

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 Atwood Ridge 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 Resources Management Plan and Final Environmental Impact Statement which are available to the public.

The Atwood Ridge 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 Atwood Ridge 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 the the Deciding Officer:

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

Atwood Ridge

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)).

F. Bill Sedenton
Chief

9/26/90
Date

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

ATWOOD RIDGE
RESEARCH NATURAL AREA



SHAWNEE NATIONAL FOREST
JULY 31, 1987

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 Prescription

- 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.

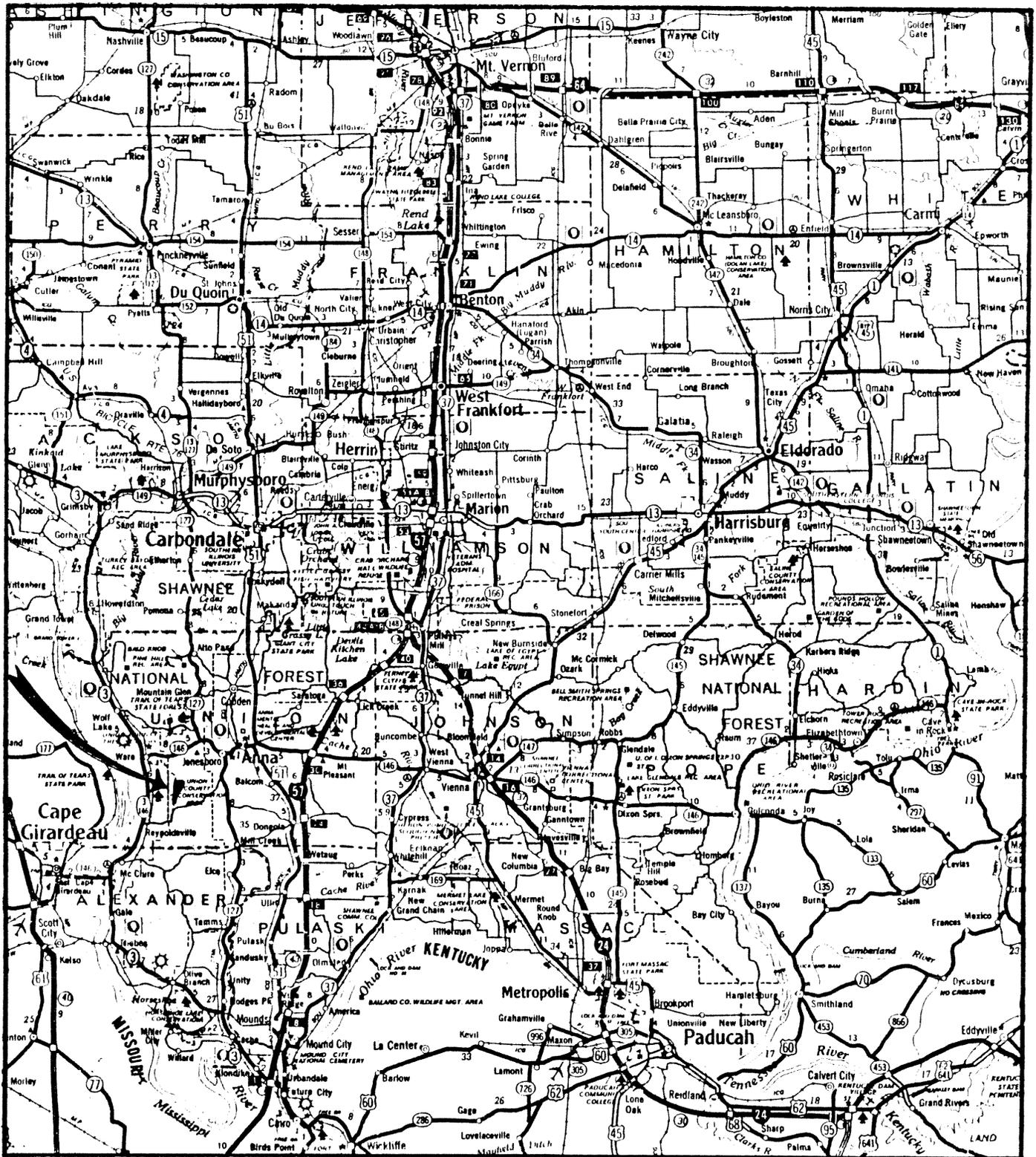


Figure 2. Location of Atwood Ridge Research Natural Area shown (with arrow) on copy of Illinois Official Highway Map, 1985-86, Department of Transportation, Springfield

Quaternary system
(Pleistocene and Recent)
Clayey silt, clay; sand and gravel in places

Tertiary system
Pliocene series
"Lafayette" formation—20-50 feet
Eocene series
Paleocene series

Cretaceous system

Pennsylvanian system

Mississippian system
Upper Mississippian series
Lower Mississippian series
Meramec group
Osage group
 ^a.....
 Hartline "formation"—30-50 feet
Kinderhook group
 Springville formation—60 feet

Devonian system
 ^a.....
 Clear Creek formation—300 feet
 ^{a, b}.....
 Grassy Knob "formation"—185 feet
 Bailey formation—200-300 feet

Silurian system

Ordovician system

Succession of geologic formations at
Atwood Ridge Research Natural Area

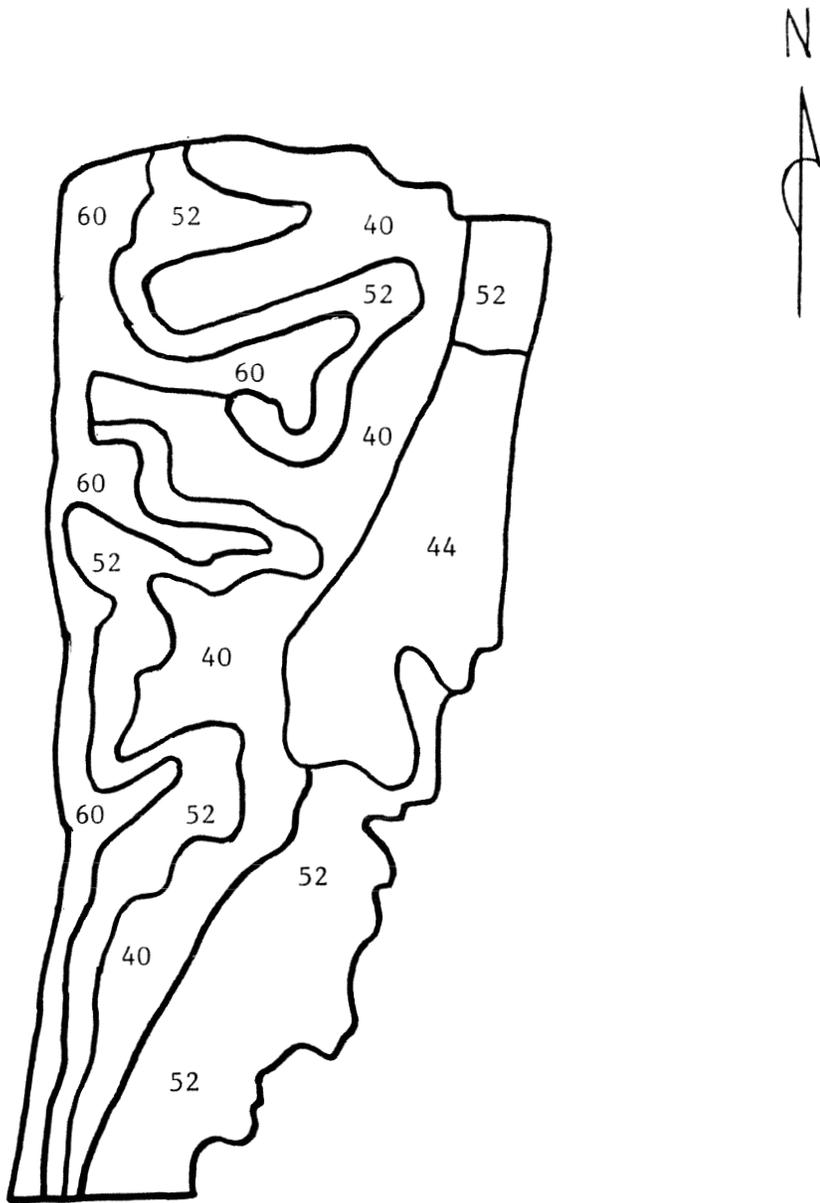


Figure 7. Map of Atwood Ridge Research Natural Area showing area cover types
scale 1:24000

SAF Cover Type	Kuchler PNV Type
#40 post oak-blackjack oak	#91 oak-hickory
#44 chestnut oak	#91 oak-hickory
#52 white oak-black oak-northern red oak	#91 oak-hickory
#60 beech-sugar maple	#93 beech-maple

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		SELECTED FOR W.O. PHOTO LIBRARY	DATE OF EXPOSURE	LOCATION (State, Forest, District and County)	CONCISE DESCRIPTION OF VIEW	NEGATIVE (Show size and BW for black and white or C for color)
TEMP.	PERMANENT (To be filled in by the WO)					
(1)	(2)	(3)	(4)	(5)	(6)	(7)
			Aug. 24, 1938	Illinois, Shawnee National Forest, Jonesboro District, Union Co.	vertical aerial view of Atwood Ridge Research Natural Area	35 mm. BW

Fig. 8

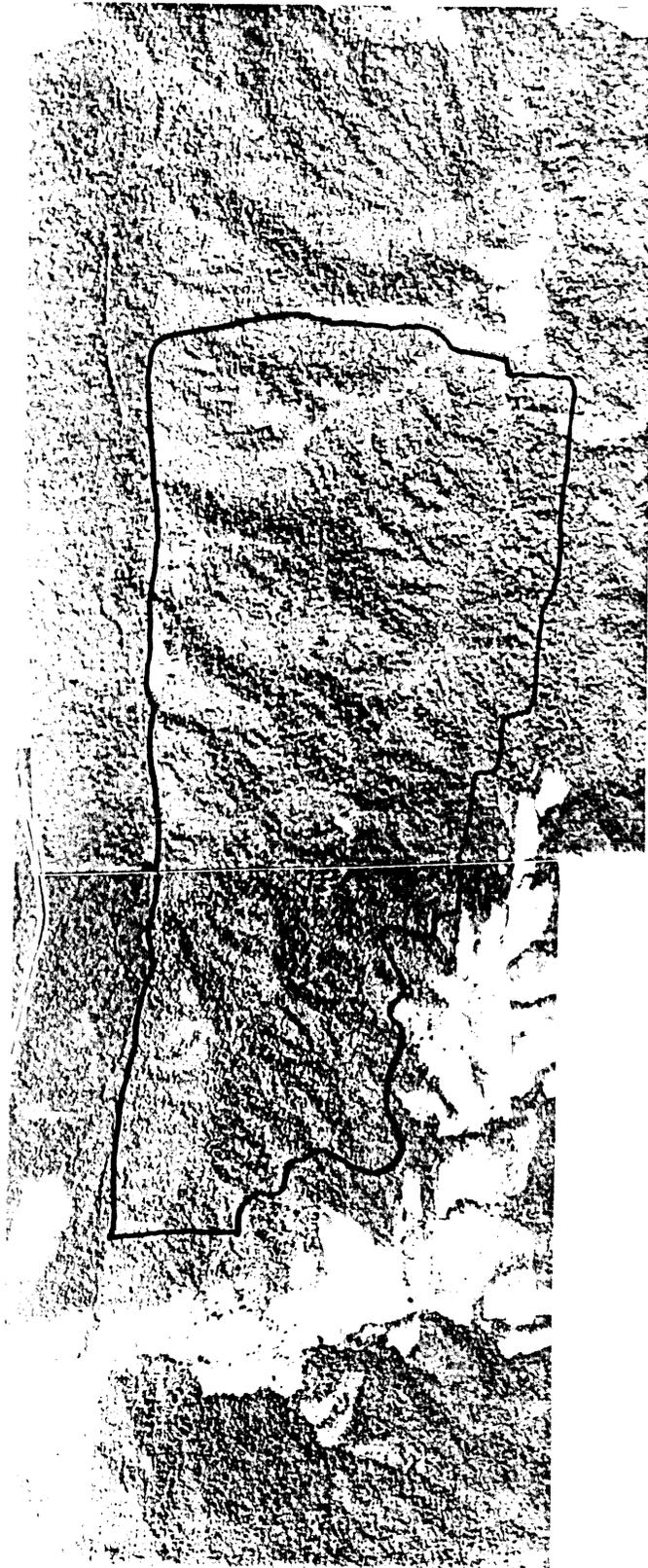


Figure 8. Copy of ASCS aerial photograph taken August 24, 1938 showing Atwood Ridge Research Natural Area

USDA-FOREST SERVICE PHOTOGRAPHIC RECORD <i>(See FSM 1643.52)</i>	PHOTOGRAPHER M. D. Hutchison	DATE SUBMITTED July, 1987
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TEMP.	PERMANENT <i>(To be filled in by the WO)</i>						(1)	(2)
			Nov. 10, 1986	Illinois, Shawnee National Forest, Jonesboro District, Union Co.	aerial view of Atwood Ridge Research Natural Area looking northeast	35 mm. C		

Fig. 9

USDA-FOREST SERVICE

PHOTOGRAPHIC RECORD

(See FSM 1643.52)

PHOTOGRAPHER

M. D. Hutchison

DATE SUBMITTED

July, 1987

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TEMP.	PERMANENT (To be filled in by the WO)					
(1)	(2)	(3)	(4)	(5)	(6)	(7)
			Dec. 4, 1986	Illinois, Shawnee National Forest, Jonesboro District, Union Co.	view of forested slope in northwest part of Atwood Ridge Research Natural Area	35 mm. C

Fig. 10



Figure 9. Aerial view
of Atwood Ridge
Research Natural Area
looking northeast
-photo by M. D.
Hutchison, Nov. 10,
1986



Figure 10. View of forested slope
in northwest part of Atwood Ridge
Research Natural Area; tall
tuliptrees are on the lower mesic
slope; chestnut oaks are on the
upper slope in the background
-photo by M. D. Hutchison,
Dec. 4, 1986

USDA-FOREST SERVICE PHOTOGRAPHIC RECORD (See FSM 1643.52)	PHOTOGRAPHER M. D. Hutchison	DATE SUBMITTED July, 1987
	HEADQUARTERS UNIT	LOCATION

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(1)	(2)	(3)	(4)	(5)	(6)	(7)
			Dec. 4, 1986	Illinois, Shawnee National Forest, Jonesboro District, Union Co.	view of chestnut oak near the west edge of Atwood Ridge Research Natural Area	35 mm. C

Fig. 11

USDA-FOREST SERVICE

PHOTOGRAPHIC RECORD

(See FSM 1643.52)

PHOTOGRAPHER

M. D. Hutchison

DATE SUBMITTED

July, 1987

HEADQUARTERS UNIT

LOCATION

INITIAL DISTRIBUTION OF PRINTS AND FORM 1600-11

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TEMP.	PERMANENT (To be filled in by the WO)					
(1)	(2)	(3)	(4)	(5)	(6)	(7)
			June, 1980	Illinois, Shawnee National Forest, Jonesboro District, Union Co.	view of small barrens with grasses growing on cherty gravels	35 mm. C

Fig. 12



Figure 11. A large old chestnut oak on a steep rocky slope near the west edge of Atwood Ridge Research Natural Area
-photo by M. D. Hutchison, Dec. 4, 1986



Figure 12. A small barrens with grasses growing on cherty gravels; trees are black oaks
-photo by M. D. Hutchison June, 1980

USDA-FOREST SERVICE

PHOTOGRAPHIC RECORD
(See FSM 1643.52)

PHOTOGRAPHER

M. D. Hutchison

DATE SUBMITTED

July, 1987

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TEMP.	PERMANENT (To be filled in by the WO)					
(1)	(2)	(3)	(4)	(5)	(6)	(7)
			April, 1981	Illinois, Shawnee National Forest, Jonesboro District, Union Co.	view of old chinkapin oaks near south end of Atwood Ridge Research Natural Area	35 mm. C

Fig. 13

USDA-FOREST SERVICE

PHOTOGRAPHIC RECORD

(See FSM 1643.52)

PHOTOGRAPHER

M. D. Hutchison

DATE SUBMITTED

July, 1987

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TEMP.	PERMANENT (To be filled in by the WO)					
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Fig. 14			Sept. 30, 1986	Illinois, Shawnee National Forest, Jonesboro District, Union Co.	view of beech trees near the west edge of Atwood Ridge Research Natural Area	35 mm. C



Figure 13. Large old chinkapin oaks on upper slope near south end of Atwood Ridge Research Natural Area; post oaks occur with the chinkapin oaks in most of the stands -photo by M. D. Hutchison, April, 1981



Figure 14. Large beech trees on a lower slope near the west edge of Atwood Ridge Research Natural Area -photo by M. D. Hutchison, September 30, 1986

USDA-FOREST SERVICE PHOTOGRAPHIC RECORD <i>(See FSM 1643.52)</i>	PHOTOGRAPHER S. E. Harris	DATE SUBMITTED July, 1987
	HEADQUARTERS UNIT	LOCATION

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TEMP.	PERMANENT <i>(To be filled in by the WO)</i>					
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Fig. 15			Dec. 4, 1986	Illinois, Shawnee National Forest, Jonesboro District, Union Co.	view of chestnut oaks on the main ridge at Atwood Ridge Research Natural Area	35 mm. C

USDA-FOREST SERVICE <h2 style="text-align: center;">PHOTOGRAPHIC RECORD</h2> <p style="text-align: center;">(See FSM 1643.52)</p>	PHOTOGRAPHER <p style="text-align: center;">M. D. Hutchison</p>	DATE SUBMITTED <p style="text-align: center;">July, 1987</p>
HEADQUARTERS UNIT		LOCATION

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TEMP.	PERMANENT (To be filled in by the WO)					
(1)	(2)	(3)	(4)	(5)	(6)	(7)
			June, 1980	Illinois, Shawnee National Forest, Jonesboro District, Union Co.	view of cherty exposure of the Grassy Knob Formation in the northwest part of the Atwood Ridge Research Natural Area	35 mm. C

Fig. 16



Figure 15. Chestnut oaks on a westerly slope of the main ridge at Atwood Ridge Research Natural Area, SW 1/4, NW 1/4, SE 1/4 of section 4, T. 13 S., R. 2 W.; note mosses and lichens on the scree slope
-photo by S. E. Harris, Dec. 4, 1986



Figure 16. A cherty exposure of the Grassy Knob Formation in the northwest part of the Atwood Ridge Research Natural Area
-photo by M. D. Hutchison, June, 1980

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USDA-FOREST SERVICE PHOTOGRAPHIC RECORD <i>(See FSM 1643.52)</i>	PHOTOGRAPHER M. D. Hutchison	DATE SUBMITTED July, 1987
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TEMP.	PERMANENT <i>(To be filled in by the WO)</i>						(1)	(2)
Fig. 17			Sept. 30, 1986	Illinois, Shawnee National Forest, Jonesboro District, Union Co.	view of Bailey Formation in southwest part of Atwood Ridge Research Natural Area	35 mm. C		

USDA-FOREST SERVICE

PHOTOGRAPHIC RECORD

(See FSM 1643,52)

PHOTOGRAPHER

S. E. Harris

DATE SUBMITTED

July, 1987

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Fig. 18			Dec. 4, 1986	Illinois, Shawnee National Forest, Jonesboro District, Union Co.	view of block filled valley near the west edge of Atwood Ridge Research Natural Area	35 mm. C



Figure 17. View of Bailey Formation outcropping
in lower part of valley in southwest part of
Atwood Ridge Research Natural Area
-photo by M. D. Hutchison, September 30, 1986



Figure 18. A block filled valley near the west edge of Atwood
Ridge Research Natural Area, near the center of the
west line of section 4, T. 13 S., R. 2 W.
-photo by S. E. Harris, Dec. 4, 1986

USDA-FOREST SERVICE PHOTOGRAPHIC RECORD <i>(See FSM 1643.52)</i>	PHOTOGRAPHER M. D. Hutchison	DATE SUBMITTED July, 1987
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TEMP.	PERMANENT (To be filled in by the WO)					
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Fig. 19			August, 1980	Illinois, Shawnee National Forest, Jonesboro District, Union Co.	view of artifacts and bones where Indian graves have been vandalized at the south edge of Atwood Ridge Research Natural Area	35 mm. C



Figure 19. Artifacts and bones where Indian graves have been
vandalized at the south edge of Atwood Ridge Research
Natural Area
-photo by M. D. Hutchison, August, 1980

Fig. 8. Atwood Ridge RNA - Union Co., Ill. (N part)

Fig. 8. Atwood Ridge RNA - Union Co., Ill. (S part)



Fig. 9. Atwood Ridge RNA - Union Co., Ill.

Fig. 10. Atwood Ridge RNA - Union Co., Ill.

Fig. 11. Atwood Ridge RNA - Union Co., Ill.



Fig. 12. Atwood Ridge RNA - Union Co., Ill.

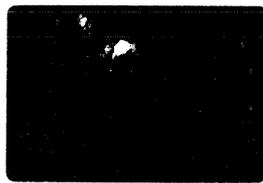


Fig. 13. Atwood Ridge RNA - Union Co., Ill.



Fig. 14. Atwood Ridge RNA - Union Co., Ill.



Fig. 15. Atwood Ridge RNA - Union Co., Ill.

Fig. 16. Atwood Ridge RNA



Union Co., Ill.

Fig. 17. Atwood Ridge RNA



Union Co., Ill.



Fig. 18. Atwood Ridge RNA - Union Co., Ill.

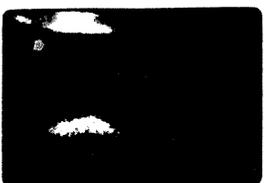


Fig. 19. Atwood Ridge RNA - Union Co., Ill.

SIGNATURE PAGE

for

RESEARCH NATURAL AREA ESTABLISHMENT RECORD

Atwood Ridge Research Natural Area

Shawnee National Forest

Union County, Illinois

The undersigned certify that all applicable land management planning and environmental analysis requirements have been met in arriving at this recommendation.

Prepared by Max D. Hutchison, Field Representative, Natural Land Institute; Steven Olson, Technical Assistant, Natural Land Institute; and Stanley Harris, Jr., Ph.D., Professor Emeritus, Department of Geology, Southern Illinois University

Recommended by Joe L Newcomb Date 3/24/88
Joe Newcomb, District Ranger, Jonesboro District

Recommended by Kenneth Henderson Date 4/13/88
Kenneth Henderson, Forest Supervisor, Shawnee National Forest

Recommended by Floyd Marita Date 9/22/88
Floyd Marita, Regional Forester, Eastern Region

Recommended by R. D. Lindmark Date 10/7/88
Ronald D. Lindmark, Station Director, North Central Station

TITLE PAGE

Establishment Record for the Atwood Ridge
Research Natural Area within the Shawnee
National Forest, Union County, Illinois

ESTABLISHMENT RECORD FOR THE ATWOOD RIDGE
RESEARCH NATURAL AREA WITHIN THE SHAWNEE NATIONAL FOREST
UNION COUNTY, ILLINOIS

INTRODUCTION

The Atwood Ridge Research Natural Area (RNA) is a 955-acre (386.6-hectare) tract owned by the federal government and managed by the U. S. Forest Service, Shawnee National Forest. It contains relatively undisturbed natural community types, i.e. barrens, hill prairie, dry upland forest, dry-mesic upland forest, and mesic upland forest. Outstanding geological features and rare and relict plants are also present.

The RNA boundaries include the major part of the Atwood Ridge Natural Area identified by the Illinois Natural Areas Inventory (1978) as being of significance because of its high quality dry upland forest; two Illinois Endangered plants (including Panicum ravenelii); and an Illinois Threatened plant species, the chestnut oak (Quercus prinus) (INAI, 1978; see Appendix I). (One of the sites reported for Carex physorhyncha, a State Endangered and SNF Listed Species, is near but outside the boundaries of the RNA).

There are two Shawnee National Forest Listed Species known to occur within the RNA boundaries at Atwood Ridge: the chestnut oak (Quercus prinus), and a panic grass (Panicum ravenelii) (Shawnee National Forest, Land and Resource Management Plan, 1986). The panic grass is listed as Endangered in Illinois. The chestnut oak is listed as Threatened in the State (Natural Land Institute, 1981). Several other uncommon and relict plants occur here also, including the cucumber magnolia (Magnolia acuminata) and the azalea (Rhododendron prinophyllum), both southeastern species at the northwestern edge of their range.

Four Society of American Foresters (SAF) cover types are present: Type 40 (post oak-blackjack oak), Type 44 (chestnut oak), Type 52 (white oak-black oak-northern red oak), and Type 60 (beech-sugar maple). Types 40, 44, and 52 are indicated as needed in the RNA system (Shawnee National Forest, Land and Resource Management Plan, 1986). Several variants and small stands with other dominants are also present.

The Atwood Ridge RNA is geologically significant. It is a high prominent ridge, a section of the rugged upland bluffs that border the east edge of the Mississippi River valley. The west side of the main ridge drains to the east, directly into the Mississippi bottomland. The east side of the ridge drains east and then south into Harrison Creek, which enters the Mississippi

bottomland just south of the RNA. Clear Creek Ditch flows south and west through the bottomland (just east of the RNA), to enter the Mississippi River at a point near Gale, some 10 miles (16.1 kilometers) to the southwest. The entire area is maturely dissected with narrow ridges, steep slopes, and V-shaped valleys. The Devonian age rocks have been heavily silicified, and chert-fragment scree covers slopes where loess is thick. Mass wasting is very active. Stream gradients are very steep, and great blocks of rock are moved by water during storm periods. The RNA is in the Southern Section of the Ozark Natural Division and is a part of the Ozark Plateaus Physiographic Province (Schwegman, 1973).

The RNA is archaeologically significant. Burial mounds with rock-walled Indian graves occur on the ridge crest in the south part.

The Public Land Survey surveyors described the general area in 1807-1810. They noted the "high and poore hills." "Barrons" occurred throughout. Most lines were described as "brushy." As the surveyors walked north along the line between sections 8 and 9, they wrote that they stood on a "pinicle of a high knob commanding a view of a lake and the Mississippi . . ." The mile comment for this line was "Hills high and barrons." Oak and hickory timber grew on the ridges; beech and walnut were common trees in the ravines and valleys.

Most of the RNA has never been cultivated or significantly disturbed by livestock. There are a few small sites on the upland ridges in the north part of the RNA that were agricultural fields prior to 1940. These have now mostly reverted to forest. There has been some selective logging (primarily for white oaks) in the area, but most occurred during the 1930's and 1940's. Four tracts of less than 25 acres (10.1 hectares) each were clearcut a few years ago, but there is now little evidence of cutting disturbance elsewhere. Due to the rugged terrain, most of the area has never been suitable for agricultural use.

Although parts of the area are scenic, access is not easy. Walking is difficult in the rugged terrain, and the area has received little public use in the past. Occasionally, squirrel and deer hunters enter the area and walk the valley bottoms or ridge crests.

The Atwood Ridge RNA was in private ownership prior to its acquisition by the federal government to become a part of the Shawnee National Forest. The property was purchased during the period 1974-1939.

Atwood Ridge was recognized in the 1970's by botanists at Southern Illinois University, Carbondale, Illinois, as being significant because of its old growth stands of chestnut oak

(Quercus prinus), a species rare in Illinois and near the western edge of its range (Myatt, 1975). During the Illinois Natural Areas Inventory of 1976-78, the area was identified as being of state-wide significance for its very high quality dry forest and its uncommon plant species. The Atwood Ridge area was first recommended for designation as a research natural area by the Illinois Nature Preserves Commission in 1980 (Hutchison, 1980). The area was recommended for RNA designation by the North Central Forest Experiment Station in 1981 (Rink, 1981).

LAND MANAGEMENT PLANNING

The Atwood Ridge 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 Atwood Ridge 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

Natural communities of very high quality are present at the Atwood Ridge RNA. Scattered dry upland forest stands of near 30 acres (12.1 hectares) appear essentially undisturbed. Here, the trees are short and limby, but many are very old (Figure 11). The barrens are relatively open sites with a mixture of woody shrubs and prairie species (Figure 12). They are on drouthy, cherty slopes in this area. Prior to settlement, the barrens were more common and widespread in the Midwest. According to early descriptions of the area, the ridges in this region were open and grassy with brushy thickets and scattered trees. Today, it is difficult to separate the barrens from the dry forest and hill prairie communities on a map, but good examples of each are present at Atwood Ridge. The barrens is extremely rare and is given a rank of G1S1 by the Nature Conservancy (this means that the barrens natural community is critically imperiled, both in Illinois and globally). High quality upland forest communities are also rare in the Midwest today.

The hill prairies were originally on the thick loess, mainly on the ridge crests. They are now almost all gone, nearly completely shaded by invading woody vegetation. A few tiny remnants are left with good assemblages of prairie species that are rare elsewhere in the region. It may be that the exclusion of natural fires has allowed saplings to replace the original grassy vegetation on the loess covered ridge crests.

The chestnut oak (Quercus prinus), a Shawnee National Forest Listed Species, occurs here in nearly pure stands (Figures 11 and 15). The rocky slopes where it grows are essentially undisturbed. This is a species near the western edge of its continental range in Illinois, and it is listed as Threatened in the State (Natural Land Institute, 1981).

A panic grass (Panicum ravenelii) occurs in the area. This is a Shawnee National Forest Listed Species and is Endangered in the State.

Atwood Ridge is significant for its excellent examples of geomorphic features and processes. The area is on the highest part of a prominent hill along the east edge of the Mississippi River valley. The bluffs here are an eastward extension of the Ozark Physiographic region. The upland has been deeply dissected, exposing cherty and siliceous limestones of Devonian age formations. Thick loess caps the ridge crests and covers some of the cherty gravelly slopes. The RNA illustrates the changes that take place in the evolution of landforms. The processes of mass wasting, sheet and rill erosion, and stream channel scour are particularly well represented. This area is an

outstanding site to illustrate the contrast due to north versus south slope orientation in erosion, soil thickness, and vegetation (Figure 6).

The Atwood Ridge RNA includes SAF types 40, 44, and 52 that are listed as needed in the RNA system (Shawnee National Forest, Appendix E, Final Environmental Impact Statement, Land and Resource Management Plan, 1986). There is a diversity of SAF variants, smaller natural community types, and uncommon species present, particularly disjunct relics, that add to the value of the area for research purposes.

There are assemblages of plant species in the hill prairies, barrens, and dry forests that are usually considered to be more characteristic of the prairies further to the north and west. Mesic plant species grow in the ravines that are representative of the Appalachian flora, several that are disjunct by many miles.

The RNA is well-buffered by forested land on all sides. An extensive bottomland area of swamps and natural lakes borders the west boundary, and this adds to the diversity of species and enhances the area's value and research significance.

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 pedological 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 Atwood Ridge Research Natural Area is a part of a high ridge along the east wall of the Mississippi River Valley. It is on the north flank of the Harrison Creek anticline, at the eastern edge of the Ozark Physiographic Province. Devonian age rocks outcrop.

The entire area is maturely dissected and characterized by narrow-crested ridges, steep slopes, and V-shaped valleys (Figure 4). The ridge tops are capped with deep silty loess, and gravels of chert and siliceous limestone are exposed on slopes. Elevation ranges from 340 feet (103.6 meters) above mean sea level at the west edge of the area to 860 feet (262.1 meters) at the north edge.

Almost all of the RNA is forested with a diversity of plant species and community types (Figure 7). There are small open barrens and hill prairies where prairie grasses and forbs occur (Figure 12). The barrens are on gravelly steep slopes,

species will likely be identified in the near future.

LOCATION

The Atwood Ridge Research Natural Area is on the Jonesboro Ranger District of the Shawnee National Forest. It is in Union County, in the extreme southwestern tip of Illinois. Latitude is 37° 24' N. and longitude is 89° 20' W. The area is in sections 4, 5, 8, 9, 16, and 17, T. 13 S., R. 2 W. of the 3rd P. M. (Figures 3 and 4).

The RNA boundaries are described as follows:

Beginning at a point on the east sixteenth line of section 4 and being 14 chains south of the east sixteenth corner on the north section line of section 4, thence;

West 11.5 chains to a point, thence;

North 2 chains to a point, thence;

North 73° West about 11 chains to top of ridge, thence;

N. 30° W about 5 chains to south edge of Forest Road 648 B, thence;

Westerly along the south edge of Forest Road 648 B to a point 15 chains east of the west section line of section 4, thence;

Leaving Forest Road 648 B and S. 82° W about 23 chains to a point in the bottom of a ravine and about 10 chains west of east line of section 5, thence;

Southwesterly along edge of ravine and southerly along base of bluff through the east quarters of sections 5 and 8 to the north sixteenth line of section 17, thence;

East along the north sixteenth line of section 17 to the north sixteenth corner to section 16 and 17, thence;

Continuing east along north sixteenth line of section 16 about 10 chains to center west northwest one sixty-fourth corner, thence;

Northeasterly along the lower edge of upper slope of ridge (and lower edge, of large timber) to the west sixteenth corner to sections 9 and 16, thence;

Continuing northeasterly following the lower edge of the upper slope and lower edge of the larger timber to a point near the center of section 9, thence;

Continuing northeasterly following base of slope to a point on north line of section 9 and to west edge of Forest Road 650 A, thence;

Northerly in section 4 along west edge of Forest Road 650 A about 35 chains to where road turns to north northeast, thence;

Leaving road and continuing northerly to a point in crest of small ridge being about 18 chains west of east line of section 4 and about 18 chains south of north line of section 4, thence;

Northwesterly about 4 chains to point of beginning containing approximately 955 acres (386.6 hectares)

Elevation ranges from 340 feet (103.6 meters) above mean sea level at the west edge of the area to 860 feet (262.1 meters) at the north edge.

The area is about 3.5 miles (5.6 kilometers) southwest of Jonesboro, the county seat of Union County. Access to the RNA is from Illinois Route 146 (west of Jonesboro) on County Highway 76, a distance of about 1 mile (1.6 kilometers) to its junction with Forest Road 266. One can drive Forest Road 266 to the former site of the Atwood Ridge Lookout Tower. One must walk along the old roadway, east and south from that point, a distance of about .5 miles (.8 kilometers) to the northeast corner of the RNA (Figures 3 and 4).

AREA BY COVER TYPES

The Atwood Ridge Research Natural Area is nearly all forested. The following are SAF and Kuchler cover types represented within the RNA (Figure 8):

SAF Cover Type	Kuchlertype	Acres	Hectares
#40 post oak-blackjack oak	#91 oak-hickory forest	275	111.3
#44 chestnut oak	#91 oak-hickory forest	200	81.0
#52 white oak-black oak-northern red oak	#91 oak-hickory forest	300	121.4
#60 beech-sugar maple	#93 beech-maple forest	180	72.9

According to the Illinois Natural Areas Inventory (1978) data for the Atwood Ridge Natural Area, the following types (that clearly occur within the RNA) were described:

Natural Community	Plant Community
Dry upland forest	post oak - black oak
Dry upland Forest	chestnut oak - black oak - sassafras
Dry-mesic upland forest	black oak - chestnut oak - hickories
Mesic upland forest	red oak - white oak

The following natural community types are recognized and mapped by the authors of this report (see descriptions under Flora):

- barrens
- hill prairie
- dry upland forest

dry-mesic upland forest
mesic upland forest

PHYSICAL AND CLIMATIC CONDITIONS

The Atwood Ridge Research Natural Area forms part of the Mississippi Valley wall. It is an unbroken but undulating ridge with its south end lying immediately above an abandoned meander of the Mississippi River. The north-northeast trend of the ridge crest takes it nearly a mile eastward from the bluff at the north end of the RNA. Closely spaced and steep-sided canyons extend from the floodplain up to the crest.

The base of the Mississippi Valley bluff is at 340 feet (103.6 meters) above mean sea level, while the ridge is above 600 feet (182.9 meters) its entire length, and above 800 feet (243.8 meters) in four segments.

Cliffs are common at different elevations. Valley slopes are very steep, up to 60°.

The steepest valleys are deepening, and cataracts occur over the Bailey limestone ledges. Scree slopes are common on the Grassy Knob Formation where the aspect is toward the south and west.

The drainage pattern is grossly reticulate, though each lateral valley has a dendritic tributary pattern.

Climatological information is taken from the collection station at Anna which has records dating from 1951. It is 4.5 miles (7.2 kilometers) to the southwest of the RNA. The following description is copied from the Soil Survey of Union County, Illinois (1979):

Union County is cold in winter but generally hot in summer. Winter precipitation, which frequently occurs as snow, results in a good accumulation of soil moisture by spring and minimizes drought during summer on most soils. The number of days between the average date of the last freezing temperature in the spring and the average date of the first freezing temperature in the fall is between 182 and 214.

In winter the average temperature is 36 degrees F (3 degrees C), and the average daily minimum temperature is 27 degrees F (-3 degrees C). The lowest temperature on record, which occurred at Anna on January 24, 1963, is -12 degrees F (-24.4 degrees C). In summer the average temperature is 77 degrees, and the average daily maximum temperature is 88 degrees F (31.1 degrees C). The highest recorded temperature, which occurred on July 28, 1952, is 107 degrees F (41.6

degrees C).

Of the total 46 inches (116.8 centimeters) annual precipitation, 25 inches (63.5 centimeters), or 54 percent, usually falls in April through September. In two years out of ten, the rainfall in April through September is less than 20 inches (50.8 centimeters). The heaviest one-day rainfall during the period of record was 5.4 inches (13.7 centimeters) at Anna on March 9, 1964.

Average seasonal snowfall is 13 inches (33 centimeters). The greatest snow depth at any one time was 14 inches (35.5 centimeters). On the average, six days have at least one inch (2.5 centimeters) of snow on the ground, but the number of such days varies greatly from year to year.

The average relative humidity in mid-afternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 80 percent. The percentage of possible sunshine is 75 in summer and 50 in winter. The prevailing wind is from the southwest. Average windspeed is highest, 11 miles per hour (17 kmph), in March.

Tornadoes and severe thunderstorms occur occasionally. These storms are usually local and of short duration and cause damage in an erratic pattern.

The microclimatic patterns are similar to those throughout the more hilly portions of the Shawnee Forest, yet here they are exaggerated by the steepness of slope and relief of the area.

The topography provides significant contrasts in orientation. The south-facing slopes have thin soils and extensive areas of scree slopes. In summer they are hot and dry, and in winter, diurnal temperature changes cause frequent freeze-thaw. Thin soil, unstable slopes, severe microclimates, and relatively low moisture availability during the growing season result in relatively sparse vegetation adapted to dry and xeric conditions.

North-facing slopes are protected from the severity of the summer insolation, and in winter, experience a more moderate diurnal temperature change. The loess cover remains, providing a better root medium and moisture reservoir. The vegetation is, therefore, more abundant and more mesic. The ravine bottom and lower slope vegetation flourish even more. More moderate temperature changes and better moisture retention is clearly reflected in the vegetation.

DESCRIPTION OF VALUES

Flora

The following natural community types are identified by the authors of this report as occurring within the Atwood Ridge Research Natural Area: barrens, hill prairie, dry upland forest, dry-mesic upland forest, and mesic upland forest. It is mainly the substrate and degree of drouthiness (determined by such factors as stoniness, aspect, slope, etc.) that influences the structure and species composition of the different plant community types.

The barrens are small openings on gravelly slopes dominated by grasses and forbs characteristic of prairies and dry woods in the region. Here, the groundcover is sparse but includes poverty oats grass, little bluestem (Andropogon scoparius), wild rye (Elymus canadensis), and a panic grass (Panicum anceps). Forbs include goldenrods (Solidago spp.), asters (Aster spp.), and woodland sunflower (Helianthus divaricatus). The barrens community was more extensive in the region in presettlement times, but it probably never had a great diversity of species (Figure 12).

The hill prairie remnants are on the loess capped ridge crest near the south end of the area. They have almost disappeared from shading and encroachment of woody vegetation, especially sassafrass. Here, in canopy gaps, are species such as big bluestem (A. scoparius), Indian grass (Sorghastrum nutans), rosinweed (Silphium integrifolium), prairie dock (S. terebinthinaceum), and slender bush clover (Lespedeza virginica).

The dry upland forest sites are primarily on the drouthy gravelly slopes. Black oak, chestnut oak, and hickories (Carya glabra and C. ovata) are locally dominant. The chestnut oak is a disjunct species in Illinois, at the extreme western edge of its range in the U. S. In the northern part of the RNA, primarily on the east-facing slope, chestnut oak is dominant in a stand of near 100 acres (40.5 hectares). This is probably the largest well-developed example of the chestnut oak forest type in Illinois. Here, there are few other species. The undergrowth is sparse. The ground is bare of leaf litter much of the year, and mosses and lichens are common (Figure 15). Cherty boulders commonly outcrop. Other dry forest sites have post oaks and black oaks as codominants. Here, there is more undergrowth and leaf litter on the ground. The pink azalea (Rhododendron prinophyllum) is occasional here on the west-facing upper slopes.

The dry-mesic upland forest has a greater variety of canopy species including red and white oaks, hickories, ashes (Fraxinus

spp.), and occasional cucumber magnolias. The shrub layer is relatively dense and includes dogwood, redbud (Cercis canadensis), and greenbriers. Poison ivy (Rhus radicans) is an abundant groundcover species.

The mesic forests in the deep ravines have beech (Fagus grandiflora), sugar maple, tuliptree, red oak, and cucumber magnolias (Figure 14). Pawpaw, spicebush, and dogwood are common in the understory. The spring ephemeral wildflowers are abundant, and there is a diversity of species including trilliums (Trillium spp.), violets (Viola spp.), ginger (Asarum reflexum), bloodroot (Sanguinaria canadensis), Dutchman's breeches (Dicentra cucullaria), and columbine (Aquilegia canadensis). Ferns include Christmas fern (Polystichum acrosticoides), bracken (Pteridium aquilinum), and walking fern (Camptosorus rhizophyllus). Bedrock outcrops and shallow overhangs are common here along the steep ravine walls, and the ravine bottoms have boulders, ledges, and small waterfalls (Figure 17).

The chestnut oak and a panic grass (Panicum ravenelii) are Shawnee Listed Species that occur within the RNA. The chestnut oak is a Threatened Species in Illinois. Panicum ravenelii is Endangered in the State.

Fauna

The Federally Endangered bald eagle (Haliaeetus leucocephalus) is often seen in the area during the winter. The pileated woodpecker (Dryocopus pileatus) and wild turkey (Meleagris gallopavo) are not uncommon.

The timber rattlesnake (Crotalis horridus) and eastern box turtle (Terrapene carolina) are common reptiles.

The green treefrog (Hyla cinerea) occurs at a small spring at the base of the bluff. The red spotted newt salamander (eft stage) occurs under rocks in the mesic ravines.

The bobcat (Lynx rufus) is occasionally seen in the vicinity and probably occurs here on Atwood Ridge. This is a Forest Listed Species and is a Threatened Species in Illinois.

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

Geology (Figure 5)

The ridge crests are capped with silty loess, and a loess

veener generally is present on the slopes. Bedrock is chert and siliceous limestone of Devonian age. A few well rounded brown chert cobbles occur in the upper water courses. These are residual from the Mounds (Tertiary) gravel deposit.

The Bailey Formation extends along the base of the entire bluff from Upper Bluff Lake almost to the north boundary of the RNA where it dips beneath the floodplain level. The rock is gray, fine-grained siliceous limestone. It appears rather massive in cliffs, but weathers so as to show its thin-bedded character. When loosened, blocks are slabby and rather smooth in contrast to Grassy Knob rubble (Figure 17). On the bedding surface, irregular slightly raised nodular masses give a distinctive pattern and mottled appearance.

In exposures, the Grassy Knob Formation is entirely chert. On a cliff face, irregular bedding can be distinguished, but it is much brecciated, has innumerable cavities, and is a reddish color (Figure 16). The brecciation and cavities indicate that it was originally a carbonate rock, much leached, collapsed, and silicified.

The entire area is maturely dissected consisting of narrow-crested ridges, steep slopes and V-shaped valleys. Narrow bottomlands exist along the highest order streams. The first order headwaters have amphitheater-like gathering areas. Concentrated flow channels are filled with boulders and cobbles and commonly plunge over a series of cataracts, especially when the top of the Bailey limestone is encountered.

The Bailey forms ledges and cliffs commonly covered with moss and ferns in the more shaded glens.

Beneath the Grassy Knob chert cliff, the slopes are steep (up to 60°) with a talus zone. Many slopes are scree covered.

At the base of the bluff near the south end of the RNA, there is a permanent spring that flows westward into the swamps.

The Atwood Ridge RNA is at the eastern edge of the Ozark Physiographic Province. Here, the Devonian rocks were heavily silicified apparently before they were exhumed and then transected by the Mississippi River Valley. Perhaps the valley was super-imposed on Paleozoic rocks from a course taken on coastal plain sediments. The valley now transects the most resistant bedrock of the region. The result is a trough-like valley with high, steep bluffs.

During the late Pleistocene, thick deposits of silty loess were carried by the wind onto the bluffs. Accumulation was greatest on the ridges, though loess was trapped by the vegetation on the slopes as well. This deposit is of prime

significance, as the soils have been formed in it.

In Recent time, a large Mississippi River meander impinged against the bluffs at the natural area, though the Bailey limestone does not form high cliffs such as those at Pine Hills.

The principal active geomorphic processes are by running water and mass movement. Solution by groundwater in the Bailey is probably important, too. Weathering, both physical and chemical, proceeds apace, varying somewhat according to orientation, insolation, and other microclimatic conditions.

Slopewash is quite active on the loess-covered ridges. Where clearcut at the north, gullying is also severe. Slopewash is apparent on the slopes where every obstruction has an accumulation of material on the up-slope side. Rill and minor gullying is not apparent on most slopes.

Where loess is thick, especially on south-facing slopes, loose chert-fragment scree covers the slope. The chert is derived mainly from the Grassy Knob. Creep and sliding are rapid.

Scree and blocks of rock reach the channel by various processes of mass wasting along the steep active valleys. Stream flow is ephemeral but the gradient is very steep, and storms bringing rains of several inches in 24 hours cause movement of great blocks of rock and channel deepening, as well as widening. The longest streams (less than 1 mile or 1.6 kilometers) have floodplains in valley floors but are closely spaced with steep tributaries.

Along the base of the bluff near Bluff Lake, a series of slides was observed in September, 1986. The debris slides sheared away from the weathered Bailey limestone, bringing down many trees; large trees were well enough anchored so that the debris passed around them. Bedrock was not involved.

References: 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.

J. M. Weller and G. E. Ekblaw. 1940. Preliminary geologic map of parts of the Alto Pass, Jonesboro, and Thebes quadrangles in Union, Alexander, and Jackson counties. Ill. State Geol. Surv. Rep. Invest. 70. 26 p.

Soils (Figure 6)

The humid temperate climate of the region has favored the rapid weathering of soil materials and the downward movement of

clays and minerals in the profile. Much of the annual precipitation occurs during short intense storms creating severe erosion potential.

The soils over almost all of the RNA are mapped as the Goss-Alford complex. These are steep to very steep, well drained soils formed in material weathered from cherty limestone and in loess. The steep slopes, severe erosion hazard, and cherty, clayey subsoil limit the use of this association. Goss soils occur on middle and lower slopes and in coves. They have a very cherty silt loam surface. Alford soils occur on the upper slopes and on the ridges. They have chert in the subsoil. Water moves through Goss at a moderately rapid rate and through Alford at a moderate rate. Surface runoff is very rapid. Alford soils have severe limitations for buildings and roads because of the slope, low strength, and frost action. Organic matter is low, and fertility is low in Goss and medium in Alford. The A horizon may be neutral in places.

A very small bit of Elsayh silt loam is within the RNA at the base of the west slope. This soil formed in silty, cherty stream sediments.

Reference: C. C. Miles, et al. 1979. Soil survey of Union County, Illinois. Soil Conservation Service and Forest Service, in cooperation with the Illinois Agricultural Experiment Station, Urbana, Illinois. 143 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 on the property. According to Appendix E of the Shawnee National Forest, Final Environmental Impact Statement, Land and Resource Management Plan (1986), there is no coal, and the potential for fluorite, lead, zinc, oil, and gas is low.

Cultural features

Although little archaeological survey work has been conducted in the area, Indian graves are known to occur along the ridge crest at the south end of the RNA. These are in deep loess and are lined with slabs of limestone. Several have been recently vandalized leaving bones and grave stones scattered in the woods (Figure 19).

Faint evidence of old trails still exist on the main ridge and on the crests of several spur ridges. These may have originally been Indian and/or game trails. Some were probably

used by logging crews as haul roads many years ago. Forest Service Roads 648BA, 648BB, and 264C are shown on the Jonesboro USGS Topographic Map, modified for Forest Service use, as entering the RNA (Figure 4). These are unimproved, and in places, are hardly recognizable as trails.

IMPACTS AND POSSIBLE CONFLICTS

The Shawnee National Forest's Land and Resource Management Plan (1986) 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 on any part of the Atwood Ridge Research Natural Area. The potential for the presence of fluorite, lead, zinc, gas, and oil is low, and no coal is in the area, according to the Final Environmental Impact Statement of the Shawnee National Forest Land and Resource Management Plan (1986).

Grazing

This area has never been grazed under Federal ownership, and is not presently under range allotment. There is no demand or need for grazing land in the vicinity, and the area is unsuitable for livestock use. It is nearly all forested. The soils on the steep 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. The 8.2 management prescription expressly prohibits grazing.

Timber

All of the potential research natural areas identified in the SNF Land and Resource Management Plan (1986) 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

The protection and management of this area as an RNA will help maintain its watershed in a minimal erosional condition, and thus protect the water quality of recipient streams and rivers. The natural vegetative cover helps buffer the extensive wetland along its west edge.

Recreational values

There has been little recreational use of the RNA in the past. An occasional hunter enters the area. There is occasional hiking along the old roadway at the base of the bluff bordering the west edge of the area. Off road vehicle riders have recently been using a trail to illegally cross a part of the RNA in the northeast corner. There are no special attractions to cause public use to increase significantly. Adequate supervision and management should prevent serious recreational use from developing.

Wildlife, 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 be in conflict with, or adversely affect, the RNA. Forest Service Roads 648BA, 648BB, and 264C are shown on the Jonesboro USGS Topographic Map, modified for Forest Service use, as entering the RNA (Figure 4). These are unimproved and are reverting to forest. They are closed to vehicle traffic at the RNA boundaries.

MANAGEMENT PRESCRIPTION

The primary objective of the Atwood Ridge 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, barrens, hill prairie, and geologic types characteristic of the Midwest, as well as other plant communities and features that have special and unique characteristics of scientific interest and importance.

Vegetation management

Prescribed burning and hand removal of small trees and shrubs are permitted to help control the invasion of woody vegetation into the naturally open areas. The tendency of natural openings in the Midwest to succeed to forest will likely result in the disappearance of barrens and prairie communities without fire or the replication of other natural control measures that kept them open in presettlement times. A regular schedule of burning will be developed as results are monitored.

ADMINISTRATIVE RECORDS AND PROTECTION

The proposed Atwood Ridge Research Natural Area is administered from the Jonesboro Ranger District of the Shawnee National Forest. The contact person responsible for this area is:

Jonesboro District Ranger
Shawnee National Forest
521 N. Main
Jonesboro, IL 62952

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 for this natural area. Most specimens that have been collected in this area, both botanical and zoological, are housed in the collections at Southern Illinois University, Carbondale, Illinois.

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- Illinois State Geological Survey. 1965. Guide leaflet, geological science field trip to Alto Pass area, October 16. Urbana. 15 p. plus maps.
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APPENDIX ITEM I.

Computer printout of data collected for the Atwood Ridge Natural Area by the Illinois Natural Areas Inventory, 1976-78.

The major part of the INAI natural area is included within the RNA boundaries; additional acreage has been added on the south.

1046

Illinois Natural Areas Inventory
Natural Land Institute

AREA # 1046

COUNTIES: 91 Union

REFERENCE NUMBER: 29

AREA NAME: Atwood Ridge

NATURAL AREA CATEGORIES & SIGNIFICANT FEATURES:

CAT.	CODE / DESCRIPTION
I	B1.1 Dry upland forest
II	173 Carex physorhyncha (Thin soiled chert slopes)
II	174 Panicum ravenelii (Thin soiled chert slopes)

EXCEPTIONAL FEATURES:

CAT.	CODE / DESCRIPTION
II	41 Rhododendron prinophyllum (Thin soiled chert slopes)
II	172 Quercus prinus (Thin-soiled, cherty slopes)

PRESERVATION VALUE SCORE: 5

EVALUATOR: 3 Hutchinson

LEGAL LOCATION:

TWP	RNG	PM	SEC	QUARTER	QUARTER-QUARTERS
12S	2W	3	32		9&16
12S	2W	3	33		13&14
13S	2W	3	3		13
13S	2W	3	4		2&7&8&B&C&11+&D
13S	2W	3	5		1&8&9&16
13S	2W	3	8		1&8
13S	2W	3	9		1&2&7&B&11&10
13S	2W	3	10		4

TOPOGRAPHIC QUADRANGLES: 281a Jonesboro 7.5

SPECIFIC STREAM : Clear Creek Ditch

STREAM SYSTEM (Water Shed) : 25 Clear Creek--Horseshoe Lake system

LEGISLATIVE DISTRICT: 59

MUNICIPALITY:-- none

MINIMUM ALTITUDE: 340

MAXIMUM ALTITUDE: 860

TOPOGRAPHY:

PHYSIOGRAPHIC UNIT: 70	Salem Plateau Section
MAJOR FEATURE: 47	Erosional hills in bedrock (thick loess)

INDIVIDUAL TOPOGRAPHIC FEATURES:

114 Ravine
118 Valley wall

GEOLOGIC FORMATIONS:

80 Bailey Limestone
81 Grassy Knob Chert
216 Peoria Loess

SOIL ASSOCIATION (STATE) :

SOIL ASSOCIATION (COUNTY) :
Alford-Bodine

NATURAL COMMUNITY

1.1
Dry upland forest

NATURAL DIVISION AND SECTION: 11c

Southern Section, Ozark Division

COMMUNITY CLASS : 1 Forest

RARITY INDEX: 3 Occasional

NATURAL QUALITY:

33.0 acres of grade B ;

Old second growth

Unknown acres of grade C ;

Mature second growth

SAF COVER TYPE: 44 Chestnut oak

PLANT COMMUNITY: * Not collected

SAF COVER TYPE: 40 Post oak--black oak

PLANT COMMUNITY:

205 Quercus prinus, chestnut oak

209 Quercus velutina, black oak

230 Sassafras albidum, sassafras

NATURAL COMMUNITY

1.2
Dry-mesic upland forest

NATURAL DIVISION AND SECTION: 11c

Southern Section, Ozark Division

COMMUNITY CLASS : 1 Forest

RARITY INDEX: 2 Common

NATURAL QUALITY:

Unknown acres of grade C ;

Mature second growth

SAF COVER TYPE: 53 White oak

PLANT COMMUNITY:

209 Quercus velutina, black oak
205 Quercus prinus, chestnut oak
55 Carya spp., hickories

NATURAL COMMUNITY

1.5

Mesic upland forest

NATURAL DIVISION AND SECTION: 11c

Southern Section, Ozark Division

COMMUNITY CLASS : 1 Forest

RARITY INDEX: 3 Occasional

NATURAL QUALITY:

Unknown acres of grade C ;

Mature second growth

Unknown acres of grade D ;

Recently clearcut

SAF COVER TYPE: * Not collected

PLANT COMMUNITY:

206 Quercus rubra, red oak
195 Quercus alba, white oak

DIVERSITY INDEX: 2

TOTAL ACREAGE: 1016

OWNERSHIP TYPE: 1 Private
2 Public

NUMBER OF OWNERSHIPS: 3

USE OF NATURAL AREA:

10 No apparent use

USE OF SURROUNDING LAND (% wildland): 90

USE OF SURROUNDING LAND (% farmland): 10

USE OF SURROUNDING LAND (% developed land): 0

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

DISTANCE TO SMSA: 59

NUMBER OF NEARBY SCHOOLS: 3

NEAREST SCHOOL: 88 Southern Illinois University, Carbondale

NUMBER OF NEARBY D.O.C. FACILITIES: 6

MANAGEABILITY: 1

PRESERVATION STATUS:

- 1 Public land, not recognized as a natural area
- 6 Private land, not protected by owner or lessee

THREATS:

- 3 Threat likely within five years.
- DESCRIPTION: Logging

SPECIES LISTS:

- 1 Woody plants
- 2 Ferns and fern allies
- 3 Summer birds
- 4 Amphibians, reptiles, and mammals

SAMPLING FORMS:

- 1 Tree basal area
- 2 Tree density
- 3 Sapling and shrub density

DISCUSSION OF PRESERVATION VALUES:

Atwood Ridge has a high quality upland forest with the following endangered and threatened species: the sedge *Carex physorhyncha*, the panic grass *Panicum ravenellii*, wild azalea (*Rhododendron prinophyllum*), chestnut oak (*Quercus prinus*), and interrupted fern. Dry slopes are dominated by chestnut oak.

PUBLICATIONS:

CITATION # 181

Bailey, W. M. and J. R. Swayne. 1951. Southern Illinois plant records. Trans. Ill. State Acad. Sci. 44:40-41.

CITATION # 508

Jones, G. N., H. E. Ahles, G. D. Fuller and G. S. Winterringer. 1951. Addition records of some Illinois vascular plants. Amer. Midland Natur. 45:500-503.

CITATION # 522

Mohlenbrock, R. H., J. Ozment and G. Folkerts. 1962. Additions to the flora of Illinois. Rhodora 64:356-358.

CITATION # 1077

Evers, R. A. 1950. Notes on the flora of Illinois. Amer. Midland Natur. 44:617-621.

CITATION # 1143

Myatt, M. 1975. Quantitative analysis of a *Quercus prinus* stand in southern Illinois. Master's thesis. Southern Ill. Univ., Carbondale. 144 p.

CITATION # 1474

Schwegman, J. E. 1970. Notes on the flora of southern Illinois. Castanea 35:319-320.

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 Atwood Ridge Research Natural Area in natural diversity

APPENDIX E
Evaluation of Proposed RNA's

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 table. 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:

<u>Not Represented</u>	<u>In one RNA</u>	<u>In two RNA's</u>
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.

<u>SAF Cover Types</u>	
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 Atwood Ridge Research Natural Area and documenting the recommendations of the Forest for its designation and management

CHAPTER III
Affected Environment

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:

CHAPTER III
Affected Environment

Table 3-15
Recommended Research Natural Areas

<u>AREA</u>	<u>ACRES</u> 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

<u>Roadless Area</u>	<u>Size (Ac. NFS Land)</u>
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.

APPENDIX E
RNA Assignment by Alternative

Alternative I

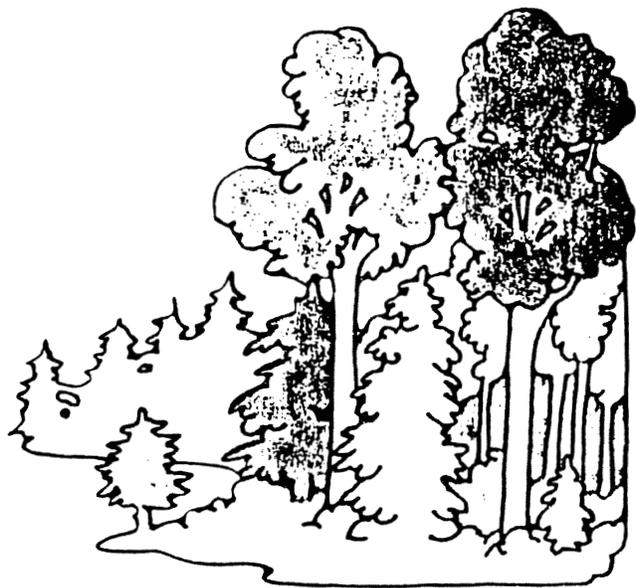
Alternative I emphasizes the maintenance and enhancement of wildlife habitat and preservation of unique natural features. A variety of motorized and nonmotorized recreation features are provided. All proposed Research Natural Areas are recommended for further evaluation.

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



APPENDIX E
Special Features

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.

<u>Name</u>	<u>Size (Acres)</u>
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.

<u>Name</u>	<u>Mgmt. Prescription</u>	<u>Size (Acres)</u>
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.

- 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.

APPENDIX E
Special Features

<u>Name</u>	<u>Management Prescription</u>	<u>Size(acres)</u>
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	<u>2,811</u>
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).