
THENCE, north along the meridional centerlines of section 32 and 29 a distance of 7275 feet to the 1/4 section corner of sections 29 and 32,
THENCE, N 38 00'E, a distance of 1000 feet more or less to the highest point on a ridge, said point being shown 7139 on FS Quadrangle 473 SE;
THENCE, N 14 00'E, a distance of 1400 feet more or less to the highest point of a hill,;
THENCE, east, a distance of 1800 feet more or less to a point on the section line between section 20 and 21;
THENCE, south along the section line a distance of 500 feet more or less to its intersection with the 7200 feet contour line;
THENCE, along the 7200 feet contour line southeasterly and northeasterly to a point at the head of a canyon, said point lying approximately 500 feet north of the 1/4 section corner of sections 21 and 28;
THENCE, southerly along the bottom of said canyon 400 feet more or less to the junction with McKittrick Canyon;
THENCE, following the bottom of McKittrick Canyon southwesterly to its junction with the Texas-NM State line;
THENCE, westerly along the State line a distance of 650 feet more or less to the Point of Beginning.

Access to the RNA requires a four-wheel drive vehicle and a rugged hike to reach the interior of the RNA. From U.S. Highway 285, take NM Highway 137 heading southwest to Sitting Bulls Falls, and Little Dog Canyon (Maps 1 and 2). This junction is 12 miles (19.3 km) north of Carlsbad and 24 miles (38.6 km) south of Artesia. Proceed 32.5 miles (52.3 km) on Highway 137 to where Forest Road 540 (the "Guadalupe Rim Road") turns off on the left (east). Follow this gravel road 12.4 miles (20.0 km) to a "Y", and take the right fork which is a primitive road. Proceed 0.3 miles (0.5 km) further and turn right at the next fork. Continue 0.2 miles (0.3 km), where you will leave your vehicle. At this point you are a short distance from the north boundary

of the RNA. From here there is a nearly 1000 foot (304.8 m) descent down the scrub-covered limestone slopes into Upper North McKittrick Canyon. Virtually all of the RNA is negotiable on foot, but care must be taken in picking a route through this rugged limestone terrain.

AREA BY COVER TYPES

The distribution of cover types was determined from a field survey conducted in the summer of 1986 and from interpretation of 1976 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 Upper McKittrick Research Natural Area.

Type	Society of American Foresters Cover Type[1]	Surface Area Küchler PNV Type[2]	Acres	Hectares
Ponderosa Pine	SAF 237	K-17 Pine - Douglas-fir Forest	88	35.6
Pinyon - Juniper	SAF 239	~~K-27~~ K-21 ~~Oak~~ Juniper - Pinyon Woodland	29	11.7
Western Live Oak	SAF 241	K-27 Juniper Oak Woodland	664	268.7
Riparian Woodland	[none]	[none]	46	18.6
		TOTAL:	827	334.6

How will these corrections affect maps?

[1]Eyre 1980.
[2]Küchler 1964.

center

PHYSICAL AND CLIMATIC CONDITIONS

The proposed RNA is located on a

ridge between North McKittrick and Upper Dog Canyons, about one mile (1.6 km) north of the Texas border. Elevations range from 6600 feet (2011.7 m) in the bottom of North McKittrick Canyon, to 7400 feet (2255.5 m) at the ridge summit, to the southwest. From the RNA, there is a steep drop-off, down scrub covered limestone cliffs, to Upper Dog Canyon to the west, and an equally steep ascent to the southeast.

Climate in this part of far southern New Mexico varies considerably over short distances. Low elevation flatlands around Carlsbad and much of Eddy County are characterized as arid Chihuahuan Desert, with high temperatures, extended frostfree season and very low moisture levels, while the Guadalupe Mountain range enjoys subhumid conditions and intervening areas are semi-arid. The nearest long range weather station, at Carlsbad about 40 miles (64.3 km) northeast, records weather conditions very different from those at Upper McKittrick. The following data were interpreted for the RNA from the Terrestrial Ecosystems Handbook maintained by the USFS Southwestern Regional Office. Average annual rainfall for Upper McKittrick is 16 inches (406 mm); much of this falls during summer months as local orographic and convectional storms. Average annual snowfall is 31 inches (78.7 cm). Perennial or semi- perennial water flow in Upper McKittrick Creek is a critical component in presence and maintenance of the distinctive plant communities in the RNA. Mean annual temperature is 48° F (8.9° C), with a July average of 64° F (17.8° C) and a January average of 31° F (-0.6° C). The frost free period lasts an average of 150 days.

DESCRIPTION OF VALUES

Flora

At the time of preparation of the Establishment Record, no publication adequately described the habitat types occurring on Upper McKittrick Canyon RNA. The following description is based therefore on SAF forest types.

Virtually all the RNA is located on steep limestone terraced substrate, and much of it can be classed vegetatively as scarp woodland or scarp shrubland. Most of the area is dominated by a mountain mahogany (Cercocarpus montanus) shrub cover on slopes of all aspects. Wavyleaf oak (Quercus undulata) is codominant, becoming relatively more frequent on the north-facing slopes. Other common shrubs include beargrass (Nolina microcarpa), yellowleaf silktassel (Garrya flavescens), sotol (Dasylirion leiophyllum), New Mexico agave (Agave neomexicana), and desert ceanothus (Ceanothus greggii). Aristida sp., Eragrostis intermedia, and Bouteloua curtipendula are the most common grasses. Forbs are well represented; among the most common are Thelesperma longipes, Hedyotis nigricans, Sisyrinchium occidentale, and Polygala alba. Widely scattered pinyon (Pinus edulis) grows on most of these slopes; where the slopes become north-facing, ponderosa pine (Pinus ponderosa) and alligator juniper (Juniperus deppeana) are occasionally found.

A pinyon-juniper patch occurs on a flat at the northwest corner of the RNA, the only site where blue grama (Bouteloua gracilis) and wolftail (Lycurus phleoides) grasses were noted. Above the RNA on the northeast boundary is a pinyon-juniper woodland. Patches of this type extend down into the RNA

* montanus

at the upper end of several drainages. A ponderosa pine type occurs on several north-facing slopes above the main McKittrick drainage. Quercus undulata replaces Cercocarpus as the dominant shrub here. Ponderosa drops out wherever the slopes become east or west- facing.

The Upper McKittrick Canyon mainstem and most of the side canyons support a riparian woodland type exhibiting great plant diversity with a strong Chihuahuan influence. Bigtooth maple (Acer grandidentatum) tends to be the dominant tree, with codominants of chinkapin oak (Quercus muhlenbergia), serviceberry (Amelanchier goldmanii), Texas madrone (Arbutus texana), or southwestern white pine (Pinus strobiformis). Other occasional to common trees include Rocky Mountain juniper (Juniperus scopulorum), some of which attain huge size in the canyon bottoms; Douglas fir (Pseudotsuga menziesii); wolf hop hornbeam (Ostrya knowltonii); and pinyon. Common shrubs in the bottoms include wavyleaf and Gambel oaks (Quercus undulata and Q. gambelii), mountain mahogany, desert ceanothus, white honeysuckle (Lonicera albiflora), apache-plume (Fallugia paradoxa), canyon grape (Vitis arizonica), selloa (Selloa glutinosa), and squawberry (Rhus trilobata).

1. Mexican silene

Herbaceous vegetation is luxuriant in these canyons with a great diversity of forbs. Common species include Silene lacineata, 2. Viguiera dentata, and Hedyotis nigricans. Grasses are equally well-represented, among them Muhlenbergia pauciflora, M. emersleyi, Eragrostis intermedia, Sorghastrum nutans, and Stipa sp.

2.

3. Bluets

There are no endangered, threatened, or sensitive plant species known on the proposed RNA.

The following plant list was compiled during the field survey on September 19, 1986. Time and lateness of the season permitted only a cursory survey.

Abbreviated Plant List for Upper McKittrick RNA[1]

Latin Name	Common Name[2]
GRASSES AND GRASS-LIKE PLANTS:	
Andropogon gerardii	big bluestem
Andropogon scoparius	Little bluestem
Aristida sp.	Three-awn
Blepharoneuron tricholepis	Pine dropseed
Bouteloua curtipendula	Sideoats grama
Bouteloua gracilis	Blue grama
Eragrostis intermedia	Plains lovegrass
Lycurus phleoides	Wolftail
Muhlenbergia dubia	Pine muhly
Muhlenbergia emersleyi	Bullgrass

Muhlenbergia pauciflora	New Mexico muhly
Piptochaetium fimbriatum	Pinyon ricegrass
Sitanion hystrix	Bottlebrush squirreltail
Sorghastrum nutans	Yellow Indiangrass
Stipa sp.	Needlegrass

FORBS:

Allium cernuum	Nodding onion
Castilleja sp.	Paintbrush
Euphorbia heterophylla	Painted lady
Hedyotis nigricans	Bluets
Ipomopsis aggregata	Skyrocket
Liatris punctata	Gayfeather
Penstemon cardinalis	Beardtongue
Polygala alba	White milkwort
Salvia lycioides	Sage
Sedum sp.	Stonecrop
Silene lacineata	Mexican silene
Sisyrinchium occidentale	Blue-eyed grass
Thelesperma longipes	Coatex greenthread
Verbena sp.	Verbena

HALF-SHRUBS, SHRUBS, AND TREES:

Acer grandidentatum	Bigtooth maple
Agave lechuguilla	Lechuguilla
Agave neomexicana	New Mexico agave
Amelanchier goldmanii	Serviceberry
Arbutus texana	Texas madrone
Brickellia sp.	Flythicket
Ceanothus greggii	Desert ceanothus
Cercocarpus montanus	Mountain mahogany
Dalea frutescens	Black indigobush
Dasylirion leiophyllum	Sotol
Echinocereus sp.	Hedgehog cactus
Fallugia paradoxa	Apache-plume
Fendlera rupicola	Cliff fendlerbush
Garrya flavescens	Yellowleaf silktassel
Juniperus deppeana	Alligator-bark juniper
Juniperus scopulorum	Rocky Mountain juniper
Lonicera albiflora	White honeysuckle
Nolina microcarpa	Beargrass
Opuntia engelmannii	Engelmann pricklypear
Opuntia imbricata	Cholla

Ostrya knowltonii	Wolf hophornbean
Pinus edulis	Pinyon pine
Pinus ponderosa	Ponderosa pine
Pinus strobiformis	Southwestern white pine
Pseudotsuga menziesii	Douglas-fir
Quercus gambelii	Gambel oak
Quercus muhlenbergia	Chinkapin oak
Quercus undulata	Wavyleaf oak
Rhus trilobata	Squawberry
Sapindus drummondii	Western soapberry
Selloa glutinosa	Selloa
Symphoricarpus longiflorus	Longflower snowberry
Viguiera dentata	Goldeneye
Vitis arizonica	Canyon grape
Yucca baccata	Datil yucca

[1]Observed by Bill Dunmire (The Nature Conservancy) and Larry Sansom (Guadalupe District Ranger, Lincoln National Forest) on September 19, 1986.
[2]Common names used according to USDA, Forest Service 1974, or Martin & Hutchins 1981.

space

Fauna

Upper McKittrick Canyon is potential habitat for several rare, endangered, or sensitive animal species. There have been no biological surveys covering this specific area; however, the following animal species are known to occur in similar habitats in the general vicinity of Upper McKittrick Canyon: peregrine falcon, spotted owl, gray vireo, varied bunting, mottled rock rattlesnake, trans-pecos rat snake, plain-bellied water snake, western ribbon snake, and eastern barking frog.

Most of the area is too steep and rocky for prime deer habitat. The only other ungulate inhabiting the Guadalupe Mountains at this time (1986) is the introduced Barbary sheep, but they are very infrequently seen. Upper McKittrick Creek has a perennial or semi-perennial flow within the RNA; therefore a variety of riparian animal species can be expected 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 Eddy County, New Mexico:

1. Pinyon - juniper series; Juniperus deppeana association

2. Madrean evergreen woodland biome

3. Interior chaparral biome; Cercocarpus association

These habitat types currently in the data base most closely correspond to those occurring in the proposed RNA.

Potential Animal List for Upper McKittrick Canyon RNA

AMPHIBIANS:

Frog, barking toad	Hylactophryne augusti
Spadefoot, western	Scaphiopus hammondi
Toad, red-spotted	Bufo punctatus

BIRDS:

Bunting, lazuli	Passerina amoena
Bushtit	Psaltriparus minimus
Dove, mourning	Zenaida macroura
Falcon, peregrine	Falco peregrinus
Finch, house	Carpodacus mexicanus
Flicker, northern	Colaptes auratus
Gnatcatcher, blue-gray	Polioptila caerulea
Hawk, Cooper's	Accipiter cooperii
Hummingbird, broad-tailed	Selasphorus platycercus
Hummingbird, rufous	Selasphorus rufus
Jay, scrub	Aphelocoma coerulescens
Jay, Steller's	Cyanocitta stelleri
Kestrel, American	Falco sparverius
Mockingbird, northern	Mimus polyglottos
Owl, great horned	Bubo virginianus
Owl, long-eared	Asio otus
Owl, spotted	Strix occidentalis
Pigeon, band-tailed	Columba fasciata
Poorwill, common	Phalaenoptilus nuttallii
Quail, scaled	Callipepla squamata
Raven, common	Corvus corax
Sparrow, black-chinned	Spizella atrogularis
Sparrow, black-throated	Amphispiza bilineata
Sparrow, rufous-crowned	Aimophila ruficeps
Starling, European	Sturnus vulgaris
Swallow, barn	Hirundo rustica
Swallow, cliff	Hirundo pyrrhonota
Thrasher, crissal	Toxostoma dorsale
Titmouse,plain	Parus inornatus
Towhee, brown	Pipilo fuscus
Towhee, green-tailed	Pipilo chlorurus
Towhee, rufous-sided	Pipilo erythrophthalmus
Vireo, solitary	Vireo solitarius
Warbler, black-throated gray	Dendroica nigrescens

Warbler, orange-crowned	Vermivora celata
Warbler, Virginia's	Vermivora virginiae
Waxwing, cedar	Bombycilla cedrorum
Wren, canyon	Catherpes mexicanus
Wren, rock	Salpinctes obsoletus

MAMMALS:

Badger	Taxidea taxus
Bat, Brazilian free-tailed	Tadarida brasiliensis
Bear, black	Ursus americanus
Cottontail, desert	Sylvilagus audubonii
Coyote	Canis latrans
Deer, mule	Odocoileus hemionus
Elk	Cervus elaphus
Fox, kit	Vulpes macrotis
Jackrabbit, black-tailed	Lepus californicus
Lion, mountain	Felis concolor
Mouse, western harvest	Reithrodontomys megalotis
Myotis, fringed	Myotis thysanodes
Myotis, small-footed	Myotis leibii
Raccoon	Procyon lotor
Ringtail	Bassariscus astutus
Sheep, Barbary	Ammotragus lervia
Skunk, hog-nosed	Conepatus mesoleucus
Skunk, striped	Mephitis mephitis
Squirrel, rock	Spermophilus variegatus
Woodrat, white-throated	Neotoma albigula

REPTILES:

Lizard, collared	Crotaphytus collaris
Lizard, crevice spiny	Sceloporus poinsetti
Lizard, eastern fence	Sceloporus undulatus
Lizard, greater earless	Cophosaurus texanus
Lizard, lesser earless	Holbrookia maculata
Lizard, side-blotched	Uta stansburiana
Rattlesnake, blacktail	Crotalus molossus
Rattlesnake, western	Crotalus viridis
Skink, great plains	Eumeces obsoletus
Skink, many-lined	Eumeces multivirgatus
Snake, blackneck garter	Thamnophis cyrtopsis
Snake, gopher	Pituophis melanoleucus
Snake, Mexican blackhead	Tantilla atriceps
Snake, mountain patchnose	Salvadora grahamiae

Snake, ringneck	Diadophis punctatus
Whiptail, western	Cnemidophorus tigris

Geology

The steep limestone cliffs in the vicinity of Upper McKittrick are predominantly carbonate rocks of the Artesia Group (Hayes 1964). The Seven Rivers Formation is characterized by yellowish-gray dolomite with minor very pale orange quartzose siltstone cemented with dolomite. The Queen Formation consists of very pale orange, very finely textured dolomite and calcareous dolomite, together with very pale orange, very fine-grained sandstone and siltstone. Also present are elements of the Grayburg Formation, with very pale orange, very finely textured dolomite and calcareous dolomite, together with pale orange, very fine-grained calcareous or dolomitic quartz sandstone.

Soils

Upper McKittrick is found on Calciustolls-Rock Land (NMSU 1978:125-127), an association consisting of soils and land types on mountain footslopes and limestone hills in the south central part of the state, mostly at elevations from 5000 to 7000 feet (1524 to 2134 m). The soils, dominantly shallow, stony and rocky, are underlain by limestone bedrock and less commonly by other sedimentary rocks. Deeper soils occur in flood plains contiguous to drainageways. The Lithic Calciustolls commonly occur on rolling uplands. These soils have a surface layer of dark grayish-brown to brown calcareous stony loam., grading to the underlying limestone bedrock at 6 to 20 inches (15.2 to 50.8 cm). Rock Land typically occurs on steep canyon walls and escarpments, and comprises about 30 per cent of the association. It consists dominantly of a complex of shallow soils and outcrops of limestone and occasionally other sedimentary rocks. The outcrops occur as vertical or near vertical exposures and ledges. Also present in the RNA are Lithic Haplustolls, forming residually in materials of sandstone and shale origin. These soils occur on sloping and rolling upland ridges and hills, and have a thin brown noncalcareous cobbly loam surface layer over a brown very cobbly sandy clay loam subsoil.

Lands

All lands within the proposed RNA were included within the original Guadalupe Forest created on April 19, 1907. There are no known outstanding rights or rights-of-way within the proposed boundaries.

Cultural

No cultural resource surveys have been conducted within this RNA. Surveys that have been conducted nearby indicate that small lithic scatters, possibly associated with mescal pits or ring middens, may be present. These sites are found commonly throughout the Guadalupes. Rock shelters and pictograph panels may also occur, primarily along the canyon sides. No permanent or year-round habitation sites have been found in this area. The Guadalupe Mountains appear to have been used primarily for hunting and gathering activities. Upon establishment as an RNA, the area will be

withdrawn from any archeological research that would in any way modify the existing biological resources.

IMPACTS AND POSSIBLE CONFLICTS

Mineral Resources

The proposed RNA occurs within the Guadalupe Escarpment Wilderness Study Area (WSA). The WSA has been classified by the USGS as having 'Inferred Identified Economic Oil and Gas Potential'. There have been no oil and gas lease applications for the proposed RNA, but 16 applications are pending for most of the remaining land in the WSA. If the Upper McKittrick area is designated as an RNA, a recommendation will be made to withdraw the area from mineral entry.

Grazing

In the early 1900's, goats grazed the area. The area is currently within the Soldier Springs Allotment, but grazing rarely occurs here now, due to the lack of water and difficult access for sheep and cows.

Timber

Forest species, including ponderosa pine, pinyon pine, and juniper, are sparse throughout the area, and none of the proposed RNA is included in the timber base. As trees are sparse and the area is difficult to get to, the potential for firewood harvest is virtually nil.

Watershed Values

This area is drained primarily by the North McKittrick Canyon south into the Pecos River drainage in Texas. This canyon is part of the South Guadalupe fifth order watershed. The water ceases to flow on the surface a few miles below the RNA.

Recreation Values

The area contains a very little used pedestrian trail, which ascends the canyon. There is no vehicular use in the area, and no conflicts between recreation use and potential research is anticipated.

Wildlife and Plant Values

The area contains potential habitat for the endangered plant species, Sneed's pincushion cactus (Coryphantha sneedii var. sneedii). No populations have been located yet. The McKittrick pennyroyal (Hedeoma apiculatum), a federally threatened species, has been found near and perhaps within the area. Exact boundary identification of the RNA is needed to verify where the population exists. There is also potential habitat here for several other state sensitive plants which are known to occur within a few miles of the RNA.

Wilderness, Wild and Scenic River, National Recreation Area Values

The area is contained within the Guadalupe Escarpment Wilderness Study Area.

A recommendation will be made to Congress to not designate this area as wilderness.

Transportation Plans

The north edge of the RNA is within about 2 miles (3.2 km) of a Forest Road. A spur route and trail allow four-wheel drive vehicles to drive within 0.5 mile (0.8 km) of the area. The trail continues to the area, but becomes impassable to vehicles. There is no unauthorized vehicular travel in the area, and there are no transportation plans that would adversely affect the proposed RNA.

Utility Corridor Plans

No existing or planned utility corridors occur in the vicinity of the RNA.

Other

A small fenced exclosure was installed in the northwest corner of the area by the Forest Service in the 1950's for a vegetation study. This exclosure has historical value and does not interfere with RNA obligations.

MANAGEMENT ~~PLAN~~ Prescription

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, and recreation signs or marking are prohibited within the area. 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 Upper McKittrick RNA will be the responsibility of the Lincoln National Forest. The District Ranger, Guadalupe District, Carlsbad, 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 Upper McKittrick 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, Guadalupe District, Carlsbad, NM

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ESTABLISHMENT REPORT

UPPER MCKITTRICK RESEARCH NATURAL AREA

USDA FOREST SERVICE
SOUTHWESTERN REGION
LINCOLN NATIONAL FOREST
GUADALUPE RANGER DISTRICT
EDDY 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_____
Larry Sansom, District Ranger
Guadalupe 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

UPPER MCKITTRICK RESEARCH NATURAL AREA

within

Lincoln National Forest

Eddy County, New Mexico

INTRODUCTION

The Upper McKittrick Research Natural Area (RNA) comprises approximately 827 acres (334.7 hectares) in the Guadalupe Mountains at the southern border of New Mexico, adjacent to Texas. The proposed RNA is located in the Lincoln National Forest, in Eddy County, and is National Forest land reserved from the public domain.

Many areas in the Forest Service Southwestern Region are covered by a mountain mahogany vegetation type, but most have been heavily grazed in the past and are currently used for this purpose. However, this area is far enough from water that it does not receive livestock use. It is, in addition, an extensive stand of mountain mahogany and associated chaparral shrubs, as yet unrepresented in the Southwestern Region RNA system. Upper McKittrick was reviewed by the RNA regional committee in spring, 1982, and was determined to be the most suitable representation of this ecosystem available.

LAND MANAGEMENT PLANNING

The need for representation of shrubland biotic communities was identified in the Southwestern Regional Guide (August 1983). The Lincoln National Forest Plan (USFS 1986a) recommends that approximately 827 acres (334.7 hectares) of the Upper McKittrick drainage in Management Area 3A 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

Upper McKittrick Research Natural Area has been identified as an outstanding example of a mountain mahogany community. This is an important chaparral ecosystem in the Southwest.

In addition to providing a good representation of a mountain mahogany community, in good condition and with a minimal livestock use history, Upper McKittrick Canyon RNA includes smaller ponderosa pine (Pinus ponderosa) and pinyon-juniper (Pinus edulis-Juniperus sp.) woodland communities, and riparian woodland. The high floral abundance and diversity, together with geographic position and considerable variability in topographic relief and aspect, provide a rich array of factors for study of the impact of the Chihuahuan Desert influence on floral and faunal composition.

PRINCIPAL DISTINGUISHING FEATURES

Upper McKittrick is surrounded by steep, shrub covered limestone cliffs. Most of the area is dominated by mountain mahogany together with wavyleaf oak (Quercus undulata) and other associated chaparral shrubs, grasses and a variety of forbs. Pinyon-juniper woodland is found above the RNA to the northeast, and pockets of ponderosa pine are found on north-facing slopes lining the canyon. Vegetation along the narrow canyon bottoms includes large trees and abundant and varied herbs and grasses.

LOCATION

Upper McKittrick is on the Texas-New Mexico border about 40 miles (64.3 km) southwest of Carlsbad, New Mexico (Map 1). It adjoins Guadalupe Mountains National Park, to the south in Texas. The RNA can be found on the El Paso Gap quadrangle (USGS 7.5' map), Township 26S, Range 21E, Sections 20, 21, 28, 29, 32 and 33, latitude 32° 1' N, longitude 104° 49' W. The boundary is described as follows:

Beginning at a point on the Texas-New Mexico State line, said point being the closing corner of the meridional centerline of section 32, T 26S., R 21E., NMPM;
THENCE, north along the meridional centerlines of section 32 and 29 a distance of 7275 feet to the 1/4 section corner of sections 29 and 32,
THENCE, N 38 00'E, a distance of 1000 feet more or less to the highest point on a ridge, said point being shown 7139 on FS Quadrangle 473 SE;
THENCE, N 14 00'E, a distance of 1400 feet more or less to the highest point of a hill,;
THENCE, east, a distance of 1800 feet more or less to a point on the section line between section 20 and 21;
THENCE, south along the section line a distance of 500 feet more or less to its intersection with the 7200 feet contour line;
THENCE, along the 7200 feet contour line southeasterly and northeasterly to a point at the head of a canyon, said point lying approximately 500 feet north of the 1/4 section corner of sections 21 and 28;
THENCE, southerly along the bottom of said canyon 400 feet more or less to the junction with McKittrick Canyon;
THENCE, following the bottom of McKittrick Canyon southwesterly to its junction with the Texas-NM State line;
THENCE, westerly along the State line a distance of 650 feet more or less to the Point of Beginning.

Access to the RNA requires a four-wheel drive vehicle and a rugged hike to reach the interior of the RNA. From U.S. Highway 285, take NM Highway 137 heading southwest to Sitting Bulls Falls, and Little Dog Canyon (Maps 1 and 2). This junction is 12 miles (19.3 km) north of Carlsbad and 24 miles (38.6 km) south of Artesia. Proceed

32.5 miles (52.3 km) on Highway 137 to where Forest Road 540 (the "Guadalupe Rim Road") turns off on the left (east). Follow this gravel road 12.4 miles (20.0 km) to a "Y", and take the right fork which is a primitive road. Proceed 0.3 miles (0.5 km) further and turn right at the next fork. Continue 0.2 miles (0.3 km), where you will leave your vehicle. At this point you are a short distance from the north boundary of the RNA. From here there is a nearly 1000 foot (304.8 m) descent down the scrub-covered limestone slopes into Upper North McKittrick Canyon (Map 3). Virtually all of the RNA is negotiable on foot, but care must be taken in picking a route through this rugged limestone terrain.

AREA BY COVER TYPES

The distribution of cover types was determined from a field survey conducted in the summer of 1986 and from interpretation of 1976 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 Upper McKittrick Research Natural Area.

Type	Society of American Foresters Cover Type[1]	Surface Area Küchler PNV Type[2]	Acres	Hectares
Ponderosa Pine	SAF 237	K-17 Pine - Douglas-fir Forest	88	35.6
Pinyon - Juniper	SAF 239	K-21 Juniper - Pinyon Woodland	29	11.7
Western Live Oak	SAF 241	K-27 Oak - Juniper Woodland	664	268.7
Riparian Woodland	[none]	[none]	46	18.6
		TOTAL:	827	334.6

[1]Eyre 1980.
[2]Küchler 1964.

PHYSICAL AND CLIMATIC CONDITIONS

The proposed RNA is located on a ridge between North McKittrick and Upper Dog Canyons, about one mile (1.6 km) north of the Texas border. Elevations range from 6600 feet (2011.7 m) in the bottom of North McKittrick Canyon, to 7400 feet (2255.5 m) at the ridge summit, to the southwest. From the RNA, there is a steep drop-off, down scrub covered limestone cliffs, to Upper Dog Canyon to the west, and an equally steep ascent to the southeast.

Climate in this part of far southern New Mexico varies considerably over short distances. Low elevation flatlands around Carlsbad and much of Eddy County are characterized as arid Chihuahuan Desert, with high temperatures, extended frostfree season and very low moisture levels, while the Guadalupe Mountain range enjoys subhumid conditions and intervening areas are semi-arid. The nearest long range weather station, at Carlsbad about 40 miles (64.3 km) northeast, records weather conditions very different from those at Upper McKittrick. The following data were interpreted for the RNA from the Terrestrial Ecosystems Handbook maintained by the USFS Southwestern Regional Office. Average annual rainfall for Upper McKittrick is 16 inches (406 mm); much of this falls during summer months as local orographic and convectional storms. Average annual snowfall is 31 inches (78.7 cm). Perennial or semi-perennial water flow in Upper McKittrick Creek is a critical component in presence and maintenance of the distinctive plant communities in the RNA. Mean annual temperature is 48° F (8.9° C), with a July average of 64° F (17.8° C) and a January average of 31° F (-0.6° C). The frost free period lasts an average of 150 days.

DESCRIPTION OF VALUES

Flora

At the time of preparation of the Establishment Record, no publication adequately described the habitat types occurring on Upper McKittrick Canyon RNA. The following description is based therefore on SAF forest types.

Virtually all the RNA is located on steep limestone terraced substrate, and much of it can be classed vegetatively as scarp woodland or scarp shrubland. Most of the area is dominated by a mountain mahogany (Cercocarpus montanus) shrub cover on slopes of all aspects. Wavyleaf oak (Quercus undulata) is codominant, becoming relatively more frequent on the north-facing slopes. Other common shrubs include beargrass (Nolina microcarpa), yellowleaf silktassel (Garrya flavescens), sotol (Dasylirion leiophyllum), New Mexico agave (Agave neomexicana), and desert ceanothus (Ceanothus greggii). Aristida sp., Eragrostis intermedia, and Bouteloua curtipendula are the most common grasses. Forbs are well represented; among the most common are Thelesperma longipes, Hedyotis nigricans, Sisyrinchium occidentale, and Polygala alba. Widely scattered pinyon (Pinus edulis) grows on most of these slopes; where the slopes become north-facing,

ponderosa pine (Pinus ponderosa) and alligator juniper (Juniperus deppeana) are occasionally found.

A pinyon-juniper patch occurs on a flat at the northwest corner of the RNA, the only site where blue grama (Bouteloua gracilis) and wolftail (Lycurus phleoides) grasses were noted. Above the RNA on the northeast boundary is a pinyon-juniper woodland. Patches of this type extend down into the RNA at the upper end of several drainages. A ponderosa pine type occurs on several north-facing slopes above the main McKittrick drainage. Quercus undulata replaces Cercocarpus montanus as the dominant shrub here. Ponderosa drops out wherever the slopes become east or west- facing.

The Upper McKittrick Canyon mainstem and most of the side canyons support a riparian woodland type exhibiting great plant diversity with a strong Chihuahuan influence. Bigtooth maple (Acer grandidentatum) tends to be the dominant tree, with codominants of chinkapin oak (Quercus muhlenbergia), serviceberry (Amelanchier goldmanii), Texas madrone (Arbutus texana), or southwestern white pine (Pinus strobiformis). Other occasional to common trees include Rocky Mountain juniper (Juniperus scopulorum), some of which attain huge size in the canyon bottoms; Douglas fir (Pseudotsuga menziesii); wolf hop hornbeam (Ostrya knowltonii); and pinyon. Common shrubs in the bottoms include wavyleaf and Gambel oaks (Quercus undulata and Q. gambelii), mountain mahogany, desert ceanothus, white honeysuckle (Lonicera albiflora), apache-plume (Fallugia paradoxa), canyon grape (Vitis arizonica), selloa (Selloa glutinosa), and squawberry (Rhus trilobata).

Herbaceous vegetation is luxuriant in these canyons with a great diversity of forbs. Common species include Silene lacineata, Viguiera dentata, and Hedyotis nigricans. Grasses are equally well-represented, among them Muhlenbergia pauciflora, M. emersleyi, Eragrostis intermedia, Sorghastrum nutans, and Stipa sp.

There are no endangered, threatened, or sensitive plant species known on the proposed RNA.

The following plant list was compiled during the field survey on September 19, 1986. Time and lateness of the season permitted only a cursory survey.

Abbreviated Plant List for Upper McKittrick RNA[1]

Latin Name	Common Name[2]
GRASSES AND GRASS-LIKE PLANTS:	
Andropogon gerardii	big bluestem
Andropogon scoparius	Little bluestem
Aristida sp.	Three-awn
Blepharoneuron tricholepis	Pine dropseed
Bouteloua curtipendula	Sideoats grama
Bouteloua gracilis	Blue grama
Eragrostis intermedia	Plains lovegrass
Lycurus phleoides	Wolftail
Muhlenbergia dubia	Pine muhly
Muhlenbergia emersleyi	Bullgrass
Muhlenbergia pauciflora	New Mexico muhly
Piptochaetium fimbriatum	Pinyon ricegrass
Sitanion hystrix	Bottlebrush squirreltail
Sorghastrum nutans	Yellow Indiangrass
Stipa sp.	Needlegrass
FORBS:	
Allium cernuum	Nodding onion
Castilleja sp.	Paintbrush
Euphorbia heterophylla	Painted lady
Hedyotis nigricans	Bluets
Ipomopsis aggregata	Skyrocket
Liatris punctata	Gayfeather
Penstemon cardinalis	Beardtongue
Polygala alba	White milkwort
Salvia lycioides	Sage
Sedum sp.	Stonecrop
Silene lacineata	Mexican silene
Sisyrinchium occidentale	Blue-eyed grass
Thelesperma longipes	Coatex greenthread
Verbena sp.	Verbena
HALF-SHRUBS, SHRUBS, AND TREES:	
Acer grandidentatum	Bigtooth maple
Agave lechuguilla	Lechuguilla

Agave neomexicana	New Mexico agave
Amelanchier goldmanii	Serviceberry
Arbutus texana	Texas madrone
Brickellia sp.	Flythicket
Ceanothus greggii	Desert ceanothus
Cercocarpus montanus	Mountain mahogany
Dalea frutescens	Black indigobush
Dasylirion leiophyllum	Sotol
Echinocereus sp.	Hedgehog cactus
Fallugia paradoxa	Apache-plume
Fendlera rupicola	Cliff fendlerbush
Garrya flavescens	Yellowleaf silktassel
Juniperus deppeana	Alligator-bark juniper
Juniperus scopulorum	Rocky Mountain juniper
Lonicera albiflora	White honeysuckle
Nolina microcarpa	Beargrass
Opuntia engelmannii	Engelmann pricklypear
Opuntia imbricata	Cholla
Ostrya knowltonii	Wolf hophornbean
Pinus edulis	Pinyon pine
Pinus ponderosa	Ponderosa pine
Pinus strobiformis	Southwestern white pine
Pseudotsuga menziesii	Douglas-fir
Quercus gambelii	Gambel oak
Quercus muhlenbergia	Chinkapin oak
Quercus undulata	Wavyleaf oak
Rhus trilobata	Squawberry
Sapindus drummondii	Western soapberry
Selloa glutinosa	Selloa
Symphoricarpus longiflorus	Longflower snowberry
Viguiera dentata	Goldeneye
Vitis arizonica	Canyon grape
Yucca baccata	Datil yucca

[1]Observed by Bill Dunmire (The Nature Conservancy) and Larry Sansom (Guadalupe District Ranger, Lincoln National Forest) on September 19, 1986.
[2]Common names used according to USDA, Forest Service 1974, or Martin & Hutchins 1981.

Fauna

Upper McKittrick Canyon is potential habitat for several rare, endangered, or sensitive animal species. There have been no biological surveys covering this specific area; however, the following animal species are known to occur in similar habitats in the general vicinity of Upper McKittrick Canyon: peregrine falcon, spotted owl, gray vireo, varied bunting, mottled rock rattlesnake, trans-pecos rat snake, plain- bellied water snake, western ribbon snake, and eastern barking frog.

Most of the area is too steep and rocky for prime deer habitat. The only other ungulate inhabiting the Guadalupe Mountains at this time (1986) is the introduced Barbary sheep, but they are very infrequently seen. Upper McKittrick Creek has a perennial or semi-perennial flow within the RNA; therefore a variety of riparian animal species can be expected 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 Eddy County, New Mexico:

1. Pinyon - juniper series; Juniperus deppeana association

2. Madrean evergreen woodland biome

3. Interior chaparral biome; Cercocarpus association

These habitat types currently in the data base most closely correspond to those occurring in the proposed RNA.

Potential Animal List for Upper McKittrick Canyon RNA

AMPHIBIANS:	
Frog, barking	Hylactophryne augusti
Spadefoot, western	Scaphiopus hammondi
Toad, red-spotted	Bufo punctatus
BIRDS:	
Bunting, lazuli	Passerina amoena
Bushtit	Psaltriparus minimus
Dove, mourning	Zenaida macroura
Falcon, peregrine	Falco peregrinus

Finch, house	Carpodacus mexicanus
Flicker, northern	Colaptes auratus
Gnatcatcher, blue-gray	Polioptila caerulea
Hawk, Cooper's	Accipiter cooperii
Hummingbird, broad-tailed	Selasphorus platycercus
Hummingbird, rufous	Selasphorus rufus
Jay, scrub	Aphelocoma coerulescens
Jay, Steller's	Cyanocitta stelleri
Kestrel, American	Falco sparverius
Mockingbird, northern	Mimus polyglottos
Owl, great horned	Bubo virginianus
Owl, long-eared	Asio otus
Owl, spotted	Strix occidentalis
Pigeon, band-tailed	Columba fasciata
Poorwill, common	Phalaenoptilus nuttallii
Quail, scaled	Callipepla squamata
Raven, common	Corvus corax
Sparrow, black-chinned	Spizella atrogularis
Sparrow, black-throated	Amphispiza bilineata
Sparrow, rufous-crowned	Aimophila ruficeps
Starling, European	Sturnus vulgaris
Swallow, barn	Hirundo rustica
Swallow, cliff	Hirundo pyrrhonota
Thrasher, crissal	Toxostoma dorsale
Titmouse,plain	Parus inornatus
Towhee, brown	Pipilo fuscus
Towhee, green-tailed	Pipilo chlorurus
Towhee, rufous-sided	Pipilo erythrophthalmus
Vireo, solitary	Vireo solitarius
Warbler, black-throated gray	Dendroica nigrescens
Warbler, orange-crowned	Vermivora celata
Warbler, Virginia's	Vermivora virginiae
Waxwing, cedar	Bombycilla cedrorum
Wren, canyon	Catherpes mexicanus
Wren, rock	Salpinctes obsoletus

MAMMALS:

Badger	Taxidea taxus
Bat, Brazilian free-tailed	Tadarida brasiliensis
Bear, black	Ursus americanus
Cottontail, desert	Sylvilagus audubonii
Coyote	Canis latrans

Deer, mule	Odocoileus hemionus
Elk	Cervus elaphus
Fox, kit	Vulpes macrotis
Jackrabbit, black-tailed	Lepus californicus
Lion, mountain	Felis concolor
Mouse, western harvest	Reithrodontomys megalotis
Myotis, fringed	Myotis thysanodes
Myotis, small-footed	Myotis leibii
Raccoon	Procyon lotor
Ringtail	Bassariscus astutus
Sheep, Barbary	Ammotragus lervia
Skunk, hog-nosed	Conepatus mesoleucus
Skunk, striped	Mephitis mephitis
Squirrel, rock	Spermophilus variegatus
Woodrat, white-throated	Neotoma albigula

REPTILES:

Lizard, collared	Crotaphytus collaris
Lizard, crevice spiny	Sceloporus poinsetti
Lizard, eastern fence	Sceloporus undulatus
Lizard, greater earless	Cophosaurus texanus
Lizard, lesser earless	Holbrookia maculata
Lizard, side-blotched	Uta stansburiana
Rattlesnake, blacktail	Crotalus molossus
Rattlesnake, western	Crotalus viridis
Skink, great plains	Eumeces obsoletus
Skink, many-lined	Eumeces multivirgatus
Snake, blackneck garter	Thamnophis cyrtopsis
Snake, gopher	Pituophis melanoleucus
Snake, Mexican blackhead	Tantilla atriceps
Snake, mountain patchnose	Salvadora grahamiae
Snake, ringneck	Diadophis punctatus
Whiptail, western	Cnemidophorus tigris

Geology

The steep limestone cliffs in the vicinity of Upper McKittrick are predominantly carbonate rocks of the Artesia Group (Hayes 1964). The Seven Rivers Formation is characterized by yellowish-gray dolomite with minor very pale orange quartzose siltstone cemented with dolomite. The Queen Formation consists of very pale orange, very finely textured dolomite and calcareous dolomite, together with very pale orange, very fine-grained sandstone and siltstone. Also present are elements of the Grayburg

Formation, with very pale orange, very finely textured dolomite and calcareous dolomite, together with pale orange, very fine-grained calcareous or dolomitic quartz sandstone.

Soils

Upper McKittrick is found on Calciustolls-Rock Land (NMSU 1978:125-127), an association consisting of soils and land types on mountain footslopes and limestone hills in the south central part of the state, mostly at elevations from 5000 to 7000 feet (1524 to 2134 m). The soils, dominantly shallow, stony and rocky, are underlain by limestone bedrock and less commonly by other sedimentary rocks. Deeper soils occur in flood plains contiguous to drainageways. The Lithic Calciustolls commonly occur on rolling uplands. These soils have a surface layer of dark grayish-brown to brown calcareous stony loam., grading to the underlying limestone bedrock at 6 to 20 inches (15.2 to 50.8 cm). Rock Land typically occurs on steep canyon walls and escarpments, and comprises about 30 per cent of the association. It consists dominantly of a complex of shallow soils and outcrops of limestone and occasionally other sedimentary rocks. The outcrops occur as vertical or near vertical exposures and ledges. Also present in the RNA are Lithic Haplustolls, forming residually in materials of sandstone and shale origin. These soils occur on sloping and rolling upland ridges and hills, and have a thin brown noncalcareous cobbly loam surface layer over a brown very cobbly sandy clay loam subsoil.

Lands

All lands within the proposed RNA were included within the original Guadalupe Forest created on April 19, 1907. There are no known outstanding rights or rights-of-way within the proposed boundaries.

Cultural

No cultural resource surveys have been conducted within this RNA. Surveys that have been conducted nearby indicate that small lithic scatters, possibly associated with mescal pits or ring middens, may be present. These sites are found commonly throughout the Guadalupes. Rock shelters and pictograph panels may also occur, primarily along the canyon sides. No permanent or year-round habitation sites have been found in this area. The Guadalupe Mountains appear to have been used primarily for hunting and gathering activities. Upon establishment as an RNA, the area will be withdrawn from any archeological research that would in any way modify the existing biological resources.

IMPACTS AND POSSIBLE CONFLICTS

Mineral Resources

The proposed RNA occurs within the Guadalupe Escarpment Wilderness Study Area (WSA). The WSA has been classified by the USGS as having 'Inferred Identified Economic Oil and Gas Potential'. There have been no oil and gas lease applications for the proposed RNA, but 16 applications are pending for most of the remaining land in the WSA. If the Upper McKittrick area is designated as an RNA, a recommendation will be made to withdraw the area from mineral entry.

Grazing

In the early 1900's, goats grazed the area. The area is currently within the Soldier Springs Allotment, but grazing rarely occurs here now, due to the lack of water and difficult access for sheep and cows.

Timber

Forest species, including ponderosa pine, pinyon pine, and juniper, are sparse throughout the area, and none of the proposed RNA is included in the timber base. As trees are sparse and the area is difficult to get to, the potential for firewood harvest is virtually nil.

Watershed Values

This area is drained primarily by the North McKittrick Canyon south into the Pecos River drainage in Texas. This canyon is part of the South Guadalupe fifth order watershed. The water ceases to flow on the surface a few miles below the RNA.

Recreation Values

The area contains a very little used pedestrian trail, which ascends the canyon. There is no vehicular use in the area, and no conflicts between recreation use and potential research is anticipated.

Wildlife and Plant Values

The area contains potential habitat for the endangered plant species, Sneed's pincushion cactus (Coryphantha sneedii var. sneedii). No populations have been located yet. The McKittrick pennyroyal (Hedeoma apiculatum), a federally threatened species, has been found near and perhaps within the area. Exact boundary identification of the RNA is needed to verify where the population exists. There is also potential habitat

here for several other state sensitive plants which are known to occur within a few miles of the RNA.

Wilderness, Wild and Scenic River, National Recreation Area Values

The area is contained within the Guadalupe Escarpment Wilderness Study Area. A recommendation will be made to Congress to not designate this area as wilderness.

Transportation Plans

The north edge of the RNA is within about 2 miles (3.2 km) of a Forest Road. A spur route and trail allow four-wheel drive vehicles to drive within 0.5 mile (0.8 km) of the area. The trail continues to the area, but becomes impassable to vehicles. There is no unauthorized vehicular travel in the area, and there are no transportation plans that would adversely affect the proposed RNA.

Utility Corridor Plans

No existing or planned utility corridors occur in the vicinity of the RNA.

Other

A small fenced exclosure was installed in the northwest corner of the area by the Forest Service in the 1950's for a vegetation study. This exclosure has historical value and does not interfere with RNA obligations.

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, and recreation signs or marking are prohibited within the area. 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.

ADMINISTRATIVERECORDS AND PROTECTION

Administration and protection of the Upper McKittrick RNA will be the responsibility of the Lincoln National Forest. The District Ranger, Guadalupe District, Carlsbad, 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 Upper McKittrick 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, Guadalupe District, Carlsbad, NM

REFERENCES

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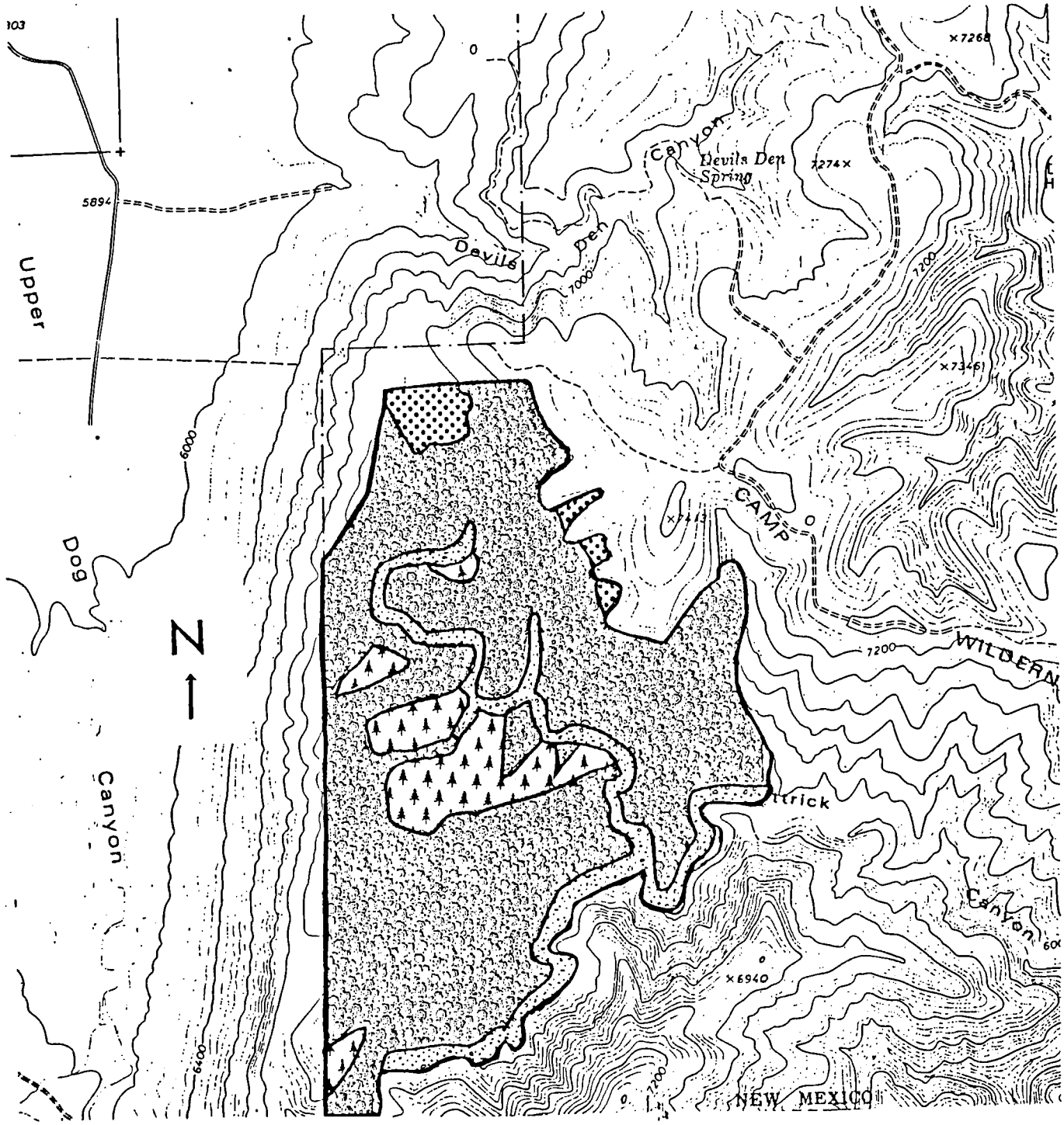
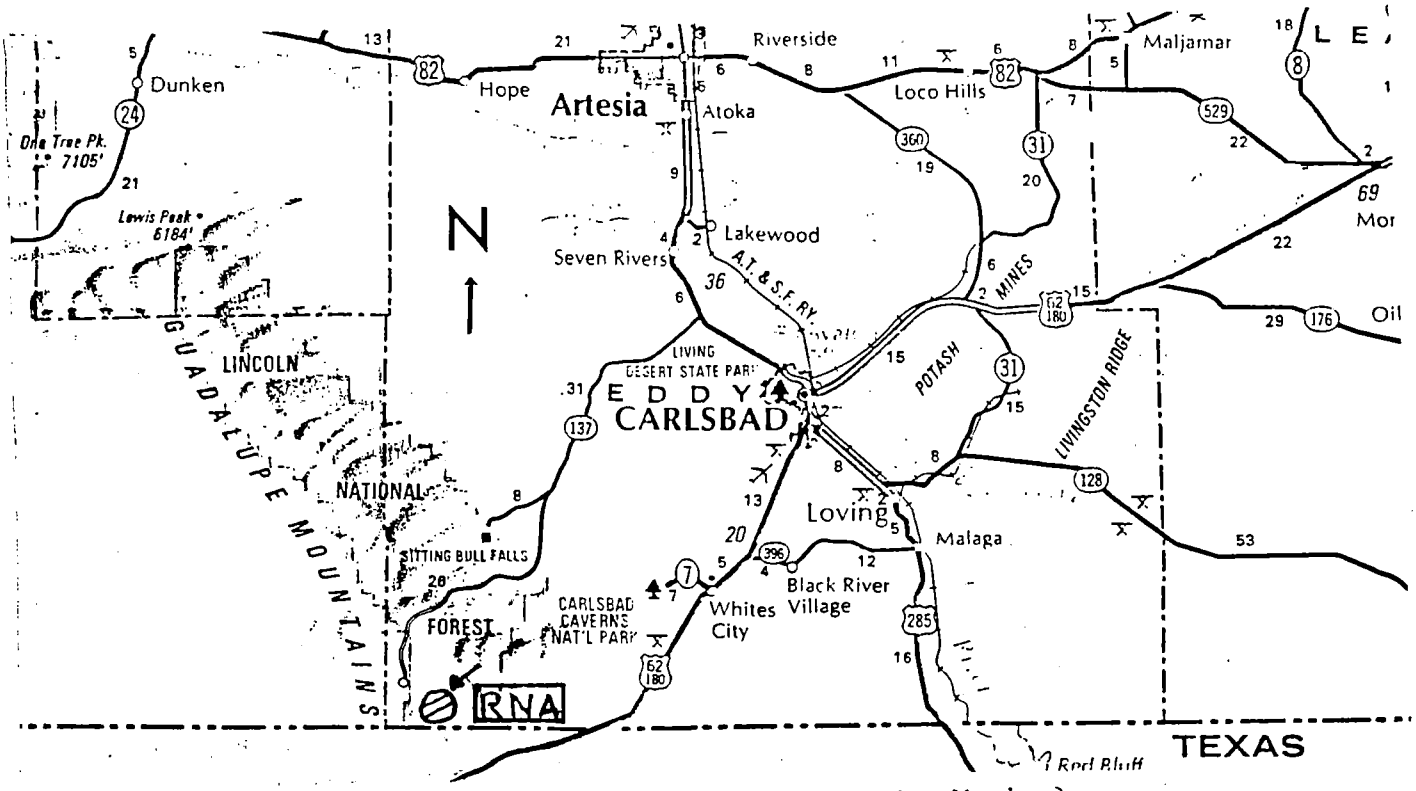


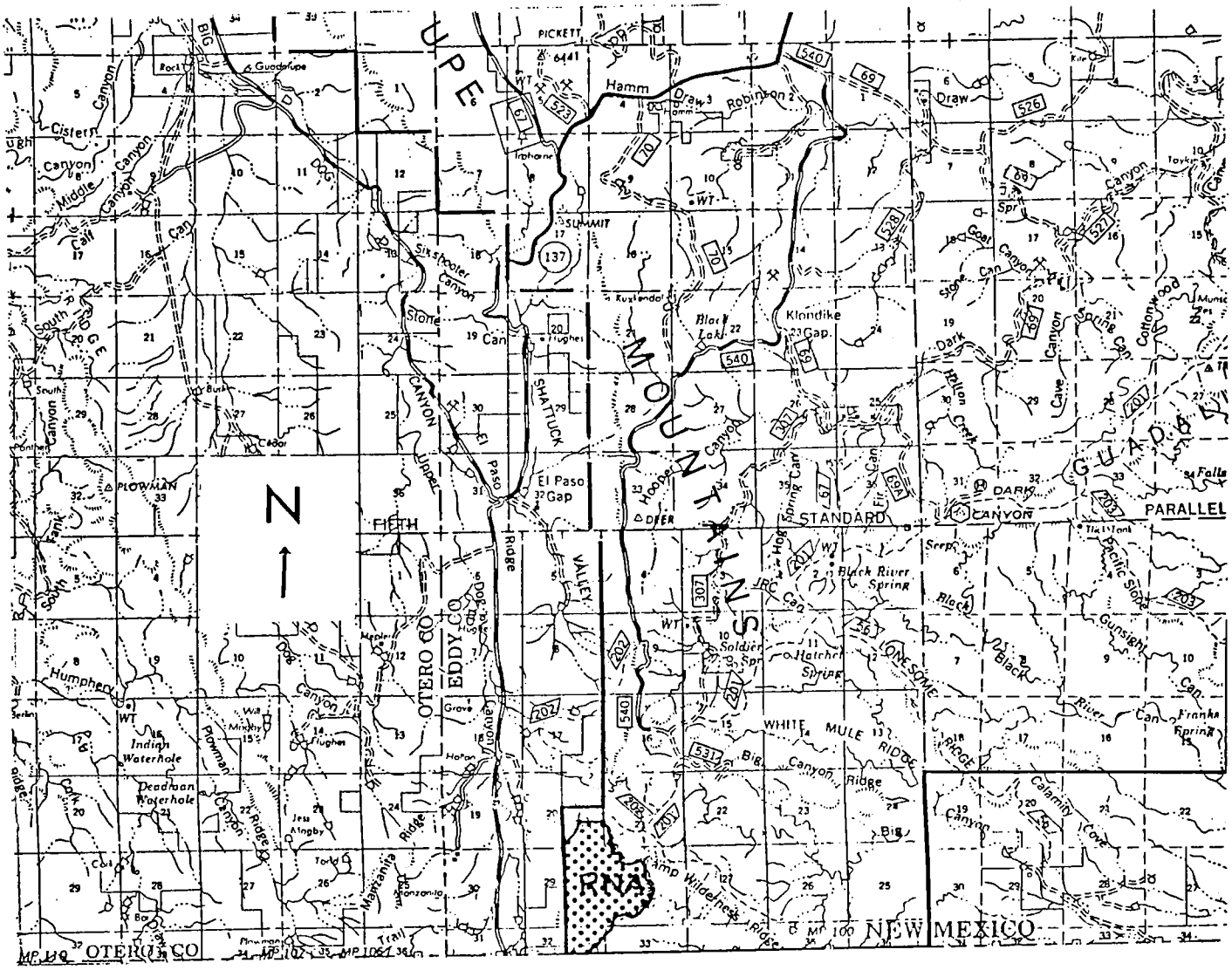
Map Symbol	Vegetation Type
	Ponderosa Pine SAF 237, K-17
	Pinyon-Juniper SAF 239, K-21

Map Symbol	Vegetation Type
	Western Live Oak SAF 241, K-27
	Riparian Woodland

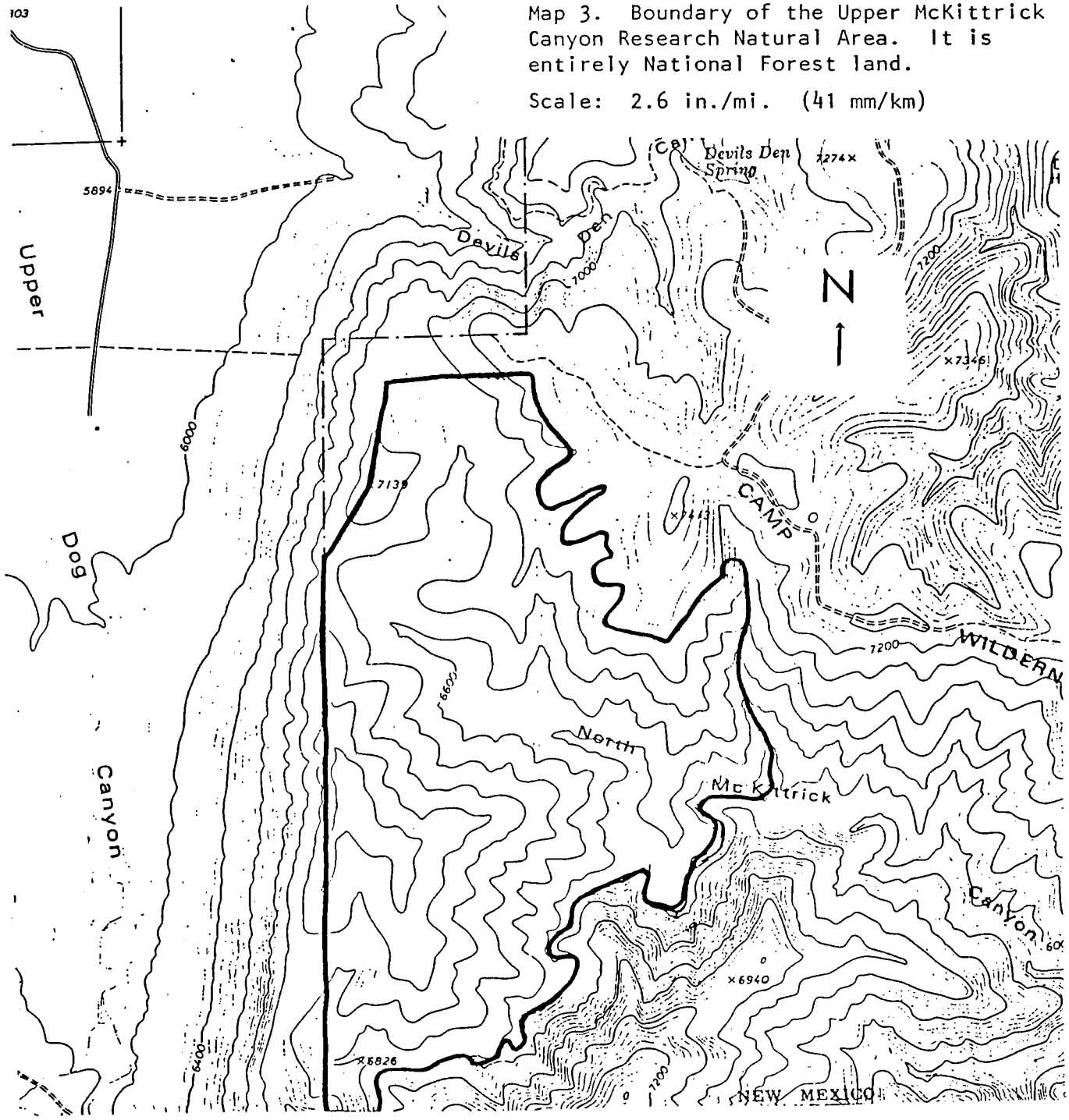
Map 4. Distribution of vegetation types in the Upper McKittrick Canyon Research Natural Area.



Map 1. Location of RNA (Southeast New Mexico)



Map 2. Access Route to Upper McKittrick Canyon RNA



Map 3. Boundary of the Upper McKittrick Canyon Research Natural Area. It is entirely National Forest land.

Scale: 2.6 in./mi. (41 mm/km)

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 Upper McKittrick Research Natural Area. The Upper McKittrick Research Natural Area shall be comprised of the land of lands described in the section of the Establishment Record entitled "Location."

1) Regional Forester, Sotero Muniz, recommended the establishment of the Upper McKittrick 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 Upper McKittrick Research Natural Area will be managed in compliance with all relevant laws, regulations, and Forest Service Manual direction regarding Research Natural Areas. The Upper McKittrick 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 of the Lincoln National Forest Land and Resource Management Plan are replaced by the directions 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 Decision Notice/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 Upper McKittrick 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 Part 217. A Notice of Appeal must be in writing and submitted to:

The Secretary of Agriculture
14th and 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

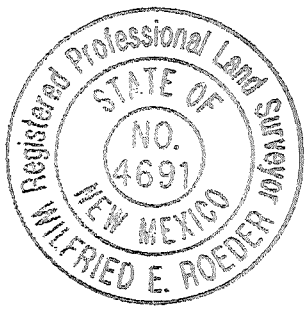
LEGAL DESCRIPTION REVIEW

LEGAL: Upper McKittrick Canyon Research Natural Area
T.26 S, R.21 E., NMPM, portions of Sections 20, 21, 28, 29, 32, and 33.

The document attached has been reviewed by me for use in describing the location of the Upper McKittrick Canyon Research Natural Area. The attached description is adequate in determining the location of the RNA and is free of any patent ambiguity, as written, at the date of original execution.

Reviewed by: Wilfried E. Roeder Date: 10/08/92
Forest Land Surveyor

Professional Registration New Mexico No. 4691.



Boundary of Upper McKittrick Canyon Research Natural Area

Beginning at a point on the Texas and New Mexico state line, said point being the closing corner of the meridional centerline of Section 32, in T.26 S., R.21 E., NMPM,

Thence:

North along the meridional centerline of Section 32, a distance of 2,050 feet to the 1/4 Section corner of Sections 29 and 32;

Thence:

North along the meridional centerline of Section 29, a distance of 5,280 feet to the 1/4 Section corner of Sections 20 and 29;

Thence:

N 37 00'E, a distance of 1,000 feet to a point on the top of hill 7139.

Thence:

N 08 00'E, a distance of 1,400 feet to a point on the top of a hill.

Thence:

East, a distance of 1,800 feet, more or less, to the rim of Camp Wilderness Ridge, being approximately at an elevation of 7,200 feet;

Thence:

Following the rim of Camp Wilderness Ridge southeasterly and northeasterly to a point at the head of a canyon, from which the 1/4 Section corner of Sections 21 and 28 bears south, 500 feet;

Thence:

Southerly along the bottom of said canyon a distance of 4,000 feet, more or less, to its junction with McKittrick Canyon;

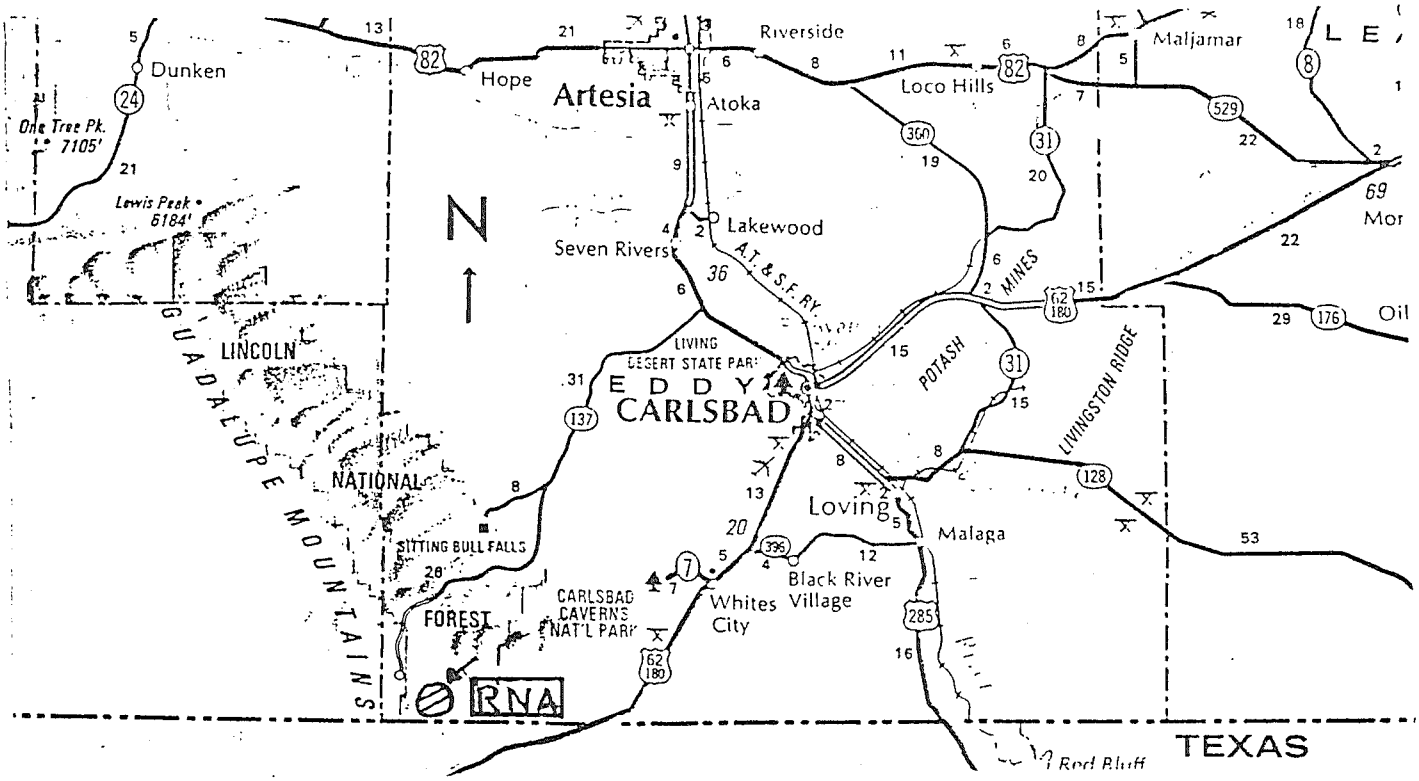
Thence:

Following the bottom of McKittrick Canyon southwesterly to its intersection with the Texas and New Mexico state line, a distance of 2 miles.

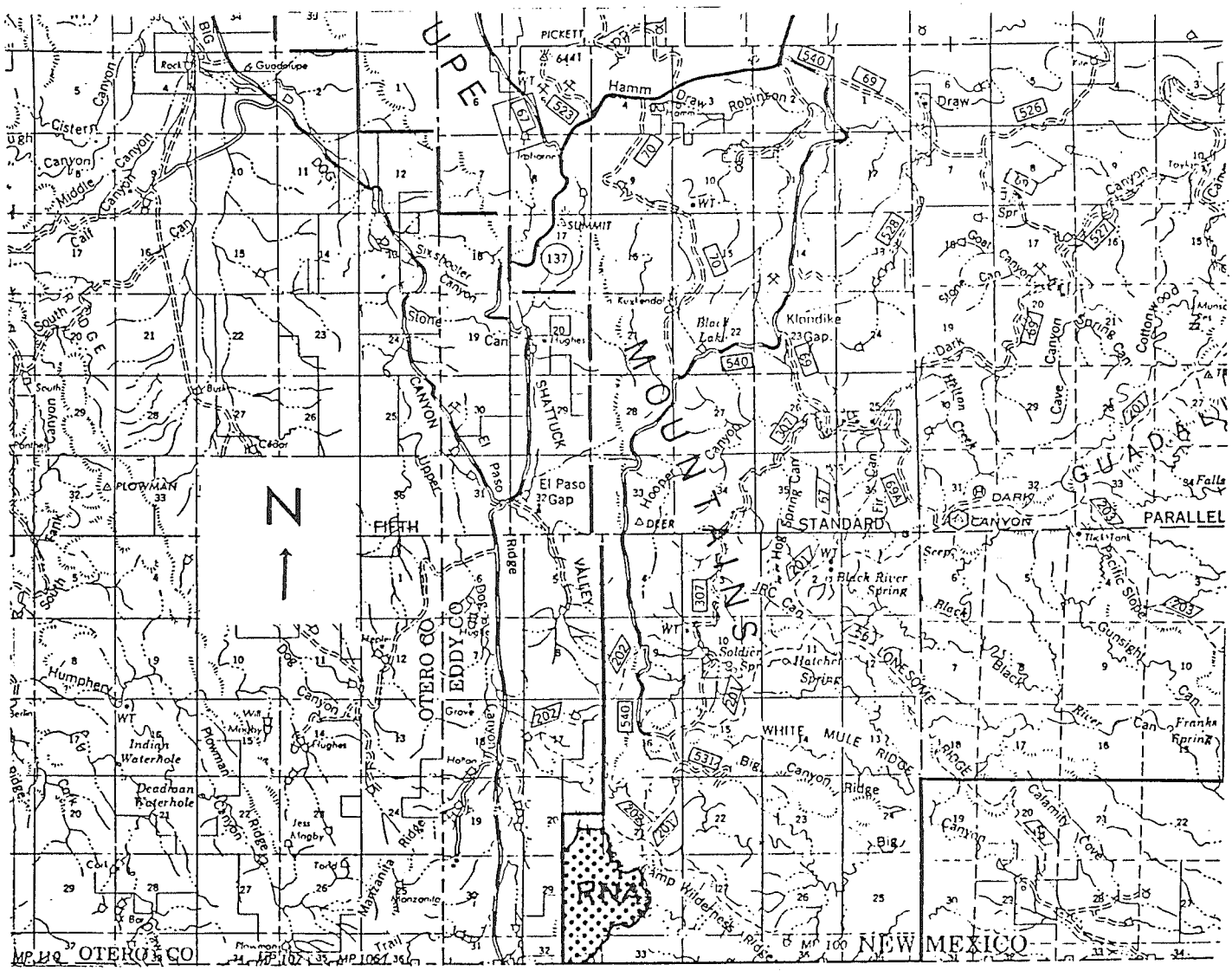
Thence:

Westerly along the Texas and New Mexico state line a distance of 650 feet, more or less, to the point of beginning.

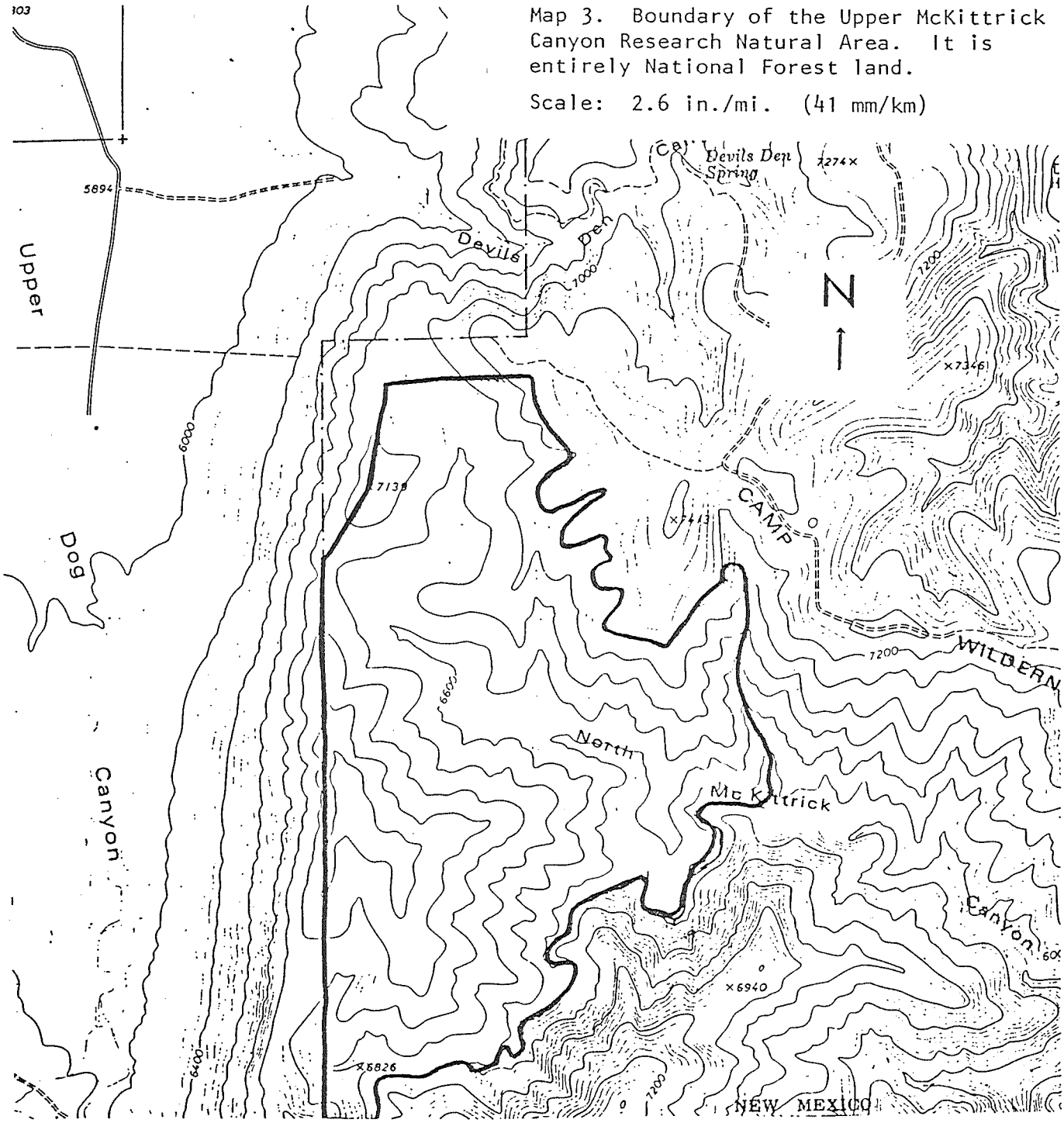
Containing an area of 800 acres, more or less.



Map 1. Location of RNA (Southeast New Mexico)

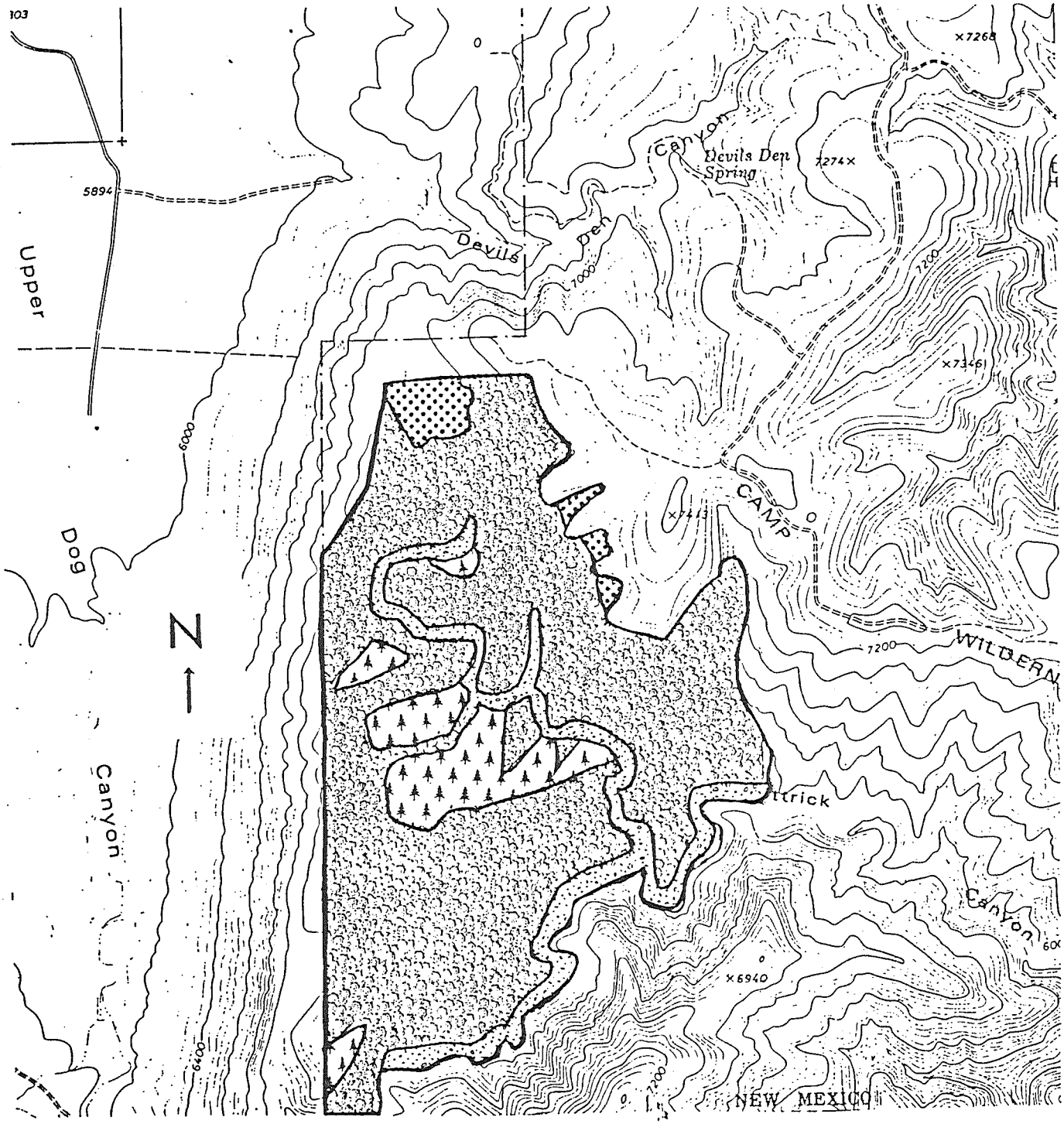


Map 2. Access Route to Upper McKittrick Canyon RNA



Map 3. Boundary of the Upper McKittrick Canyon Research Natural Area. It is entirely National Forest land.

Scale: 2.6 in./mi. (41 mm/km)



Map Symbol	Vegetation Type
	Ponderosa Pine SAF 237, K-17
	Pinyon-Juniper SAF 239, K-27

Map Symbol	Vegetation Type
	Western Live Oak SAF 241, K-31
	Riparian Woodland

Map 4. Distribution of vegetation types in the Upper McKittrick Canyon Research Natural Area.

Boundary of Upper McKittrick Canyon Research Natural Area.

Beginning at a point on the Texas - New Mexico State line, said point being the closing corner of the meridional centerline of section 32, T.26 S., R.21 E. NMPM,

Thence:

North along the meridional centerlines of section 32 and 29 a distance of 7275 feet to the 1/4 section corner of sections 29 and 32,

Thence:

N 38 00'E, a distance of 1000 feet more or less to the highest point on a ridge, said point being shown 7139 on FS Quadrangle 473 SE,

Thence:

N 14 00'E, a distance of 1400 feet more or less to the highest point of a hill,

Thence:

East, a distance of 1800 feet more or less to a point on the section line between section 20 and 21,

Thence:

South along the section line a distance of 500 feet more or less to its intersection with the 7200 feet contour line,

Thence:

Along the 7200 feet contour line southeasterly and northeasterly to a point at the head of a canyon, said point lying approximately 500 feet north of the 1/4 section corner of sections 21 and 28,

Thence:

Southerly along the bottom of said canyon 400 feet more or less to the junction with McKittrick Canyon,

Thence:

Following the bottom of McKittrick Canyon southwesterly to its junction with the Texas - NM State line,

Thence:

westerly along the State line a distance of 650 feet more or less to the point of beginning.

ESTABLISHMENT RECORD

UPPER MCKITTRICK RESEARCH NATURAL AREA

USDA FOREST SERVICE
SOUTHWESTERN REGION
LINCOLN NATIONAL FOREST
GUALDALUPE RANGER DISTRICT
EDDY COUNTY, NEW MEXICO

Prepared by: William W. Dunmire Date 10/23/87
William W. Dunmire, The Nature Conservancy
Mollie S. Toll, Department of Biology,
University of New Mexico

Recommended by: Larry D Sansom Date 12/29/87
Larry Sansom, District Ranger
Guadalupe Ranger District

Recommended by: James R Abbott Date 2/22/88
James R. Abbott, Forest Supervisor
Lincoln National Forest

Recommended by: John W Russell Date 3/31/88
John W. Russell, Chairman
Southwestern Research Natural Area Committee

Recommended by: Sotero Muniz Date 4/15/88
Sotero Muniz, Regional Forester
Southwestern Region

Recommended by: Charles M. Loveless Date May 16, 1988
Charles M. Loveless, Station Director
Rocky Mountain Forest and Range Experiment Station

Change spelling on
"Guadalupe"

ESTABLISHMENT RECORD

UPPER MCKITTRICK RESEARCH NATURAL AREA

USDA FOREST SERVICE
SOUTHWESTERN REGION
LINCOLN NATIONAL FOREST
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Southwestern Region

Recommended by: _____ Date May 16, 1988
Charles M. Loveless, Station Director
Rocky Mountain Forest and Range Experiment Station

DESIGNATION ORDER

By virtue of the authority vested in me by the Secretary of Agriculture under regulations 7 CFR 2.60(a) and 36 CFR 251.23, I hereby designate as the Upper McKittrick Research Natural Area the lands described in the following establishment record prepared by William W. Dunmire and Mollie S. Toll, dated October 19, 1987. These lands shall hereafter be administered as a research natural area subject to the above regulations and instructions issued thereunder.

_____ _____

Chief Date

ESTABLISHMENT RECORD

for

UPPER MCKITTRICK RESEARCH NATURAL AREA

within

Lincoln National Forest

Eddy County, New Mexico

INTRODUCTION

The Upper McKittrick Research Natural Area (RNA) comprises approximately 827 acres (334.7 hectares) in the Guadalupe Mountains at the southern border of New Mexico, adjacent to Texas. The proposed RNA is located in the Lincoln National Forest, in Eddy County, and is National Forest land reserved from the public domain.

Many areas in the Forest Service Southwestern Region are covered by a mountain mahogany vegetation type, but most have been heavily grazed in the past and are currently used for this purpose. However, this area is far enough from water that it does not receive livestock use. It is, in addition,an extensive stand of mountain mahogany and associated chapparal shrubs, as yet unrepresented in the Southwestern Region RNA system. Upper McKittrick was reviewed by the RNA regional committee in spring, 1982, and was determined to be the most suitable representation of this ecosystem available.

Land Management Planning

The need for representation of shrubland biotic communities was identified in the Southwestern Regional Guide (August 1983). The Lincoln National Forest Plan (USFS 1986a) recommends that approximately 827 acres (334.7 hectares) of the Upper McKittrick drainage in Management Area 3A 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

Upper McKittrick Research Natural Area has been identified as an outstanding example of a mountain mahogany community. This is an important chapparal ecosystem in the Southwest.

In addition to providing a good representation of a mountain mahogany community, in good condition and with a minimal livestock use history, Upper McKittrick Canyon RNA includes smaller ponderosa pine (*Pinus ponderosa*) and pinyon-juniper (*Pinus edulis*-*Juniperus* sp.) woodland communities, and riparian woodland. The high floral abundance and diversity, together with geographic position and considerable variability in topographic relief and aspect, provide a rich array of factors for study of the impact of the Chihuahuan Desert influence on floral and faunal composition.

PRINCIPAL DISTINGUISHING FEATURES

Upper McKittrick is surrounded by steep, shrub covered limestone cliffs. Most of the area is dominated by mountain mahogany together with wavyleaf oak (Quercus undulata) and other associated chapparal shrubs, grasses and a variety of forbs. Pinyon-juniper woodland is found above the RNA to the northeast, and pockets of ponderosa pine on north-facing slopes lining the canyon. Vegetation along the narrow canyon bottoms includes large trees and abundant and varied herbs and grasses.

LOCATION (Lincoln National Forest)

Upper McKittrick is on the Texas-New Mexico border about 40 miles (64.3 km) southwesst of Carlsbad, New Mexico (Map 1). It adjoins Guadalupe Mountains National Park, to the south in Texas. The RNA can be found on the El Paso Gap quadrangle (USGS 7.5' map), Township 26S, Range 21E, Sections 20, 21, 28, 29, 32, and 33, latitude 32 degrees 1' N, longitude 104 degrees 49' W.

The boundaries of this RNA in rugged canyon topography are complicated (Maps 2 and 3). Commencing from a point about 500 feet south of the southeast corner of the northwest quarter of section 20, the boundary goes more or less southerly along the 7200 ft contour into a tributary drainage of North McKittrick Canyon in the north half of section 28. It then proceeds southerly along the bottom of this drainage into North McKittrick Canyon. The boundary then proceeds westerly and southerly up North McKittrick Canyon in such a manner as to include the riparian vegetation of this canyon. At the confluence of North McKittrick Canyon with a tributary drainage in the southwest 1/4 of section 28, the boundary follows this tributary, mostly in section 32, to the Forest border. It then follows west and north along the Forest border to a point approximately 1/2 mile south of the southwest corner of the northeast quarter of section 20. From here the boundary proceeds northeasterly up a gentle ridge to a point about 500 feet south and 600 feet east of the southwest corner of the northeast quarter of section 20. The boundary then proceeds east to the point of beginning.

Access to the RNA requires a four-wheel drive vehicle and a rugged hike to reach the interior of the RNA. From U.S. Highway 285, take N.M. Highway 137 heading southwest to Sitting Bulls Falls and Little Dog Canyon (Maps 1 and 2). This junction is 12 miles (19.3 km) north of Carlsbad and 24 miles (38.6 km) south of Artesia. Proceed 32.5 miles (52.3 km) on Highway 137 to where Forest Road 540 (the "Guadalupe Rim Road") turns off on the left (east). Follow this gravel road 12.4 miles (20.0 km) to a "Y", and take the right fork which is a primitive road. Proceed 0.3 miles (0.5 km) further and turn right at the next fork. Continue 0.2 miles (0.3 km), where you will leave your vehicle. At this point you are a short distance from the north boundary of the RNA. From here there is a nearly 1000 foot (304.8 m) descent down the scrub-covered limestone slopes into Upper North McKittrick Canyon. Virtually all of the RNA is negotiable on foot, but care must be taken in picking a route through this rugged limestone terrain.

AREA BY COVER TYPES

The distribution of cover types was determined from a field survey conducted in the summer of 1986 and from interpretation of 1976 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 Upper McKittrick Research Natural Area.

Type	Society of American Foresters Cover Type[1]	Küchler PNV Type[2]	Surface Area Acres	Hectares
Ponderosa Pine	SAF 237	K-17 Pine - Douglas-fir Forest	88	35.6
Pinyon - Juniper	SAF 239	K-27 Oak - Juniper Woodland	29	11.7
Western Live Oak	SAF 241	K-27	664	268.7
Riparian Woodland	[none]	[none]	46	18.6
		TOTAL:	827	334.6

[1]Eyre 1980.
[2]Küchler 1964.

PHYSICAL AND CLIMATIC CONDITIONS

The proposed RNA is located on a ridge between North McKittrick and Upper Dog Canyons, about one mile (1.6 km) north of the Texas border. Elevations range from 6600 feet (2011.7 m) in the bottom of North McKittrick Canyon, to 7400 feet (2255.5 m) at the ridge summit, to the southwest. From the RNA, there is a steep drop-off, down scrub covered limestone cliffs, to Upper Dog Canyon to the west, and an equally steep ascent to the southeast.

Climate in this part of far southern New Mexico varies considerably over short distances. Low elevation flatlands around Carlsbad and much of Eddy County are characterized as arid Chihuahuan Desert, with high temperatures, extended frostfree season and very low moisture levels, while the Guadalupe Mountain range enjoys subhumid conditions and

intervening areas are semi-arid. The nearest long range weather station, at Carlsbad about 40 miles (64.3 km) northeast, records weather conditions very different from those at Upper McKittrick. The following data were interpreted for the RNA from the Terrestrial Ecosystems Handbook maintained by the USFS Southwestern Regional Office. Average annual rainfall for Upper McKittrick is 16 inches (406 mm); much of this falls during summer months as local orographic and convectional storms. Average annual snowfall is 31 inches (78.7 cm). Perennial or semi-perennial water flow in Upper McKittrick Creek is a critical component in presence and maintenance of the distinctive plant communities in the RNA. Mean annual temperature is 48° F (8.9° C), with a July average of 64° F (17.8° C) and a January average of 31° F (-0.6° C). The frost free period lasts an average of 150 days.

DESCRIPTION OF VALUES

Flora

At the time of preparation of the Establishment Record, no publication adequately described the habitat types occurring on Upper McKittrick Canyon RNA. The following description is based therefore on SAF forest types.

Virtually all the RNA is located on steep limestone terraced substrate, and much of it can be classed vegetatively as scarp woodland or scarp shrubland. Most of the area is dominated by a mountain mahogany (Cercocarpus montanus) shrub cover on slopes of all aspects. Wavyleaf oak (Quercus undulata) is codominant, becoming relatively more frequent on the north-facing slopes. Other common shrubs include beargrass (Nolina microcarpa), yellowleaf silktassel (Garrya flavescens), sotol (Dasylirion leiophyllum), New Mexico agave (Agave neomexicana), and desert ceanothus (Ceanothus greggii). Aristida sp., Eragrostis intermedia, and Bouteloua curtipendula are the most common grasses. Forbs are well represented; among the most common are Thelesperma longipes, Hedyotis nigricans, Sisyrinchium occidentale, and Polygala alba. Widely scattered pinyon (Pinus edulis) grows on most of these slopes; where the slopes become north-facing, ponderosa pine (Pinus ponderosa) and alligator juniper (Juniperus deppeana) are occasionally found.

A pinyon-juniper patch occurs on a flat at the northwest corner of the RNA, the only site where blue grama (Bouteloua gracilis) and wolftail (Lycurus phleoides) grasses were noted. Above the RNA on the northeast boundary is a pinyon-juniper woodland. Patches of this type extend down into the RNA at the upper end of several drainages. A ponderosa pine type occurs on several north-facing slopes above the main McKittrick drainage. Quercus undulata replaces Cercocarpus as the dominant shrub here. Ponderosa drops out wherever the slopes become east or west-facing.

The Upper McKittrick Canyon mainstem and most of the side canyons support a riparian woodland type exhibiting great plant diversity with a strong Chihuahuan influence. Bigtooth maple (Acer grandidentatum) tends to be the dominant tree, with codominants of chinkapin oak (Quercus muhlenbergia), serviceberry (Amelanchier goldmanii), Texas madrone (Arbutus texana), or southwestern white pine (Pinus strobiformis). Other

occasional to common trees include Rocky Mountain juniper (Juniperus scopulorum), some of which attain huge size in the canyon bottoms; Douglas fir (Pseudotsuga menziesii); wolf hop hornbeam (Ostrya knowltonii); and pinyon. Common shrubs in the bottoms include wavyleaf and Gambel oaks (Quercus undulata and Q. gambelii), mountain mahogany, desert ceanothus, white honeysuckle (Lonicera albiflora), apache-plume (Fallugia paradoxa), canyon grape (Vitis arizonica), selloa (Selloa glutinosa), and squawberry (Rhus trilobata).

Herbaceous vegetation is luxuriant in these canyons with a great diversity of forbs. Common species include Silene lacineata, Viguiera dentata, and Hedyotis nigricans. Grasses are equally well-represented, among them Muhlenbergia pauciflora, M. emersleyi, Eragrostis intermedia, Sorghastrum nutans, and Stipa sp.

There are no endangered, threatened, or sensitive plant species known on the proposed RNA.

The following plant list was compiled during the field survey on September 19, 1986. Time and lateness of the season permitted only a cursory survey.

Abbreviated Plant List for Upper McKittrick RNA[1]

Latin Name	Common Name[2]
GRASSES AND GRASS-LIKE PLANTS:	
Andropogon gerardii	big bluestem
Andropogon scoparius	Little bluestem
Aristida sp.	Three-awn
Blepharoneuron tricholepis	Pine dropseed
Bouteloua curtipendula	Sideoats grama
Bouteloua gracilis	Blue grama
Eragrostis intermedia	Plains lovegrass
Lycurus phleoides	Wolftail
Muhlenbergia dubia	Pine muhly
Muhlenbergia emersleyi	Bullgrass
Muhlenbergia pauciflora	New Mexico muhly
Piptochaetium fimbriatum	Pinyon ricegrass
Sitanion hystrix	Bottlebrush squirreltail
Sorghastrum nutans	Yellow Indiangrass
Stipa sp.	Needlegrass
FORBS:	
Allium cernuum	Nodding onion
Castilleja sp.	Paintbrush
Euphorbia heterophylla	Painted lady
Hedyotis nigricans	Bluets
Ipomopsis aggregata	Skyrocket
Liatris punctata	Gayfeather
Penstemon cardinalis	Beardtongue
Polygala alba	White milkwort
Salvia lycioides	Sage
Sedum sp.	Stonecrop
Silene laciniata	Mexican silene
Sisyrinchium occidentale	Blue-eyed grass
Thelesperma longipes	Coatex greenthread
Verbena sp.	Verbena
HALF-SHRUBS, SHRUBS, AND TREES:	
Acer grandidentatum	Bigtooth maple
Agave lechuguilla	Lechuguilla
Agave neomexicana	New Mexico agave
Amelanchier goldmanii	Serviceberry
Arbutus texana	Texas madrone
Brickellia sp.	Flythicket
Ceanothus greggii	Desert ceanothus
Cercocarpus montanus	Mountain mahogany
Dalea frutescens	Black indigobush
Dasylirion leiophyllum	Sotol

Echinocereus sp.	Hedgehog cactus
Fallugia paradoxa	Apache-plume
Fendlera rupicola	Cliff fendlerbush
Garrya flavescens	Yellowleaf silktassel
Juniperus deppeana	Alligator-bark juniper
Juniperus scopulorum	Rocky Mountain juniper
Lonicera albiflora	White honeysuckle
Nolina microcarpa	Beargrass
Opuntia engelmannii	Engelmann pricklypear
Opuntia imbricata	Cholla
Ostrya knowltonii	Wolf hophornbean
Pinus edulis	Pinyon pine
Pinus ponderosa	Ponderosa pine
Pinus strobiformis	Southwestern white pine
Pseudotsuga menziesii	Douglas-fir
Quercus gambelii	Gambel oak
Quercus muhlenbergia	Chinkapin oak
Quercus undulata	Wavyleaf oak
Rhus trilobata	Squawberry
Sapindus drummondii	Western soapberry
Selloa glutinosa	Selloa
Symphoricarpus longiflorus	Longflower snowberry
Viguiera dentata	Goldeneye
Vitis arizonica	Canyon grape
Yucca baccata	Datil yucca

[1]Observed by Bill Dunmire (The Nature Conservancy) and Larry Sansom (Guadalupe District Ranger, Lincoln National Forest) on September 19, 1986.

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

Fauna

Upper McKittrick Canyon is potential habitat for several rare, endangered, or sensitive animal species. There have been no biological surveys covering this specific area; however, the following animal species are known to occur in similar habitats in the general vicinity of Upper McKittrick Canyon: peregrine falcon, spotted owl, gray vireo, varied bunting, mottled rock rattlesnake, trans-pecos rat snake, plain-bellied water snake, western ribbon snake, and eastern barking frog.

Most of the area is too steep and rocky for prime deer habitat. The only other ungulate inhabiting the Guadalupe Mountains at this time (1986) is the introduced Barbary sheep, but they are very infrequently seen. Upper McKittrick Creek has a perennial or semi-perennial flow within the RNA; therefore a variety of riparian animal species can be expected 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 Eddy County, New Mexico:

1. Pinyon - juniper series; Juniperus deppeana association

2. Madrean evergreen woodland biome

3. Interior chaparral biome; Cercocarpus association

These habitat types currently in the data base most closely correspond to those occurring in the proposed RNA.

Potential Animal List for Upper McKittrick Canyon RNA

AMPHIBIANS:

Frog, barking	*Hylactophryne augusti*
Spadefoot, western	*Scaphiopus hammondi*
Toad, red-spotted	*Bufo punctatus*

BIRDS:

Bunting, lazuli	*Passerina amoena*
Bushtit	*Psaltriparus minimus*
Dove, mourning	*Zenaida macroura*
Falcon, peregrine	*Falco peregrinus*
Finch, house	*Carpodacus mexicanus*
Flicker, northern	*Colaptes auratus*
Gnatcatcher, blue-gray	*Polioptila caerulea*
Hawk, Cooper's	*Accipiter cooperii*
Hummingbird, broad-tailed	*Selasphorus platycercus*
Hummingbird, rufous	*Selasphorus rufus*
Jay, scrub	*Aphelocoma coerulescens*
Jay, Steller's	*Cyanocitta stelleri*
Kestrel, American	*Falco sparverius*
Mockingbird, northern	*Mimus polyglottos*
Owl, great horned	*Bubo virginianus*
Owl, long-eared	*Asio otus*
Owl, spotted	*Strix occidentalis*
Pigeon, band-tailed	*Columba fasciata*
Poorwill, common	*Phalaenoptilus nuttallii*
Quail, scaled	*Callipepla squamata*
Raven, common	*Corvus corax*
Sparrow, black-chinned	*Spizella atrogularis*
Sparrow, black-throated	*Amphispiza bilineata*
Sparrow, rufous-crowned	*Aimophila ruficeps*
Starling, European	*Sturnus vulgaris*
Swallow, barn	*Hirundo rustica*
Swallow, cliff	*Hirundo pyrrhonota*
Thrasher, crissal	*Toxostoma dorsale*
Titmouse,plain	*Parus inornatus*
Towhee, brown	*Pipilo fuscus*
Towhee, green-tailed	*Pipilo chlorurus*
Towhee, rufous-sided	*Pipilo erythrophthalmus*
Vireo, solitary	*Vireo solitarius*
Warbler, black-throated gray	*Dendroica nigrescens*
Warbler, orange-crowned	*Vermivora celata*
Warbler, Virginia's	*Vermivora virginiae*
Waxwing, cedar	*Bombycilla cedrorum*
Wren, canyon	*Catherpes mexicanus*
Wren, rock	*Salpinctes obsoletus*

MAMMALS:

Badger	Taxidea taxus
Bat, Brazilian free-tailed	Tadarida brasiliensis
Bear, black	Ursus americanus
Cottontail, desert	Sylvilagus audubonii
Coyote	Canis latrans
Deer, mule	Odocoileus hemionus
Elk	Cervus elaphus
Fox, kit	Vulpes macrotis
Jackrabbit, black-tailed	Lepus californicus
Lion, mountain	Felis concolor
Mouse, western harvest	Reithrodontomys megalotis
Myotis, fringed	Myotis thysanodes
Myotis, small-footed	Myotis leibii
Raccoon	Procyon lotor
Ringtail	Bassariscus astutus
Sheep, Barbary	Ammotragus lervia
Skunk, hog-nosed	Conepatus mesoleucus
Skunk, striped	Mephitis mephitis
Squirrel, rock	Spermophilus variegatus
Woodrat, white-throated	Neotoma albigula

REPTILES:

Lizard, collared	Crotaphytus collaris
Lizard, crevice spiny	Sceloporus poinsetti
Lizard, eastern fence	Sceloporus undulatus
Lizard, greater earless	Cophosaurus texanus
Lizard, lesser earless	Holbrookia maculata
Lizard, side-blotched	Uta stansburiana
Rattlesnake, blacktail	Crotalus molossus
Rattlesnake, western	Crotalus viridis
Skink, great plains	Eumeces obsoletus
Skink, many-lined	Eumeces multivirgatus
Snake, blackneck garter	Thamnophis cyrtopsis
Snake, gopher	Pituophis melanoleucus
Snake, Mexican blackhead	Tantilla atriceps
Snake, mountain patchnose	Salvadora grahamiae
Snake, ringneck	Diadophis punctatus
Whiptail, western	Cnemidophorus tigris

Geology

The steep limestone cliffs in the vicinity of Upper McKittrick are predominantly carbonate rocks of the Artesia Group (Hayes 1964). The Seven Rivers Formation is characterized by yellowish-gray dolomite with minor very pale orange quartzose siltstone cemented with dolomite. The Queen Formation consists of very pale orange, very finely textured dolomite and calcareous dolomite, together with very pale orange, very fine-grained sandstone and siltstone. Also present are elements of the Grayburg Formation, with very pale orange, very finely textured dolomite and calcareous dolomite, together with pale orange, very fine-grained calcareous or dolomitic quartz sandstone.

Soils

Upper McKittrick is found on Calciustolls-Rock Land (NMSU 1978:125-127), an association consisting of soils and land types on mountain footslopes and limestone hills in the south central part of the state, mostly at elevations from 5000 to 7000 feet (1524 to 2134 m). The soils, dominantly shallow, stony and rocky, are underlain by limestone bedrock and less commonly by other sedimentary rocks. Deeper soils occur in flood plains contiguous to drainageways. The Lithic Calciustolls commonly occur on rolling uplands. These soils have a surface layer of dark grayish-brown to brown calcareous stony loam., grading to the underlying limestone bedrock at 6 to 20 inches (15.2 to 50.8 cm). Rock Land typically occurs on steep canyon walls and escarpments, and comprises about 30 per cent of the association. It consists dominantly of a complex of shallow soils and outcrops of limestone and occasionally other sedimentary rocks. The outcrops occur as vertical or near vertical exposures and ledges. Also present in the RNA are Lithic Haplustolls, forming residually in materials of sandstone and shale origin. These soils occur on sloping and rolling upland ridges and hills, and have a thin brown noncalcareous cobbly loam surface layer over a brown very cobbly sandy clay loam subsoil.

Lands

All lands within the proposed RNA were included within the original Guadalupe Forest created on April 19, 1907. There are no known outstanding rights or rights-of-way within the proposed boundaries.

Cultural

No cultural resource surveys have been conducted within this RNA. Surveys that have been conducted nearby indicate that small lithic scatters, possibly associated with mescal pits or ring middens, may be present. These sites are found commonly throughout the Guadalupes. Rock shelters and pictograph panels may also occur, primarily along the canyon sides. No permanent or year-round habitation sites have been found in this area. The Guadalupe Mountains appear to have been used primarily for hunting and gathering activities. Upon establishment as an RNA, the area will be withdrawn from any archeological research that would in any way modify the existing biological resources.

IMPACTS AND POSSIBLE CONFLICTS

Mineral Resources

The proposed RNA occurs within the Guadalupe Escarpment Wilderness Study Area (WSA). The WSA has been classified by the USGS as having 'Inferred Identified Economic Oil and Gas Potential'. There have been no oil and gas lease applications for the proposed RNA, but 16 applications are pending for most of the remaining land in the WSA. If the Upper McKittrick area is designated as an RNA, a recommendation will be made to withdraw the area from mineral entry.

Grazing

In the early 1900's, goats grazed the area. The area is currently within the Soldier Springs Allotment, but grazing rarely occurs here now, due to the lack of water and difficult access for sheep and cows.

Timber

Forest species, including ponderosa pine, pinyon pine, and juniper, are sparse throughout the area, and none of the proposed RNA is included in the timber base. As trees are sparse and the area is difficult to get to, the potential for firewood harvest is virtually nil.

Watershed Values

This area is drained primarily by the North McKittrick Canyon south into the Pecos River drainage in Texas. This canyon is part of the South Guadalupe fifth order watershed. The water ceases to flow on the surface a few miles below the RNA.

Recreation Values

The area contains a very little used pedestrian trail, which ascends the canyon. There is no vehicular use in the area, and no conflicts between recreation use and potential research is anticipated.

Wildlife and Plant Values

The area contains potential habitat for the endangered plant species, Sneed's pincushion cactus (*Coryphantha sneedii* var. *sneedii*). No populations have been located yet. The McKittrick pennyroyal (*Hedeoma apiculatum*), a federally threatened species, has been found near and perhaps within the area. Exact boundary identification of the RNA is needed to verify where the population exists. There is also potential habitat here for several other state sensitive plants which are known to occur within a few miles of the RNA.

Wilderness, Wild and Scenic River, National Recreation Area Values

The area is contained within the Guadalupe Escarpment Wilderness Study Area. A recommendation will be made to Congress to not designate this area as wilderness.

Transportation Plans

The north edge of the RNA is within about 2 miles (3.2 km) of a Forest Road. A spur route and trail allow four-wheel drive vehicles to drive within 0.5 mile (0.8 km) of the area. The trail continues to the area, but becomes impassable to vehicles. There is no unauthorized vehicular travel in the area, and there are no transportation plans that would adversely affect the proposed RNA.

Utility Corridor Plans

No existing or planned utility corridors occur in the vicinity of the RNA.

Other

A small fenced exclosure was installed in the northwest corner of the area by the Forest Service in the 1950's for a vegetation study. This exclosure has historical value and does not interfere with RNA obligations.

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, and recreation signs or marking are prohibited within the area. 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 Upper McKittrick RNA will be the responsibility of the Lincoln National Forest. The District Ranger, Guadalupe District, Carlsbad, 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 Upper McKittrick 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, Guadalupe District, Carlsbad, NM

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Photo 1. South from Forest Road 540. Upper McKittrick RNA is on left in the mid-distance. Upper Dog Canyon on right below is well outside the RNA.

Photo 2. South-southwest toward RNA in mid-distance from forest road approximately 0.2 miles (0.3 km) from northeast boundary of RNA.

Photo 3. Southeast toward north McKittrick Canyon. All but distant slope is within RNA.

Photo 4. North-facing slope of north McKittrick Canyon exhibits patches of ponderosa pine on more mesic sites within the mountain-mahogany-wavyleaf oak shrub community. Photo is panorama continuation to the west of Photo 3.

Photo 5. Southwest across north McKittrick Canyon with ponderosa pine on otherwise open shrub community on limestone strata (westward panoramic continuation of Photo 3 and 4).

Photo 6. South-facing slopes exhibit mountain-mahogany-wavyleaf oak communities on highly stratified limestone terrain.

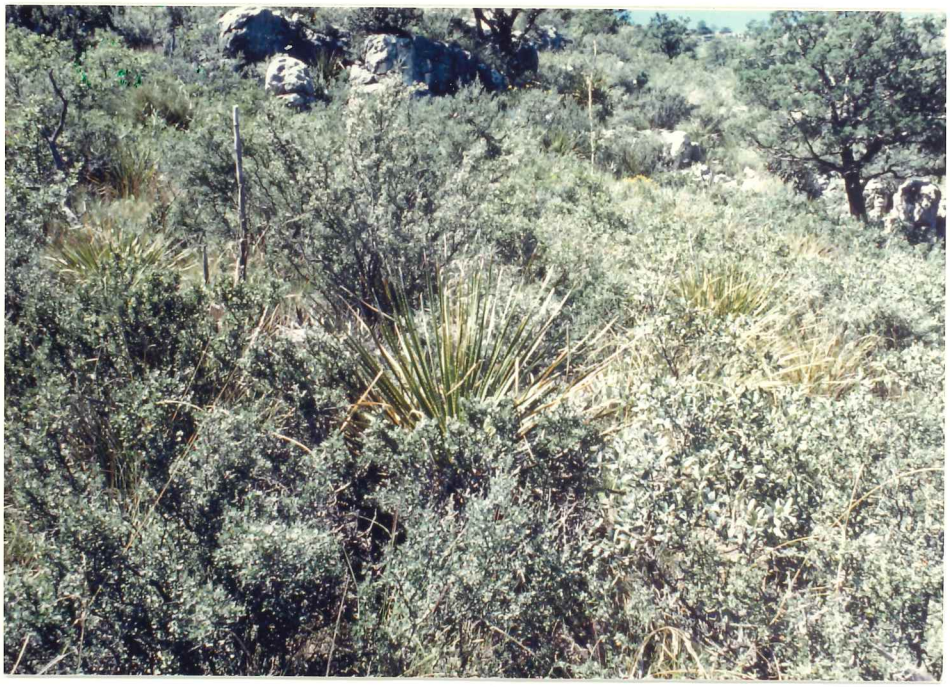

Photo 7. Mountain-mahogany shrub type includes Cercocarpus montanus, Quercus undulata and Dasylirion leiophyllum.

Photo 8. The Upper McKittrick Canyon mainstem and most of the side canyons support a riparian woodland type exhibiting great plant diversity including Texas madrone (Arbutus texana) seen in the foreground here.

Photo 9. Riparian woodland forest in upper drainage of north McKittrick Canyon exhibits Acer grandidentatum, Quercus muhlenbergia, Juniperus scopulorum and Pinus ponderosa.

Photo 10. Main north McKittrick drainage bottom with Acer grandidentatum, Pseudotsuga menziesii, Quercus muhlenbergia and Juniperus scopulorum. Surface water is nearly perennial here.

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 Guadalupe Dist. Eddy Co.		ALL: 24x36mm color slides
1.			9/19/86		South toward Upper McKittrick RNA in left, mid-distance from Forest Road 540. Upper Dog Canyon on right; Guadalupe Mountains, Texas, in distance.	
2.			9/19/86		South-southwest toward RNA in mid-distance from forest road approximately 0.2 miles (0.3 km) from northeast boundary of Upper McKittrick RNA.	
3.			9/19/86		Southeast toward north McKittrick Canyon from south-facing slopes at north end of Upper McKittrick RNA.	
4.			9/19/86		South across north McKittrick Canyon to ridge dividing north and south branches of the canyon within Upper McKittrick RNA.	
5.			9/19/86		Southwest across north McKittrick Canyon from northeast side of Upper McKittrick RNA. (Photos 3-5 are east to west pans across the canyon.)	
6.			9/19/86		South-facing slopes above north McKittrick Canyon; northeast boundary of Upper McKittrick RNA in distance. North McKittrick riparian in right foreground.	
7.			9/19/86		Mountain-mahogany-wavyleaf oak community as typically found throughout Upper McKittrick RNA.	

USDA-FOREST SERVICE

PHOTOGRAPHIC RECORD

(See FSM 1643.52)

PHOTOGRAPHER	DATE SUBMITTED
William W. Dunmire	Oct. 23, 1987
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TEMP.	PERMANENT *(To be filled in by the WO)*					
(1)	(2)	(3)	(4)	(5)	(6)	(7)
				ALL: New Mexico Lincoln NF Guadalupe Dist. Eddy Co.		ALL: 24x36mm color slides
8.			9/19/86		Side canyon at upper drainage of north McKittrick Canyon near northeast boundary of Upper McKittrick RNA.	
9.			9/19/86		Riparian woodland type in upper north McKittrick Canyon drainage near northeast boundary of Upper McKittrick RNA.	
10.			9/19/86		Upper McKittrick Canyon mainstem, central portion of Upper McKittrick RNA (District Ranger Larry Sansom).	