DECISION NOTICE/DESIGNATION ORDER

Decision Notice
Finding of No Significant Impact
Designation Order

By virtue of the authority vested in me by the Secretary of Agriculture under regulations 7 CFR 2.42, 36 CFR 251.23, and 36 CFR Part 219, I hereby establish the Barker Bluff Research Natural Area. It shall be comprised of lands described in the section of the Establishment Record entitled "Location".

The Regional Forester has recommended the establishment of this Research Natural Area in the Record of Decision for the Shawnee National Forest Land and Resource Management Plan. 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 Shawnee National Forest Land and Resource Management Plan and Final Environmental Impact Statement which are available to the public.

The Barker Bluff Research Natural Area will be managed in compliance with all relevant laws, regulations, and Forest Service Manual direction regarding Research Natural Areas. It will be administered in accordance with the management direction/prescription identified in the Establishment Record.

The Shawnee National Forest Land and Resource Management Plan is hereby amended to be consistent with the management direction identified in the Establishment Record and this Decision Notice/Designation Order. This is a non-significant amendment of the Shawnee National Forest Land and Resource Management Plan. (36 CFR 219.10(f)).

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

Based upon the Environmental Analysis, I find that designation of the Barker Bluff Research Natural Area is not a major Federal action significantly affecting the quality of the human environment. (40 CFR 1508.27).

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

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

And simultaneously to the Deciding Officer:

Chief (1570)
USDA, Forest Service
P.O. Box 96090
Washington, D.C. 20090-6090

Barker Bluff

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 the Chief's decision is the final administrative decision of the U.S. Department of Agriculture (36 CFR 217.17(d)).

F. Dale Robertson
Chief

9/26/90
Date

UNITED STATES DEPARTMENT OF AGRICULTURE

FOREST SERVICE

BARKER BLUFF

RESEARCH NATURAL AREA

SHAWNEE NATIONAL FOREST

JULY 11, 1987

☆ U.S. GOVERNMENT PRINTING OFFICE: 1983 - 425-976 - 415/6115

FS-6200-7 (10/73)

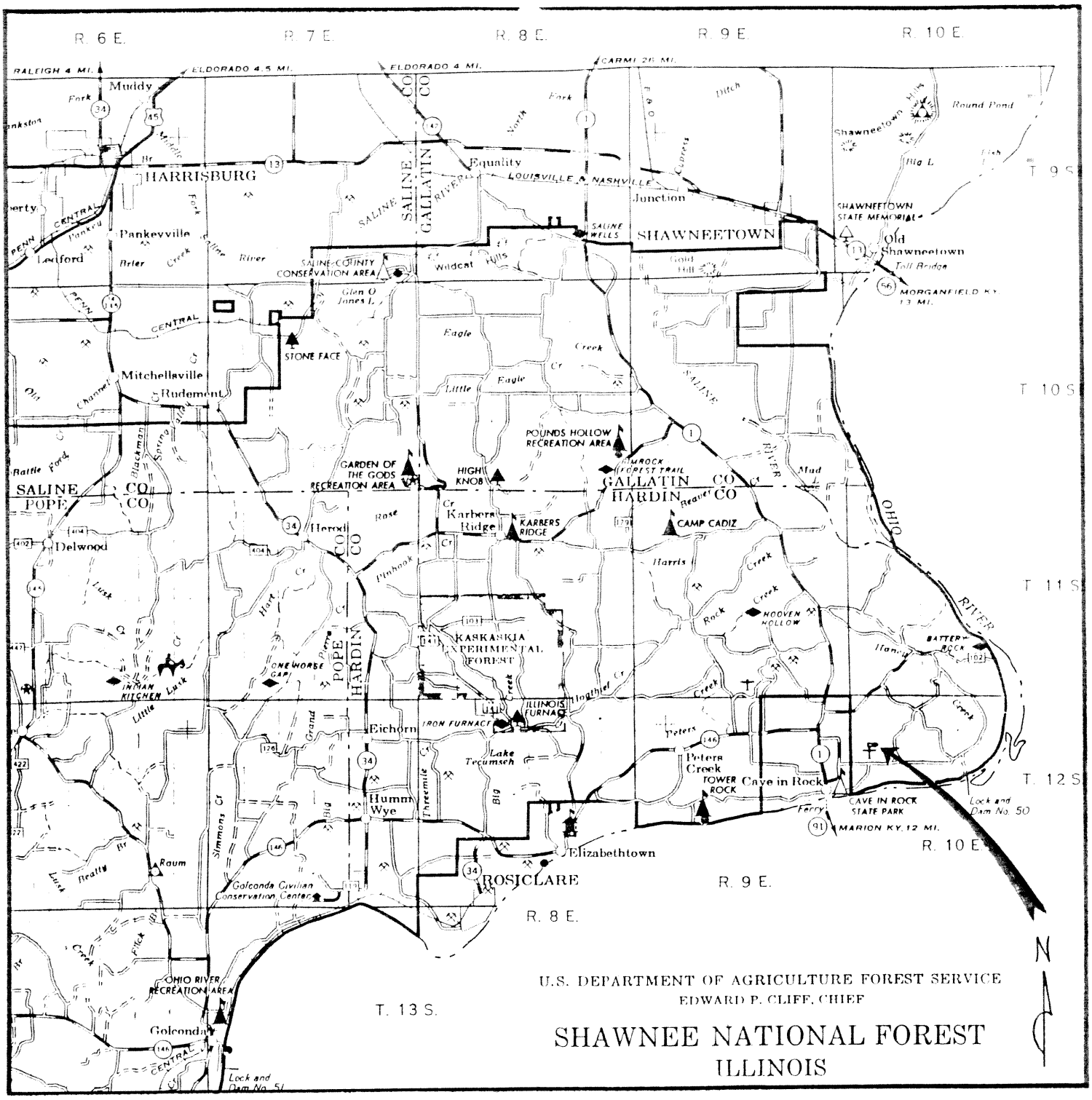

Figure 3. Location of Barker Bluff Research Natural Area shown (with arrow) on copy of Shawnee National Forest map, 1971

scale 1/4" = 1 mile

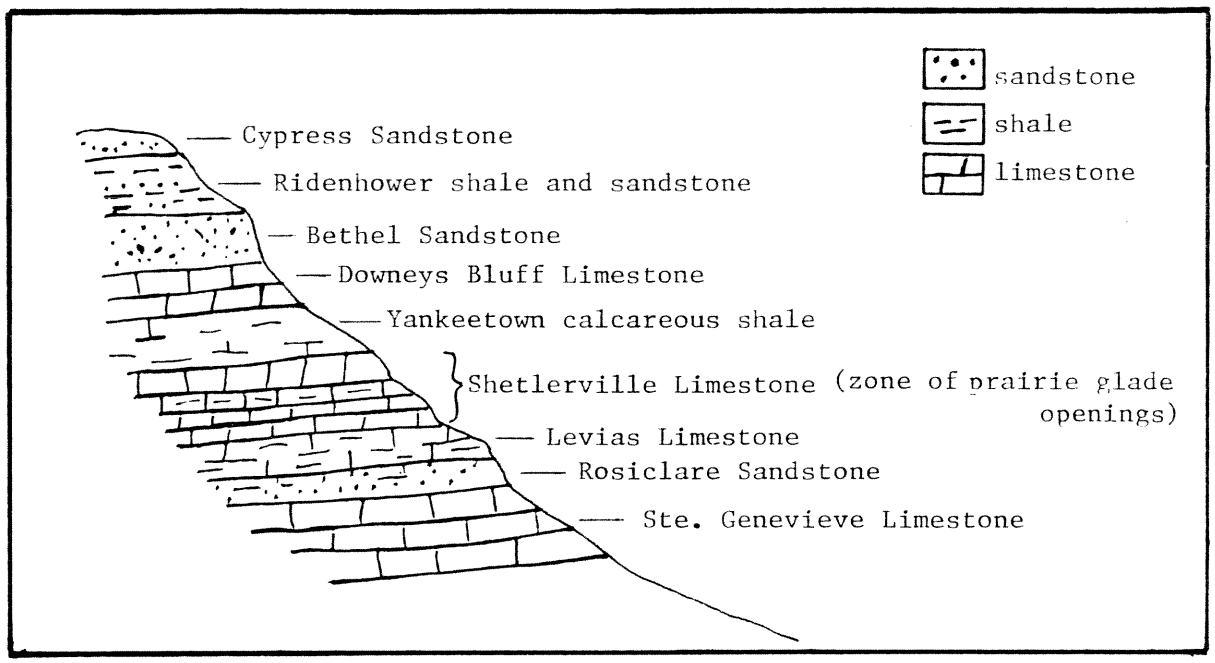

Figure 6. Cross section of Barker Bluff Research Natural Area showing bedrock formations and zone of prairie glade openings

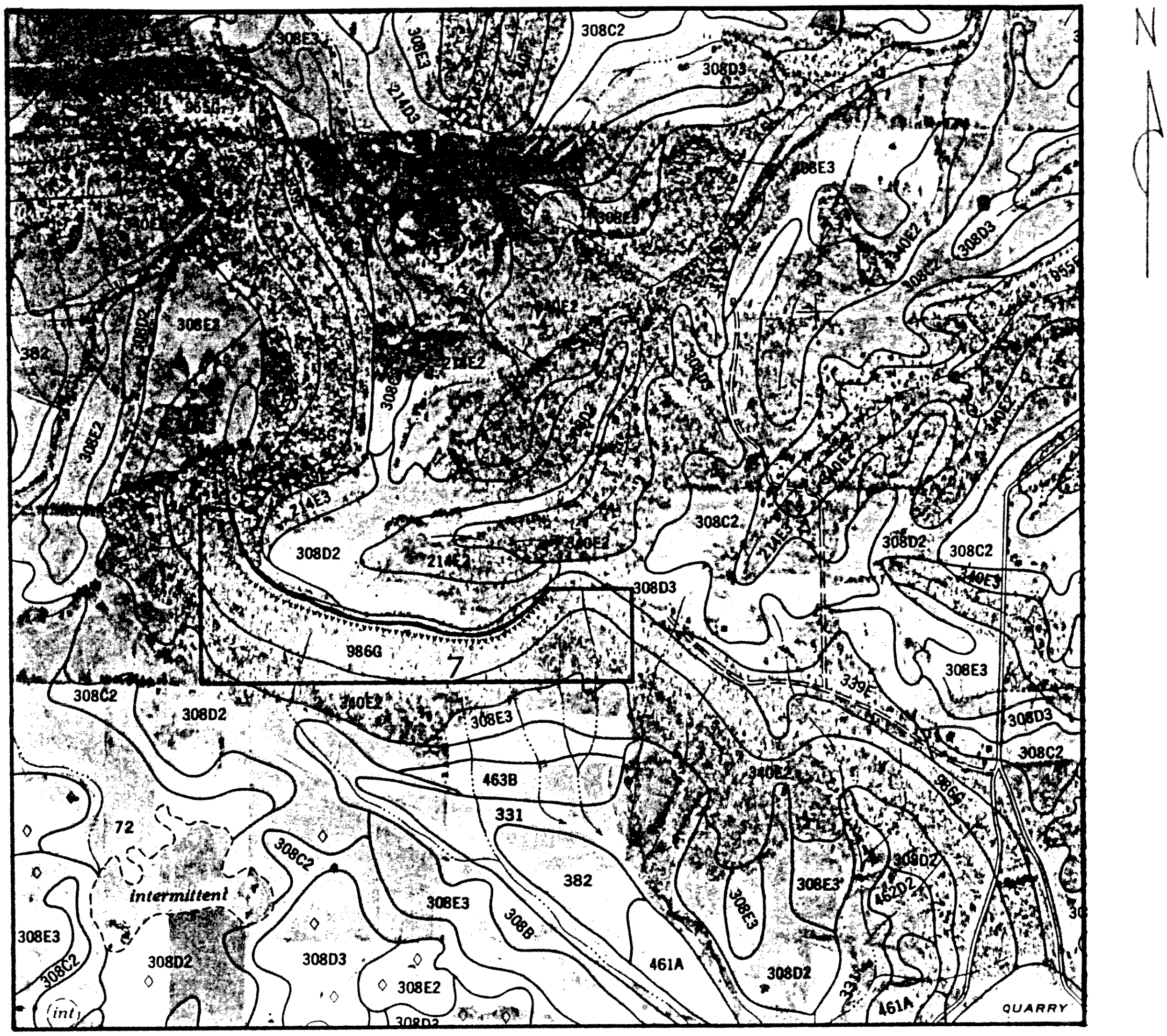

Figure 7. Location of Barker Bluff Research Natural Area shown on map of soils taken from Soil survey of Pope, Hardin, and Massac counties, Illinois by W. D. Parks et al., SCS and USFS, in coop. with Ill. Agr. Exp. Sta., Urbana, 1975

scale 4" = 1 mile

308 - Alford soils

340 - Zanesville silt loam

339 - Wellston silt loam

986 - Wellston-Berks complex

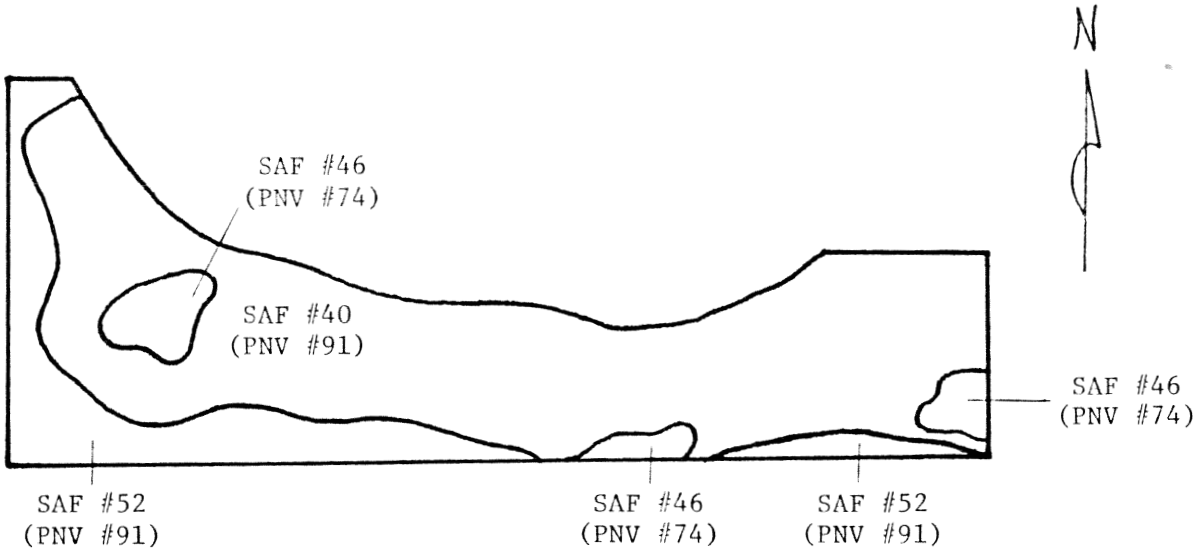

Figure 8. Map of Barker Bluff Research Natural Area showing area cover types

scale 5" = 1/4 mile

SAF Cover Type	Kuchler PNV Type
#40 post oak-blackjack oak	#91 oak-hickory
#46 eastern redcedar	#74 cedar glades
#52 white oak-black oak-northern red oak	#91 oak-hickory

USDA-FOREST SERVICE

PHOTOGRAPHIC RECORD

(See FSM 1643.52)

PHOTOGRAPHER Copy of ASCS photo (Copy made by M. D. Hutchison)

DATE SUBMITTED July, 1987

HEADQUARTERS UNIT

LOCATION

INITIAL DISTRIBUTION OF PRINTS AND FORM 1600-1:

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

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

PHOTOGRAPH NUMBER TEMP. (1)	PHOTOGRAPH NUMBER PERMANENT (To be filled in by the WO) (2)	SELECTED FOR W.O. PHOTO LIBRARY (3)	DATE OF EXPOSURE (4)	LOCATION (State, Forest, District and County) (5)	CONCISE DESCRIPTION OF VIEW (6)	NEGATIVE (Show size and BW for black and white or C for color) (7)
Fig. 9			June 15, 1938	Illinois, Shawnee National Forest, Elizabeth-town Dist., Hardin Co.	vertical aerial view of Barker Bluff Research Natural Area	35 mm. BW

☆ U.S. GOVERNMENT PRINTING OFFICE : 1973-730-157/208 3-1

1600-1 (8/67)

USDA-FOREST SERVICE

PHOTOGRAPHIC RECORD

(See FSM 1643.52)

PHOTOGRAPHER Copy of ASCS photo (Copy made by M. D. Hutchison)

DATE SUBMITTED July, 1987

HEADQUARTERS UNIT

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	TEMP. (1)	PERMANENT (To be filled in by the WO) (2)	(3)	(4)	(5)	(6)	(7)
Fig. 10				Nov. 5, 1970	Illinois, Shawnee National Forest, Elizabeth-town Dist., Hardin Co.	vertical aerial view of Barker Bluff Research Natural Area	35 mm. BW

☆ U.S. GOVERNMENT PRINTING OFFICE : 1973—730-157/208 3-1

1600-1 (8/67)

Figure 9. Copy of ASCS aerial photograph taken June 15, 1938 showing location of Barker Bluff RNA

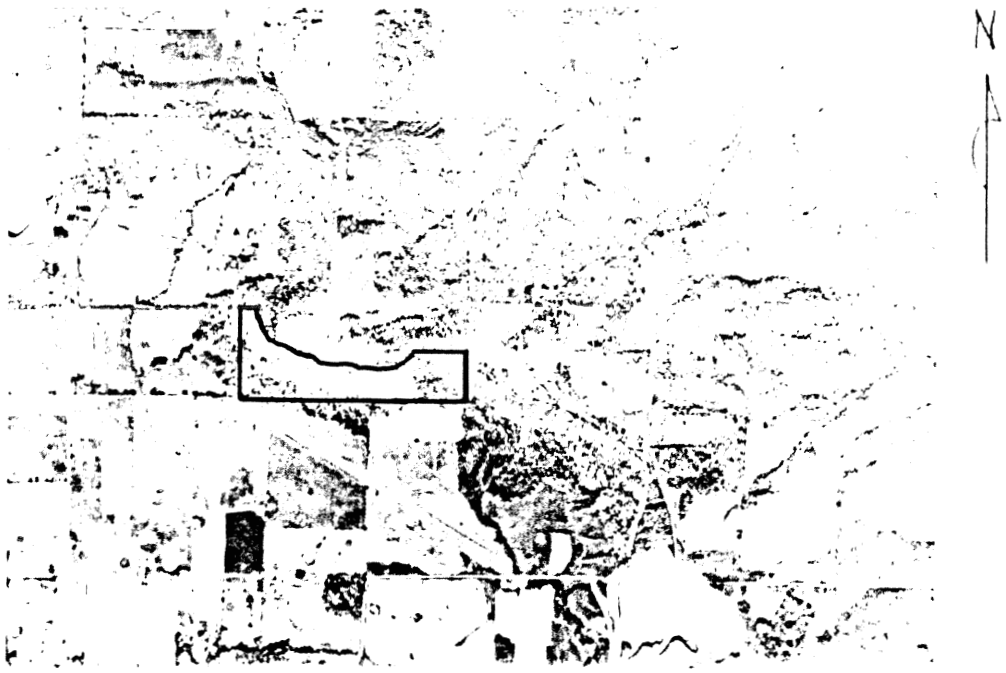

Figure 10. Copy of ASCS aerial photograph taken Nov. 5, 1970 showing location of Barker Bluff RNA

USDA-FOREST SERVICE

PHOTOGRAPHIC RECORD

(See FSM 1643.52)

PHOTOGRAPHER	DATE SUBMITTED
M. D. Hutchison	July, 1987
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Fig. 11				March, 1978	Illinois, Shawnee National Forest, Elizabeth-town Dist., Hardin Co.	nearly vertical aerial view of part of Barker Bluff Research Natural area	35 mm. C

☆ U.S. GOVERNMENT PRINTING OFFICE : 1973-730-157/208 3-1

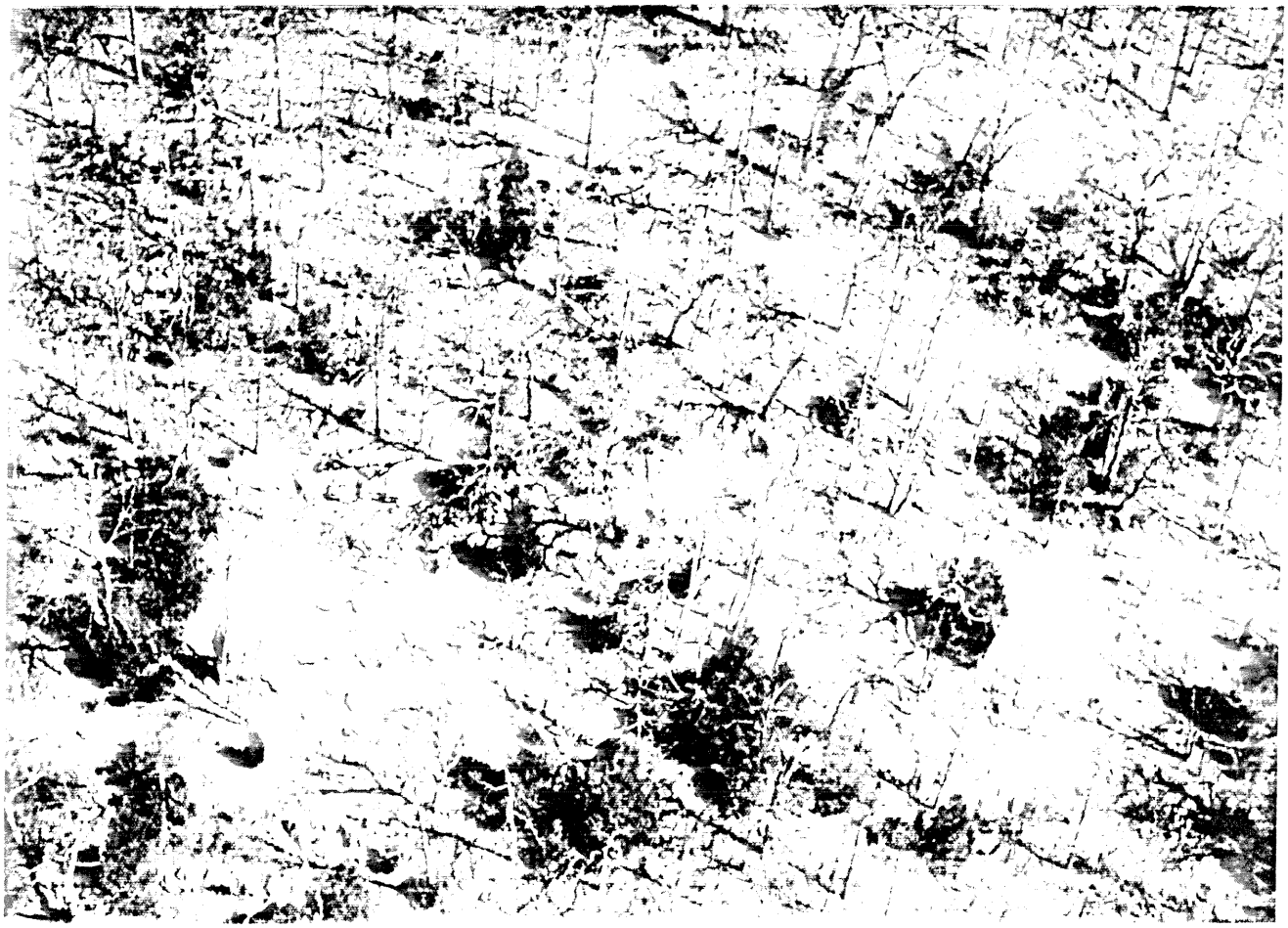

Figure 11. Aerial view of part of Barker Bluff Research Natural Area in winter; view is nearly vertical, and north is toward the top of the photo; note the open character of the forest, the small glade openings, the scattered redcedars, and the stony soil

-photo taken by M. D. Hutchison, March, 1978

USDA-FOREST SERVICE

PHOTOGRAPHIC RECORD

(See FSM 1643.52)

PHOTOGRAPHER	DATE SUBMITTED
M. D. Hutchison	July, 1987
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	TEMP. (1)	PERMANENT (To be filled in by the WO) (2)	(3)	(4)	(5)	(6)	(7)
Fig. 12				Sept. 25, 1986	Illinois, Shawnee National Forest, Elizabeth-town Dist., Hardin Co.	view of small opening with Indian grass (Sorghastrum nutans), little bluestem (Andropogon scoparius), and several prairie forbs at Barker Bluff RNA	35 mm. C

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PHOTOGRAPHIC RECORD

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	TEMP. (1)	PERMANENT (To be filled in by the WO) (2)	(3)	(4)	(5)	(6)	(7)
Fig. 13				Sept. 25, 1986	Illinois, Shawnee National Forest, Elizabeth-town Dist., Hardin Co.	close view of limestone boulders on slope at Barker Bluff RNA	35 mm. C

☆ U.S. GOVERNMENT PRINTING OFFICE : 1973—730-157/208 3-1

USDA-FOREST SERVICE

PHOTOGRAPHIC RECORD

(See FSM 1643.52)

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TEMP. (1)	PERMANENT (To be filled in by the WO) (2)	(3)	(4)	(5)	(6)	(7)
Fig. 14			Sept. 25, 1986	Illinois, Shawnee National Forest, Elizabeth-town Dist., Hardin Co.	view of sandstone units near top of ridge at Barker Bluff RNA	35 mm. C

☆ U.S. GOVERNMENT PRINTING OFFICE : 1973—730-157/208 3-1

1600-1 (8/67)

Figure 12. View of small opening with Indian grass (Sorghastrum nutans), little bluestem (Andropogon scoparius), and several prairie forbs at Barker Bluff RNA; note limestone outcropping -photo taken by M. D. Hutchison, Sept. 25, 1986

Figure 13. Close view of limestone boulders on slope at Barker Bluff RNA; note the broken character of the outcrops and the unstable surface as the boulders move downslope -photo taken by M. D. Hutchison, Sept. 25, 1986

USDA-FOREST SERVICE

PHOTOGRAPHIC RECORD

(See FSM 1643.52)

PHOTOGRAPHER	DATE SUBMITTED
M. D. Hutchison	July, 1987

HEADQUARTERS UNIT	LOCATION

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Fig. 15			Sept. 25, 1986	Illinois, Shawnee National Forest, Elizabeth-town Dist., Hardin Co.	view of old chinkapin oaks (Quercus muhlenbergii) at Barker Bluff RNA	35 mm. C

☆ U.S. GOVERNMENT PRINTING OFFICE : 1973-730-157/208 3-1

1600-1 (8/67)

Figure 14. View of sandstone units near top of ridge at Barker Bluff RNA; the resistant sandstones form small shelters on the upper slope
-photo taken by M. D. Hutchison, Sept. 25, 1986

Figure 15. Old chinkapin oaks (Quercus muhlenbergii) at Barker Bluff RNA; note open character of forest community
-photo taken by M. D. Hutchison, Sept. 25, 1986

USDA-FOREST SERVICE

PHOTOGRAPHIC RECORD

(See FSM 1643.52)

PHOTOGRAPHER	DATE SUBMITTED
M. D. Hutchison	July, 1987
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	TEMP. (1)	PERMANENT (To be filled in by the WO) (2)	(3)	(4)	(5)	(6)	(7)
Fig. 16				Sept. 25, 1986	Illinois, Shawnee National Forest, Elizabeth-town Dist., Hardin Co.	view of large redcedar (Juniperus virginiana) at edge of small glade at Barker Bluff RNA	35 mm. C

☆ U.S. GOVERNMENT PRINTING OFFICE : 1973—730-157/208 3-1

1600-1 (8/67)

USDA-FOREST SERVICE

PHOTOGRAPHIC RECORD

(See FSM 1643.52)

PHOTOGRAPHER	DATE SUBMITTED
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Fig. 17			June, 1980	Illinois, Shawnee National Forest, Elizabeth-town Dist., Hardin Co.	view of rocky slope at Barker Bluff Research Natural Area	35 mm. C

☆ U.S. GOVERNMENT PRINTING OFFICE : 1973-730-157/208 3-1

1600-1 (8/67)

Figure 16. Large redcedar (Juniperus virginiana) at edge of small glade at Barker Bluff RNA
-photo taken by M. D. Hutchison, Sept. 25, 1986

Figure 17. View of rocky slope at Barker Bluff RNA; the canopy is commonly open and uneven from tree fall; many large old oaks were blown down during a storm in July, 1980
-photo taken by M. D. Hutchison in June, 1980

Figure 9. Barker Bluff RNA, Hardin Co., Ill.

Figure 10. Barker Bluff RNA, Hardin Co., Ill.

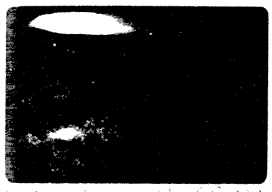

Fig 11. Barker Bluff RNA Hardin Co. Ill.

Fig 12. Barker Bluff RNA Hardin Co. Ill

Fig. 13. Barker Bluff RNA Hardin Co., Ill

Fig 14 Barker Bluff RNA Hardin Co., Ill

Fig 15 Barker Bluff RNA Hardin Co. Ill.

Fig 16. Barker Bluff RNA Hardin Co. Ill

Fig. 17. Barker Bluff RNA Hardin Co. Ill.

ERRATA SHEET

1. Authorities for biota nomenclature, unless otherwise noted, are as follows:

Flora:

a. Fernald, M.L., 1950, Gray's manual of botany, 8th ed., American Book Co., NY. 1632p

b. Little, E.L.Jr., 1979, Checklist of United States Trees (Native and Naturalized) Agri Handbook No. 541, Forest Service, USDA.

Fauna:

a. Banks, R.C., R.W. Diarmid, A.L. Gardner, 1987. Checklist of vertebrates of the United States, US Territories, and Canada, Resource Publ. 166, Fish and Wildlife Service, USDI. 81p

b. Holsinger, JR, 1972, The fresh water amphipod crustaceans (Gammaridae) of North Am., Biota of Freshwater Ecosystems. Identification Manual No. 5, EPA. 89p

c. Robins, C.R., R.M. Bailey, C.E. Bond, V.R. Brooker, E.A. Lachorer, R.N. Lea, W. B Scott, 1980. A list of common and scientific names of fishes from the U.S. and Canada, 4th ed., Am. Fisheries Soc., Spec. publ. No. 12, Bethesda, MD. 174p

d. Sutherland, D.W.S, 1978. Common names of insects and related organisms. Entomological Society of America. 132p.

2. Management Precription

a. Hand removal of vegetation. This may be necessary because natural fires have been prevented or controlled in recent years. Once woody vegetation is controllable through prescribed burning or grazing, hand removal of woody vegetation will be unnecessary.

b. Fences are not needed to achieve management objectives.

ESTABLISHMENT RECORD FOR THE BARKER BLUFF RESEARCH NATURAL AREA WITHIN THE SHAWNEE NATIONAL FOREST HARDIN COUNTY, ILLINOIS

INTRODUCTION

The Barker Bluff Research Natural Area (RNA) is a 60-acre (24.2-hectare) tract owned by the federal government and managed by the U. S. Forest Service, Shawnee National Forest (Figure 4). It contains relatively undisturbed natural community types, e.g. glade and dry upland forest. It is a part of the Barker Bluff Natural Area identified by the Illinois Natural Areas Inventory (1978) as being of significance because of its very high quality glade and its high quality glade/forest complex (see Appendix I).

There is a recently discovered plant in the RNA that is rare in the State, the whorled rosinweed (Silphium trifoliatum), found for the first time in Illinois at Barker Bluff, 1986. It should soon be designated as an Endangered Species in Illinois and as a Forest Listed Species.

The Society of American Foresters (SAF) cover types represented include Type 40 (post oak-blackjack oak) and Type 52 (white oak-black oak-northern red oak) (Eyre, 1980). Several variants and small stands with other dominants are also present. The small glade openings represent the *cedar glades* potential natural vegetation type described by Kuchler as PNV Type 74 (Kuchler, 1964, with U. S. Geol. Survey map numbers, 1969). Society of American Foresters Type 46 (eastern redcedar) best describes the glades (Figure 8).

The site is a part of a scarp face of the Spar Mountain Escarpment, a prominent cuesta. It drains southward into a sinkhole plain and is about a mile north of the Ohio River. Mississippian age limestones and sandstones comprise the bedrock. The area is a part of the Shawnee Hills in the Interior Low Plateaus Physiographic Province (Figures 1 and 5). It is within the Lesser Shawnee Hills Section of the Shawnee Hills Natural Division (Schwegman, 1973).

The area was privately owned prior to its acquisition by the federal government to become a part of the Shawnee National Forest (SNF) in 1936-37. It has never been cultivated or significantly disturbed by livestock. There has been some selective logging in parts of the area, but no cutting of significance has occurred within the last 50 years. Due to the rugged terrain and thin rocky soils, the area has never been suitable for agricultural use, and the trees grow slowly and are of poor form and quality for lumber. The RNA has received very little public use in the past.

The significance of the natural area was first recognized by the Illinois Natural Areas Inventory in 1976-78 (Appendix I). It was first proposed for consideration as an RNA prior to 1981.

LAND MANAGEMENT PLANNING

The Barker Bluff natural area is recommended for designation as a research natural area in the Land and Resource Management Plan, Shawnee National Forest, approved November 24, 1986 (see SNF, Forest Plan, IV-3, Special Feature Management). The environmental analysis as a part of the planning process supports the recommendation to establish the RNA (SNF, Final EIS, 2-66, Identification and Management of Special Features). It is currently being protected under Management Prescription 8.2.

OBJECTIVES

The objectives of establishing the Barker Bluff Research Natural Area are to:

1) preserve pristine forest, grassland, and geological natural situations for research, study, observation, monitoring, and educational activities that maintain unmodified conditions,

2) preserve and maintain genetic diversity,

3) protect against serious environmental disruptions,

4) serve as reference area for the study of succession,

5) provide onsite and extension educational activities,

6) serve as baseline area for measuring long-term ecological changes,

7) serve as control area for manipulative research,

8) monitor effects of resource management techniques and practices.

JUSTIFICATION

The most important feature of the Barker Bluff RNA is the limestone glade/dry upland forest community complex (Figure 11). The limestone glade natural community type is listed by The Nature Conservancy with an element rank of G2S2 (G2 means that the community is imperiled globally

because of rarity or because of other factors making it very vulnerable to extinction throughout its range; S2 means that it is imperiled in the State for the same reasons). The Barker Bluff limestone glade/dry upland forest complex is the largest of high quality in the Shawnee Hills of southern Illinois.

The area contains species uncommon in the region, plants disjunct from the prairies on the glacial till plain to the north. These include big bluestem (Andropogon gerardii), Indian grass (Sorghastrum nutans), white prairie clover (Petalostemum candidum), yellow coneflower (Ratibida pinnata), and puccoon (Lithospermum canescens) (Figure 12).

The whorled rosinweed (Silphium trifoliatum) was discovered here in 1986, the first record for this species in Illinois. It should soon be listed as an Endangered Species in Illinois and as a Forest Listed Species.

There is a diversity of tree species at the site, including small stands with dominants such as chinkapin oak (Quercus muhlenbergii), post oak (Q. stellata), redcedar (Juniperus virginiana), and sugar maple (Acer saccharum). Society of American Foresters cover types 40 (post oak-blackjack oak) and 52 (white oak-blackjack oak-northern red oak) occur here, and both are listed in Appendix E of the Final Environmental Impact Statement, Land and Resource Management Plan for the SNF (1986) as types needed in the RNA system.

The bluff is a part of the scarp face of a well-developed cuesta ridge which rises above the Mississippian limestone karst plain. The scarp face rises about 300 feet (91.4 meters) in a quarter mile (402.3 meters). The topography is primarily a result of differential erosion of underlying bedrock layers exposed. The limestone exposures are significant in that they affect the soil pH and influence the vegetation types on the site.

Ecologically, communities at Barker Bluff are similar to the limestone glades of Kentucky and Tennessee. The geographic separation is significant. The recent discovery of whorled rosinweed, a southeastern species, at this site indicates that there may be further similarities in flora between the regions.

This area is suitable for research, demonstration, and/or learning experience opportunities. Conditions are ideal for research on prairie-forest successional and interface questions, for studies of rock weathering and pedalogical research dependent upon the presettlement quality of the site, and for studies of vegetational history and geography of plant species migrations.

PRINCIPAL DISTINGUISHING FEATURES

The bluff along which the Barker Bluff Research Natural Area is located has a dominantly southwest aspect. A near vertical sandstone cliff lies just below the crest. The scarp slope gradient is concave upward.

There is a diversity of plant species with small stands and habitat types related to bedrock type and soil depth. The area is all forested except for the small glade openings. Much of the dry upland forest canopy is open, and there are relatively large, mature to very old trees scattered on the bouldery slope.

The naturally open glades are very stony with scattered boulders. Woody vines, saplings, and shrubs are common. The prairie grasses and forbs are mostly in clumps or are thin and scattered. These glades represent a community type listed by The Nature Conservancy as both Globally Endangered and State Endangered.

Much of the area is covered by a limestone glade/dry upland forest community complex. It represents a type that was very common in the Shawnee Hills in presettlement times. It is now almost all destroyed or drastically disturbed throughout the Midwest.

No Federally Endangered or Threatened, Sensitive, or Forest Listed species are known from the site, but the whorled rosinweed (*Silphium trifoliatum*) should soon be added to the Illinois Endangered list. It should also be included as a Forest Listed Species. It is known in Illinois only from this site, and was found 24 September, 1986, during a visit to prepare this RNA record.

LOCATION

The Barker Bluff RNA is on the Elizabethtown Ranger District of the Shawnee National Forest. It is in Hardin County, in the extreme southeastern tip of Illinois. Latitude is 37° 29' N, and longitude is 88° 09' W. The area is in the north half of section 7, T. 12 S., R. 10 E. of the 3rd P. M. (Figures 3 and 4).

The south, west, and east boundaries are straight. The north boundary of the east part is straight for a short distance, but most of the north boundary follows SNF ownership, which is near the top of the bluff (Figure 4). The boundaries are described as follows:

Beginning at the center quarter corner of section 7, thence;

West on east-west centerline of section 7 to the west west on sixty-fourth line, thence;

North on west-west one sixty fourth line to center west northwest one sixty-fourth corner, thence;

East on north sixteenth line 4 chains to west edge road and top of bluff, thence;

Southeasterly and northeasterly along top of bluff to intersection with the south-north one sixty fourth line, thence;

East on one sixty-fourth line to center south northeast one sixty fourth corner, thence;

South on east sixteenth line to center east one sixteenth corner, thence;

West to point of beginning and containing approximately 60 acres (24.2 hectares)

Elevation ranges from 435 feet (136.6 meters) to 680 feet (207.3 meters) above mean sea level.

The RNA is about one mile (1.6 kilometers) northeast of the village of Cave in Rock. No roads or trails enter the area. Access is from Cave in Rock by means of county gravel roads (County Routes 102 and 97), 1 3/4 miles (2.8 kilometers) east to a quarry entrance where Route 97 turns north. Thence, following County Route 97 north 1/3 mile (.5 kilometers), there is a gravel road that turns left (west) to Beaver Cemetery. One can park at the cemetery and walk west along the road (which is impassible to vehicles after it enters section 7) about 1/2 mile (.8 kilometers) to the east boundary of the RNA (Figure 4).

AREA BY COVER TYPES

The Barker Bluff Research Natural Area is divided into three primary cover types: glade, forest, and glade/forest complex. The following are SAF and Kuchler types represented within the RNA (Figure 8):

SAF Cover Type	Kuchler PNV Type	Acres	Hectares
#40 post oak-blackjack oak	#91 oak-hickory	40	16.1
#46 eastern redcedar	#74 cedar glades	6	2.4
#52 white oak-black oak-northern red oak	#91 oak-hickory	14	5.7

According to the INAI (1978) data for the area, the following types were described as occurring within the RNA:

Natural Community	Plant Community
Limestone glade	little bluestem-tall dropseed-Indian grass
Dry upland forest/ limestone glade	Chinkapin oak-redcedar/bluestem grasses-Indian grass
Dry upland forest	post oak-black oak-black hickory
Dry upland forest	white oak-red oak-hickories

PHYSICAL AND CLIMATIC CONDITIONS

The climatological data are from the collection station at New Burnside which has records dating from 1931. It is 36 miles (58 kilometers) to the northwest. The following description is copied from the Soil Survey of Pope, Hardin, and Massac Counties, Illinois (1975):

> The Hardin County area has the continental climate typical of southern Illinois. The annual temperature range is about 100 degrees. Summer maximums reach 100° F. or more about two-thirds of the summers. Winter minimums are zero or below during about half the winters. Low pressure areas and their associated weather fronts bring frequent changes in temperature, humidity, cloudiness, and wind direction much of the year.
>
> Annual precipitation averages about 46 inches and ranges from about 32 to 70 inches. Precipitation is fairly evenly distributed throughout the year. September and October are the driest months. Prolonged dry spells during the growing season are not unusual. Summer precipitation occurs mostly in short showers or thunderstorms which are occasionally accompanied by hail and damaging winds. Only light snows occur during an average winter. The average annual snowfall ranges from 10 to 15 inches, but this total has been exceeded in a single month.
>
> Summers are warm, and continuous warm periods can be prolonged. July is the warmest month; the average daily maximum temperature is near 90° F. for both July and August. January is the coldest month, and both January and February have had temperatures as low as -15° F. The five months from November through March each have 14 to 24 days in which the minimum daily temperature falls

below 32° F. December, January, and February average 3 to 5 days each in which the maximum daily temperature does not exceed 32° F.

The number of days between the average date of the last freezing temperature in spring and the average date of the first freezing temperature in fall is between 187 and 200 days. Temperatures vary consistently between ridge and valley locations during radiation freezes, the most common type of freeze in Illinois.

The bluff is a part of the scarp face of a prominent cuesta which extends for about 10 miles (16.1 kilometers) northwesterly from the Ohio River. It is a complex feature with a discontinous cliff near the crest and several discontinuous ledges, mainly limestone, exposed downslope. At the base, the slopes become increasingly gentle on the Ste. Genevieve Limestone. Only a few parallel waterways plunge down the scarp. They are little incised, with boulder-filled channels, and they plunge in cataracts across the resistant ledges. Depositional fans occur at breaks in the slope. The scarp is generally debris covered. On the steep slope beneath the cliff, sandstone boulders and debris make walking difficult. At lower elevations, boulders are less common.

The RNA area is mostly forested with small glade openings. Much of the site is drouthy, and the overstory trees are scattered with a sparse groundcover of grasses and forbs. Saplings, stunted trees, and vines are common.

DESCRIPTION OF VALUES

Flora

The dry upland forest and limestone glades at Barker Bluff are almost impossible to separate and map as distinct communities. A few sites are open enough to be identified as glades, but even here, shrubs and vines are common among the rocks and boulders. The dry forest has a mostly open, uneven canopy with limby tree crowns. Although there is a great deal of overlap in species composition between the glades and dry forest stands, typical expressions of each are found within the RNA boundaries.

The dry forest on the upper slopes is dominated by post oak, chinkapin oak, and redcedar. Black oak (*Quercus velutina*) and black hickory (*Carya texana*) are also common. Near the sandstone cliffs at the top of the bluff, there are small sites dominated by blackjack oak (*Quercus marilandica*). Many of the trees are relatively small, but large old trees make up about half of the stand canopy. Wind throw is common, and many trees have fallen where shallowly rooted in the stony soil on the slope (Figure 17).

Shrubs are sparse in places and form thickets in others. Common understory species are winged elm (Ulmus alata), redcedar, ashes (Fraxinus spp.), dogwoods (Cornus spp.), and oaks. Herbaceous species are primarily bluestems (Andropogon spp.) occurring sparsely among the boulders and in the canopy gaps.

The lower slope forest is dominated by white oak (Quercus alba), red oak (Q. rubra), and hickories (Carya spp.). In small stands, sugar maple is dominant. The trees are smaller and probably younger than on the higher slopes. There are not as many rocks and boulders on the surface, and the site is slightly more mesic. The canopy is fairly complete, and the understory is sparse.

The limestone glades are dominated by little bluestem, tall dropseed (Sporobolus asper), and Indian grass. Common forbs include flowering spurge (Euphorbia corollata), milkweeds (Asclepias verticillata and A. viridiflora), asters (Aster spp.), puccoon, white prairie clover, obedient plant (Physostegia virginiana), yellow coneflower, and goldenrods (Solidago spp.). Small redcedars and elms are common in the openings, and dense tangles of greenbrier (Smilax bona-nox) occur along the edges. The first and only Illinois record to date for the whorled rosinweed is in one of the glades. This species should soon be listed as an Illinois Endangered plant, but at the present time, there are no Endangered, Threatened, Sensitive, or Forest Listed species recorded from the RNA.

Fauna

There are no rare or Endangered animals known from the RNA, but little inventory work has been done in the vicinity. There appears to be a diverse assemblage of insect and spider species. The following were noted during one short visit, September 25, 1986:

pearl crescent butterfly (Nymphalidae)
red-spotted purple butterfly (Nymphalidae)
clouded sulfur butterfly (Pieridae)
bagworm moth (Psychidae)
lacewing (Mantispidae)
tree cricket (Gryllidae)
katydid (Tettigoniidae)
shorthorned grasshopper (Acrididae)
walkingstick (Phasmatidae)
wolf spider (Araneae)
harvestman (Phalangiidae)

The fence lizard (Sceloporus undulatus) is common on rocks in the glades. The broadheaded skink (Eumeces laticeps) is occasionally seen on the wooded slope.

The blue racer (Coluber constrictor), green snake

(Opheodrys aestivalis), and eastern garter snake (Thamnophis sirtalis) are all common in the woods and glades.

The following are birds noted during one brief visit to the RNA, September 25, 1986:

cardinal (Richmondena cardinalis)
yellow-billed cuckoo (Coccyzus americanus)
mourning dove (Zenaidura macroura)
red-tailed hawk (Buteo jamaicensis)
blue jay (Cyanocitta cristata)
eastern wood pewee (Contopus virens)
summer tanager (Piranga rubra)
tufted titmouse (Parus bicolor)
whip-poor-will (Caprimulgus vociferus)
downy woodpecker (Dendrocopus pubescens)
Carolina wren (Thryothorus ludovicianus)

Most of the animals common to the region probably occasionally use the RNA, especially the larger mammals such as the white-tailed deer (Odocoileus virginianus), coyote (Canis latrans), gray fox (Urocyon cinereoargenteus), raccoon (Procyon lotor), opossum (Didelphis marsupialis), and gray squirrel (Sciurus carolinensis).

Geology (Figures 5 and 6)

The rocks are all of Mississippian age including the uppermost part of the Valmeyeran Series and lower Chesterian Series.

The Bethel Sandstone is the cliff-former of the escarpment--the Cypress Sandstone merely forming the cap of the bluff. The cliff is nearly vertical with reentrant "shelters" at the base in some places. The cliffs are discontinuous, but the unit everywhere forms the steepest slope of the escarpment (Figure 14).

The underlying Downey's Bluff Limestone and Yankeetown shaly units are rarely visible, as they are covered by the debris from above which has fallen and moved downslope.

The Shetlerville and Levias Limestone formations both have resistant layers which repeatedly form ledges of 3- to 4-foot clifflets (Figure 12). Two of these are very persistent on Barker Bluff. Most commonly, the prairie glades are found between them, sometimes extending a short distance above and below the ledges. Both of these units contain abundant fossil fragments but few entire shells. Beds with abundant small oolites are present.

The Rosiclare Sandstone forms a low bench between the Levias and the thick Ste. Genevieve Limestone below. When freshly broken, it is commonly grayish green and calcareous. However, when seen in weathered exposures, it is rusty,

almost orange. It consists of beds two or three inches (5.1 or 7.6 centimeters)thick.

At the base of the bluff, the Ste. Genevieve Limestone forms a more gentle slope of decreasing gradient. This formation consists of both crystalline and colitic gray limestones. It is the important stone quarried in Hardin County for construction purposes. In fact, large quarries are present both to the east and west of Barker Bluff. The nature of these bedrock formations is best observed at the quarry operations.

The sedimentary rocks in extreme southeastern Hardin County have a rather uniform dip of 3° to 6° toward the northeast. The numerous northeast-southwest trending faults of the region do not affect Barker Bluff. In exposures, the joints are well exposed, and they are important in providing for groundwater movement.

The alternation of resistant and non-resistant sedimentary formations has resulted in the differential degradation of the landscape. The topography consists of a series of assymmetrical ridges and valleys with the weak rocks forming the valleys and the scarp faces of the escarpments. The resistant rocks cap the ridges and form the backslopes.

No river occupies the base of the Spar Mountain Escarpment, rather surface water drains to a sinkhole plain and into the Ohio River as groundwater.

Glaciation did not affect the area directly, though the variations in depth of the Ohio River must have affected groundwater circulation, and climatic changes may have caused differing weathering effects. The most obvious effect of glaciation is the deposit of loess which mantles the upland. Much silt from that source is being continually washed over the Bethel Sandstone cliff. It maintains a matrix of fine material around the coarser debris on the scarp slope; sand from the disintegrating sandstone is a part of that matrix.

Weathering, both chemical and physical, can be readily observed. Disintegration of the sandstones, wedging due to freeze-thaw, and the growth of plant roots in the rock fractures can be seen in many places. Solution of limestone is observable at every ledge.

The most active processes are those of mass wasting. In many places, the talus beneath the Bethel cliff is unstable, and a few large blocks are found well downslope (Figure 13). The entire slope is well strewn with boulders; sandstone above the Shetlerville ledges, limestone and sandstone downslope.

No landslides were observed in 1986. Creep seems to dominate.

Rainwash is important from above the cliff, both as sheet-wash and as concentrated flow into small ephemeral waterfalls. Relatively few gullies dissect the scarp face. Apparently the surface material is very porous. The gullies that are present are boulder filled and have cataracts across the resistant ledges.

Mass movement does not seem to be rapid enough to cause trees to be tilted or tumbled.

References: J. W. Baxter, P. W. Potter, and F. L. Doyle. 1963. Areal geology of the Illinois Fluorspar District Part 1--Saline Mines, Cave in Rock, Dekoven, and Repton quadrangles. Illinois State Geological Survey, Circular 342. 44 pages plus map.

S. E. Harris, Jr., C. W. Horrell, and D. Irwin. 1977. Exploring the land and rocks of southern Illinois, a geological guide. Southern Illinois University Press, Carbondale. 240 pages.

Soils (Figure 7)

Most of the soils in the RNA are stony and shallow. They are well drained, and runoff is rapid. They formed in loess and underlying material weathered from shale or sandstone. Organic content is low, and the hazard of erosion is very severe.

Most of the RNA on the upper slope is mapped as the Wellstone-Berks complex (986G). These are stony, shallow, usually acid soils. Berks soils formed in mixed loamy material and sandstone flags or stones.

The lower slope is mapped as Zanesville silt loam (340E2). This soil formed in loess and material weathered from shale and sandstone, and it has a fragipan at a depth of 19 to 27 inches (48.3 to 68.6 centimeters).

A small corner of the RNA is mapped as Alford silt loam (308D2). It formed in loess and is moderately deep. This soil is mainly in the limestone sinkhole area in Hardin County.

Reference: W. D. Parks, et al. 1975. Soil survey of Pope, Hardin, and Massac counties, Illinois. Soil Conservation Service and Forest Service, in cooperation with the Illinois Agricultural Experiment Station, Urbana, Illinois. 126 pages plus maps.

Lands

All of the RNA is federal land acquired by the U. S. Forest Service as a part of the Shawnee National Forest. There are no outstanding mineral rights at Barker Bluff.

Cultural

There are no known historical sites, cemeteries, or Indian features within the RNA. There is a trace of a very old trail in the RNA that crosses along the upper slope. It is reforested and scarcely recognizable today, but was used by early pioneers in the 1800's who traveled inland from a river landing east of Cave in Rock.

IMPACTS AND POSSIBLE CONFLICTS

The Shawnee National Forest's Land and Resource Management Plan contains standards and guidelines for the management and protection of special areas, including the proposed research natural areas. These standards and guidelines provide the basis for conflict resolution.

Mineral resources

There are no outstanding mineral rights at Barker Bluff, but active limestone quarries are in the vicinity along the same bluff line. If quarry activities were to move very close to the RNA boundaries, there could be undesirable effects on the vegetation from dust and particulate matter. More buffer land should be acquired by the Forest Service or some other conservation agency to insure better long-term protection for the area.

There is moderate potential for the presence of fluorite, lead, and zinc, but the potential for the presence of oil and gas is low, and there is no coal indicated as present in the vicinity (SNF, Land and Resource Management Plan, 1986).

There is an application by C. M. Fleetwood of Oklahoma for a lease to explore for oil and gas on the RNA tract. The lease is pending but a decision has been on hold for the last several years.

Grazing

This area is not under any range allotment and is unsuitable for livestock grazing. It is a relatively small acreage and is mostly forested. There are no fences on the RNA boundaries, and there is no known interest in developing this area for livestock. The soils on the steep rocky slopes are subject to extreme erosion, and livestock use

would have undesirable effects on the soils, natural plant communities, and rare species in the area.

Timber

All of the potential research natural areas identified in the Shawnee National Forest Land and Resource Management Plan, including Barker Bluff, were considered inappropriate for timber production. These lands were not included in the Shawnee National Forest timber base. Consequently, no additional withdrawals will be required.

Watershed values

No ponds or streams with permanent flow are within the RNA boundaries. The bluff slopes down to the karst plain which mostly drains into the Ohio as groundwater.

The protection of the RNA will help to maintain the high natural quality of water runoff and prevent unnatural erosion from affecting sites downslope within the watershed.

Recreational values

There has been little or no recreational use of the RNA in the past. An occasional hunter may cross the area. There are no special attractions to cause future problems with recreational use conflicts.

Wildlife and plant values

Maintenance of the limestone glade communities and associated uncommon and rare plant species will require some control of woody succession. Prescribed burning and hand removal of woody shrubs invading the glades are permitted to preserve the forest/glade community complex and the prairie flora. Such should not cause any significant impact or result in any conflict with other uses in the vicinity.

Wilderness, Wild and Scenic River, or National Recreation Area Values

No designated or proposed Wilderness, Wild and Scenic River, or National Recreation Area would be impacted.

Transportation plans

There are no known transportation plans that are likely to adversely affect the RNA. The RNA is relatively small, contains no existing roads, and none should be needed for Forest Service management of properties in the area.

MANAGEMENT PRESCRIPTION

The primary objective of the Barker Bluff Research Natural Area management is to protect and maintain its natural character, i.e., to preserve the area from unnatural disturbance.

The purpose of management is to provide an area to illustrate and typify for research and educational purposes, some of the important forest and glade types characteristic of the Midwest, as well as other plant communities that have special and unique characteristics of scientific interest and importance. Management prescriptions will be developed in cooperation with the NCFES. PJE

Vegetation management

Occasional prescribed burning and hand removal of small trees and shrubs are permitted to help control the unnatural invasion of woody vegetation into the glade areas (Figures 11 and 12). It is assumed that the tendency of natural openings in the Midwest to succeed to forest will result in the disappearance of glade and prairie communities without fire or the replication of other control measures that kept them open in presettlement times. Prescribed/controlled burning should not be necessary every year. Initially, a few larger trees and bushy thickets will be removed from the glades by hand cutting. A regular schedule of burning will be developed as results are monitored.

Recreation management Recreation will be discouraged. PJE

ADMINISTRATIVE RECORDS AND PROTECTION

The administrator and protector of the Barker Bluff Research Natural Area is:

District Ranger
Elizabethtown District
USDA-Forest Service
Elizabethtown, Illinois

The research coordinator is:

Director
North Central Forest Experiment Station
1992 Folwell Ave.
St. Paul, MN 55108

The research data file is maintained by the North Central Forest Experiment Station and the Shawnee National Forest Headquarters, Harrisburg, Illinois 62946. The Natural Heritage Division of the Illinois Department of Conservation, 524 S. 2nd Street, Springfield, Illinois 62706 also maintains a file of the natural area. Plant species collected in the area have been deposited in the herbarium

at Southern Illinois University at Carbondale, Illinois 62901.

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APPENDIX ITEM I

Computer printout of data collected for Barker Bluff by the Illinois Natural Areas Inventory, 1976-78.

(Note that the natural area identified by the INAI is considerably larger than the Research Natural Area described in the establishment record. The RNA area was reduced to leave out privately owned parts of the site. All of the RNA is within the INAI area, but some of the features described in the INAI printout are outside the boundaries of the RNA).

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Illinois Natural Areas Inventory
Natural Land Institute

AREA # 19

COUNTIES: 35 Hardin

REFERENCE NUMBER: 33

AREA NAME: Barker Bluff

NATURAL AREA CATAGORIES & SIGNIFICANT FEATURES:

CAT.	CODE / DESCRIPTION
I	A5.8 Limestone glade
I	B1.1/5.8

EXCEPTIONAL FEATURES:

CAT.	CODE / DESCRIPTION

no entry

PRESERVATION VALUE SCORE: 4

EVALUATOR: 3 Hutchinson

LEGAL LOCATION:

TWP	RNG	PM	SEC	QUARTER	QUARTER-QUARTERS
12S	10E	3	7		7&8&4&5&6+&11&12&9&10

TOPOGRAPHIC QUADRANGLES:276b Cave in Rock 7.5

SPECIFIC STREAM : Ohio River

STREAM SYSTEM (Water Shed) :27 Massac--Bay--Lusk--Big Grand Pierre--Big Creek system

LEGISLATIVE DISTRICT: 59

MUNICIPALITY:- none

MINIMUM ALTITUDE: 410

MAXIMUM ALTITUDE: 720

TOPOGRAPHY:

PHYSIOGRAPHIC UNIT: 50 Shawnee Hills Section
MAJOR FEATURE: 48 Erosional hills in bedrock (medium loess)

INDIVIDUAL TOPOGRAPHIC FEATURES:
3 Escarpment

GEOLOGIC FORMATIONS:
216 Peoria Loess
123 Bethel Sandstone
122 Downeys Bluff Limestone
121 Yankeetown Sandstone
120 Renault Limestone

119 Aux Vases Sandstone
118 Ste. Genevieve Limestone

SOIL ASSOCIATION (STATE) :
15 O Stookey-Alford-Muren

SOIL ASSOCIATION (COUNTY) :
Alford-Baxter-Bedford

NATURAL COMMUNITY
5.8
Limestone glade

NATURAL DIVISION AND SECTION: 13b
Lesser Shawnee Hills Section, Shawnee Hills Divisi
COMMUNITY CLASS : 5 Primary
RARITY INDEX: 4 Rare
NATURAL QUALITY:
12.0 acres of grade A ;
Woody invasion

SAF COVER TYPE: * Not collected

PLANT COMMUNITY:
14 Andropogon scoparius,little bluestem-
256 Sporobolus asper,tall dropseed-
250 Sorghastrum nutans,Indian grass

NATURAL COMMUNITY
1.1/5.8
Dry upland forest
Limestone glade

NATURAL DIVISION AND SECTION: 13b
Lesser Shawnee Hills Section, Shawnee Hills Divisi
COMMUNITY CLASS : 1 Forest
RARITY INDEX: 5 Very rare
NATURAL QUALITY:
46.0 acres of grade B ;
Mature forest

SAF COVER TYPE: 48 Eastern red cedar--hardwoods

PLANT COMMUNITY:
202 Quercus muhlenbergii,chinquapin oak-
125 Juniperus virginiana,red cedar
/
12 Andropogon spp.,bluestem grasses-
250 Sorghastrum nutans,Indian grass

NATURAL COMMUNITY
1.1

Dry upland forest

NATURAL DIVISION AND SECTION: 13b
Lesser Shawnee Hills Section, Shawnee Hills Divisi
COMMUNITY CLASS : 1 Forest
RARITY INDEX: 4 Rare
NATURAL QUALITY:
65.0 acres of grade C ;
Mature forest

SAF COVER TYPE: 40 Post oak--black oak

PLANT COMMUNITY:
208 Quercus stellata,post oak
209 Quercus velutina,black oak
61 Carya texana,black hickory

SAF COVER TYPE: 52 White oak--red oak--hickory

PLANT COMMUNITY:
195 Quercus alba,white oak
206 Quercus rubra,red oak
55 Carya spp.,hickories

DIVERSITY INDEX: 3

TOTAL ACREAGE: 123

OWNERSHIP TYPE: 1 Private
2 Public

NUMBER OF OWNERSHIPS: 4

USE OF NATURAL AREA:
10 No apparent use

USE OF SURROUNDING LAND (% wildland): 30

USE OF SURROUNDING LAND (% farmland): 70

USE OF SURROUNDING LAND (% developed land): 0

NEAREST SMSA: 9 St. Louis (Madison and St. Clair counties)

DISTANCE TO SMSA: 101

NUMBER OF NEARBY SCHOOLS: 1

NEAREST SCHOOL: 87 Southeastern Illinois College, Harrisburg

NUMBER OF NEARBY D.O.C. FACILITIES: 2

MANAGEABILITY: 1

PRESERVATION STATUS:
6 Private land, not protected by owner or lessee
4 Public land, not recognized as a natural area

THREATS:
3 Threat likely within five years.
DESCRIPTION: Mining or quarrying possible

SPECIES LISTS:
1 Woody plants
2 Ferns and fern allies
3 Summer birds
4 Amphibians, reptiles, and mammals
5 Other species list

SAMPLING FORMS:
4 Prairie frequency

DISCUSSION OF PRESERVATION VALUES:
Barker Bluff has a very high quality limestone glade and a high quality upland forest/limestone glade community.

PUBLICATIONS:

CITATION # -

APPENDIX II.

Copy of page 21, Shawnee National Forest, Land and Resource Management Plan, Final Environmental Impact Statement, Appendix E illustrating the role of the Barker Bluff Research Natural Area in natural diversity

SAF Cover Type

SAF cover types in relation to RNA's

SAF Type:	ATWOOD RIDGE	BARKER BLUFF	BURKE BRANCH	KASKASKIA	LARUE/OTTER	MTN TOWNSHIP	OZARK HILL	PANTHER HOLLOW	WHOOPIE CAT	Needed	Comments
40	X	X	X	X	X	X	X			Yes	In RNA in Kentucky, 1968 RNA Directory
44	X									Yes	Midwest example
46		X								Yes	Not in any RNA
52	X	X	X	X	X		X		X	Yes	Midwest example
53			X	X		X				Yes	Midwest example
55								X		Yes	Central Midwest example
59				X	X					No	In RNA in Indiana
60	X				X		X			No	In RNA in Indiana
63			X							Yes	Not in any RNA, Northern Example
64				X			X			Yes	Not in any RNA
65					X					Yes	Not in any RNA
75			X							Yes	Northern example
87					X					Yes	Not in any RNA

This table is from a Regional Office 4060 memo dated October 27, 1983. The memo recommends that we provide minimum coverage of all SAF cover types indicated as needed in the above table.

A 4060/1920 memo from the Regional Office dated December 22, 1983, updates the above tab This memo places SAF cover types into three categories. One, in which there is no representative nationally; two, a category in which there is only one RNA representative; and three, a category in which there are two RNA's representing the cover type. These categories are as follows:

Not Represented	In one RNA	In two RNA's
SAF 46	SAF 40	SAF 55
SAF 65	SAF 53	
SAF 87		

Based on the above information, establishment of the following RNA proposals were recommended to provide minimum coverage of the needed SAF cover types.

	SAF Cover Types
Atwood Ridge	40, 44, 52, 60
Barker Bluff	40, 46, 52
Burke Branch	40, 52, 53
LaRue Pine Hills/Otter Pond	40, 52, 59, 60, 65, 75, 76, 87
Panther Hollow	40, 54, 55

APPENDIX III.

Copies of pages selected from the Shawnee National Forest, Land and Resource Management Plan documents describing the Barker Bluff Research Natural Area and documenting the recommendations of the Forest for its designation and management

Murphysboro Ranger District

13. Oakwood Kite Site	53
14. Toothless Cave	8
15. Cave Spring Cave	120
16. Big Bayou Kite Site	80

Jonesboro Ranger District

1. Atwood Ridge	955
2. Clear Creek Swamp	4
3. LaRue Pine Hills/Otter Pond	3547
4. Opossum Trot Trail	3
5. Ozark Hill Prairies	535
6. Wolf Creek Area	495
7. Bald Knob Geological	7

Detailed descriptions of each of these sites is in the planning record. Analysis details are in Appendix F of this FEIS.

Research Natural Areas

Research Natural Areas are protected areas reserved for nonmanipulative research observation and study. Each area is part of a national network representing a full array of North American ecosystems, biological communities, habitats, and phenomena, and geological and hydrological formations and conditions. Research Natural Areas (RNA's) are established by the Chief of the Forest Service.

There are currently no RNA's established on the Shawnee National Forest; however, four separate proposals have been submitted to the Forest Supervisor for consideration.

As a result of the four proposals submitted to the Forest Supervisor, the following twelve areas were considered for Research Natural Area designation in the planning process:

Table 3-15
Recommended Research Natural Areas

AREA	ACRES 1/
Atwood Ridge	955
Barker Bluff	60
Burke Branch	300
Dennison Hollow	205
Kaskaskia	1,050
Panther Hollow	180
Whoopie Cat Mountain	17
Ozark Hill Prairies	535
LaRue Pine Hills	1,905
Otter Pond	680
Cave Hill	465
Stoneface	176

1/ The acreage shown is as originally proposed. Some modifications have been made in individual alternatives (see Appendix E).

Detailed descriptions of each area and the analysis of RNA proposals is in Appendix E of this FEIS.

Roadless Areas

The Shawnee National Forest does not currently have any areas designated as units of the National Wilderness Preservation System. It does, however, have nine roadless areas which are being considered for their potential as wilderness or for nonwilderness uses. These areas and their acreage are:

Table 3-16
Roadless Areas

Roadless Area	Size (Ac. NFS Land)
Bald Knob	5,888
Burden Falls	2,999
Burke Branch	6,230
Clear Springs	4,777
Garden of the Gods	3,844
Lusk Creek	6,055
Murray Bluff	4,172
Panther Den	722
Ripple Hollow	3,530

These nine areas were originally inventoried in 1977 during the second Roadless Area Review and Evaluation. This study came to be known as RARE II and was completed in 1979 with the issuance of a Final Environmental Statement. Four areas totaling 15,093 acres were recommended for wilderness study: Garden of the Gods, Bald Knob, Clear Springs, and Panther Den. Three areas totaling 13,143 acres were recommended for non-wilderness management: Murray Bluff, Burke Branch, and Ripple Hollow. Two areas totaling 8,883 acres were recommended for further evaluation: Lusk Creek and Burden Falls.

INTRODUCTION

This appendix lists areas of significant physical, biological and cultural features. Where necessary, additional information is provided to assist in implementing management on an area by area basis.

INTENSIVE RESEARCH AREAS

The following areas are assigned to Management Prescription 8.1 to provide for on-going natural resource research and management.

Name	Size (Acres)
Palzo Reclamation Project	325
Dixon Springs Agricultural Research Station	4259
Kaskaskia Experimental Forest	2169
Sugar Creek Seed Orchard	105

NATURAL AREAS

The following areas are assigned to Management Prescription 8.2 (except as noted) to provide for the preservation and protection of their unique scientific or educational values. One or more natural area categories (National Natural Landmark, Research Natural Area Candidate, Botanical Area, etc.) may be assigned to an individual site as warranted.

National Natural Landmarks (existing)

These areas are managed for their landmark features in accordance with the Forest-wide Standards and Guidelines and those in the Management Prescription shown.

Name	Mgmt. Prescription	Size (Acres)
Bell Smith Springs	8.2	1,260
LaRue Pine Hills	8.2	1,905
Little Grand Canyon	8.2	1,023
Lusk Creek	9.3	720
Total Acres		4,908

Candidate Research Natural Areas (RNA)

The following areas will be managed for the site specific features listed. Direction is found in the Forest-wide Standards and Guidelines and those in Management Prescription 8.2. If through evaluation at higher organizational levels and area(s) is not accepted into the National System, it will continue to be managed under Management Prescription 8.2 (or in case of Kaskaskia, 8.1) for the life of the plan.

APPENDIX E
Special Features

Name	Management Prescription	Size(acres)
Atwood Ridge	8.2	955
Barker Bluff	8.2	60
Burke Branch	8.2	300
Cave Hill	8.2	465
Stoneface	8.2	175
Dennison Hollow	8.2	205
Ozark Hill Prairie	8.2	535
Panther Hollow	8.2	180
Whoopie Cat Mountain	8.2	17
Kaskaskia Exp. Forest	8.1	1,050
LaRue Pine Hills/Otter Pond	8.2	2,811
Total		6,753

Atwood Ridge

Location:

The Atwood Ridge RNA proposal is located in portions of Sections 4, 5, 8, 9, 16, and 17, T13S, R2W, Jonesboro Ranger District, Union County.

Area:

955 acres

SAF Cover Types Identified in Area:

SAF 40, SAF 44, SAF 52, SAF 60.

General Information:

The area includes a relic stand of chestnut oak as well as Magnolia acuminata and azalea near the western edge of their respective ranges. In addition, the area includes a number of Indian burial sites. The area is an example of dry, upland Illinois forest. Portions of the northern part of Atwood Ridge have been clearcut. Aside from the clearcuts, the area could provide baseline information on succession in upland hardwood forests.

Selective logging has occurred on some portions of the area. There remains representative mature dry upland forest stands with chestnut oaks that are essentially undisturbed. In many places, the steep slope timber was left (including many chestnut oaks).

A hiking trail exists within the area.

Purpose and Special Features:

To maintain the natural character of a large upland area with a diversity of habitats and to protect the following special features:

-Dry upland forest dominated by the rock chestnut oak (Quercus prinus).

APPENDIX E
RNA Assignment by Alternative

Alternative I

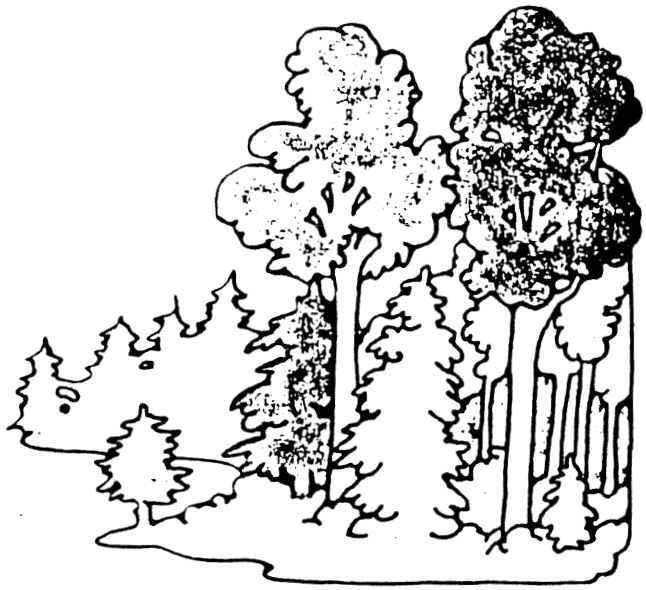
Alternative I emphasizes the maintenance and enhancement of wildlife habitat and preservation of unique natural features. A variety of motorized and nonmotorized recreation features are provided. All proposed Research Natural Areas are recommended for further evaluation.

Management Prescription 8.1

Kaskaskia Experimental Forest .

Management Prescription 8.2

Barker Bluff
Atwood Ridge
Burke Branch
LaRue Pine Hills
Otter Pond
Dennison Hollow
Cave Hill
Stoneface
Ozark Hill Prairie
Whoopie Cat Mountain
Panther Hollow



-A sedge (Carex physorhynca).
-A panic grass (Panicum ravenelii).
-Small hill prairie and barrens natural community remnants.

This area contains the largest stand of chestnut oak in Illinois and also has a number of species representative of Appalachian flora including azalea and cucumber tree.

Federal Threatened and Endangered Species:

No documented sightings of Federal Threatened and Endangered Species in this area.

Sensitive Species (proposed):

No documented sightings of Sensitive Species in this area.

Forest Listed Species:

Sedge - (Carex physorhyncha)
Panic Grass - (Panicum ravenelii)
Bobcat - (Lynx rufus)

Barker Bluff

Location:

The Barker Bluff RNA proposal is located in portions of Section 7; T12S, R10E, Elizabethtown Ranger District, Hardin County.

Area:

60 acres.

SAF Cover Types Identified in Area:

SAF 40, SAF 46, SAF 52.

General Information:

Barker Bluff has the last remnant of what was once the largest continuous limestone glade system that existed in Illinois. Most of the glades have been eliminated through expanding limestone quarrying activities within this region.

There is little evidence of previous disturbances within the Barker Bluff area. The proposed area is completely surrounded by private land with an active limestone quarry on the east side.

Purpose and Special Features:

To maintain the natural character of an upland forested area with a diversity of habitats and to protect the following special features:

-Limestone glade community.
-Dry upland forest/limestone glade community.

Federal Threatened or Endangered Species:

No records documenting presence of a Federal T & E Species in this area.

Sensitive Species (proposed):

No records documenting presence of a Sensitive Species in this area.

Forest Listed Species:

No records documenting presence of a Forest Listed Species in this area.

Burke Branch

Location:

The area is located in portions of Sections 4, 5, 8, and 9 of T15S, R6E, Vienna Ranger District, Pope County.

Area:

300 acres.

SAF Cover Types Identified in Area:

SAF 40, SAF 52, SAF 53

General Information:

Burke Branch and two of its small tributaries are the major streams of the site. There are steep, rocky slopes with dry upland forest of Spanish oak (Quercus falcata), black oak, post oak, and chinquapin oak (Q. muhlenbergii) and dry mesic forest of white oak, red oak, sugar maple, and hickories.

The majority of the area is mature, second-growth forest showing some evidence of light timber harvest. There are 50 acres of old field in succession to hardwood. The mesic barrens were burned through prescription about 1969 to control honeysuckle.

Purpose and Special Features:

To maintain the natural character of an area with a diversity of habitats and to protect the following special features: