

WILDCAT CANYON RNA; Heber Ranger District

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Gila and Salt River Base Meridian, Navajo County, Arizona
Township: T. 13 N., R. 15 E.

Section 2 - SW1/4 NW1/4,
W1/2 SE1/4 NW1/4,
SW1/4,
N1/2 SE1/4,
SW1/4 SE1/4,
N1/2 SE1/4 SE1/4,
S1/2 SW1/4 NE1/4,
SW1/4 SE1/4 NE1/4,

Section 3 - SE1/4 SW1/4 SE1/4,
SW1/4 SE1/4 SE1/4,
SE1/4 SE1/4 SE1/4,
NE1/4 SE1/4 SE1/4,
E1/2 NE1/4 SE1/4,
SE1/4 SE1/4 NE1/4,

Section 10 - E1/2 NW1/4 NW1/4,
NE1/4 SW1/4 NW1/4,
NW1/4 SE1/4 NW1/4,
SE1/4 SE1/4 NW1/4,
NE1/4 SE1/4 NW1/4,
NE1/4 NW1/4,

Section 11 - N1/2 NW1/4,
NW1/4 SW1/4 NW1/4,
SW1/4 SW1/4 NW1/4,
NE1/4 SW1/4 NW1/4,
NW1/4 SE1/4 NW1/4,
NW1/4 NW1/4 NE1/4,

ACREAGE: Approximately 513 acres (ForPlan) bounded by natural features, and described by a Meets and Bounds Description. Approximately 692 acres with linear boundaries as described in the Aliquot Part Description above.

ESTABLISHMENT RECORD
for
WILDCAT CANYON RESEARCH NATURAL AREA
within
Sitgreaves National Forest
Navajo County, Arizona

INTRODUCTION

Wildcat Canyon Research Natural Area (RNA) comprises approximately 513 acres (207 hectares) in the Heber Ranger District of the Sitgreaves National Forest in Navajo County, Arizona, on reserved public domain National Forest land.

In the past, Wildcat Canyon RNA was part of a sheep allotment under herd type management. Over the last twenty years the area has been excluded from livestock grazing and prior to that was lightly used because of inaccessibility and the absence of water.

Land Management Planning. The Southwest Regional Guide (USDA Forest Service, 1983) and Apache-Sitgreaves National Forests Plan (USDA Forest Service, 1987a) include Wildcat Canyon RNA. The environmental analysis conducted as part of the planning process supports the recommendation to establish this Research Natural Area (USDA Forest Service, 1987b).

OBJECTIVES

Wildcat Canyon RNA was recommended by the Regional RNA Committee (USDA Forest Service, 1984) as an undisturbed land area representative of Colorado pinyon/Utah juniper *Pinus edulis/Juniperus osteosperma* woodland.

Objectives of establishing Wildcat Canyon RNA are:

1. To provide representation of an undisturbed pinyon-juniper woodland community in the Southwest Regional RNA system.
2. To permit old growth or late successional natural processes to maintain this old growth pinyon-juniper woodland community.
3. To help insure the protection of genetic diversity in the pinyon-juniper woodland ecosystem.
4. To serve as a reference area for studying livestock and type conversion practices in pinyon-juniper woodland on National Forest land.

JUSTIFICATION STATEMENT FOR ESTABLISHMENT OF AREA

Wildcat Canyon RNA was identified as an outstanding example of an undisturbed, old-growth, Colorado pinyon-Utah juniper woodland. The need for representation of this ecosystem was identified in the Southwestern Regional Guide (USDA Forest Service, 1983). About 8 million acres (3.2 million hectares) of National Forest lands in the Southwestern Region consist of woodland vegetation, primarily pinyon-juniper and juniper savannas. Few opportunities exist to represent these woodlands in the RNA system in the southwest due to the long history of human use in this widespread biotic community (USDA Forest Service, 1984).

PRINCIPAL DISTINGUISHING FEATURES

Wildcat Canyon RNA contains an excellent example of old growth, Colorado pinyon-Utah juniper woodland. Also included within Wildcat Canyon RNA are stringers of ponderosa pine on the north-facing, scarp slopes of Wildcat Canyon. The most notable feature of this RNA is the nearly pristine condition of the site. Minimally disturbed, representative sites within the pinyon-juniper biotic community have been very difficult to find in the Southwestern Region.

LOCATION

Wildcat Canyon RNA can be reached via Arizona State Highway 260 (Figs. 1 and 2). About 1 mile (1.6 kilometers) west of Heber turn north on Forest Road 504. Travel 10 miles (16 kilometers) to the bridge crossing of Wildcat Canyon. The RNA, which straddles the road, is located up and downstream of the bridge.

Wildcat Canyon RNA is located within the Heber Ranger District of the Sitgreaves portion of Apache-Sitgreaves National Forests in Navajo County, Arizona. The area is at 34° 32' North latitude and 110° 43' West longitude. It is within portions of sections 2, 3, 10, and 11 of Township 13 North, Range 15 East, Gila and Salt Rivers Meridian, Arizona.

The boundaries of Wildcat Canyon RNA are more particularly described as follows:

BEGINNING at a point on the east boundary of Section 2, Township 13 North, Range 15 East, said point being 200 feet (61 meters) south of the East 1/4 corner of Section 2;

THENCE, south along the section line approximately 900 feet (274 meters) to the intersection with the 6,500 foot (1,981 meter) contour line;

THENCE, in a southwesterly direction along said contour approximately 1,100 feet (335 meters) to a point on a trail;

THENCE, westerly along said trail to the intersection with Forest Road 504;

THENCE, southwesterly along the hydrographic divide between Wildcat Canyon and Daze Canyon approximately 4,200 feet (1,280 meters) to a point North 80° East, 230 feet (70 meters) from the 1/4 corner of sections 10 and 11;

THENCE, northwesterly up a ridge approximately 1,700 feet (518 meters) to the top of the mesa;

THENCE, northwesterly along the easterly edge of said mesa to a point 500 feet (152 meters) south of the north line of section 10;

THENCE, North 50° East approximately 400 feet (122 meters) to the 6,500 foot (1,981 meter) contour line;

THENCE, following the 6,500 foot (1,981 meter) contour line in a northeasterly direction, including any side canyons, across Forest Road 504 to a point opposite the point of beginning;

THENCE, South 72° East approximately 960 feet (293 meters) to the point of Beginning.

Lands herein described and topographic features referred to are based on 7.5' United States Geological Survey Quadrangle Sheet POTATOE WASH SOUTH, ARIZONA, dated 1971. Wildcat Canyon RNA borders Wildcat Canyon on the south and east; elevations within the RNA are from 6,400 to 6,700 feet (1,950 to 2,042 meters). It contains 513 acres (207 hectares), more or less (Fig. 3).

AREA BY COVER TYPES

Information on cover types was obtained from the Southwestern Region RNA Progress Report (USDA Forest Service, 1984) and field reconnaissance. Surface area of cover types are provided in Table 1 and Figure 4.

Küchler. The primary cover type is K-21, Juniper-Pinyon Woodland, along with a limited amount of K-18, Arizona Pine Forest (Küchler, 1966).

Society of American Foresters. The primary cover type is SAF-239, Pinyon-Juniper, along with a limited amount of SAF-237, Interior Ponderosa Pine (Eyre, 1980).

Habitat Types or Plant Associations. Two habitat types occur within the RNA: *P. edulis/J. osteosperma/Cowania mexicana/Bouteloua gracilis* (PIED/JUOS/COME/BOGR), and *Pinus ponderosa/C. mexicana* (PIPO/COME) (USDA Forest Service, 1986a).

Table 1. Estimated areas of vegetation cover types in Wildcat Canyon Research Natural Area.

USFS Type ¹	SAF Type ²	Küchler Type ³	Surface Area Acres (Hectares)
PIED/JUOS/ COME/BOGR	SAF-239	K-20	416 (168)
PIPO/COME	SAF-237	K-17	97 (39)
Total			513 (207)

¹USDA Forest Service, 1986a.

²Eyre, 1980.

³Küchler, 1966.

PHYSICAL AND CLIMATIC CONDITIONS

The area can be characterized as a gently sloping plateau surface dissected by steep, shallow canyons. Included in Wildcat Canyon RNA are scarp slopes, side canyons, canyon bottom, and sandy terraces of Wildcat Canyon and the adjoining plateau area to the south. Wildcat Canyon is an ephemeral drainage. Elevations within the boundary range from 6,400 to 6,700 feet (1,950 to 2,042 meters).

A characteristic climatic feature of this arid woodland is cold winter minimum temperatures, as freezing temperatures can be expected between 130 and 150 days a year (USDA Forest Service, 1986b). Annual precipitation is approximately 16 inches (41 centimeters). This sparse rainfall is more or less evenly distributed throughout the year with 57 percent occurring in the warm season, between May and October, and the remaining 43 percent occurring in the cool season, between November and April. Much of the winter precipitation falls as snow that averages 80 inches (203 centimeters) annually. Mean temperatures on the north-facing canyon slopes are approximately 5° F (2.4° C) cooler than on the surrounding plateau. Mean annual temperature for the plateau is 43° F (6° C). Average monthly mean temperature for January and July are 68° F (20° C) and 31° F (-0.5° C), respectively.

DESCRIPTION OF VALUES

Flora. The predominant plant community occupying the limestone-sandstone, caprock plateau is a *P. edulis/J. osteosperma/C. mexicana/B. gracilis* woodland habitat type (USDA Forest Service, 1986a). The steep north-facing slopes of Wildcat Canyon contain stringers of ponderosa pine that form a *P. ponderosa/C. mexicana* habitat type (USDA Forest Service, 1986a). Along the streamside terraces are populations of native perennial grasses such as needle-and-thread *Stipa comata*, yellow Indian grass *Panicum virgatum*, and switch grass *Sorghastrum nutans*. At the outer edges of the sandy terraces, along Wildcat Canyon, small stands of walnut *Juglans major*, and gambel oak *Quercus gambelli* occur. The active channel, and areas immediately adjacent to this channel, are dominated by a shrub, leadplant *Amorpha fruticosa*. Flora of Wildcat Canyon RNA has not been thoroughly collected, described or studied. No threatened, endangered or sensitive plants are known from this site.

Fauna. The animal list provided in Table 2 was derived from the RUN WILD III computer-stored data base (Lehmkuhl and Patton, 1984) for Great Basin Conifer Woodland biome, Pinyon-Juniper series. No threatened or endangered species are known from this site.

Table 2. Abbreviated list of animals from Wildcat Gulch Research Natural Area.

<u>Common names</u>	<u>Scientific names</u>
BIRDS	
Bluebird, mountain	<i>Sialia currucoides</i>
Bluebird, western	<i>Sialia mexicana</i>
Chickadee, mountain	<i>Parus gambeli</i>
Falcon, prairie	<i>Falco mexicanus</i>
Finch, house	<i>Carpodacus mexicanus</i>
Flicker, northern	<i>Colaptes auratus</i>
Flycatcher, ash-throated	<i>Myiarchus cinerascens</i>
Flycatcher, gray	<i>Empidonax wrightii</i>
Grosbeak, black-headed	<i>Pheucticus melanocephalus</i>
Hawk, ferruginous	<i>Buteo regalis</i>
Hawk, red-tailed	<i>Buteo jamaicensis</i>
Hawk, sharp-shinned	<i>Accipiter striatus</i>
Hummingbird, black-chinned	<i>Archilochus alexandri</i>
Jay, pinyon	<i>Gymnorhinus cyanocephalus</i>
Junco, dark-eyed	<i>Junco hyemalis</i>
Kingbird, Cassin's	<i>Tyrannus vociferans</i>
Nighthawk, common	<i>Chordeiles minor</i>
Nuthatch, pygmy	<i>Sitta pygmaea</i>
Oriole, Scott's	<i>Icterus parisorum</i>
Phoebe, black	<i>Sayornis nigricans</i>
Pygmy-owl, northern	<i>Glaucidium gnoma</i>
Raven, common	<i>Corvus corax</i>
Roadrunner, greater paisano	<i>Geococcyx californianus</i>
Robin, American	<i>Turdus migratorius</i>
Shrike, loggerhead	<i>Lanius ludovicianus</i>
Shrike, northern	<i>Lanius excubitor</i>
Siskin, pine	<i>Carduelis pinus</i>
Solitaire, Townsend's	<i>Myadestes townsendi</i>
Sparrow, Brewer's	<i>Spizella breweri</i>
Sparrow, chipping	<i>Spizella passerina</i>
Sparrow, lark	<i>Chondestes grammacus</i>
Swift, white-throated	<i>Aeronautes saxatalis</i>
Tanager, western	<i>Piranga ludoviciana</i>
Titmouse, plain	<i>Parus inornatus</i>
Towhee, brown	<i>Pipilo fuscus</i>
Vireo, gray	<i>Vireo vicinior</i>
Warbler, black-throated gray	<i>Dendroica nigrescens</i>
Waxwing, cedar	<i>Bombycilla cedorum</i>
Woodpecker, Lewis'	<i>Melanerpes lewis</i>
Wood-pewee, western	<i>Contopus sordidulus</i>
Wren, Bewick's	<i>Thryomanes bewickii</i>
Wren, rock	<i>Salpinctes obsoletus</i>
MAMMALS	
Bat, big brown	<i>Eptesicus fuscus</i>
Bat, pallid	<i>Antrozous pallidus</i>
Bat, Townsend's big-eared	<i>Plecotus townsendii</i>
Chipmunk, Colorado	<i>Tamias quadrivittatus</i>

Deer, mule	<i>Odocoileus hemionus</i>
Elk	<i>Cervus elaphus</i>
Fox, kit	<i>Vulpes macrotis</i>
Gopher, Botta's pocket	<i>Thomomys bottae</i>
Lion, mountain	<i>Felis concolor</i>
Mouse, brush	<i>Peromyscus boylii</i>
Mouse, canyon	<i>Peromyscus crinitus</i>
Mouse, deer	<i>Peromyscus maniculatus</i>
Mouse, northern grasshopper	<i>Onychomys leucogaster</i>
Mouse, pinyon	<i>Peromyscus truei</i>
Mouse, plains pocket	<i>Perognathus flavescens</i>
Mouse, western harvest	<i>Reithrodontomys megalotis</i>
Mouse, white-footed	<i>Peromyscus leucopus</i>
Mouse, California	<i>Myotis californicus</i>
Myotis, fringed	<i>Myotis thysanodes</i>
Myotis, little brown	<i>Myotis lucifugus</i>
Myotis, long-eared	<i>Myotis evotis</i>
Myotis, long-legged	<i>Myotis volans</i>
Pipistrelle, western	<i>Pipistrellus hesperus</i>
Porcupine	<i>Erethizon dorsatum</i>
Prairie dog, Gunnison's	<i>Cynomys gunnisoni</i>
Rat, Ord's kangaroo	<i>Dipodomys ordii</i>
Skunk, striped	<i>Mephitis mephitis</i>
Skunk, western spotted	<i>Spilogale gracilis</i>
Squirrel, golden-mantled ground	<i>Spermophilus lateralis</i>
Squirrel, rock	<i>Spermophilus variegatus</i>
Squirrel, white-tailed antelope	<i>Ammospermophilus leucurus</i>
Vole, Mexican	<i>Microtus mexicanus</i>
Woodrat, bushy-tailed	<i>Neotoma cinerea</i>
Woodrat, Stephen's	<i>Neotoma stephensi</i>
Woodrat, white-throated	<i>Neotoma albigula</i>

AMPHIBIANS AND REPTILES

Spadefoot, Great Basin	<i>Scaphiopus intermontanus</i>
Kingsnake, Sonoran mountain	<i>Lampropeltis pyromelana</i>
Lizard, collared	<i>Crotaphytus collaris</i>
Lizard, sagebrush	<i>Sceloporus graciosus</i>
Lizard, side-blotched	<i>Uta stansburiana</i>
Lizard, tree	<i>Urosaurus ornatus</i>
Whiptail, plateau striped	<i>Cnemidophorus velox</i>
Whiptail, western	<i>Cnemidophorus tigris</i>

Geology. The entire area is underlain with Kaibab limestone (Arizona Department of Transportation, 1978).

Soils. Soils on the gently sloping plateau are mainly classified as Lithic Ustochrepts: loamy-skeletal, mixed and mesic (USDA Forest Service, 1986b). These are shallow, well-drained to somewhat excessively drained soils with large amounts of calcium carbonate. Soils on the steep scarp slopes are Udic Ustochrepts; loamy-skeletal, mixed and frigid. These too are high in calcium carbonate. Large amounts of calcium carbonate adversely affect the soils ability to supply nutrients to plants.

Lands. Wildcat Canyon RNA is wholly reserved National Forest System lands.

Cultural. No surveys have been done within the area, however it is in an area known to have high concentrations of archeological sites. The likelihood of locating a truly important site that is not duplicated elsewhere

is considered low.

IMPACTS AND POSSIBLE CONFLICTS

Mineral Resources. No known mineral resources exist in this area. Sections 3 and 11 were acquired through the General Exchange Act from Aztec Land and Cattle Company who retained all mineral rights.

Grazing. About 400 acres (162 hectares) of Wildcat Canyon RNA have potential grazing capacity. The remaining acreage is located on steep slopes. It has been excluded from grazing since 1969. Prior to that time use was low due to its inaccessibility.

Timber. Wildcat Canyon RNA consists primarily of pinyon pine and juniper with small amounts of ponderosa pine along the canyon slopes. The potential for fuelwood harvest will increase as wood becomes more scarce near the subdivision of Chevelon Retreat, located about 6 miles (10 kilometers) to the northeast.

Watershed Values. The area is contained within Watershed 3 on the Sitgreaves National Forest. The area drains through a series of ephemeral or intermittent streams to Chevelon Canyon and ultimately to the Colorado River.

Recreation Values. Due to the inaccessibility of the area it is used occasionally in the fall for hunting big game and perhaps trapping. Wildcat Canyon can be accessed by off-road vehicles near the bridge crossing, but no use has been observed. Should off-road vehicle use occur, barriers may need to be installed.

Wildlife and Plant Values. The Wildcat Canyon area is used by elk and mule deer. Other big game species that use the area are mountain lion, bear, javelina, and antelope. Along the sandy terraces and bottom of Wildcat Canyon are valuable (and highly unusual) populations of native grasses. These grasses include yellow indiagrass, switchgrass, and needle-and-thread. The bottom of Wildcat Canyon has some riparian trees and shrubs.

Special Management Area Values. There are no congressionally designated areas for this area.

Transportation Plans. Wildcat Canyon RNA is bisected by Forest Road 504, a major graveled road providing access to the north end of Heber Ranger District and across Chevelon Canyon into Chevelon Ranger District. In 1984 a barrier fence was erected to restrict vehicular traffic where the topography lends the area to easy access.

Utility Corridor Plans. There are two existing major powerlines located near the area: a 345 KV line located about four miles (6 kilometers) northwest, and two 500 KV lines located about 0.5 miles (0.8 kilometers) east. No other proposals have been made.

MANAGEMENT PRESCRIPTION

Wildcat Canyon RNA is recommended in Management Area 10 of the Apache-Sitgreaves National Forests Plan (USDA Forest Service, 1987a). Management emphasis is protection of the natural ecosystem for research purposes.

Vegetation Management. No vegetative management practices are planned in this management area. Wildcat Canyon RNA is assigned no grazing capacity and will be fenced as necessary to protect.

ADMINISTRATIVE RECORDS AND PROTECTION

Administration and protection of Wildcat Canyon RNA will be the responsibility of the Apache-Sitgreaves National Forests. The District Ranger, Heber Ranger District, AZ has direct responsibility.

The Director of the Rocky Mountain Forest and Range Experiment Station will be responsible for any studies or research conducted in the area, and requests to conduct research in the area should be referred to the Director. The Director, or designee, will evaluate research proposals and coordinate all studies and research in the area with the District Ranger and the RNA research coordinator.

Records for the Wildcat Canyon RNA will be maintained in the following offices of the USDA Forest Service:

Southwestern Region, Albuquerque, NM
 Rocky Mountain Station, Fort Collins, CO
 Apache-Sitgreaves National Forest, Springerville, AZ
 Heber Ranger District, AZ

ARCHIVING

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.

REFERENCES

- Arizona Department of Transportation. 1978.
- Brown, D. E. 1982. 122.4 Great Basin Conifer Woodlands. Pp. 52-57 in: D. E. Brown (Editor). Biotic Communities of the American Southwest-United States and Mexico. Desert Plants 4. 324 pp.
- Eyre, F. H. (Editor). 1980. Forest cover types of the United States and Canada. Society of American Foresters, Washington, D. C. 148 pp.
- Küchler, A. W. 1966. Potential natural vegetation. U. S. Department of Interior, Geologic Survey. 1969. Washington, D. C.
- Lehmkuhl, J. F., and D. 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.
- USDA Forest Service. 1983. Regional guide for the Southwestern Region. USDA Forest Service, Southwestern Region, Albuquerque, NM.
- 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, Region 3, Albuquerque, NM. 90 pp.
- USDA Forest Service. 1986a. Forest and Woodland Habitat Types (Plant Associations) of southern New Mexico and central Arizona (north of the Mogollon Rim). 2nd edition. USDA Forest Service, Southwestern Region, Albuquerque, NM.

USDA Forest Service. 1986b. Terrestrial Ecosystem Handbook, Appendix B. USDA Forest Service, Southwestern Region, Albuquerque, NM.

USDA Forest Service. 1987a. Apache-Sitgreaves National Forests Plan. USDA Forest Service, Southwestern Region, Albuquerque, NM. 261 pp.

USDA Forest Service. 1987b. Environmental Impact Statement, Apache-Sitgreaves National Forests Plan. USDA Forest Service, Southwestern Region, Albuquerque, NM. 872 pp.

I certify the enclosed boundary description of the Wildcat Canyon Research Natural Area was prepared under my direct supervision.

Seal

Forest Land Surveyor

Date

APPENDIX

These pages are reproduced from the
Apache-Sitgreaves National Forests Plan.



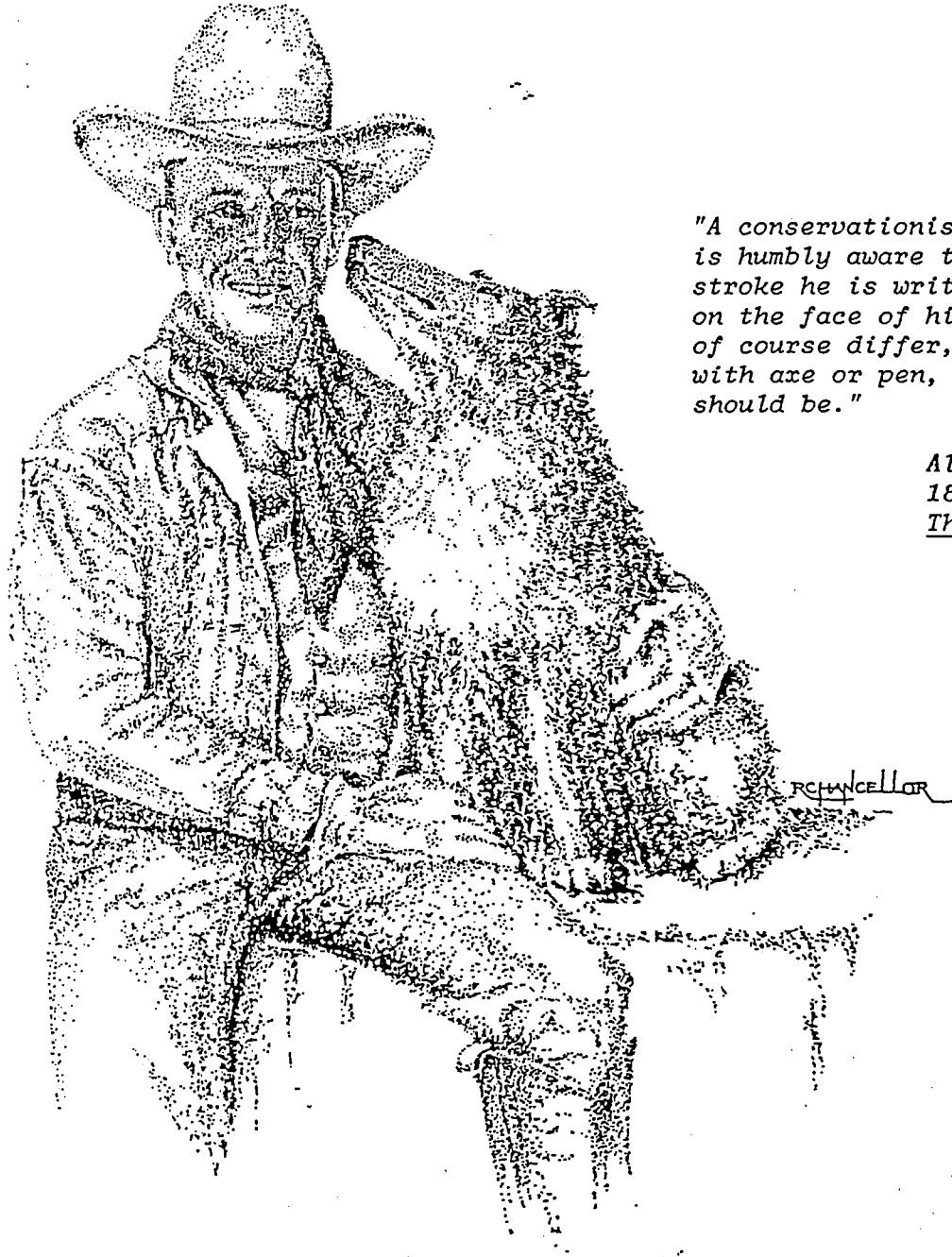
United States
Department of
Agriculture

Forest
Service

Southwestern
Region



Apache-Sitgreaves National Forests Plan



"A conservationist is one who is humbly aware that with each stroke he is writing his signature on the face of his land. Signatures of course differ, whether written with axe or pen, and that is as it should be."

*Aldo Leopold
1887-1948
The Sand County Almanac*

MANAGEMENT AREA 10

Analysis Areas: 92, 94, 230, 240, 270

Research Natural Areas

Acres: 2,550

This area includes the following research natural areas:

<u>Status</u>	<u>Name</u>	<u>Type</u>	<u>Areas-Acres</u>
Existing	Phelps Cabin	Montane Grassland	312
Recommended	Thomas Creek	Mixed Conifer	500
Recommended	Escudilla Mtn.	Spruce Montane grassland	909
Recommended	Wildcat	Pinyon Juniper	513
Recommended	Hayground	Blue Spruce/ Allium Goodingii	316

Management Emphasis:

Emphasis protection of the natural ecosystem for research purposes.

Timber Suitability Land Classification

Total National Forest Land	2,550
Not Capable, Available, or Suitable	2,550
Not Appropriate	0
Suitable	0

No vegetative management practices are planned in this management area.

<u>Program Components</u>	<u>Activities</u>	<u>Applicable Analysis Areas</u>	<u>Standards and Guidelines</u>
	A01	ALL	<u>Recreation</u> Prepare a dispersed use implementation plan with the objective of identifying the recreation attractions and means to discourage use.
	A08		Implement the plan. Do not encourage recreation use in these areas.

<u>Program Components</u>	<u>Activities</u>	<u>Applicable Analysis Areas</u>	<u>Standards and Guidelines</u>
D2	001	ALL	<u>Range</u> Range resource planning and inventory. RNA's are assigned no grazing capacity. RNA's are fenced to protect them as necessary.

I certify the enclosed boundary description of the Wildcat Canyon
Research Natural Area was prepared under my direct supervision.

Seal

Forest Land Surveyor

Date

wildcat

DECISION NOTICE AND DESIGNATION ORDER
and
FINDING OF NO SIGNIFICANT IMPACT

Wildcat Canyon Research Natural Area
Apache-Sitgreaves National Forests
Alpine Ranger District
Apache County, Arizona

By virtue of the authority vested in me by the Secretary of Agriculture under regulations at 7 CFR 2.42, 36 CFR 251.23, and 36 CFR Part 219, I hereby establish the Wildcat Canyon Research Natural Area (RNA). It shall be comprised of 545 acres (220 hectares) of lands in Apache County, Arizona, on the Alpine Ranger District of the Apache-Sitgreaves National Forests, as described in the section of the Establishment Record entitled "Location".

The Regional Forester recommended the establishment of this RNA in the Record of Decision for the Apache-Sitgreaves National Forests Land and Resource Management Plan (Forest Plan) in 1987. That recommendation was the result of an analysis of the factors listed in 36 CFR 219.25 and Forest Service Manual 4063.41. Results of the Regional Forester's analysis are documented in the Forest Plan and Final Environmental Impact Statement which are available to the public.

The Regional Forester has reexamined the Wildcat Canyon area to ensure the environmental effects of establishing the area as an RNA have not changed since 1985. This analysis is documented in the attached environmental assessment. Based on the analysis in the environmental assessment, it is my decision to adopt Alternative A, to establish Wildcat Canyon as an RNA. Alternative A is selected because it provides long-term protection and recognition of the pinyon-juniper woodland forest type. Wildcat Canyon RNA will be managed in compliance with all relevant laws, regulation, and Forest Service Manual direction regarding RNA's and in accordance with the management direction identified in the Forest Plan.

The alternative considered was Alternative B, the "No Action" alternative which would continue management of Wildcat Canyon as a "proposed" RNA. Alternative B was not selected because it would only provide short-term protection of the Wildcat Canyon area. Alternative B is consistent with the Forest Plan. Although the proposed action (Alternative A) is consistent with the management direction, it is not consistent with the land allocation for the Wildcat Canyon area in the Forest Plan. The Apache-Sitgreaves Forest Plan is hereby amended to change the allocation of the Wildcat Canyon area from "Proposed" to Established RNA. This is a non-significant amendment of the Forest Plan (36 CFR 219.10[f]).

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

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

A. Context.

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

B. Intensity.

1. There are no known effects on public health and safety.
2. There are no known effects on historic or cultural resources, actual or eligible National Register of Historic places sites, Park lands, prime farmlands, wetland, wild and scenic rivers. Effects on ecologically critical areas are minimal.
3. Effects on the human environment are not uncertain, do not involve unique or unknown risks, and are not likely to be highly controversial.
4. The action is not likely to establish a precedent for future actions with significant effects.
5. There are no known cumulative effects.
6. The proposed action would not adversely affect an endangered or threatened species or its critical habitat.
7. The proposed action is consistent with Federal, State, and local laws and requirements for the protection of the environment.

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

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

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

Chief

Date

ENVIRONMENTAL ASSESSMENT

WILDCAT CANYON RESEARCH NATURAL AREA Apache-Sitgreaves National Forests, Alpine Ranger District Apache County, Arizona

Proposed Action

The proposed action is to establish the Wildcat Canyon Research Natural Area (RNA), and to manage it according to the direction provided in the Land and Resource Management Plan (Forest Plan) for the Apache-Sitgreaves National Forests. The Wildcat Canyon RNA was proposed for establishment and management direction was provided in the Forest Plan in Management Area 10, Research Natural Areas, pages 203 and 204. The proposed action, formal designation of the RNA by the Chief of the Forest Service, will amend the Forest Plan.

Purpose and Need for Action

The purpose of establishing the Wildcat Canyon RNA is to contribute to a series of RNA's designated to "illustrate adequately or typify for research or education purposes, the important forest and range types in each forest region, as well as other plant communities that have special or unique characteristics of scientific interest and importance" (36 CFR 251.23). Wildcat Canyon RNA contributes to this series of RNA's by providing an example of pinyon-juniper woodland, as discussed in the Regional Guide, page 3-9. An evaluation by the Regional RNA Committee, pursuant to direction in Forest Service Manual (FSM) 4063.04b), of the need for RNA's identified this habitat type as suitable for inclusion in the national network. Establishment of the Wildcat Canyon RNA provides the long-term protection and recognition of pinyon-juniper woodland.

The Wildcat Canyon area was identified in the Forest Plan as a "proposed" RNA based on the relatively undisturbed conditions of the pinyon-juniper woodlands in the area at that time. Comments received from interested and affected members of the public supported establishment of an RNA in the area. Site conditions and public concerns have been reviewed, and no important changes have occurred.

Conditions and environmental effects of designation are the same as described on pages 171 and 216 of the EIS for the Forest Plan and pages 3-7 through 3-12 of the Regional Guide. Site specific conditions and effects are as follows:

- The area has been excluded from livestock since 1969. Prior to that time its use was light due to its inaccessibility.
- No known significant mineral resources exist within the area. A portion of the area is land that was acquired through a land exchange with the Aztec Land and Cattle Company, who retained all mineral rights.
- Recreation use is light and mostly limited to hunting. The 504 Road, a major gravel access route, bisects the area, and is the only road access.
- The area is mostly pinyon-juniper woodland, with small amounts of ponderosa pine on the canyon slopes. The area is withdrawn from the timber land base.

Designation of alternate RNA's for protection was considered during Forest Plan development (Public Comments and Forest Service Response to DEIS, pages 66, 74, 402). A Region-wide study of potential RNA's was conducted as input to the Regional Guide, and Wildcat Canyon was determined at that time to provide the most appropriate site for inclusion in the national network for protection of this habitat type.

Alternatives and Environmental Consequences

Alternative A, Proposed Action

Alternative A would designate a 545 acre area as the Wildcat Canyon RNA. Wildcat Canyon "proposed" RNA was estimated to be 513 acres in the Forest Plan; more precise measurement sets acreage at 545 as described on page of the attached Establishment Record. Management of the area emphasizes protection of the natural ecosystem for research purposes. There are no planned vegetative management practices. Recreation use will be limited to dispersrd recreation at a low intensity and reduced service level. The area is assigned no grazing capacity.

There are no adverse or irreversible environmental effects of Alternative A. The Wildcat Canyon RNA is already being managed as a "proposed" RNA under the Forest Plan. Long-term retention of existing management would be ensured. There are no significant cumulative effects of establishing the RNA.

Alternative B, No Action

Under this alternative, the Wildcat Canyon RNA would not be formally designated at this time. The area would continue to be managed as a "proposed" RNA according to direction in the Forest Plan, pages 203 and 204, and the recommendation would be revisited when the Forest Plan is revised. There are no significant cumulative effects of this alternative. Some research opportunities may be foregone due to the delay in establishing the RNA. No change in on-the-ground management should occur as a result of this alternative during the remaining life of the Forest Plan.

Agencies and Persons Consulted

In the process of updating information to determine whether or not conditions had changed since adoption of the Forest Plan, the State Natural Heritage Program, Nature Conservancy, Arizona Cattlegrowers Association, Arizona Game and Fish Department, and the range permittee were contacted. Only one comment was received, from the Arizona Game and Fish Department, which supported RNA designation.

WILDCAT CANYON
R.N.A.
APACHE-SITGREAVES NATIONAL FOREST

Beginning at a point on the east line of Section 2, T.13 N., R.15 E., G.S.R.M., from which point the east 1/4 corner of said Section 2 bears North, a distance of 200 feet.

Thence South, along the east line of said Section 2 a distance of 1030 feet.
Thence S40°W, a distance of 1300 feet, to a point on a trail.
Thence S75°W, a distance of 1180 feet, to a point on Forest Road 504.
Thence S47°W, a distance of 4330 feet, to a point bearing East, a distance of 235 feet from the west 1/4 corner of Section 11, T.13 N., R 15 E., G.S.R.M..
Thence N72°W, a distance of 2245 feet.
Thence N16°W, a distance of 1180 feet.
Thence N38°E, a distance of 2960 feet.
Thence N16°E, a distance of 1235 feet.
Thence N49°E, a distance of 1660 feet.
Thence S19°E, a distance of 1970 feet.
Thence N68°E, a distance of 2685 feet.
Thence S73°E, a distance of 1050 feet to the point of beginning.

The described Wildcat Canyon R.N.A. contains 545 acres more or less.

The intent of this description is to identify the Wildcat Canyon R.N.A., as would be identified by a survey.

The above description was produced from information identified on the USGS Potato Wash South Quad Map.

This description was prepared for Forest Service use in the preparation of R.N.A. documents

The above description for the Wildcat Canyon R.N.A., has been reviewed by me for use in an area designation. The legals are acceptable as presented, and no potential problems were noted during my review.

Douglas J. Williams

For Regional Land Surveyor

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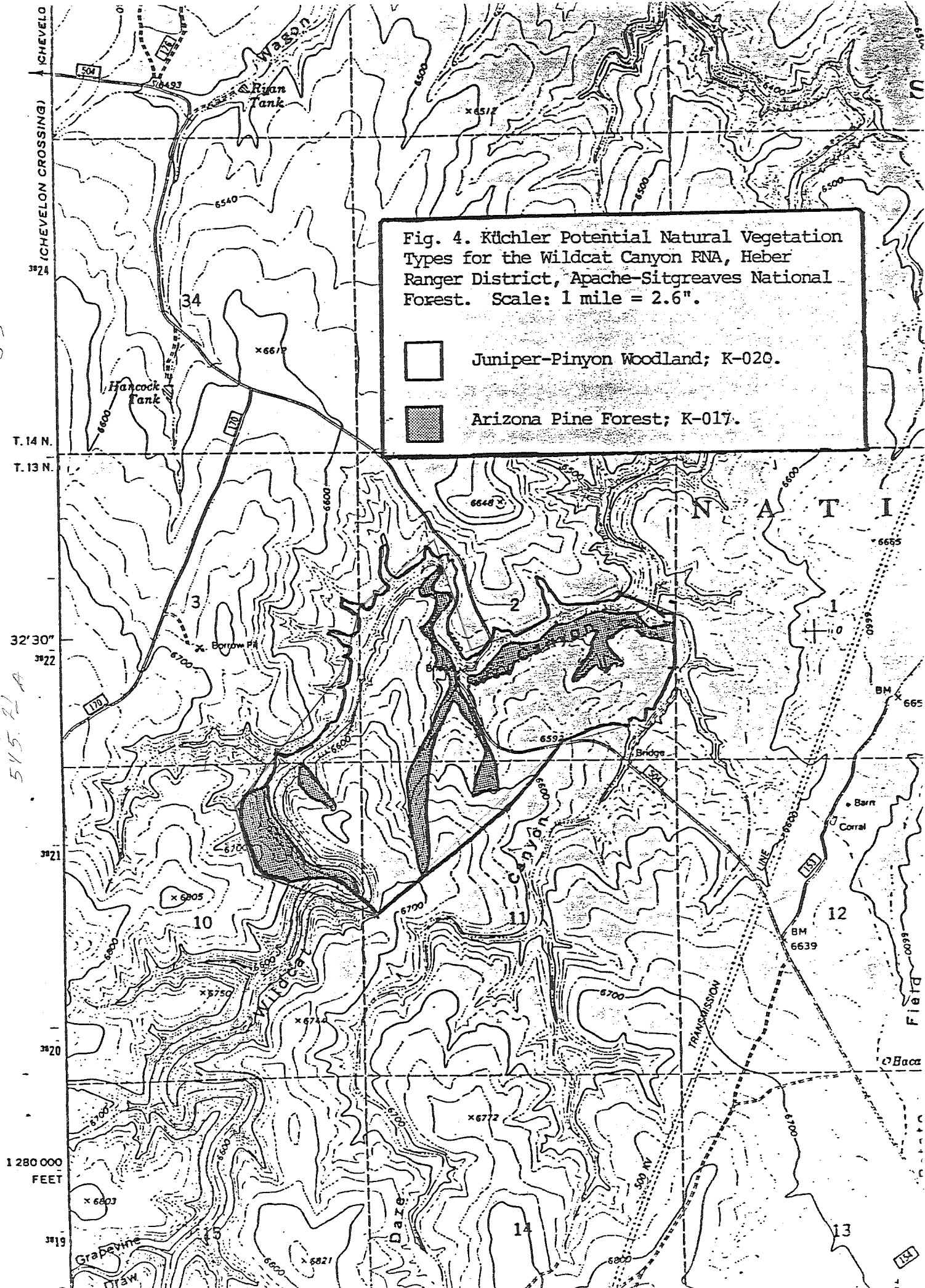




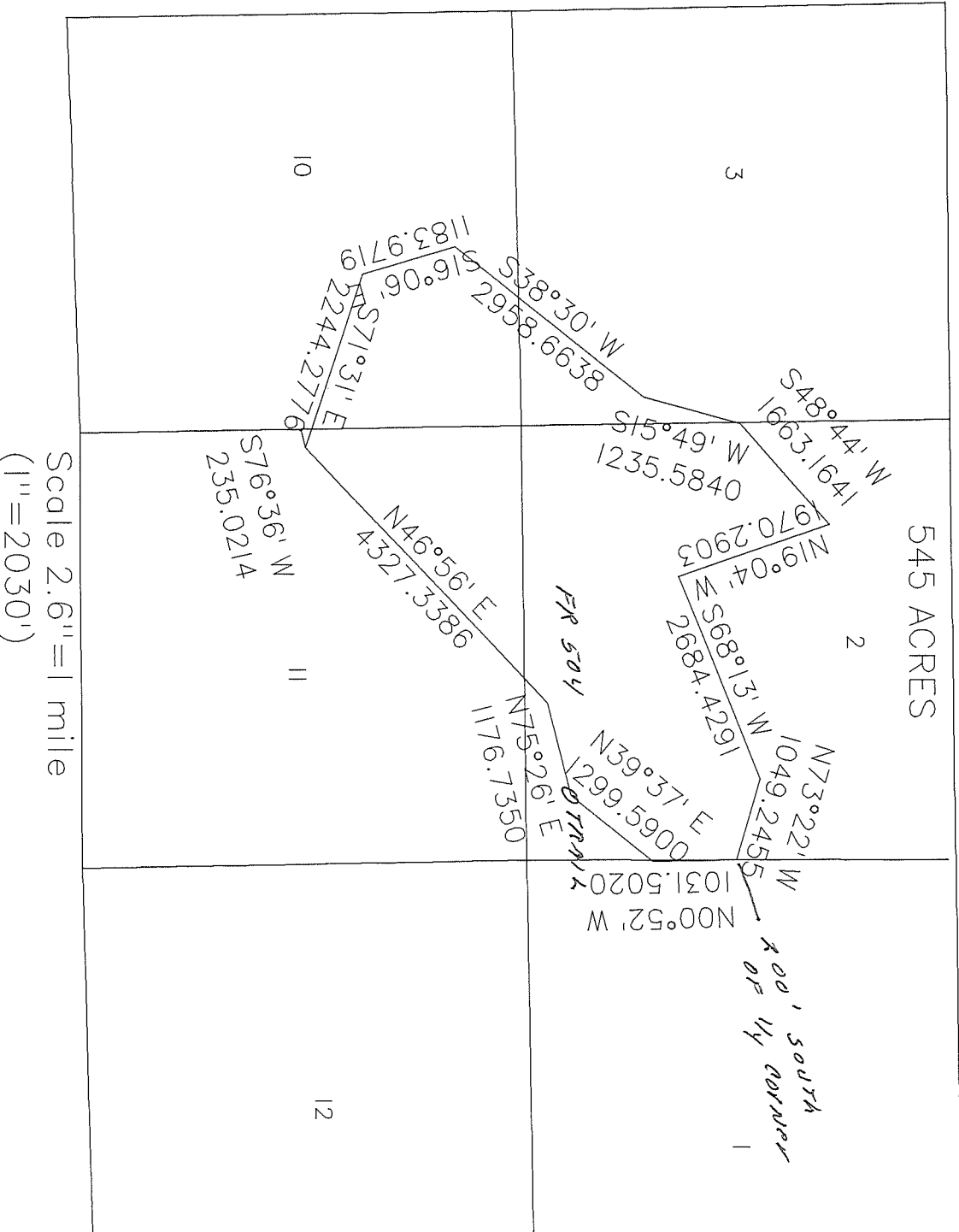
Fig. 4. Küchler Potential Natural Vegetation Types for the Wildcat Canyon RNA, Heber Ranger District, Apache-Sitgreaves National Forest. Scale: 1 mile = 2.6".

-  Juniper-Pinyon Woodland; K-020.
-  Arizona Pine Forest; K-017.

1 280 000 FEET

WILDCAT CANYON RNA

545 ACRES



ENVIRONMENTAL ASSESSMENT WILDCAT CANYON RESEARCH NATURAL AREA

Apache-Sitgreaves National Forests
Alpine Ranger District
Apache County, Arizona

Proposed Action

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Purpose and Need for Action

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Alternatives and Environmental Consequences

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There are no adverse or irreversible environmental effects of Alternative A. The Wildcat Canyon RNA is already being managed as a "proposed" RNA under the Forest Plan. Long-term retention of existing management would be ensured. There are no significant cumulative effects of establishing the RNA.

Alternative B, No Action

Under this alternative, the Wildcat Canyon RNA would not be formally designated at this time. The area would continue to be managed as a "proposed" RNA according to direction in the Forest Plan, pages 203 and 204, and the recommendation would be revisited when the Forest Plan is revised. There are no significant cumulative effects of this alternative. Some research opportunities may be foregone due to the delay in establishing the RNA. No change in on-the-ground management should occur as a result of this alternative during the remaining life of the Forest Plan.

Agencies and Persons Consulted

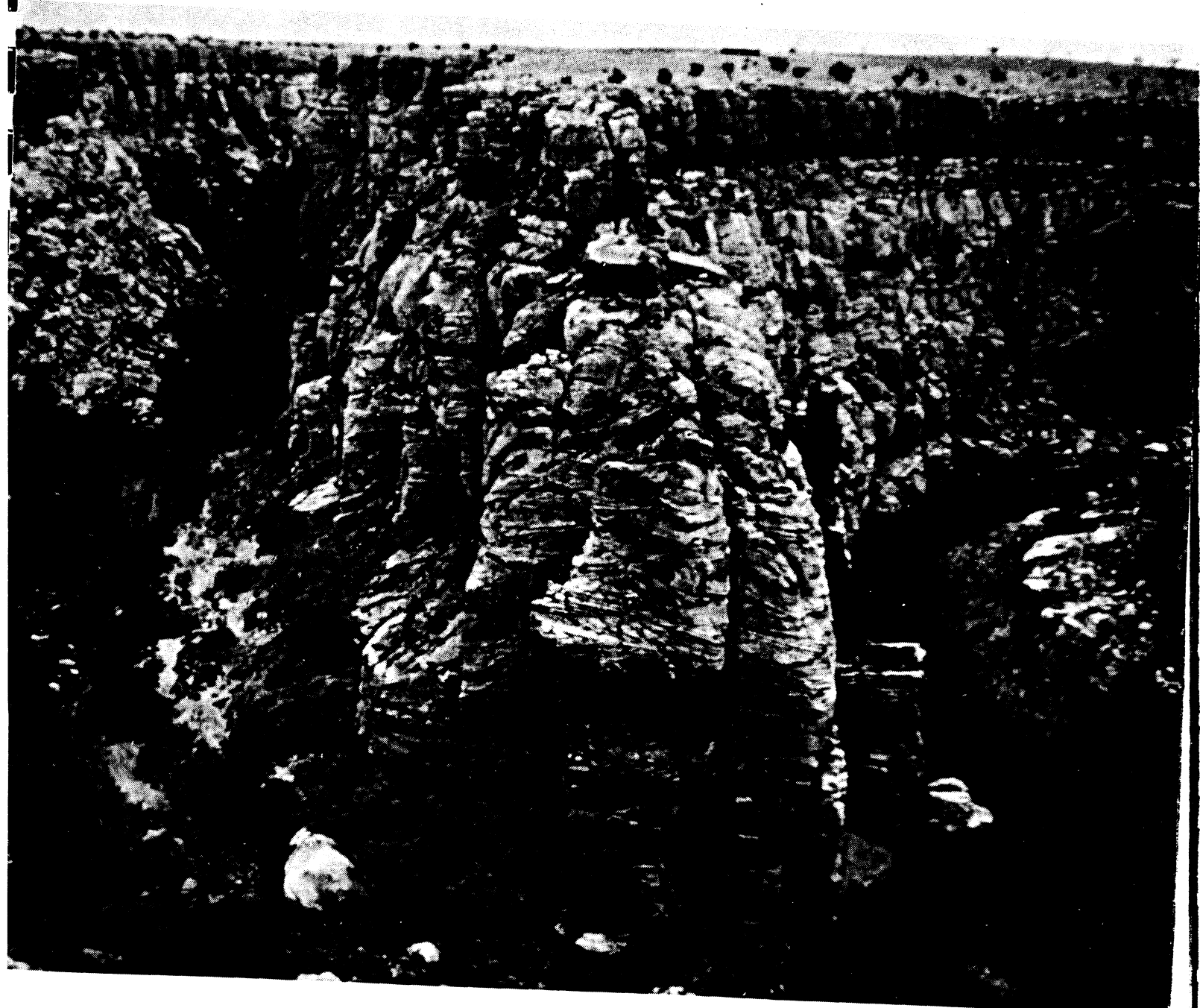
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LIBRARY

A Biotic inventory of

CHEVELON CANYON

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SUBMITTED TO: U.S. DEPARTMENT OF AGRICULTURE
- SOIL CONSERVATION SERVICE
- SITGREAVES NATIONAL MONUMENT

NORTHERN ARIZONA SOCIETY OF SCIENCE AND ART, INC.

MUSEUM OF NORTHERN ARIZONA

Department of Biology

A BIOTIC INVENTORY OF CHEVELON CANYON,
COCONINO AND NAVAJO COUNTIES, ARIZONA

Prepared by:

Stewart W. Aitchison
Field Biologist

and

Michael E. Theroux
Botanist

Submitted to:

Soil Conservation Service

and

Sitgreaves National Forest

Order No. 6202-11-73

Submitted by:

Steven W. Carothers
Curator of Zoology
Museum of Northern Arizona

1 February 1974

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INTRODUCTION

In 1972 the Navajo County Resource Conservation District Office and the Sitgreaves National Forest Office suggested that Chevelon Canyon, Coconino and Navajo Counties, Arizona, may qualify as a "roadless" or "natural" area. It was felt that Chevelon Canyon was of such a pristine and unique nature that it deserved protection for its own sake and for the enjoyment of future generations. This action was readily endorsed by various conservation, educational, and commercial organizations as well as private individuals. However to convince the necessary political-social machinery to act accordingly on this proposal, factual information was required regarding the resources (i.e., the uniqueness) of Chevelon Canyon.

As part of this search for knowledge, the Biology Department of the Museum of Northern Arizona was asked by the Soil Conservation Service and Sitgreaves National Forest to submit a research plan concerning the biotic resources of Chevelon Canyon.

A five-point program was formulated and mutually agreed upon. These points or objectives were:

- 1) To provide an inventory of the vertebrate animals including their relative abundance and habitat of occurrence within Chevelon Canyon. Migratory status of birds and mammals (where applicable) will be noted.
- 2) To provide an inventory of the vascular plants occurring in the study area.
- 3) A range and distribution map will be prepared illustrating the major vegetative associations.

- 4) Qualitative descriptions of the major vegetative associations and the vertebrate resources will be compiled.
- 5) Special emphasis will be placed on the location and relative abundance of rare and endangered species of vascular plants and vertebrate animals in the study area. At the request of the Sitgreaves National Forest, two Gunnison's Prairie Dog town sites will be censused for the presence of Black-footed Ferrets and/or Burrowing Owls.

STUDY LOCATIONS

For the purposes of this study, the following area was delineated as Chevelon Canyon: the main canyon gorge from Chevelon Lake, Coconino County, Arizona [Sec. 10, T12N, R14E] to the junction of Chevelon Creek and the Little Colorado River, Navajo County, Arizona [Sec. 15, T18N, R17E]. Also included were approximately one-mile wide strips adjacent to each rim of the main gorge (Fig. 1).

In addition, the Gunnison's Prairie Dog townsites are located at South 1/2, Sec. 19; North 1/2, Sec. 20, T12N, R19E, and South 1/2, Sec. 2; North 1/2; Sec. 11, T10N, R22E. Both sites are in Navajo County and within the Sitgreaves National Forest, Arizona.

METHODS

Preliminary inventorying was carried out 6-8 February 1973 at Chevelon Crossing (Sec. 20, T14N, R15E), Coconino County and Chevelon Bridge (Sec. 27, T18N, R17E), Navajo County. Information on small mammal densities and habitat preferences were revealed by snap-trapping. Observations were made on fish, amphibians, reptiles, large mammals, and birds. Vascular plants were collected.

Laboratory time was spent reviewing existing literature, contacting previous investigators of the area (few were found), ordering topographic maps, and readying field equipment.

To facilitate the research, an aerial survey was undertaken on 2 June 1973 to achieve a comprehensive over-view of the

physiography and vegetative associations of the Chevelon region. From this flight, a backpacking expedition was decided to be the most expedient approach to fulfilling our objectives.

During 4-22 June 1973, a Museum biology team, headed by the authors, hiked from Chevelon Lake to six creek miles north of the McCauley Sinks (Sec. 7, T16N, R17E). Further walking was impossible because of the Chevelon Canyon "narrows". The "narrows" extend from about three creek miles north of the McCauley Sinks to Chevelon Bridge. This part of the canyon is characterized by wall to wall water with little or no bank.

A small raft was used to go from Chevelon Bridge south approximately two miles until a log-jam prevents further boating. Therefore, the entire length of Chevelon Canyon was surveyed, save the short stretch containing the log-jam. But even this was observed from the aerial survey.

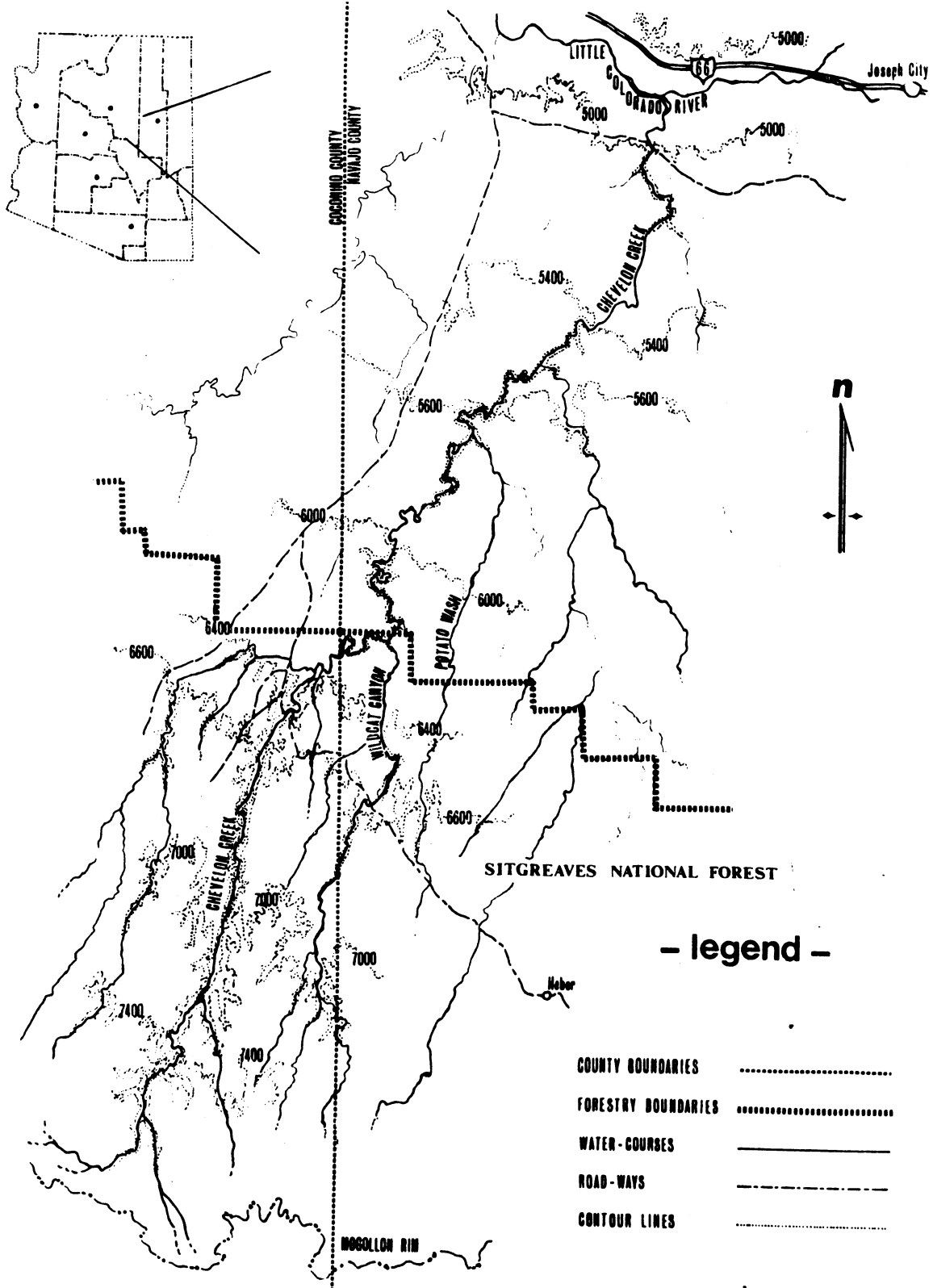
Further field work was done near the McCauley Sinks, Chevelon Crossing, Durant's Tank, and the two Gunnison's Prairie Dog townsites.

Using aerial photographs supplied by the Soil Conservation Service, field notes, and another flight over Chevelon Canyon enabled Michael Theroux to finalize the vegetation map (Fig. 2).

A total of 70 man-days was spent in the field and 100 man-days in laboratory and write-up time.

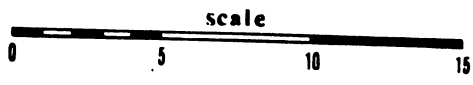
Fig. 1. Map of Chevelon Canyon.

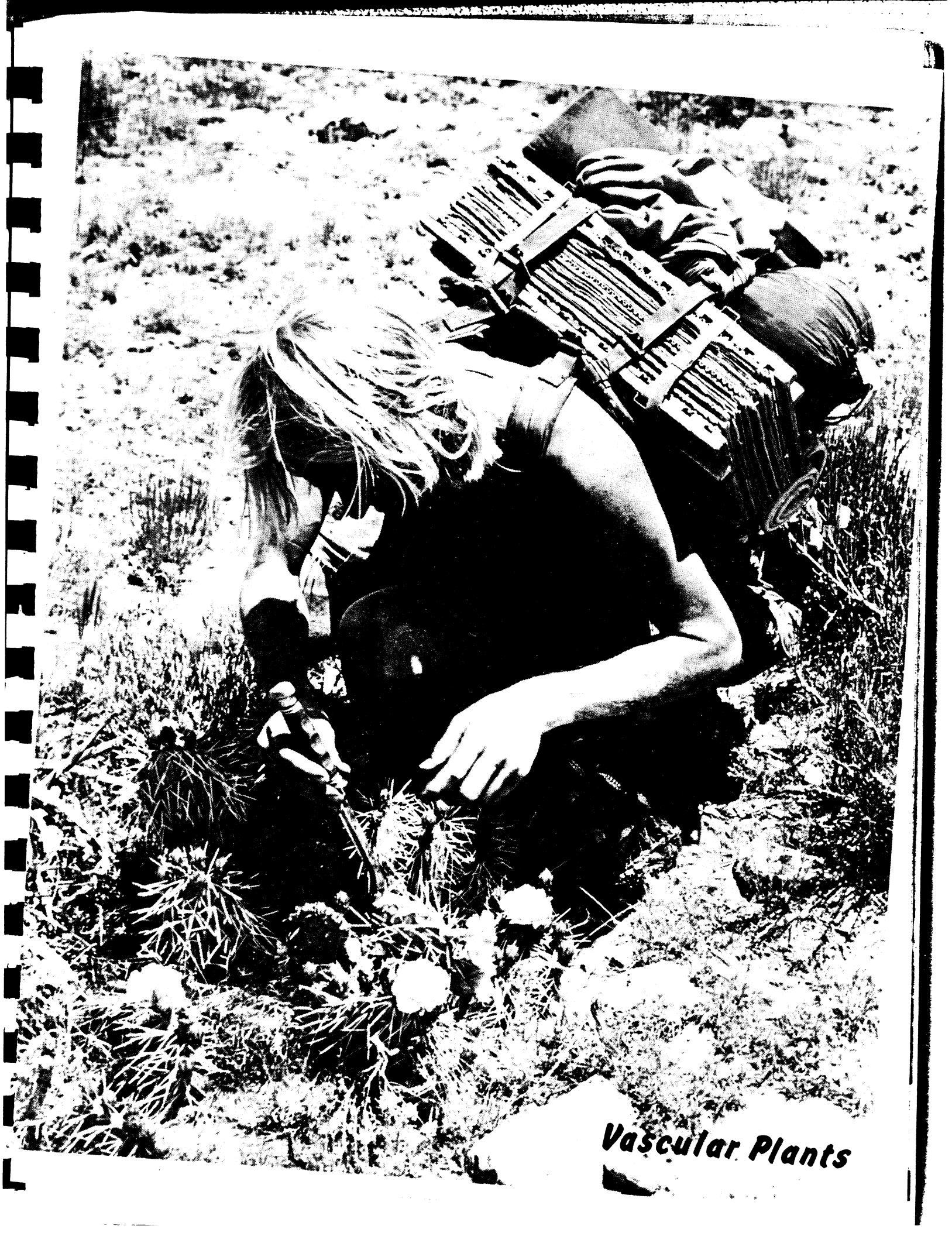
CHEVELON CANYON



- legend -

- COUNTY BOUNDARIES (dotted line)
- FORESTRY BOUNDARIES (thick dotted line)
- WATER-COURSES (solid line)
- ROAD-WAYS (dashed line)
- CONTOUR LINES (dotted line)





Vascular Plants

BIOTIC INVENTORIES

Vascular Plants

Species listed below represent species encountered during field study; this is not meant as a total-flora checklist.

VASCULAR PLANTS

EQUISETACEAE

Equisetum arvense L. "Horsetail"

POLYPODIACEAE

Cheilanthes eatoni Baker. "Lip Fern"

Cheilanthes feci T. Moore. "Lip Fern"

Cheilanthes fendleri Hook. "Lip Fern"

Cheilanthes lindheimeri Hook. "Lip Fern"

Cystopteris fragilis (L.) Bernh. "Bladder-fern"

Notholaena sinuata (Lag.) Kaulf. var. integerrima (Gooding)
Weatherby

Pellaea atropurpurea (L.) Link "Cliff-break"

Pellaea longimucronata Hook. "Cliff-break"

PINACEAE

Abies concolor (Gordon & Glendinning) Lindl. "White Fir"

Picea engelmannii Parry "Engelmann Spruce"

Picea pungens Engelm. "Blue Spruce" (Probable occurrence; no
specimen)

Pinus edulis Engelm. "Pinyon Pine"

Pinus ponderosa Lawson "Ponderosa Pine"

Pseudotsuga menziesii (Mirb.) Franco. var. glauca (Beissn.)

Franco. "Rocky Mountain Douglas Fir"

CUPRESSACEAE

Juniperus deppeana Steud. "Alligator Juniper"

Juniperus monosperma (Engelm.) Sarg. "One-seed Juniper"

Juniperus osteosperma (Torr.) Little "Utah Juniper"

Juniperus scopulorum Sargent "Rocky Mountain Juniper"

EPHEDRACEAE

Ephedra viridis Coville "Joint-fir", "Mormon Tea"

GRAMINEAE

Agropyron smithii Rydb. "Wheat-grass"

Aristida adscensionis L. "Six-week Three-awn"

Bouteloua curtipendula (Michx.) Torr. "Side-oats Grama"

Bouteloua gracilis (H.B.K.) Lag. "Blue Grama"

Bromus marginatus Nees. "Brome"

Bromus tectorum L. "Cheat-grass"

Eragrostis diffusa Buckl. "Love-grass"

Festuca octoflora Walt. "Six-weeks Fescue"

Koeleria cristata (L.) Pers. "June Grass"

Oryzopsis hymenoides (Roem & Schult.) Ricker "Rice-grass"

Phragmites communis Trin "Common Reed"

Poa fendleriana (Steud.) Vasey "Muttongrass"

Setaria leucopila (Scribn. & Merr.) K. Shumann "Bristlegrass"

Sitanion longifolia J. G. Smith "Squirreltail"

Stipa comata Trin. & Rupr. "Needle and Thread Grass"

CYPERACEAE

Carex lanuginosa Michx. "Sedge"

Carex vallicola Dewey "Sedge"

Carex vallicola var. rusbyi (Mack.) Herm. "Sedge"

COMMELINACEAE

Tradescantia occidentalis (Britton.) Smyth. "Spiderwort"

LILIACEAE

Nolina microcarpa Wats. "Beargrass"

Yucca angustissima Engelm. "Spanish Bayonet"

Yucca baccata Torr. "Banana Yucca"

AMARYLLIDACEAE

Agave parryi Engelm. "Century Plant"

SALICACEAE

Populus angustifolia James "Narrowleaf Cottonwood"

Populus fremontii Wats. "Fremont Cottonwood"

Salix exigua Nutt. "Coyote Willow"

Salix gooddingii Ball. "Goodding Willow"

Salix lasiolepis Benth. "Arroyo Willow"

JUGLANDACEAE

Juglans major (Torr.) Heller. "Arizona Walnut"

BETULACEAE

Alnus oblongifolia Torr. "Arizona Alder"

FAGACEAE

Quercus emoryi Torr. "Emory Oak"

Quercus gambellii Nutt. "Gambel Oak"

Quercus turbinella Greene "Shrub Live Oak"

ULMACEAE

Celtis reticulata Torr. "Hackberry"

MORACEAE

Morus microphylla Buckl. "Small-leaf Mulberry"

SANTALACEAE

Comandra pallida DC. "Sandalwood", "Bastard Toadflax"

POLYGONACEAE

Eriogonum umbellatum Torr. "Wild Buckwheat"

Rumex acetosella L. "Sheep Sorrel"

Rumex crispus L. "Curly-leaf Dock"

CHENOPODIACEAE

Atriplex canescens (Pursh.) Nutt. "Four-wing Saltbush"

Chenopodium album L. "Lamb's Quarters"

Salsola kali var. tenuifolia Taush. "Russian Thistle"

Sueda suffrutescens Wats. "Soapweed"

NYCTAGINACEAE

Allionia incarnata L. "Trailing Four-o'-Clock"

PORTULACACEAE

Portulaca oleracea L. "Purslane"

RANUNCULACEAE

Clematis bigelovii Torr. "Leatherflower"

Delphinium scaposum Greene "Larkspur"

Ranunculus aquatilis var. capillaceus D.C. "Aquatic Buttercup"

BERBERIDACEAE

Berberis haematocarpa Wooton. "Small-leaf Barberry", "Red Mahonia"

Berberis repens Lindl. "Creeping Mahonia"

CRUCIFERAE

- Arabis gracilipes Greene "Rock-cress"
Arabis perennans Wats. "Rock-cress"
Descurainia pinnata (Walt.) Britton. "Tansy Mustard"
Dithyrea wislizenii Engelm. "Spectacle Pod"
Draba asprella Greene "Draba"
Draba cuneifolia Nutt. "Draba"
Erysimum wheeleri Rothr. "Wallflower"
Lepidium montanum Nutt. var. glabrum C. L. Hitchc. "Peppergrass"
Lesquerella intermedia (Watts.) Heller. "Bladderpod"
Sisymbrium altissimum L. "Tumble-mustard"
Thlaspi fendleri Gray "Candytuff"

CAPPARIDACEAE

- Cleome jonesii (Macbr.) Tidestrom. "Yellow-flowered Beeplant"
Cleome serrulata Pursh. "Rocky Mountain Beeplant"

CRASSULACEAE

- Sedum cockerellii Britton. "Stonecrop"

SAXIFRAGACEAE

- Heuchera parvifolia Nutt. "Allumroot"
Ribes cereum Dougl. "Wax Currant", "Squaw Currant"

ROSACEAE

- Chamaebatiaria millefolium (Torr.) Maxim. "Fern-bush"
Cercocarpus montanum Raf. "Mountain Mahogany"
Cowania mexicana D. Don. "Cliff-rose"
Fragaria ovalis (Lehm.) Rydb. "Wild Strawberry"

Petrophytum cacspitosum Nutt. "Rockmat"

Rosa arizonica Rydb. "Arizona Wild Rose"

Rubus neomexicanus Gray. "New Mexican Raspberry"

LEGUMINOSAE

Astragalus amphioxys Gray "Milkvetch", "Locoweed"

Amorpha fruticosa var. occidentalis (Abrams.) K.&P. "False-indigo"

Astragalus lentiginosus Dougl. var. vitreus Barneby "Milkvetch", "Locoweed"

Astragalus mollissimus Torr. var. thompsonae (Wats.) Barneby "Milkvetch"

Astragalus tephrodos Gray "Milkvetch"

Lathyrus eucosmus Butters & St. John "Peavine"

Medicago lupulina L. "Black Medic"

Robinia neomexicana Gray "New Mexico Locust"

Thermopsis pinatorum Greene "Golden Pea"

GERANIACEAE

Geranium richardsonii Risch & Traut. "White Cranesbill"

RUTACEAE

Ptelca pallida Greene "Hop-tree"

POLYGALACEAE

Polygala alba Nutt. "White Milkwort"

EUPHORBIACEAE

Euphorbia fendleri Torr. & Gray "Spurge"

Tragia stylaris Muell. "Noseburn"

ANACARDIACEAE

Rhus radicans L. "Poison-ivy"

Rhus trilobata Nutt. "Squawbush"

CELASTRACEAE

Forsellesia nevadensis (Gray) Greene "Greasebush"

ACERACEAE

Acer negundo L. "Box-elder"

VITACEAE

Parthenocissus inserta (Kerner) Fritsch. "Virginia Creeper"

Vitis arizonica Engelm. "Arizona Grape"

MALVACEAE

Sphaeralcea leptophylla (Gray) Rydb. "Globe-mallow"

Sphaeralcea subhastata Coult. "Globe-mallow"

TAMARICACEAE

Tamarix pentandra Pall. "Tamarix"

VIOLIACEAE

Viola nephrophylla Greene "Violet"

LOASACEAE

Mentzelia albicaulis Dougl. "Stickleaf"

CACTACEAE

Coryphantha vivipara (Nutt.) Britton. & Rose var. arizonica
(Engelm.) W.T. Marshall

Echinocereus fendleri (Engelm.) Rumpler. "Hedgehog", "Straw-
berry Cactus"

Opuntia phaeacantha Engelm. "Prickly Pear"

Opuntia whipplei Engelm. & Bigel. "Cholla"

ONAGRACEAE

Gayophytum racemosum T. & G. "Gayophytum"

Oenothera albicaulis Pursh. "Evening Primrose"

Oenothera lavandulaefolia Torr. & Gray "Purple-leaf Evening
Primrose"

UMBELLIFERAE

Cymopterus purpurascens (Gray) Jones. "False Parsley"

Pseudocymopterus montanus (Gray) Coult. & Rose "False Mountain
Parsley"

CORNACEAE

Cornus stolonifera Michx. "Red-osier Dogwood"

ERICACEAE

Arctostaphylos uva-ursi (L.) Spreng. "Bearberry", "Kinnikinnick"

PRIMULACEAE

Androsace septentrionalis L. "Rockjasmine"

OLEACEAE

Fraxinus anomala Torr. "Single-leaf Ash"

Fraxinus cuspidata Torr. var. macropetala (Eastw.) Reyder
"Flowering Ash"

Fraxinus pennsylvanica Marshall ssp. velutina (Torr.) Miller
"Velvet Ash"

CONVOLVULACEAE

Evolvulus pilosus Nutt. "Evolvulus"

POLEMONIACEAE

Phlox austromontana Coville "Phlox"

Phlox longifolia Nutt. "Phlox"

Gilia ophthalmoides Brand. "Skyrocket"

Gilia polycladon Torr.

Gilia rigidula Benth. "Skyrocket"

HYDROPHYLLACEAE

Phacelia crenulata Torr. "Phacelia"

BORAGINACEAE

Cryptantha jamesii (Torr.) Payson.

Cryptantha pterocarya (Torr.) Greene

Lappula redowskii (Hornem.) Greene var. desertorum (Greene)

Johnst. "Stickseed"

VERBENACEAE

Verbena ciliata Benth. "Vervain"

Verbena scabra Vahl. "Vervain"

LABIATAE

Hedeoma drummondii Benth. "Mock-pennyroyal"

Marrubium vulgare L. "Horehound"

Mentha arvensis L. var. villosa (Benth.) S. R. Stewart "Common
Mint"

Mentha spicata L. "Spearmint"

Monardia menthaefolia Graham. "Horsemint Beebalm"

Monardella odoratissima Benth. "Beebalm"

Salvia columbariae Benth. "Sage"

SOLANACEAE

Datura meteloides D.C. "Jimson Weed", "Sacred Datura"

Lycium pallidum Miers. "Wolfberry"

Nicotiana trigonophylla Dunal. "Indian Tobacco"

SCROPHULARIACEAE

Castilleja integra Gray "Indian Paintbrush"

Mimulus rubellus Gray "Monkey Flower"

Pedicularis centranthera Gray "Lousewort"

Penstemon barbatus (Cav.) Roth. "Scarlet Beardtongue"

Penstemon thomsoniae (Gray) Rydb.

Verbascum thapsus L. "Flannel-mullein"

OROBANCHACEAE

Orobanche fasciculata Nutt. "Broomrape"

Orobanche ludoviciana Nutt. "Broomrape"

Orobanche multiflora Nutt. "Broomrape"

PLANTAGINACEAE

Besseyia plantaginea (James) Rydb. "Kitten-tails"

Plantago purshii Roem & Schult. "Plantain"

RUBIACEAE

Galium stellatum Kellogg. "Bedstraw"

Houstonia wrightii Gray

CAPRIFOLIACEAE

Symphoricarpos palmeri G.N. Jones "Snowberry"

VALERIANACEAE

Valeriana arizonica Gray "Valerian"

COMPOSITAE

Antennaria marginata Greene "Pussytoes"

Artemisia dracunculoides Pursh. "Sagebrush", "False Tarragon"

Artemisia frigida Willd. "Sage"

Aster arenosus (Heller.) Blake "Aster"

Brickellia californica (Torr. & Gray) Gray "Brickel-bush"

Chrysopsis villosa (Pursh.) Nutt. "Golden Aster"

Cirsium pulchellum (Greene) Woot. & Standl. "Thistle"

Erigeron concinnus (Hook. & Arn.) Torr. & Gray "Fleabane"

Erigeron divergens Torr. & Gray "Fleabane"

Erigeron macranthus Nutt. "Fleabane"

Gaillardia pinnatifida Torr. "Blanket Flower"

Gnaphallium chilense Spreng. "Everlasting"

Gutierrezia sarothrae (Pursh.) Britt. & Rusby. "Snakeweed"

Haplopappus nuttallii Torr. & Gray "Goldenweed"

Hymenopappus lugens Greene

Perezia wrightii Gray

Psilostrophy sparsiflora (Gray) Nels. "Paper Flower"

Senecio multilobatus Torr. & Gray "Groundsel"

Senecio newcomexicanus Gray "Groundsel"

Solidago missouriensis Nutt. "Goldenrod"

Taraxacum officinale Weber. "Dandelion"

Townsendia excapa (Richards.) Porter "Townsendia"

Tragopogon dubius Scop. "Goat's Beard"

Xanthium strumarium L. "Cocklebur"

Zinnia grandiflora Nutt. "Zinnia"

Vertebrate Inventory

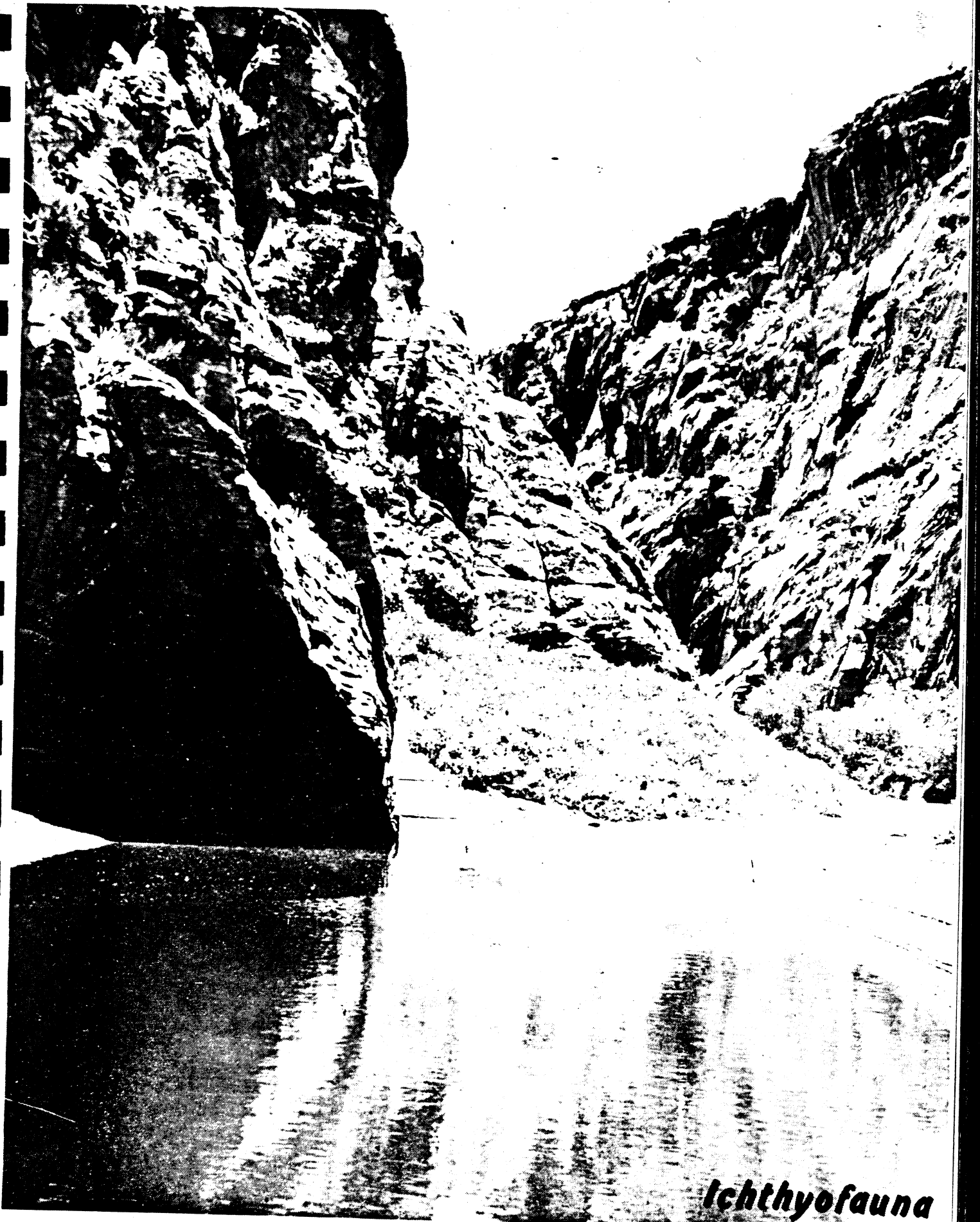
Any vertebrate checklist is destined to be outdated almost before it is in print. Animal distribution is a very dynamic phenomenon. Also, detection of animals requires being in the right place at the right time, knowing where and how to look, and having some degree of cooperation from the animals themselves. Probably the biggest problem is the temporal placement of certain species.

Goin and Goin (1953) found that at any one period of time the average number of species per genus was quite low but with cumulative time the average for the area increased. This was attributed to the fact that the area is not occupied by a single community but rather a succession of communities as environmental conditions change.

With this in mind, the checklists, therefore, are not definitive but rather only contain those organisms actually encountered or very likely to occur (hypotheticals) as known from the literature. But this should give an idea of the diversity of wildlife in Chevelon Canyon.

As far as possible, keys to the status and distribution of these creatures have been used. However, exceptions (e.g., seasonal changes, evolutionary trends, successional changes) will no doubt be found.

The keyed parameters were determined by direct field observation, trapping, and literature reviewing. The authority(s) used for the names of the animals is also included at the beginning of each checklist.



Ichthyofauna

Ichthyofauna

This checklist contains 12 known species, 2 hypotheticals, and 1 hybrid. These represent only 3 native species but 12 exotics. Of the exotics, three are stocked on a regular basis. No attempt was made at determining densities.

ICHTHYOFAUNA CHECKLIST

Authorities: Miller and Lowe (1964) and Minckley (1971)

Key

<u>Status</u>	<u>Distribution</u>
N - native	1 - throughout creek
S - stocked regularly	2 - prefers northern end of creek
E - other exotics	3 - prefers southern end of creek and/or lake
H - hypothetical	4 - distribution unknown

SALMONIDAE

Cutthroat Trout - <u>Salmo clarki</u>	E-3
Rainbow Trout - <u>Salmo gairdneri</u>	S-3
Brown Trout - <u>Salmo trutta</u>	S-3
Arctic Grayling - <u>Thymallus arcticus</u>	E-3
Coho Salmon - <u>Oncorhynchus kisutch</u>	S-3
Hybrid - <u>S. clarki</u> X <u>S. gairdneri</u>	E-3

CYPRINIDAE

Carp - <u>Cyprinus carpio</u>	(H) E-4
Speckled Dace - <u>Rhinichthys osculus</u>	N-1
Sand Shiner - <u>Notropis stramineus</u>	E-4
Little Colorado Spinedace - <u>Lepidomeda vittata</u>	(H) N-4
Gila Chub - <u>Gila intermedia</u> - identification questionable	
Golden Shiner - <u>Notemigonus crysoleucus</u>	E-4

CATOSTOMIDAE

Bluehead Mountain Sucker - <u>Pantosteus discobolus</u>	N-1
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ICTALURIDAE

Black Bullhead - Ictalurus melas - E-2

CYPRINODONTIDAE

Southwestern Plains Killifish - Fundulus zebrinus E-4

CENTRARCHIDAE

Largemouth Bass - Micropterus salmoides E-4



Herpetofauna

Herpetofauna

This checklist contains 17 known native species and 14 hypothetical native species. The use of terms like common, uncommon, and rare may be misleading without some introductory comments. Many herptiles are seldom encountered, especially amphibians. For example, the Western Spadefoot may remain buried in the ground for months only to emerge for a few days to breed (Bragg, 1945). Now, is this toad rare because it is rarely seen or common because when they come out to breed the ground may be covered with them? In this case a compromise was made and the toad was called uncommon. Use the status key only as a guide:

Common = always to be detected by a trained observer

Uncommon = not always detected by a trained observer

Rare = always a surprise but not out of its normal range

HERPETOFAUNA CHECKLIST

Authority: Stebbins (1954)

Key

<u>Status</u>	<u>Distribution</u>
C - common	1 - throughout canyon near water
U - uncommon	2 - talus slopes, walls
R - rare	3 - rim (plains) area
H - hypothetical	

AMBYSTOMIDAE

Tiger Salamander - Ambystoma tigrinum (H)

PLEOBATIDAE

Western Spadefoot - Scaphiopus hammondi U-1

BUFONIDAE

Woodhouse's Toad - Bufo woodhousei (H)Southwestern Toad - Bufo microscaphus R-1Red-spotted Toad - Bufo punctatus U-1

HYLIDAE

Chorus Frog - Pseudacris triseriata U-1Canyon Treefrog - Hyla arenicolor C-1Arizona Treefrog - Hyla wrightorum R-near water
within coniferous forest only

RANIDAE

Leopard Frog - Rana pipiens C-1

IGUANIDAE

Lesser Earless Lizard - Holbrookia maculata C-2,3

Collared Lizard - <u>Crotaphytus collaris</u>	C-2,3
Leopard Lizard - <u>Crotaphytus wislizenii</u>	(H)
Desert Spiny Lizard - <u>Sceloporus magister</u>	(H)
Eastern Fence Lizard - <u>Sceloporus undulatus</u>	C-within coniferous forest mainly
Side-blotched Lizard - <u>Uta stansburiana</u>	(H)
Tree Lizard - <u>Urosaurus ornatus</u>	C-1,2
Short-horned Lizard - <u>Phrynosoma douglassi</u>	C-3

SCINCIDAE

Great Plains Skink - <u>Eumeces obsoletus</u>	(H)
Many-lined Skink - <u>Eumeces multivirgatus</u>	(H)

TEIIDAE

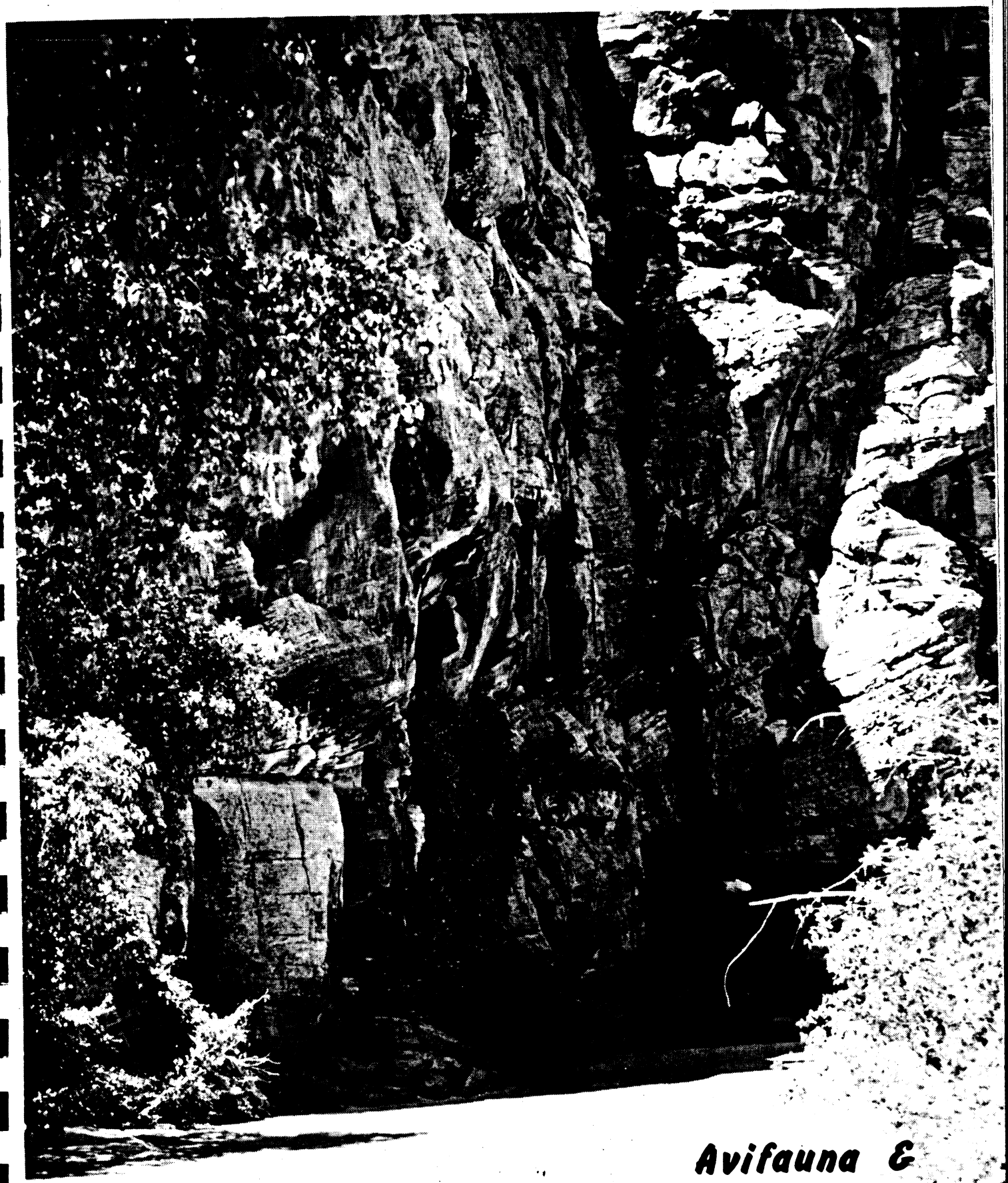
Little Striped Whiptail - <u>Cnemidophorus inornatus</u>	U-3
Plateau Whiptail - <u>Cnemidophorus velox</u>	(H)
Western Whiptail - <u>Cnemidophorus tigris</u>	(H)

COLUBRIDAE

Striped Whipsnake - <u>Masticophis taeniatus</u>	(H)
Glossy Snake - <u>Arizona elegans</u>	(H)
Gopher Snake - <u>Pituophis melanoleucus</u>	R-1,2
Sonora Mountain Kingsnake - <u>Lampropeltis pyromelana</u>	R-2,3
Western Terrestrial Garter Snake - <u>Thamnophis elegans</u>	C-1
Black-necked Garter Snake - <u>Thamnophis cyrtopsis</u>	(H)
Night Snake - <u>Hypsiglena torquata</u>	(H)

VIPERIDAE

Black-tailed Rattlesnake - <u>Crotalus molossus</u>	(H)
Western Rattlesnake - <u>Crotalus viridis</u>	R-1,2



***Avifauna &
Mammalofauna***

Avifauna

This checklist contains 92 known native species. No hypotheticals are listed because of the great temporal behavior of these creatures. The species composition of migratory flocks can vary drastically from season to season, year to year (Welty, 1962). The status definitions are the same as in the Herpetofauna section.

AVIFAUNA CHECKLIST

Authority: A.O.U. (1957)

Key

<u>Status</u>		<u>Habitat Preference</u>
C - common	P - permanent resident	1 - grasslands & desert scrub
U - uncommon	S - summer resident	2 - riparian or open water
R - rare	M - migrant only	3 - cliffs
		4 - woodland
		5 - coniferous forest

ANATIDAE

Mallard - Anas platyrhynchos C-S-2

CATHARTIDAE

Turkey Vulture - Cathartes aura C-S-1,3,5

ACCIPITRIDAE

Sharp-shinned Hawk - Accipiter striatus U-P-1,3Red-tailed Hawk - Buteo jamaicensis C-P-1,3,4,5Swainson's Hawk - Buteo swainsoni R-S-1,5Ferruginous Hawk - Buteo regalis R-P-1,5Golden Eagle - Aquila chrysaetos U-P-1,2,3,4,5Bald Eagle - Haliaeetus leucocephalus U-P-2,3,5Marsh Hawk - Circus cyaneus C-P-1

PANDIONIDAE

Osprey - Pandion haliaetus R-M-2

FALCONIDAE

Prairie Falcon - Falco mexicanus

R-P-1,3

Sparrow Hawk - Falco sparverius

C-P-1,3,4,5

PHASIANIDAE

Harlequin Quail - Cyrtonyx montezumae

U-P-4,5

MELEAGRIDIDAE

Turkey - Meleagris gallopavo

C-P-4,5

RALLIDAE

American Coot - Fulica americana

C-S-2

SCOLOPACIDAE

Spotted Sandpiper - Actitis macularia

C-S-2

COLUMBIDAE

Mourning Dove - Zenaidura macroura

C-S-1,2,3,4,5

CUCULIDAE

Roadrunner - Geococcyx californianus

R-P-1

STRIGIDAE

Flammulated Owl - Otus flammeolus

R-S-4,5

Great Horned Owl - Bubo virginianus

C-P-2,5

Pygmy Owl - Glaucidium gnoma

U-P-2,5

CAPRIMULGIDAE

Whip-poor-will - Caprimulgus vociferus

see page 62

Poor-will - Phalaenoptilus nuttallii

C-S-2,4

Common Nighthawk - Chordeiles minor

C-S-1,2,4,5

APODIDAE

White-throated Swift - Aeronautes saxatalis C-S-2,3,5

TROCHILIDAE

Black-chinned Hummingbird - Archilochus alexandri C-S-2

Broad-tailed Hummingbird - Selasphorus platycercus C-S-5

PICIDAE

Red-shafted Flicker - Colaptes cafer C-P-2,4,5

Acorn Woodpecker - Melanerpes formicivorus C-P-2,5

Yellow-bellied Sapsucker - Sphyrapicus varius U-S-5

Hairy Woodpecker - Dendrocopos villosus U-P-2,5

TYRANNIDAE

Western Kingbird - Tyrannus verticalis U-S-2

Cassin's Kingbird - Tyrannus vociferans C-S-2

Ash-throated Flycatcher - Myiarchus cinerascens C-S-2

Black Phoebe - Sayornis nigricans C-P-2

Say's Phoebe - Sayornis saya U-P-1,2

Coues' Flycatcher - Contopus pertinax R-S-5

Western Wood Pewee - Contopus sordidulus U-S-2,5

ALAUDIDAE

Horned Lark - Eremophila alpestris C-P-1

HIRUNDINIDAE

Violet-green Swallow - Tachycineta thalassina C-S-2,3,5

Bank Swallow - Riparia riparia R-M-2

Rough-winged Swallow - Stelgidopteryx ruficollis U-S-2

Cliff Swallow - Petrochelidon pyrrhonota C-S-2,3

CORVIDAE

Steller's Jay - <u>Cyanocitta stelleri</u>	C-P-5
Scrub Jay - <u>Aphelocoma coerulescens</u>	U-P-4
Common Raven - <u>Corvus corax</u>	C-P-1,2,3,4,5
Pinyon Jay - <u>Gymnorhinus cyanocephala</u>	C-P-4
Clark's Nutcracker - <u>Nucifraga columbiana</u>	U-P-5

PARIDAE

Mountain Chickadee - <u>Parus gambeli</u>	C-P-5
Plain Titmouse - <u>Parus inornatus</u>	C-P-4
Bridled Titmouse - <u>Parus wollweberi</u>	C-P-4

SITTIDAE

White-breasted Nuthatch - <u>Sitta carolinensis</u>	C-P-2,5
Pygmy Nuthatch - <u>Sitta pygmaea</u>	U-P-5

CERTHIIDAE

Brown Creeper - <u>Certhia familiaris</u>	U-P-2,4,5
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TROGLODYTIDAE

Bewick's Wren - <u>Thryomanes bewickii</u>	C-P-2
Canyon Wren - <u>Catherpes mexicanus</u>	C-P-2,3,4,5
Rock Wren - <u>Salpinctes obsoletus</u>	C-P-2,3,4,5

MIMIDAE

Mockingbird - <u>Mimus polyglottos</u>	C-P-1,2
Curve-billed Thrasher - <u>Toxostoma curvirostre</u>	R-M-1

TURDIDAE

Robin - <u>Turdus migratorius</u>	C-P-2,4,5
Hermit Thrush - <u>Hylocichla guttata</u>	U-S-2,5

Mountain Bluebird - <u>Sialia currucoides</u>	U-S-5
Townsend's Solitaire - <u>Myadestes townsendi</u>	U-S-5
SYLVIIDAE	
Ruby-crowned Kinglet - <u>Regulus calendula</u>	U-S-5
LANIIDAE	
Loggerhead Shrike - <u>Lanius ludovicianus</u>	U-P-1
VIREONIDAE	
Bell's Vireo - <u>Vireo bellii</u>	U-S-2,4
Solitary Vireo - <u>Vireo solitarius</u>	U-S-4,5
Warbling Vireo - <u>Vireo gilvus</u>	U-S-2
PARULIDAE	
Yellow Warbler - <u>Dendroica petechia</u>	C-S-2
Grace's Warbler - <u>Dendroica graciae</u>	U-S-5
MacGillivray's Warbler - <u>Oporornis tolmiei</u>	U-S-2
Yellowthroat - <u>Geothlypis trichas</u>	U-S-2
Yellow-breasted Chat - <u>Icteria virens</u>	C-S-2
Red-faced Warbler - <u>Cardellina rubrifrons</u>	U-S-5
Wilson's Warbler - <u>Wilsonia pusilla</u>	U-S-2
Painted Redstart - <u>Setophaga picta</u>	U-S-2,5
ICTERIDAE	
Western Meadowlark - <u>Sturnella neglecta</u>	C-P-1
Brewer's Blackbird - <u>Euphagus cyanocephalus</u>	C-P-1
Brown-headed Cowbird - <u>Molothrus ater</u>	C-P-1,2

THRAUPIDAE

Western Tanager - <u>Piranga ludoviciana</u>	C-S-2,5
Hepatic Tanager - <u>Piranga flava</u>	R-S-4

FRINGILLIDAE

Rose-breasted Grosbeak - <u>Pheucticus ludovicianus</u>	R-S-2
Black-headed Grosbeak - <u>Pheucticus melanocephalus</u>	C-S-2
Blue Grosbeak - <u>Guiraca caerulea</u>	R-S-2
Indigo Bunting - <u>Passerina cyanea</u>	R-S-2
House Finch - <u>Carpodacus mexicanus</u>	C-P-1,2
American Goldfinch - <u>Spinus tristis</u>	C-M-1,2
Lesser Goldfinch - <u>Spinus psaltria</u>	U-S-2,5
Rufous-sided Towhee - <u>Pipilo erythrophthalmus</u>	C-S-2,4
Lark Sparrow - <u>Chondestes grammacus</u>	U-M-1
Black-throated Sparrow - <u>Amphispiza bilineata</u>	U-S-1,2
Oregon Junco - <u>Junco oreganus</u>	C-S-5
Gray-headed Junco - <u>Junco caniceps</u>	C-S-5

Mammalofauna

This checklist contains 35 known species, and 24 hypotheticals. These represent 56 native species and 3 exotics. The definitions of the status designations are the same as in the Herpetofauna section.

THRAUPIDAE

Western Tanager - <u>Piranga ludoviciana</u>	C-S-2,5
Hepatic Tanager - <u>Piranga flava</u>	R-S-4

FRINGILLIDAE

Rose-breasted Grosbeak - <u>Pheucticus ludovicianus</u>	R-S-2
Black-headed Grosbeak - <u>Pheucticus melanocephalus</u>	C-S-2
Blue Grosbeak - <u>Guiraca caerulea</u>	R-S-2
Indigo Bunting - <u>Passerina cyanea</u>	R-S-2
House Finch - <u>Carpodacus mexicanus</u>	C-P-1,2
American Goldfinch - <u>Spinus tristis</u>	C-M-1,2
Lesser Goldfinch - <u>Spinus psaltria</u>	U-S-2,5
Rufous-sided Towhee - <u>Pipilo erythrophthalmus</u>	C-S-2,4
Lark Sparrow - <u>Chondestes grammacus</u>	U-M-1
Black-throated Sparrow - <u>Amphispiza bilineata</u>	U-S-1,2
Oregon Junco - <u>Junco oreganus</u>	C-S-5
Gray-headed Junco - <u>Junco caniceps</u>	C-S-5

Mammalofauna

This checklist contains 35 known species, and 24 hypotheticals. These represent 56 native species and 3 exotics. The definitions of the status designations are the same as in the Herpetofauna section.

MAMMALOFAUNA CHECKLIST

Authority: Hall (1965)

Key

<u>Status</u>	<u>Distribution</u>
C - common	1 - throughout canyon
U - uncommon	2 - talus slopes, walls
R - rare	3 - rim (plains) area
H - hypothetical	

SORICIDAE

Vagrant Shrew - <u>Sorex vagrans</u>	(H)
Merriam's Shrew - <u>Sorex merriami</u>	(H)
Desert Shrew - <u>Notiosorex crawfordi</u>	(H)

VESPERTILIONIDAE

Yuma Myotis - <u>Myotis yumanensis</u>	(H)
Long-eared Myotis - <u>Myotis evotis</u>	(H)
Fringed Myotis - <u>Myotis thysanodes</u>	(H)
Long-legged Myotis - <u>Myotis volans</u>	(H)
California Myotis - <u>Myotis californicus</u>	(H)
Small-footed Myotis - <u>Myotis subulatus</u>	(H)
Western Pipistrelle - <u>Pipistrellus hesperus</u>	C-1
Big Brown Bat - <u>Eptesicus fuscus</u>	(H)
Townsend's Big-eared Bat - <u>Plecotus townsendii</u>	(H)
Pallid Bat - <u>Antrozous pallidus</u>	(H)

MOLOSSIDAE

Brazilian Free-tailed Bat - <u>Tadarida brasiliensis</u>	(H)
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- Canyon Mouse - Peromyscus crinitus (H)
- Deer Mouse - Peromyscus maniculatus C-1,2,3
- White-footed Mouse - Peromyscus leucopus (H)
- Brush Mouse - Peromyscus boylii C-1,2,3
- Pinyon Mouse - Peromyscus truei C-especially in Pinyon-Juniper woodland
- Northern Grasshopper Mouse - Onychomys leucogaster R-one found near mouth of Chevelon Canyon
- White-throated Wood Rat - Neotoma albigula U-2 prefers xeric conditions
- Stephen's Wood Rat - Neotoma stephensi (H)
- Mexican Wood Rat - Neotoma mexicana U-2 prefers mesic conditions
- Mexican Vole - Microtus mexicanus (H)

ERETHIZONTIDAE

- Porcupine - Erethizon dorsatum (H)

CANIDAE

- Coyote - Canis latrans C-1,3
- Gray Fox - Urocyon cinereoargenteus U-1

URSIDAE

- Black Bear - Ursus americanus R-mainly found in the coniferous forests and southern riparian areas

PROCYONIDAE

- Ringtail - Bassariscus astutus U-1 usually near the riparian areas
- Raccoon - Procyon lotor C-1 usually near the riparian areas

MUSTELIDAE

- Long-tailed Weasel - Mustela frenata (H)
 Striped Skunk - Mephitis mephitis C-1,3

FELIDAE

- Mountain Lion - Felis concolor R-1,2,3
 Bobcat - Lynx rufus R-1,2,3

TAYASSUIDAE

- Collared Peccary - Tayassu tajacu R-one skull
 was found at Chevelon Crossing

CERVIDAE

- Wapiti - Cervus canadensis C-ranges from
 woodland to coniferous forest
 Mule Deer - Dama hemionus C-1,3
 White-tailed Deer - Dama virginiana U-have been
 reported from the Chevelon Lake
 area

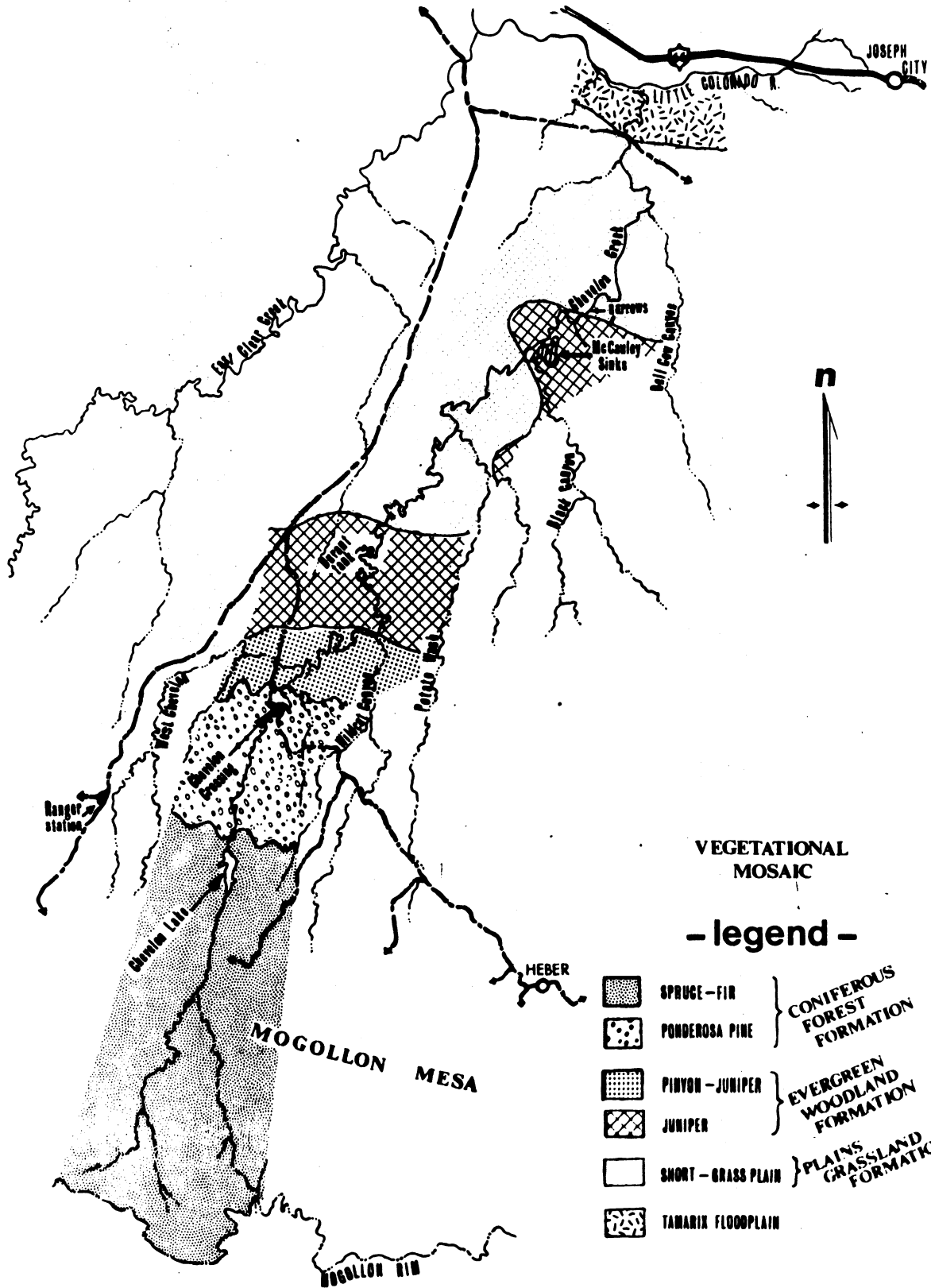
ANTILOCAPRIDAE

- Pronghorn - Antilocapra americana C-3

Domestic Animals







- Horse - Equus caballus
 Cow - Bos sp.
 Sheep - Ovis aries
- The abundance and
 - distribution of these
 creatures is controlled
 entirely by man

CHEVELON CANYON



VEGETATIONAL MOSAIC

- legend -

- | | | |
|--|--------------------|--------------------------------|
|  | SPRUCE-FIR | } CONIFEROUS FOREST FORMATION |
|  | PONDEROSA PINE | |
|  | PINYON-JUNIPER | } EVERGREEN WOODLAND FORMATION |
|  | JUNIPER | |
|  | SHORT-GRASS PLAIN | } PLAINS GRASSLAND FORMATION |
|  | TAMARIX FLOODPLAIN | |

From the southern escarpment of the Mogollon Mesa to the Little Colorado floodplains there exist three major vegetational formations, as described by Lowe (1964). These may be seen to form extensive east-west belts of vegetation perpendicular to the flow of Chevelon Creek. Beginning at the higher elevations, the formations and the associations¹ that comprise the study area are:

- I Coniferous Forest Formation
 - A) Spruce-Fir Association
 - B) Ponderosa Pine Forest Association
- II Evergreen Woodland Formation
 - A) Pinyon-Juniper Association
- III Plains Grassland Formation
 - A) Short-grass Plains Association

These broad belts intergrade slowly from one to the next on the open country surrounding the canyon. Within the steep-walled bends of the canyon, complex environmental conditions give rise to a varied mosaic of vegetational communities, representing three further associations:

- 1) Riparian Woodland Association - a changing pattern of habitats along the creek, including the Tamarix floodplain of the Little Colorado River;
- 2) Interior Chaparral Association - here evidenced as Petran (rock-wall) Chaparral of the dry slopes;
- 3) Oak Woodland Association - occurring on flats above the high-water line of the lower canyon.

¹Formation: uniform regional climax of vegetation; Association: sub-formation which maintains the same or closely related species as dominants or sub-dominants (Oosting, 1956).

The mosaic of habitats within the canyon will be treated as three units, delineated roughly by the ecotones [the zone of blending or intergradation between two recognizably separate vegetational units (after Munz, 1970)] on the rim country of the three major formation types.

Coniferous Forest Formation. The Mogollon Mesa supports one of the finest examples of coniferous forest to be found in Arizona, extending over 200 miles of high country in a continuous east-to-west band. The upper reaches of Chevelon Canyon lie within this forest stand, intergrading from spruce-fir forest to Ponderosa Pine forest in the area of Chevelon Lake. Below this, the pine forest extends to about one mile north of the Chevelon Crossing Campground where it blends with the evergreen woodland and pinyon-juniper stands.

The Spruce-Fir Association is co-dominated by tall, pointed Engelmann Spruce, Douglas Fir, and shorter White Fir. One finds that these tree species occur within the more protected, moist side canyons feeding Chevelon, providing a dense canopy surrounding a system of lush, interconnecting meadows.

Ponderosa Pine becomes prominent on round hilltops between these side canyons that intersect Chevelon in the lake area, and slowly dominates the canopy with an open pure stand typical of the Ponderosa Pine Association.

Within the confines of the canyon walls, the trees and undergrowth of the Spruce-Fir Association occur wherever sufficient moisture and protection from excessive solar exposure may be found. These conditions are met on both walls of the canyon south

of Chevelon Lake, and on the lower north-west facing slopes well into the Evergreen Woodland Formation. Such patches provide suitable growing conditions for a high diversity of herbaceous plants, often of great beauty.

Slope-aspect, degree and composition of slope, and position of elevation determine to a large extent what sort of vegetation is supported by a particular spot in the canyon. The eastern wall from Chevelon Lake to Chevelon Crossing normally slopes to the west and north, giving the protection necessary for support of the coniferous forest community. On a bend, however, when this wall faces the south and east, drier conditions give rise to Pinyon Pine and various species of juniper more common to the canyon miles northward. If the talus slope is very rocky, and facing southeastward, xeric-adapted Petran Chaparral species appear in high numbers, often replacing the dominant pinyon and juniper with Shrub Live Oak, Barberry, Mountain Mahonia, Yucca species and various cacti.

The western wall of Chevelon Canyon, since it usually faces southeastward, tends toward this composition of chaparral species more than the eastern. It alternates between pinyon-juniper covered slopes and this Petran Chaparral, with occasional fingers of the Ponderosa Pine community and spruce-fir community reaching down moist ravines and northwestern slopes. The sparse appearance of the chaparral belies the variety of plants present; this patchwork of differing habitats actually provides for a diversity of plant life much higher than the heavily wooded rim country. On the west wall may be found the saprophytic Broomrape, an orchid-

like plant of extremely dry locations, and mossy, fern-covered seeps abounding in brilliant Monkey Flower within a few meters of each other. These adjacent extremes in habitat deserve protection from destruction as well as intensive ecological study.

At the base of the talus slopes in the upper canyon occur broad "flats", or benches of land, just above the high-water line. Open, parklike stands of pine and juniper provide an excellent canopy for a great variety of grasses, herbaceous ground cover and low shrubbery. The beds of Sheep-sorrel and Wild Strawberry are dotted with clump grasses and brightly flowered herbs such as Fleabane and Spiderwort.

By far the densest riparian community of Chevelon is found within the Coniferous Forest Formation. A canopy of Box Elder and New Mexico Alder towers over thickets of Arroyo and Coyote Willow, Red-osier Dogwood, Wild Arizona Rose and New Mexico Locust on both sides of the water-course. Occasional Velvet Ash, Arizona Walnut, oak and willow are present between water and talus slope or raised pine flats. Lush growths of watercress, rushes, violets and mint, with the more unpleasant clumps of poison-ivy, root in the soft banks where the current stacks to produce calm pools. This nearly unbroken and often impenetrable plant cover begins to radically change in composition below Chevelon Crossing Campground, as the forest stand on both rims changes from Ponderosa Pine dominance to that of pinyon and juniper.

Evergreen Woodland Formation. As Ponderosa Pine becomes less prominent on the rim country below Chevelon Crossing, Pinyon Pine and One-seed Juniper assume the proportions of dominance characteristic of the Evergreen Woodland Formation. The canyon widens here as two side canyons feed into Chevelon, both walls supporting mixed stands of Ponderosa Pine, Pinyon Pine, and four species of juniper.

Aerially, it may be seen that the Evergreen Woodland Formation is composed of two parallel belts of vegetation. The upper "stand" is quite dense, being an homogeneous blend of both pinyon and juniper. The lower is more sparse, supporting widely-spaced One-seed Juniper with very few pine. The northern border of this formation is quite recognizable; the scattered juniper simply cease to occur on the open plains about three miles north of the mouth of Wildcat Canyon. An extension of this formation skirts the Short-grass Plains Association of the Little Colorado River valley to the east of Chevelon, to cross the canyon again in the area of the McCauley Sinks. Here a sparse mixture of both pinyon and juniper extending about one mile to the north and south of the sinks occurs.

The two sections of Chevelon Canyon supporting the Pinyon-Juniper Association (see Fig. 2) are surprisingly similar in vegetative composition, although the upper extends from 6500 feet in elevation to 6000 feet, and the lower lies around 5500 feet. Cottonwood trees, dominant in the riparian portion of the formation between 6500 and 6000 feet, drop in importance

to scattered occurrence within the Plains Grassland Formation, and appear once again as dominants of the riparian habitat in the lower Pinyon-Juniper Association.

Within the Pinyon-Juniper Association, Petran Chaparral becomes prominent as the vegetative association of both canyon walls. Large shrubbery provides the main body of the vegetation; Fernbush and Ephedra (or Joint-fir) add to the species already present in the chaparral of higher elevations of the canyon. Rock structure and lack of water form drier, steeper slopes than up-canyon, limiting tree species to scattered occurrence in protected microenvironments and along the creek itself. A few stunted Pinyon Pine, One-seed and Utah Juniper and Emory Oak are still found on the north and west-facing slopes, where the actual density of vegetation is greater than the density on the rim directly above the slope due to the abundance of the shrub species.

The broad flats so common above Chevelon Crossing now appear less frequently as the canyon begins to double back on itself in a fascinating series of hairpin turns. A few remaining open bench areas near the creek support vegetative units of unique species composition. One such bench system occurs near the mouth of Wild Cat Canyon, about nine meters above the high-water line. Massive Gamble Oak stand crown to crown against the talus slope base in limited but beautiful clusters. Fremont and Narrowleaf Cottonwood appear near Chevelon Crossing as a major species, among New Mexico Alder, Box Elder and increasing numbers of Goodding Willow, while small,

isolated stands of ancient Ponderosa Pine occur throughout this formation. Two species of special interest grow at the base of the talus here; Small-leaf Mulberry and Flowering Ash, both indigenous to Arizona but not commonly found in the northern counties, produce loose banks of foliage above the riparian habitat and yet below the heavy shrubbery and juniper growing within the minimal shelter of the rim.

The streamside vegetation slowly changes from habitat dominated by tree species at the upper end of the formation to a dominance of shrub-species near Durant's Tank. Amorpha, New Mexico Locust, Wax Currant, Wild Grape, Poison-ivy and Squaw-bush line the creek. Under the protection of the many cliff-faces one finds waist-deep Arizona Rose and Snowberry surrounding occasional cottonwood, ash, and Arizona Walnut.

This pattern is again present in the McCauley Sinks area, with the slightly drier climatic conditions reflected in narrower belts of vegetation lining the creek. Unlike the rim country, there are no clear borders between riparian "communities" along Chevelon Creek, but simply a slow change from one area to the next as species shift in importance and abundance.

Plains Grassland Formation. The effect of the localized rainshadow produced by the Mogollon Mesa is most evident in the dry Short-grass Plains Association of the Little Colorado River valley. The lower third of Chevelon Canyon passes through this formation, and the arid climate that allows so little vegetation on the plains likewise limits growth within the canyon.

Upon the rim, both east and west of Chevelon, no true dominant species may be recognized. Loose stands of One-seed Juniper, Shrub Live Oak, Mountain Mahonia, and other evergreen woodland shrub species occur when the surface relief is sufficient to provide some protection, as in gullies and side canyons. Generally, the area is quite flat and rocky; in these open stretches separate clumps of Spanish Bayonet, Banana Yucca, Ephedra, Prickly Pear and Cholla are the largest plant-life forms. Most abundant are the low-growing grasses, such as Blue Grama, Side-oats Grama, Six-week Three-awn, Squirrel-tail, Six-week Fescue and Bristle Grass. A great variety of mustards occur here, most commonly Bladder-pod and Peppergrass. Snakeweed, Thistle, Groundsel, Russian Thistle, Rabbit-brush, Golden Aster, and Sagebrush do well amongst rock outcroppings and along fence lines. Lavender-leaf Evening Primrose and the small, globe-shaped cactus Coryphantha add bright color on spring mornings to both the plains and the rocky walls of the canyon.

If the canyon wall is not a sheer cliff, as commonly occurs north of the McCauley Sinks, the type of vegetation growing on

the rim continues to the canyon floor with a slight tendency toward larger individual plants and a greater abundance of those that require protection. A few new species do occur on these dry walls, however, that were not observable on the plains. Among these, Zinnia, Polygala, Verbena, and Phlox are most noticeable, being present in large numbers. Poisonous Larkspur is frequent, even in the driest areas, as is Arizona's only common species of Blanket-flower. Paperflower, Indian Paintbrush, Aster and Wild Buckwheat find suitable habitat among the broken blocks and slabs of Kaibab Limestone and Coconino Sandstone. The monotony of seemingly identical vegetation that one observed on the Short-grass Plains actually contains an incredibly wide variety of plant species. Most of the color and diversity, however, is hidden within the shelter and shade of rocks and larger clusters of vegetation.

It may be seen from Fig. 2 that there are two portions of the canyon within this Plains Formation, separated by a segment of the Pinyon-Juniper Association. The creek, passing through the more southerly section, is generally less protected due to greater width and more gentle slope than in the narrows below the McCauley Sinks area. Vegetation along the upper section is essentially a less dense version of the Pinyon-Juniper Association riparian community. The quantity of trees diminishes until tree species no longer are the dominant growth-form. Chevelon Creek becomes a series of intermittent pools bordered by Horsetail and willow, Amorpha and New Mexico Locust. Less Arizona Grape, Snowberry, Poison-ivy, and Arizona Wild Rose

are found in this part of the canyon than either to the north or south.

By contrast, the barren steepness of both walls in the lower portion of the canyon passing through the Plains Grassland Formation acts to concentrate vegetation along the canyon floor, by providing shade most of the day and by retaining cool air moving down-canyon. Here great banks of Wild Grape occur under the shade of huge Fremont and Narrowleaf Cottonwoods forming one of the finest, oldest stands found in Arizona.

About half-way between the sinkholes and Chevelon Bridge the canyon constricts to only a few meters wide. Within this portion, continuous water and bare rock walls offer little hold for vegetation. Below the bridge, however, the canyon opens to the floodplains of the Little Colorado River. *Tamarix* forms the only tree species that can maintain a hold in the constantly flood-shifted soils along the creek. Russian Thistle, Rabbit-brush and Yellow-flowered Beeplant occur on these wash areas of unstable silt and debris, with Cocklebur, Phragmites, (the common reed of Arizona), and Needle and Thread Grass.

Rare and/or Endangered Species

The mosaic of vegetative communities found within Chevelon Canyon provides for the Mogollon Mesa and the Little Colorado River valley a diversity of habitats much higher than the relatively flat surrounding countryside. One encounters extremes in moisture availability and degree of protection from sun and wind, from Petran Chaparral to spruce-fir forest, from sheer rock face to perpetually shaded seep, often only meters apart. Plants adapting to and utilizing these extremes often represent portions of flora uncommon to northern Arizona.

These plants, however, do not necessarily constitute either rare or endangered species, simply because they appear so infrequently in our area. Such a judgement is quite difficult to place on the plant kingdom. A species appearing rarely or not at all in those areas normally traversed and studied may be quite abundant in localized areas; it may also be quite present as seed or rootstock awaiting only proper environmental conditions to undergo a "population explosion". Instead of rare and endangered species, then, I suggest that we should rather think in terms of unusual and threatened habitats. We tend to find the most unique plants in the most unique ecological situations; Chevelon Canyon represents a continuous series of extremely unique ecological relationships, each of which have proven to support, upon close inspection, unique species of plants.

It should be remembered that the habitat in which each unusual occurrence exists should be entirely protected if

the preservation of a single individual is desired.

One may note from the lists of encountered species that Broomrape, a strange-appearing root-parasite, is represented by all three species that occur in Arizona. The occurrence of a specimen of one species would be noteworthy; the occurrence of three closely related species of a plant with such unusual environmental requirements is indeed worthy of further attention.

The diversity of species of Lip Fern encountered in Chevelon is indicative of the available Petran Chaparral habitats, each species utilizing rock ledges and crevices with slightly different microenvironments. In adjacent habitat one may find the tiny succulent aptly called Stonecrop for its habit of growth on and amongst rock masses. Protected by Arizona law, this beauty abounds where moss-beds mark the seeps of the normally dry slopes.

Of the two species of Vervain found in Chevelon, Verbena scabra is not recognized as a member of the flora of the northern counties (McDougall, 1973). Both species grow amongst the blocks of limestone that form the rim from 6500 to 5500 feet. It happens in Chevelon that V. scabra is by far the most common, exemplifying the localized variances common to any regional flora.

The family Cactaceae, also protected by Arizona law, forms a major part of the flora of both the Petran Chaparral and the Short-grass Plains Associations. Possibly the most interesting is the globose Coryphantha vivipara mentioned earlier. It seems

never to produce large clusters, existing only along the rim of Chevelon as tiny individuals between rock masses to flower in cool moments of the spring and early summer. When an individual is removed by man, there are no vegetative portions left to regenerate. This small cactus deserves the consideration of enforcement of the Native Plant Law possibly much more than the abundant Prickly Pear and Cholla, most often thought of as representatives of the cactus family in Arizona.

Six tree species are of special interest in Chevelon Canyon. First is the Blue Spruce. Its occurrence in the upper reaches of the spruce-fir forest needs clarification. No specimens of Blue Spruce have been collected from the Chevelon Canyon section of the Mogollon Mesa. Habitat conditions seem to indicate this tree's existence in the Chevelon Canyon-Mogollon Mesa area; any knowledge pertaining to such actual field locations would be quite welcome.

The second and third trees of special note, Small-leaf Mulberry and Flowering Ash, have been previously described as to habit and location within the Pinyon-Juniper Association. Relatively abundant in this section of the canyon, both constitute species not frequently found in the upper half of the state.

It is of interest that Ponderosa Pine occur as low in the canyon as eight miles north of Durant's Tank, almost to the sinkholes. These huge old trees, often rising better than 100 feet above the canyon floor, are isolated from the main forest stand by twelve or more miles. No regeneration occurs beneath

them, or has for decades. They appear to represent relict species of the ancient extent of the pine forest, which may well have covered much of what is now arid plains. Analysis of associated pollen-rains of two to five hundred years ago might explain their lowland growth and add much valuable knowledge to the understanding of the paleoecology of this interesting area.

Within the lower reaches of the canyon, helping to stabilize the sandy, flood-prone soil, one finds the Narrowleaf Cottonwood growing as the dominant tree species amongst Fremont Cottonwood, Velvet Ash, Goodding Willow and Arizona Walnut. Although this species quite commonly occurs in conjunction with the other trees mentioned, it is very unusual for the high numbers of such old trees as these to maintain dominance, especially over the much more common Fremont Cottonwood. This stand may be quite unique in Arizona.

Lastly, the amazing stands of Gambel Oak located near the mouth of Wildcat Canyon should be considered. As previously mentioned, these oaks have attained such an immense stature that they appear to be giant sentinels of the canyon, untouched for probably a century or more. Tree-ring core analysis should be significant in painting a picture of the canyon's history, as such a pure stand is very unusual indeed.

Vertebrate Resources

All the vertebrates encountered and those highly suspected in the Chevelon region are listed in the inventory section. However, lists in themselves are not necessarily very useful. I will attempt in this section to divide the study area into faunal units that may prove to be more meaningful to the reader. Let me caution the reader that these are not entirely distinct, self-sufficient units. They can blend into each other and indeed animals do move between these artificial units. For example, an animal may live in one unit but feed in another or there might be seasonal migration across units, and so forth. It is hoped, though, that by looking at an assemblage of animals instead of just interesting individuals, an inkling of the importance, uniqueness, what-have-you of an area can be appreciated.

The faunal regions I have artificially devised are as follows: 1) Riparian Faunal Unit - this includes Chevelon Creek and the adjacent stream-side (riparian) vegetation; 2) Talus Slope-Canyon Wall Faunal Unit - this includes the area adjacent to the riparian vegetation upward along any slopes and/or walls to the rim of the canyon; and 3) Rim-Plains Faunal Unit - this includes the area from the rim of the main gorge to a distance of one mile perpendicular to the trend of the canyon.

This general discussion by faunal units is followed by a section on rare and/or endangered species.

Riparian Faunal Unit

Zimmerman (1970), Hubbard (1971), Aitchison and Theroux (1972 and 1973), and Carothers et al. (1974, in press) have indicated the importance of riparian associations to wildlife, particularly in arid and semi-arid regions. Chevelon Creek is no exception. Most of the wildlife occurring in the canyon and surrounding area are able to exist there only because of the stream and its attendant vegetation.

The fish are completely dependent on the maintenance of a permanent water flow. Nearly all the amphibians require the stream for breeding. Water, lush vegetation, and ample sunlight provide a highly productive and benign habitat for animals to live and reproduce in. Furthermore, the canyon's north-south trending direction makes Chevelon's riparian zone a natural corridor for migrating animals, especially birds. More than half of the species of birds observed during this study utilized the riparian zone, either for nesting, foraging, or migrating.

Many bats live in the cracks and caves on the walls but feed on insects hovering above the stream. Other common mammals include Beaver, Ringtails, and Raccoons. The Bobcat, Mountain Lion, Black Bear, Wapiti, and Mule Deer frequent this vegetative zone in search of prey and forage. The White-tailed Deer has been reported from the Chevelon Lake area and a Collared Peccary (Javelina) skull was found at Chevelon Crossing. These two records represent northward range extensions (Cockrum, 1960), probably made possible by the existence of

this faunal unit.

Of Chevelon's 197 known and hypothetical species, over 50% are dependent, for at least part of their life cycle, on the riparian associations of Chevelon Canyon.

Talus Slope-Canyon Wall Faunal Unit

The inhabitants of this unit generally require caves or cracks for home sites. Also they usually are able to withstand fairly xeric conditions. Many utilize the riparian zone for feeding and drinking.

The most common reptile of this unit is the Tree Lizard. These and Collared Lizards were frequently seen basking on rocks and feeding on small insects and spiders. Rarely encountered were Gopher Snakes, Sonora Mountain Kingsnakes, and Western Rattlesnakes which inhabit this unit and primarily feed on the lizards and small rodents.

Some of the birds to be seen in this zone include:

Turkey Vulture	Sparrow Hawk	Raven
Golden Eagle	White-throated Swift	Canyon Wren
Bald Eagle	Violet-green Swallow	Rock Wren
Prairie Falcon	Cliff Swallow	

Turkey Vultures were found nesting in small shallow caves, so common in Chevelon Canyon. An active Golden Eagle nest was found near the McCauley Sinks atop a projection high on a cliff face. Other similar nests undoubtedly exist throughout the canyon since other Golden Eagle pairs were observed soaring overhead. Bald eagles probably nest in the coniferous forest near Chevelon Lake. They definitely winter in the lower stretches of the canyon, particularly at Chevelon Crossing where several were seen in February 1973. A Prairie Falcon nest was located in a crack near the rim north of the McCauley Sinks. White-throated Swifts, Violet-green Swallows, and Cliff Swallows were very abundant

throughout the canyon. Cliff Swallow nests were exceptionally common in the rugged "narrows" of northern Chevelon Canyon. Ravens nested on the walls in cracks. Canyon and Rock Wrens built their nests in shallow, fist-size caves.

The mammals included the Cliff Chipmunk which prefers living near pinyon pines where it readily feeds on the nuts. They can be quite vociferous, giving a sharp bark that is accompanied by a twitch of the tail. The Gray-collared Chipmunk replaces the Cliff Chipmunk where ponderosa, spruce, and fir trees replace pinyon pines.

The Rock Squirrel is found wherever there is a talus slope and rocks. They occasionally will be seen in trees sleeping or gathering pine or fir cones. Although mainly a herbivorous feeder, this squirrel will eat insects and nearly any kind of food scraps left by man.

Of the peromyscines, probably the Brush Mouse is the most cosmopolitan, occurring throughout the canyon in nearly all the vegetative associations. The Deer Mouse was found throughout the canyon but in smaller numbers, except near the tamarix area near the mouth of Chevelon Canyon where it was the dominant peromyscine. The Pinyon Mouse was locally abundant on slopes covered with pinyon pine.

As also found by Carothers and Johnson (1969) in East Clear Creek, Coconino County, Arizona, White-throated Wood Rats, which prefer arid to semi-arid conditions, were taken on the south and east-facing slopes of the escarpment. On these slopes the vegetation is typically of a xeric nature. These narrow bands of

desert vegetation may serve as dispersion corridors into the Mogollon Mesa area for desert animals. Conversely, the Mexican Wood Rat, a species adapted to more mesic conditions, was taken on north and west-facing slopes where the habitat is consistently pine and fir. Montane species may utilize these areas to move further north (toward the Little Colorado River desert) than expected.

The Mountain Lion and Bobcat hunt and den throughout the canyon but probably are most likely seen in the woodland areas and rugged "narrows" area.

Rim-Plains Faunal Unit

This unit changes vegetatively from north to south; basically from plains-grassland to woodland to coniferous forest (see Fig. 2).

Lizards are most common in the more open grassland areas. The species include the Lesser Earless Lizard, the Collared Lizard, the Short-horned Lizard, and the Little Striped Whiptail. Most recent field guides do not include the Little Striped Whiptail in northern Arizona. However, recent ecological and morphological studies have tentatively shown that there are two sibling species in the Chevelon area, the other species being the Plateau Whiptail. Additionally, the Plateau Whiptail has been found to be parthenogenetic while the Little Striped Whiptail populations contain both males and females (Wright, 1966).

Many soaring birds dot the skies over the Chevelon area. Turkey Vultures, Red-tailed Hawks, Golden Eagles, Marsh Hawks, Ravens, and Common Nighthawks are frequently seen in summer.

An occasional Roadrunner or Loggerhead Shrike, large flocks of Horned Larks or Brown-headed Cowbirds, House Finches and Western Meadowlarks are all residents of this unit.

The mammals include:

Black-tailed Jackrabbit	Western Harvest Mouse
White-tailed Antelope Squirrel	Coyote
Ord's Kangaroo Rat	Striped Skunk
Mule Deer	Pronghorn

The White-tailed Antelope Squirrel is often seen scurrying quickly to its burrow with its tail curved up and over its back.

They eat a variety of plant material and will climb bushes in search of food.

Ord's Kangaroo Rat is remarkably well-adapted to living in a desert environment. It requires no free water nor succulent plant material. This nocturnal animal has a highly efficient kidney, and by eating seeds high in carbohydrates, it is able to sustain itself on the small amount of water produced by its own body during metabolism (Schmidt-Nielsen, 1964). Their burrows are found in the soft dirt and sand near Chevelon Bridge north to the junction of Chevelon Creek and the Little Colorado River.

The largest native mammals in this faunal unit are the Mule Deer and Pronghorn (the Black Bear and Wapiti will range into the coniferous and woodland sections of this unit but are rarely encountered).

The Pronghorn prefers the open grassland areas where it is seen singly or in herds of up to ten individuals. They were only noted on the east side of Chevelon but probably also occur on the west side.

The Mule Deer prefers the coniferous and woodland sections and frequently descends into the canyon for water and forage.

Rare and/or Endangered Species

Although the Bureau of Sport Fisheries and Wildlife (1968) has compiled a list of rare and endangered fish and wildlife of the United States, the status of local populations may vary significantly from this "standard" reference.

The vertebrate species discussed below should be classified as having a "sensitive" status. Although they may not be endangered now, management of Chevelon Canyon as other than a natural area may spell their doom.

Much of the native ichthyofauna has been replaced with exotic game species such as trout (Whitaker, 1964; Minckley, 1973). Speckled Dace and Bluehead Mountain Suckers may be the only two native species left. The native Little Colorado River Spinedace may still exist near the mouth of Chevelon Creek but none have been found (Minckley, 1967). However, I am not advocating reduction in the exotic species without further study. The inhabitants of the canyon may have already adjusted to the new fish species composition, and any sudden change in fish density and/or diversity could upset predator densities and so forth (Odum, 1968).

The Southwestern Toad and Arizona Treefrog are rarely encountered except when environmental conditions are optimum for breeding. Then these amphibians can become locally common. The Southwestern Toad is found between Chevelon Lake and Chevelon Crossing. This relictual toad's range has become broken because of increased post-glacial aridity of the Southwest and eventually faces extinction as aridity continues (Blair, 1955). The

Arizona Treefrog emerges in early summer if there are rain pools to breed in. Loggers have reported them from the tops of ponderosa pine trees (Chapel, 1972).-

The Leopard Lizard probably occurs in small numbers near the mouth of Chevelon. In the past, populations may have been larger but overgrazing by livestock has decimated their preferred habitat (pers. com., D. S. Tomko).

The Black-tailed Rattlesnake's status is unknown in Chevelon. It is probably exceedingly rare. The ecological requirements of this snake are not known and deserve attention before extinction makes this species just a memory.

The Bald and Golden Eagles seem to be holding their own in Chevelon Canyon. The fish of Chevelon Lake and Creek provide meals for the Bald Eagle; the rugged, nearly inaccessible "narrows" provide safe nesting sites for the Golden Eagle. There is little agriculture in the Chevelon area with its resultant use of pesticides, which have been blamed, in part, for the decline of eagles in other regions.

The Osprey is a rare migrant in Chevelon where it preys on fish.

An active nest of the endangered Prairie Falcon was found north of McCauley Sinks. This site should have high priority in those places to be protected. The Prairie Falcon numbers in Arizona have been drastically reduced in recent years (Phillips, 1964).

A Whip-poor-will was heard calling one evening in June (1973) near Chevelon Lake. This represents a first record of the bird

above (north of) the Mogollon Rim.

Although the Beaver, Mountain Lion, and Black Bear populations appear stable or increasing in Chevelon, these species are becoming scarce and extirpated in other parts of the southwest. It is hoped that maintaining Chevelon Canyon as wilderness will perpetuate these magnificent animals.

The two Gunnison's Prairie Dog townsites yielded no Black-footed Ferrets nor Burrowing Owls. Even the Prairie Dogs showed little activity. The townsites seem to have been invaded by Botta's Pocket Gophers as witnessed by numerous tunnels and burrows. In cultivated areas they consume some of the vegetation, particularly root crops. In wilderness areas, they help form soil by bringing subsoil to the surface and aid in water conservation and aeration of the soil (Burt and Grossenheider, 1964).

SUMMARY AND RECOMMENDATIONS

We have seen that Chevelon Canyon contains a mosaic of habitats resulting in a great diversity of plant and animal life. Perhaps the riparian habitat is the most important in terms of wildlife by linking together the life of the various faunal units. A permanent stream turns an otherwise drab, lonely canyon into a profusion of vegetation and animals. Most of the canyon is still in a pristine, primitive state, notably the "narrows" and the mouth of Wildcat Canyon.

However, human overuse has already marred the beauty and continuity of the canyon between Chevelon Lake and Chevelon Crossing. Overgrazing is evident both on the rim and within the canyon from Chevelon Crossing to the McCauley Sinks area.

It is imperative that the whole area be managed carefully by a coordinated, direct approach to insure that unnatural, man-related destruction is held to an absolute minimum. This should not exclude usage of the resources of the canyon by man, but rather require that such usage be well analyzed as to its effect on the whole system.

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Any misconceptions are wholly the responsibility of the authors.

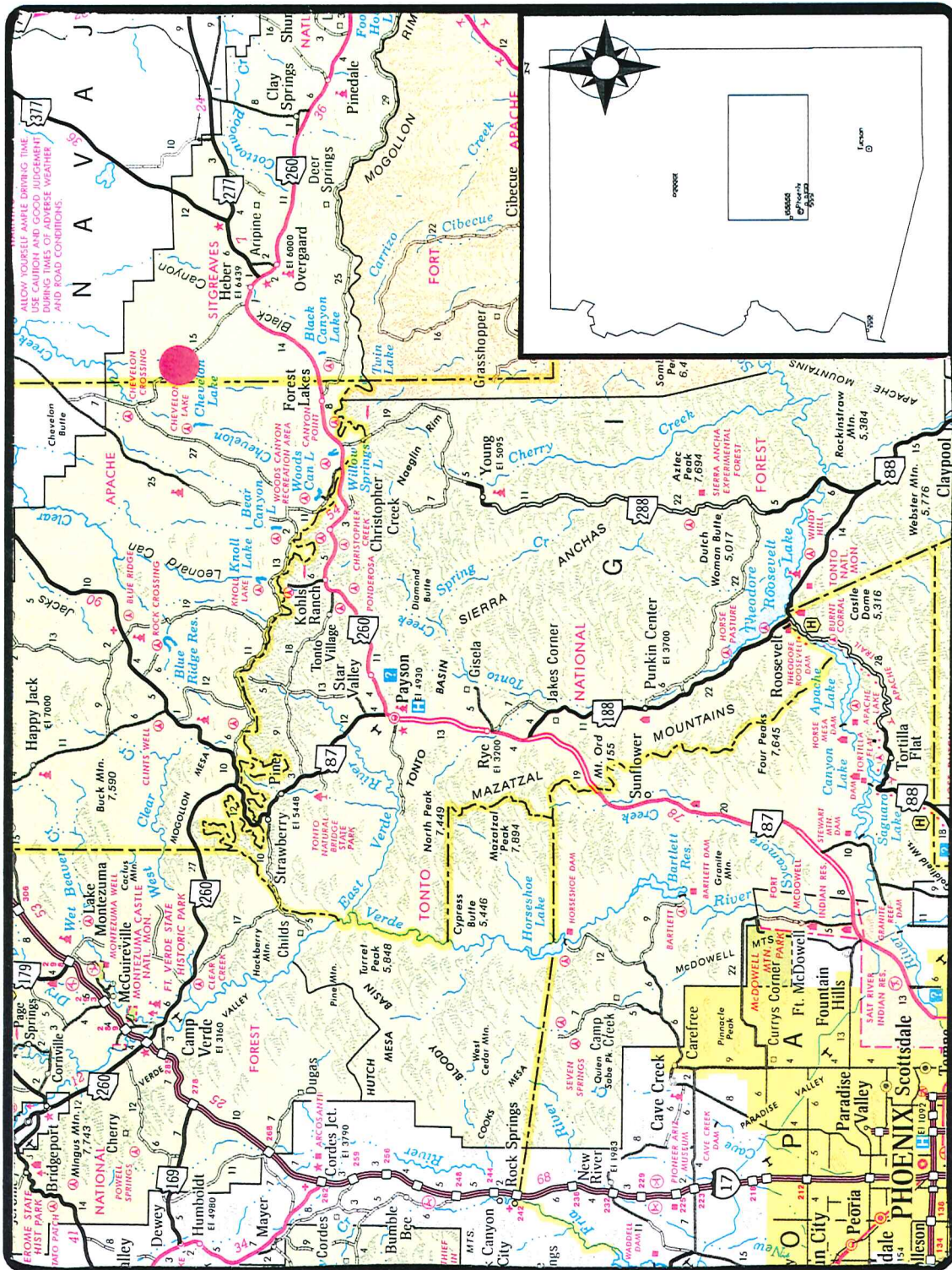


Figure 1. General location of Wildcat Canyon Research Natural Area, Arizona, showing nearby cities. Scale: 1 inch=16 miles (1 centimeter=10 kilometers).

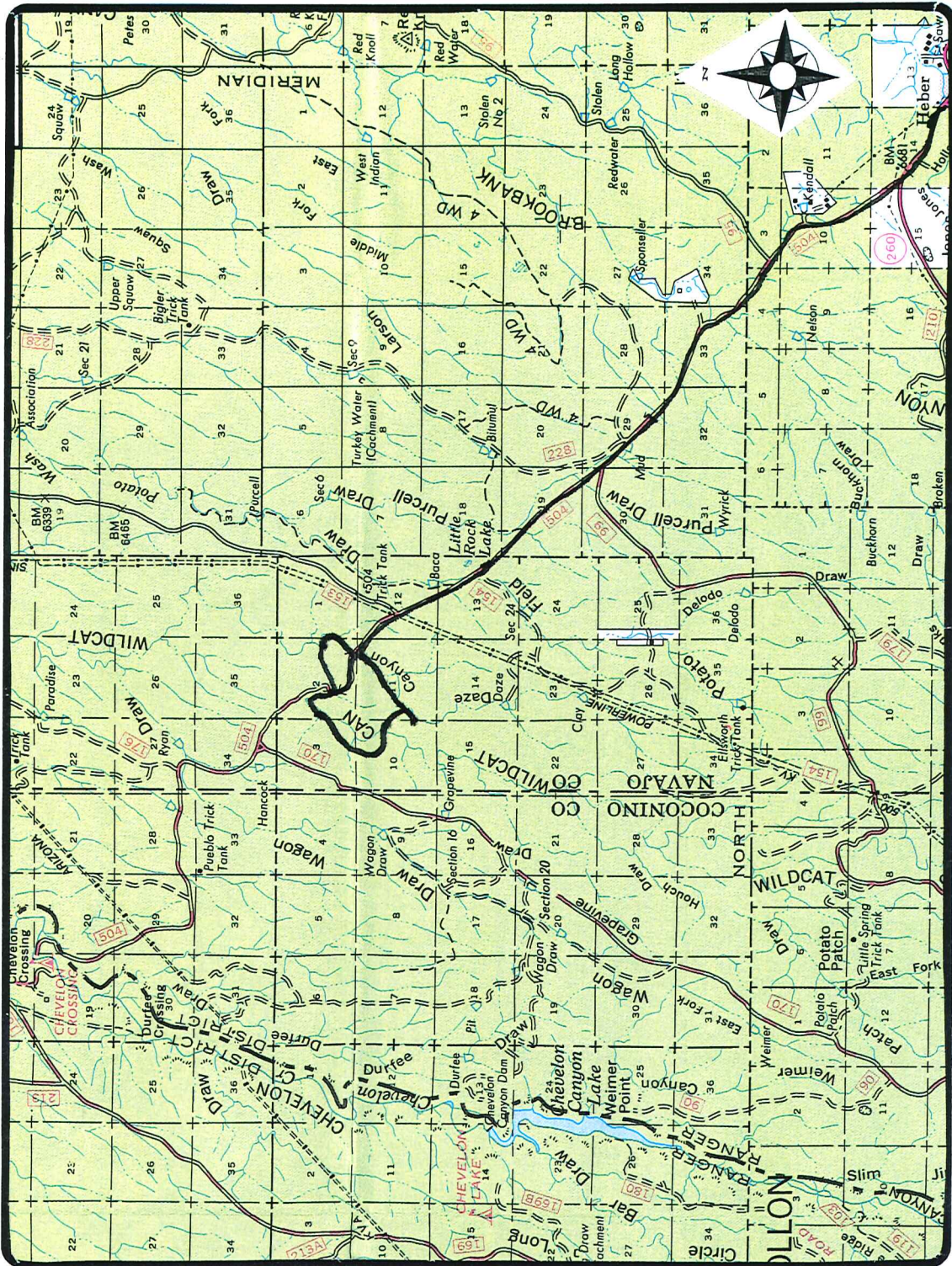


Figure 2. Vicinity map of Wildcat Canyon Research Natural Area, Arizona, showing recommended access. Scale: 1 inch=2 miles (1 centimeter=1.27 kilometers).

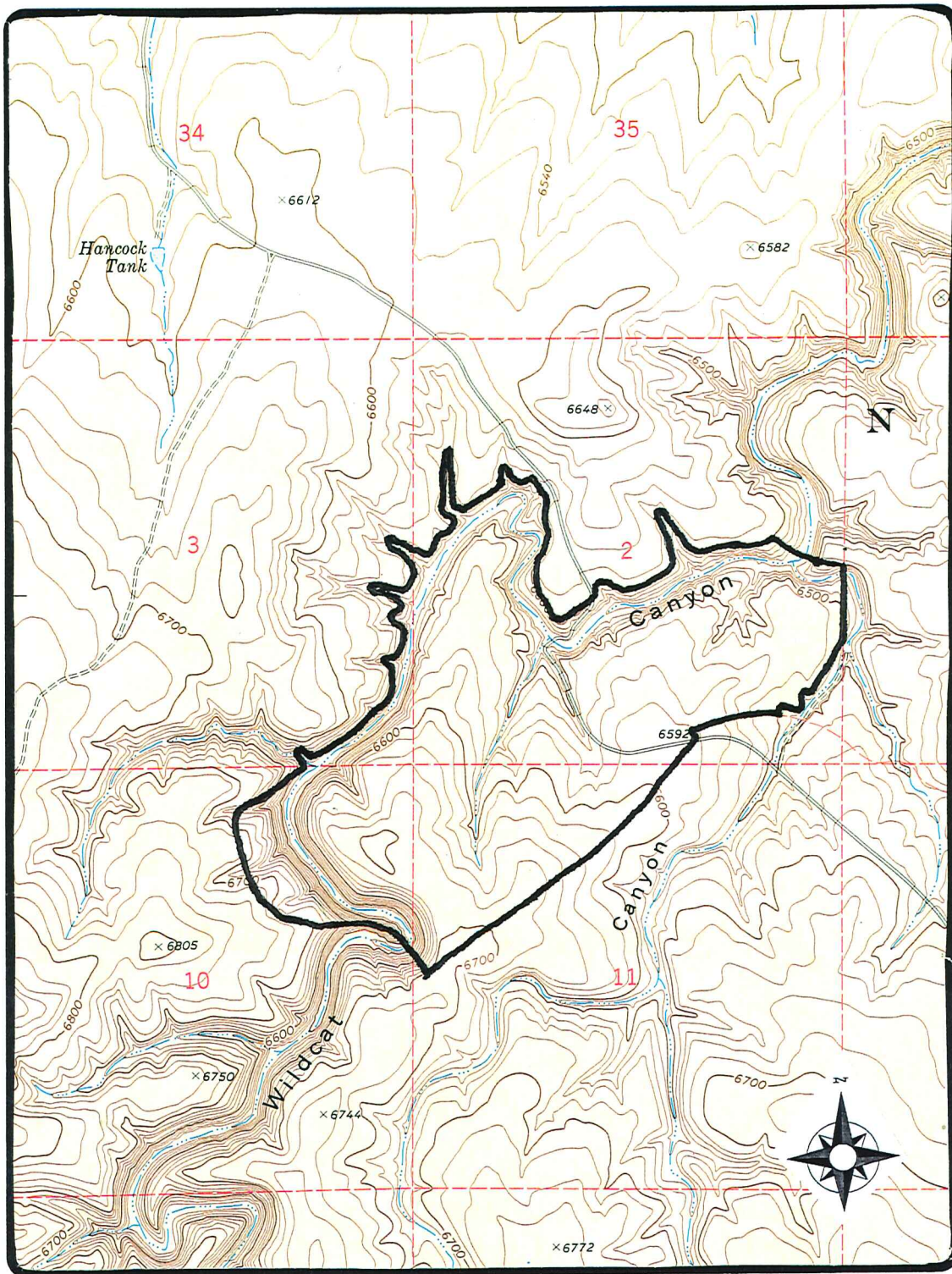


Figure 3. Boundary map of Wildcat Canyon Research Natural Area, Arizona, with elevations shown in feet. Scale: 2.64 inches=1 mile (42 millimeters=1 kilometer).

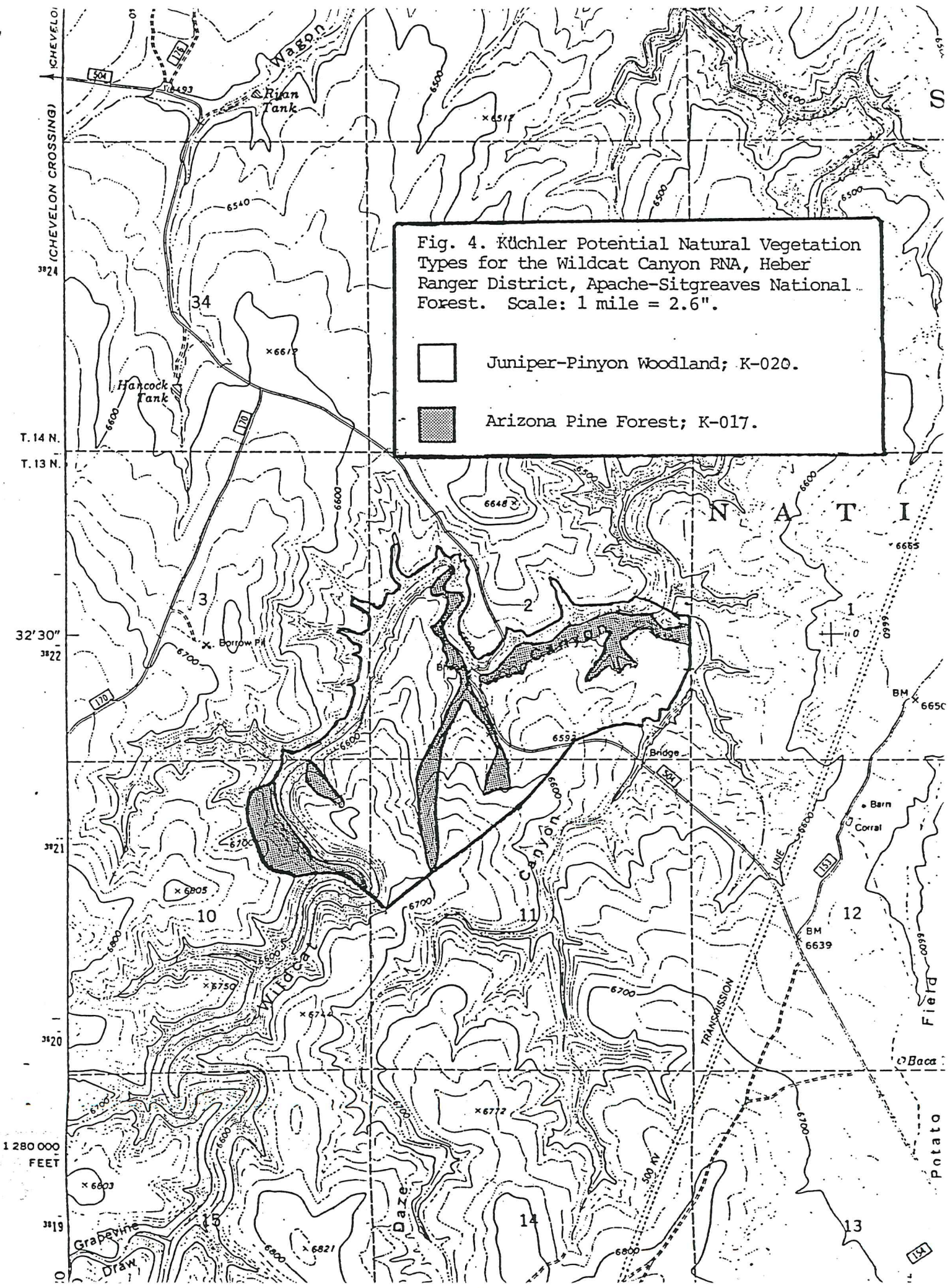
Fig. 4. Kuchler Potential Natural Vegetation Types for the Wildcat Canyon RNA, Heber Ranger District, Apache-Sitgreaves National Forest. Scale: 1 mile = 2.6".



Juniper-Pinyon Woodland; K-020.



Arizona Pine Forest; K-017.



MESSAGE SCAN FOR REGGIE A. FLETCHER

To r.fletcher:r03a
CC d.barber

From: DOUG BARBER:R03F01A

Postmark: Mar 16,94 11:58 AM

Delivered: Mar 16,94 11:54 AM

Subject: Forwarded: AliquotRNAs

Comments:

From: DOUG BARBER:R03F01A

Date: Mar 16,94 11:58 AM

You might want to retain a copy of this in the file in case we ever want to go for mineral withdrawal in the future. Tom Subirge put in a lot of time delineating these boundaries, and I'd hate to lose them.

-----X-----

LEGAL DESCRIPTIONS FOR RECOMMENDED RESEARCH NATURAL AREAS
APACHE-SITGREAVES NATIONAL FOREST

The Research Natural Areas referred to in the Forest Land Management Plan (pg. 203) which are in "recommended" status are: Escudilla Mtn. RNA, Hayground Creek RNA, North Fork of Thomas Creek RNA, and Wildcat Canyon RNA.

In case mineral withdrawal is desired on these respective areas, the following Aliquot Part Descriptions describe each respective RNA. The natural boundaries originally proposed are nearly all included within the Aliquot Part Descriptions. The greater acreage figures reflect additional area surrounding the natural boundaries and extending to the nearest fractional section lines.

JAMES MUTH
Forest Land Surveyor

November 29, 1993

Collectively these meadow ecosystems span a variety of types within our "mountain bunchgrass" range type. None of these ecosystems are presently within the RNA network to any significant degree. Because of their importance in high elevation grazing programs in the Southwestern Region, the Regional RNA Committee has identified such grassland ecosystems to be one of their critical and priority needs. We strongly recommend this area as an RNA-designate with the Forest Plan. Such designation will be compatible with the area's special management unit prescription.

Boundaries should include the forested areas that adjoin the meadows, since forest-meadow dynamics is both of research and management interest. We suggest that a fence at about the 10,000-foot contour on the south end of this unit (above the watered portions of Toolbox Draw) would effectively exclude livestock.

3. Hay Ground Creek (West Fork Black River tributary).

This area (for proposed boundaries see map) has two strong reasons for recommendation as an RNA. Blue spruce (Picea pungens) has been nationally identified as a gap in ecosystem representation within the RNA program; and Region 3 has indicated need for a representation in Arizona of a blue spruce RNA, since this is one of its major timber management types. The second reason concerns optimal habitat and populations of Allium gooddingii - on the Regional sensitive species list and strong candidate for Federal listing as a threatened and endangered species.

The suggested boundaries include about 330 acres. We feel that there should be at least one mile of stream stretch within the proposed RNA. An optional but desirable inclusion (indicated by the dotted boundary) is suggested for control of water quality about $\frac{1}{4}$ mile upstream of the main canyon area. Generally, the boundary follows the topographic canyon break. However, the Task Group thought it to be important that at least some upland blue spruce ecosystem be included. We suggest this be accommodated by making some boundary along the road in Section 12.

We point out that this area contains at least three distinctive blue spruce habitat types. The northerly canyon slopes (where Allium gooddingii abounds, along with its streamside habitat) are mostly Engelmann spruce forest with blue spruce as an infrequent seral tree.

4. Wildcat Canyon

A minimally disturbed pinyon-juniper (P-J) woodland that we examined south and east of Wildcat Canyon (section 2 and 11 of R 15 E, T 13 N) addresses one of Region 3's foremost deficiencies in its present RNA program. As previously mentioned in our letter to the A/S (ltr 25 May 1982, 4060) our P-J woodland in the Region is so heavily utilized that location of a satisfactory example for research is extremely difficult. The ecosystem examined is on sandstone and limestone rock. It is a Pinus edulis - Juniperus osteosperma/Cowania mexicana/Bouteloua gracilis habitat type.

The boundaries of this tract are clear, so far as the critical P-J woodland is concerned. We recommend that the Forest give some additional thought to including either of the following as part of the included boundary along Wildcat Canyon:

1. The narrow canyon slope containing stringers of ponderosa pine.
2. The sandy terraces and bottoms of Wildcat Canyon where valuable (and highly unusual) populations of native grasses occur (these grasses include yellow Indiangrass, switchgrass, and needle-and-thread). Either of these additions would enhance the ecological and seed pool diversity of the proposed RNA without costing much additional acreage.

The following area is also recommended for the RNA program, although the Task Group had some problem with "tract #3" which had appreciable disturbance:

5. Campbell Blue Riparian Areas

Five tracts of mostly narrowleaf cottonwood ecosystems were visited along the Campbell Blue and Blue Rivers. The tract straddling the Arizona-NM state line had obvious and compelling attributes for a RNA. It was a protected riparian ecosystem dominated by Populus angustifolia and Pinus ponderosa. Lush banks of willows and grassy understories were observed. Ecosystem dynamics and succession could be related to channel and fluvial processes operating without man's local intrusion.

The remaining tracts were not so qualified. The best of these, "tract #3," occurred on the Blue River below Jones Canyon. Here, riparian diversity included broad-leafed cottonwood, outstanding walnut groves, and other tree and understory features. The former road had been rerouted away from the main channel of the Blue. Heavy equipment used on some sites, a power line, and some earlier gravel borrow areas from portions of the channel all contributed to "intrusions" upon the channel and fluvial dynamics that are necessary to maintain natural riparian ecosystems. We are unsure how important or unimportant these disturbances are. Riparian areas are, of course, actively distributed by floodings, etc.; capacity to recover in future years should not necessarily disqualify us from considering their RNA potential now.

Therefore, we propose including tracts 1 (on the State Line) and 3 as a proposed RNA addressing the Regional Cottonwood-Willow requirement. Neither tract by itself is sufficient for an RNA, but in combination a sufficient river stretch and ecosystem diversity can be attained. We note that this ecosystem was high on the RNA priority for the A/S. The Region, too, considers outstanding riparian areas to be of high concern for the RNA program.

We did not consider any of the following areas to be suitable for RNA designation in this round of planning for reasons stated: