United States Department of Agriculture
Forest Service
Washington Office
14th & Independence SW
P.O. Box 96090
Washington, DC 20090-6090

Reply To: 4060-3

Date: March 19, 1991

Floyd J. Marita
Regional Forester
USDA Forest Service
310 W. Wisconsin Avenue
Room 500
Milwaukee, Wisconsin 53203

Dear Dr. Marita

Enclosed is the approved signed Decision Notice/Designation Order and Establishment Record for Burke Branch RNA within Shawnee National Forest, Pope County, Illinois.

Sincerely,

STANLEY L. KRUGMAN, Director
Forest Management Research

MAR 1 9 1991
PLAN... & BUD...

Burke Branch

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 Burke Branch 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 Burke Branch 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 Burke Branch 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

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)).

Chief

3/14/91
Date

ERRATA SHEET

1. Figure 4 - Due to a printing error in the topographic map, Forest Road 1382 appears to enter the SW corner of the RNA; the road does not cross the RNA boundary.

2. Photo Record - negatives are unavailable for photos No. 9, 10 and 17-34.

3. 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.I. 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.

4. Management Prescription, page 25.

   a. Management Prescriptions will be developed in cooperation with the North Central Forest Experiment Station.

   b. Recreation Management - Recreation will be discouraged. Fences are not needed to achieve management objectives. Gates installed across old roads and trails have eliminated ORV use problems.

5. Administrative Records, page 26.

   The Director NCFES, reviews and approves research plans and activities. The Forest Supervisor authorizes use of the RNA.

   If the RNA becomes a part of a Congressionally designated wilderness, the Regional Forester will become the responsible official for approving research.

UNITED STATES DEPARTMENT OF AGRICULTURE

FOREST SERVICE

BURKE BRANCH

RESEARCH NATURAL AREA

SHAWNEE NATIONAL FOREST

JULY 31, 1987

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

FS-6200-7 (10/73)

Figure 1. Location of Burke Branch Research Natural Area shown (with arrow) on copy of J. A. Bier's Landforms of Illinois map, Ill. State Geol. Surv., Urbana, 1980

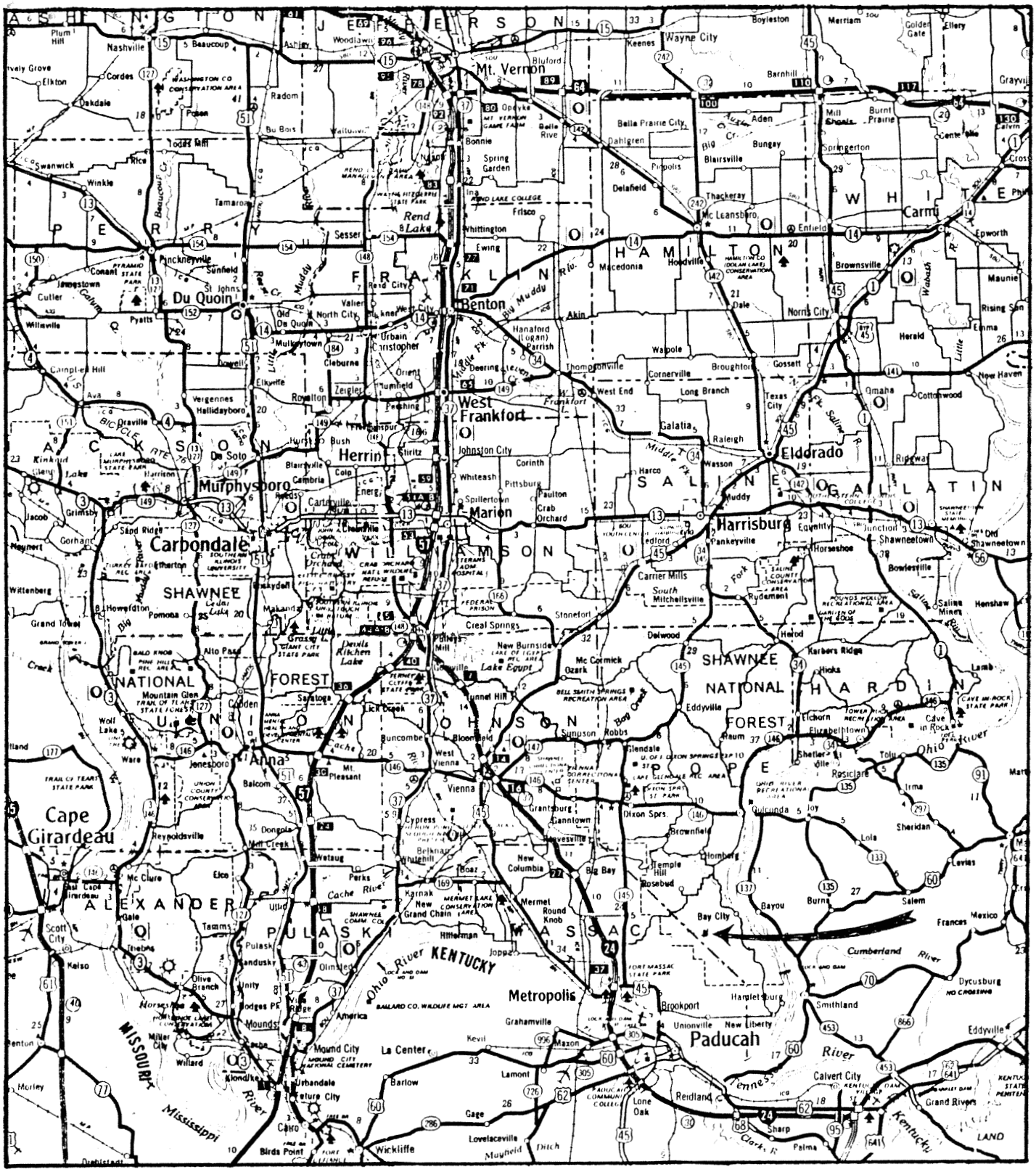

Figure 2. Location of Burke Branch Research Natural Area shown (with arrow) on copy of Illinois Official Highway Map, 1985-86, Department of Transportation, Springfield

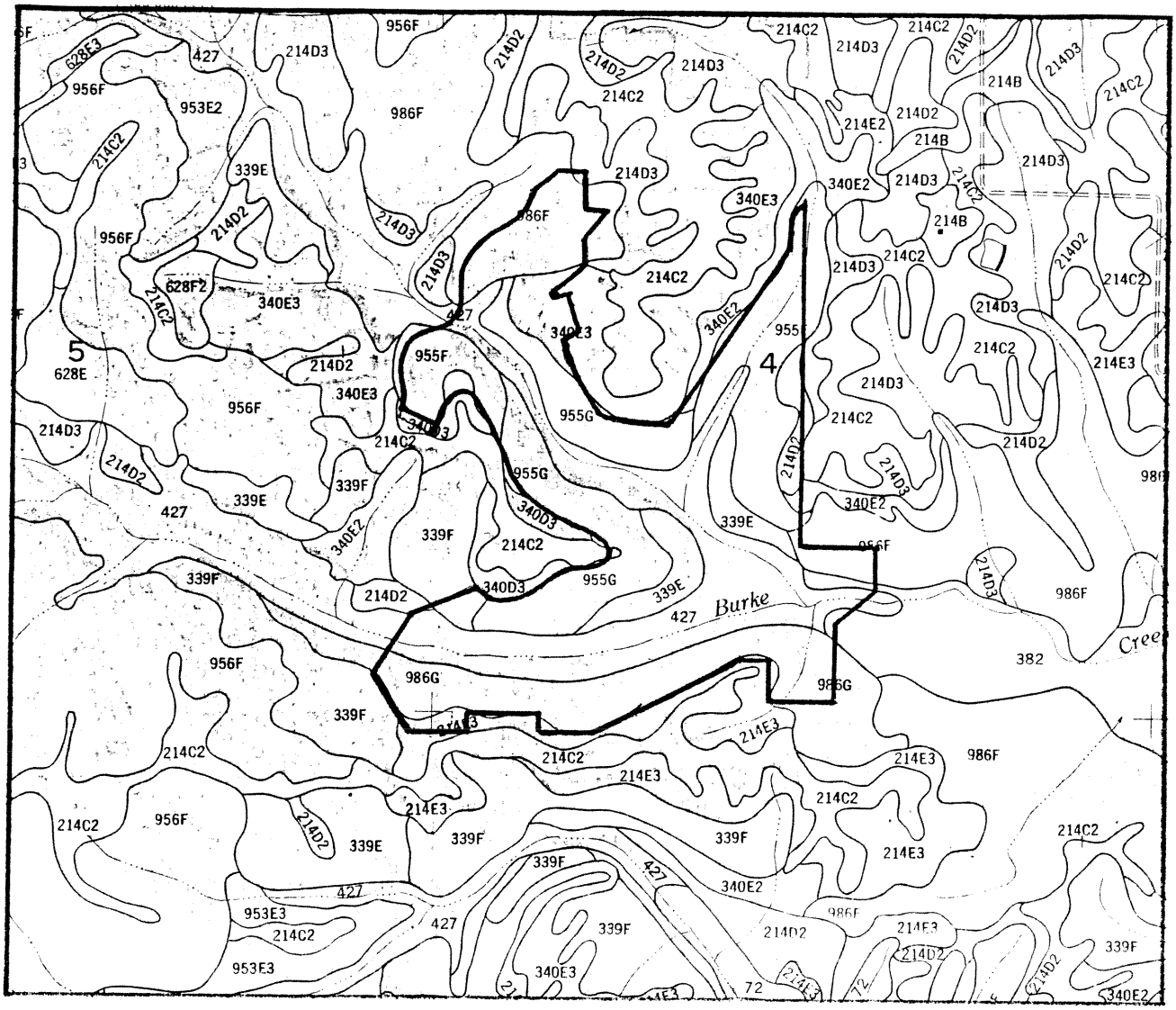

Figure 6. Location of Burke Branch Research Natural Area shown on map of soils taken from Soil survey of Pope, Hardin, and Massac counties, Illinois by W. D. Parks et al., SCS and USFS, in coop. with Ill. Agr. Exp. Sta., Urbana, 1975

scale 4" = 1 mile

382 - Belknap silt loam

986 - Wellston-Berks complex

340 - Zanesville soils

214 - Hosmer silt loam

427 - Burnside silt loam

339 - Wellston soils

955 - Muskingum and Berks soils

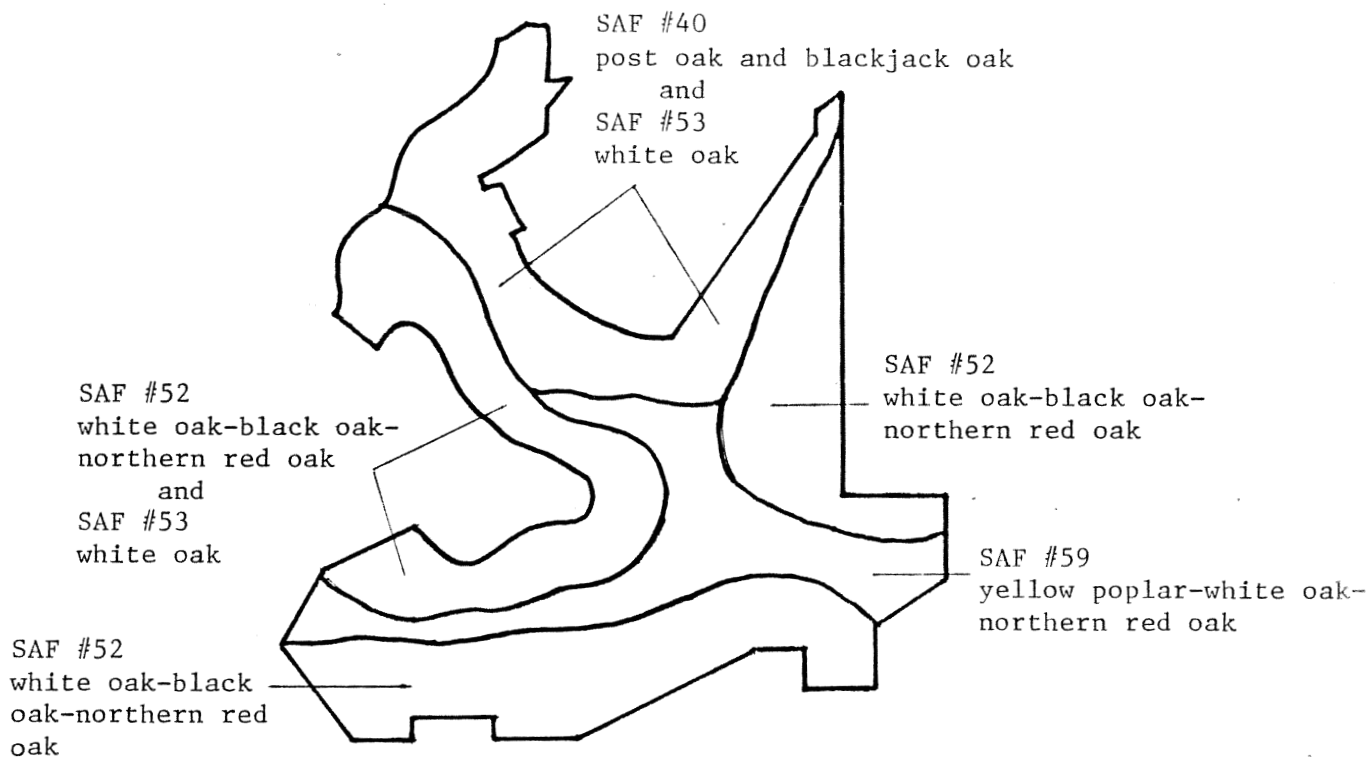

Figure 7. Map of Burke Branch Research Natural Area showing SAF cover types; the upland is Kuchler PNV #91 (oak-hickory) which includes SAF types 40, 52, and 53; the bottomland (SAF 59) is Kuchler PNV #94 (mixed mesophytic forest) scale 4.5" = 1 mi.

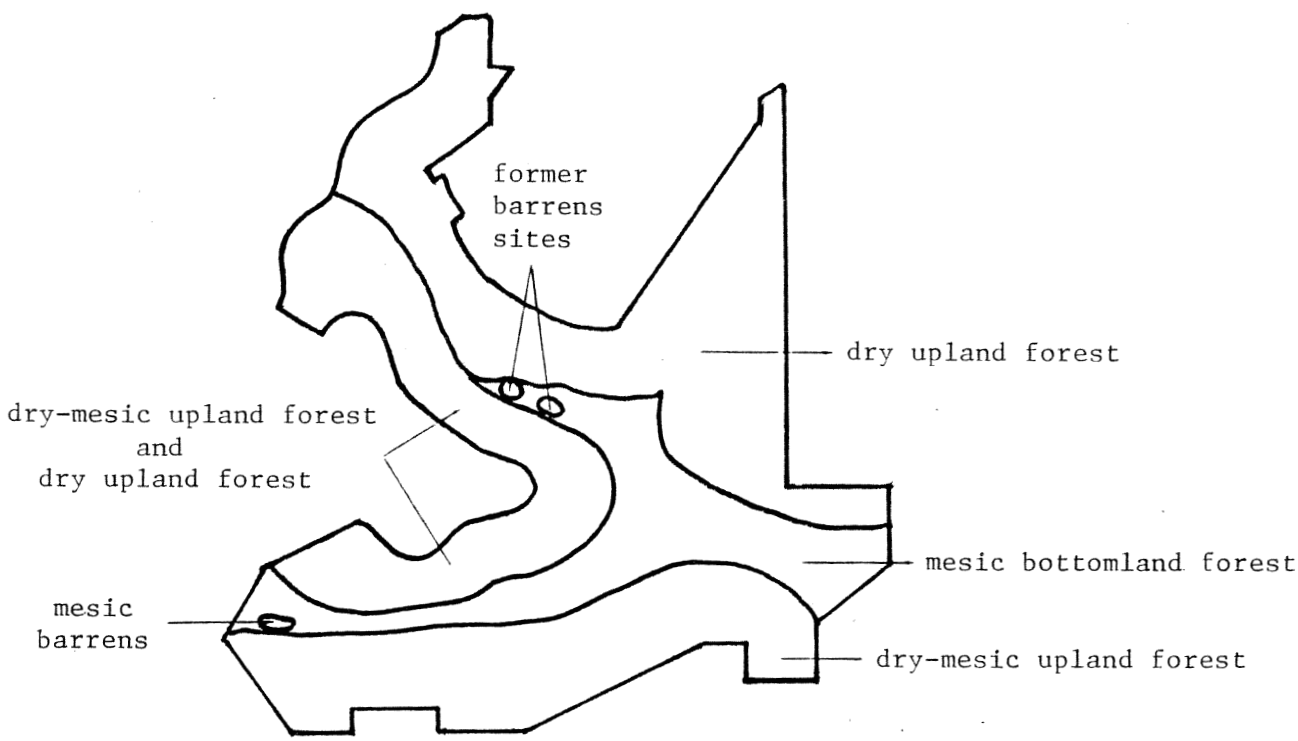

Figure 8. Map of Burke Branch Research Natural Area showing natural communities; the barrens site in the southwest corner of the area is now very small, and the former barrens sites located on the north fork of Burke Creek are now almost completely eliminated by shading from woody plant encroachment scale 4.5" = 1 mi.

USDA-FOREST SERVICE

PHOTOGRAPHIC RECORD

(See FSM 1643.52)

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

DATE SUBMITTED September, 1

HEADQUARTERS UNIT

LOCATION

INITIAL DISTRIBUTION OF PRINTS AND FORM 1600-1:

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Fig. 10			Oct. 12, 1971	Illinois, Shawnee National Forest, Vienna Dist. Pope Co.	aerial view of Burke Branch RNA	35 mm BW

USDA-FOREST SERVICE

PHOTOGRAPHIC RECORD

(See FSM 1643.52)

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

DATE SUBMITTED September, 19

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Fig. 9			Aug. 12, 1938	Illinois, Shawnee National Forest, Vienna Dist. Pope Co.	aerial view of Burke Branch RNA	35 mm BW

Figure 9. Copy of ASCS aerial photograph taken August 12, 1938 showing location of Burke Branch Research Natural Area

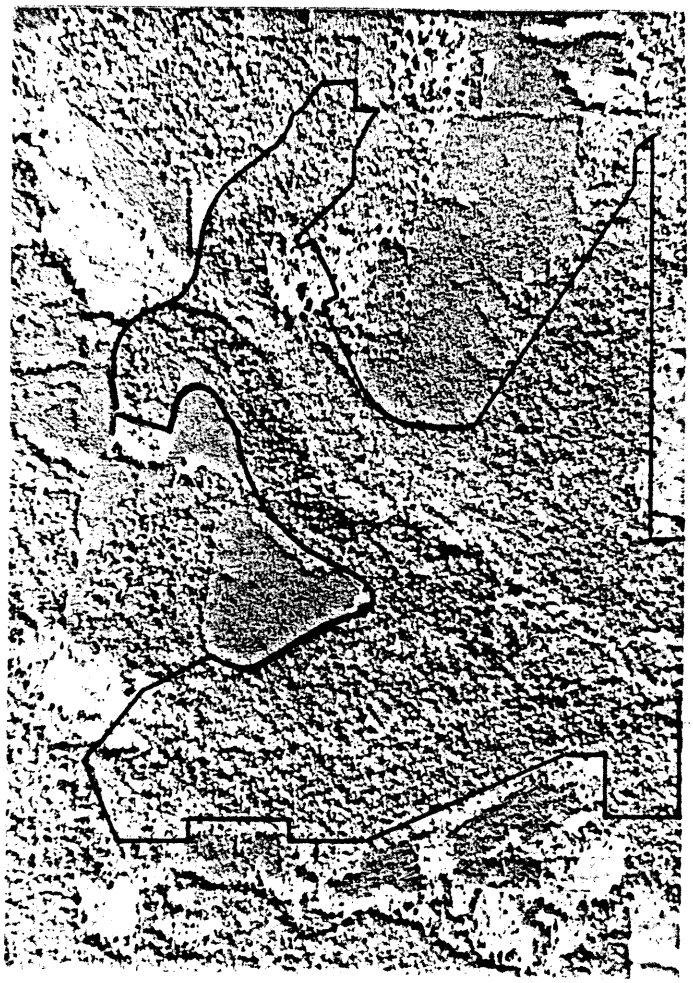

Figure 10. Copy of ASCS aerial photograph taken October 12, 1971 showing location of Burke Branch Research Natural Area

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PHOTOGRAPHIC RECORD

(See FSM 1643.52)

PHOTOGRAPHER	DATE SUBMITTED
S. E. Harris, Jr.	September, 198
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Fig. 11			Oct. 7, 1986	Illinois, Shawnee National Forest, Vienna Dist. Pope Co.	view of north fork of Burke Creek at Burke Branch RNA	35 mm. C

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(See FSM 1643.52)

PHOTOGRAPHER	DATE SUBMITTED
S. E. Harris, Jr.	September, 198
HEADQUARTERS UNIT	LOCATION

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Fig. 12			Oct. 7, 1986	Illinois, Shawnee National Forest, Vienna Dist. Pope Co.	view of north fork of Burke Creek at Burke Branch RNA	35 mm. C

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

Figure 11. View of north fork of Burke Creek looking downstream at rocky channel and showing limestone exposure in background
-photo by S. E. Harris, Jr., Oct. 7, 1986

Figure 12. View of north fork of Burke Creek looking downstream and showing large imbricated blocks in stream channel
-photo by S. E. Harris, Jr., Oct. 7, 1986

USDA-FOREST SERVICE

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(See FSM 1643.52)

PHOTOGRAPHER	DATE SUBMITTED
S. E. Harris, Jr.	September, 1

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Fig. 13			Oct. 8, 1986	Illinois, Shawnee National Forest, Vienna Dist. Pope Co.	north-facing slope on south fork of Burke Creek at Burke Branch RNA	35 mm C

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(See FSM 1643.52)

PHOTOGRAPHER: M. D. Hutchison

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TEMP. (1)	PERMANENT (To be filled in by the WO) (2)	(3)	(4)	(5)	(6)	(7)
Fig. 14			June, 1981	Illinois, Shawnee National Forest, Vienna Dist. Pope Co.	view of barrens species along south fork of Burke Creek at Burke Branch RNA	35 mm C

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Figure 13. North-facing slope on south fork of Burke Creek showing exposures of Glen Dean Limestone; trees are white oak (Quercus alba), red oak (Q. rubra), and sugar maple (Acer saccharum)
-photo by S. E. Harris, Jr., Oct. 8, 1986

Figure 14. View of barrens along south fork of Burke Creek in southeast corner of section 5; species include big bluestem (Andropogon gerardii), Indian grass (Sorghastrum nutans), sunflowers (Helianthus spp.), and tickseed (Coreopsis tripteris)
-photo by M. Hutchison, June, 1981

USDA-FOREST SERVICE

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(See FSM 1643.52)

PHOTOGRAPHER: M. D. Hutchison

DATE SUBMITTE: September,

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TEMP. (1)	PERMANENT (To be filled in by the WO) (2)	(3)	(4)	(5)	(6)	(7)
Fig. 15			July 23, 1986	Illinois, Shawnee National Forest, Vienna Dist. Pope Co.	view of barrens in southeast corner of section 5 at Burke Branch RNA	35 m C

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PHOTOGRAPHIC RECORD

(See FSM 1643.52)

PHOTOGRAPHER	DATE SUBMITTED
M. D. Hutchison	September, 19
HEADQUARTERS UNIT	LOCATION

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Fig. 16			July 23, 1986	Illinois, Shawnee National Forest, Vienna Dist. Pope Co.	rosinweed (Silphium integrifolium), a prairie species common in the barrens at Burke Branch RNA	35 mm. C

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Figure 15. View of barrens in southeast corner of section 5 (same location as Fig. 14) showing encroachment of woody vegetation since 1981 -photo by M. Hutchison, July 23, 1986

Figure 16. Rosinweed (Silphium integrifolium), a prairie species common in the barrens at Burke Branch -photo by M. Hutchison, July 23, 1986

USDA-FOREST SERVICE

PHOTOGRAPHIC RECORD

(See FSM 1643.52)

PHOTOGRAPHER: M. D. Hutchison

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TEMP. (1)	PERMANENT (To be filled in by the WO) (2)	(3)	(4)	(5)	(6)	(7)
Fig. 17			July 28, 1987	Illinois, Shawnee National Forest, Vienna Dist. Pope Co.	sugar maples (Acer saccharum) in mesic bottom along Burke Creek at Burke Branch RNA	35 mm C

USDA-FOREST SERVICE

PHOTOGRAPHIC RECORD

(See FSM 1643.52)

PHOTOGRAPHER	DATE SUBMITTED
M. D. Hutchison	September, 1
HEADQUARTERS UNIT	LOCATION

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TEMP. (1)	PERMANENT (To be filled in by the WO) (2)	(3)	(4)	(5)	(6)	(7)
Fig. 18			July 28, 1987	Illinois, Shawnee National Forest, Vienna Dist. Pope Co.	scouring rush (Equisetum sp.) growing along the banks of Burke Creek at Burke Branch RNA	35 mm C

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Figure 17. Sugar maples (Acer saccharum) in narrow mesic bottom along south fork of Burke Creek -photo by M. Hutchison, July 28, 1987

Figure 18. Scouring rush (Equisetum sp.) growing along the banks of the south fork of Burke Creek -photo by M. Hutchison, July 28, 1987

USDA-FOREST SERVICE

PHOTOGRAPHIC RECORD

(See FSM 1643.52)

PHOTOGRAPHER: M. D. Hutchison

DATE SUBMITTED: September, 1

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Fig. 19			July 28, 1987	Illinois, Shawnee National Forest, Vienna Dist. Pope Co.	a white oak (Quercus alba) stand on south-facing slope at Burke Branch RNA	35 mm. C

USDA-FOREST SERVICE

PHOTOGRAPHIC RECORD

(See FSM 1643.52)

PHOTOGRAPHER: M. D. Hutchison

DATE SUBMITTED: September, 198

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Fig. 20			July 28, 1987	Illinois, Shawnee National Forest, Vienna Dist. Pope Co.	large white oaks (Quercus alba) in a white oak-black oak-northern red oak stand on a north-facing slope at Burke Branch RNA	35 mm. C

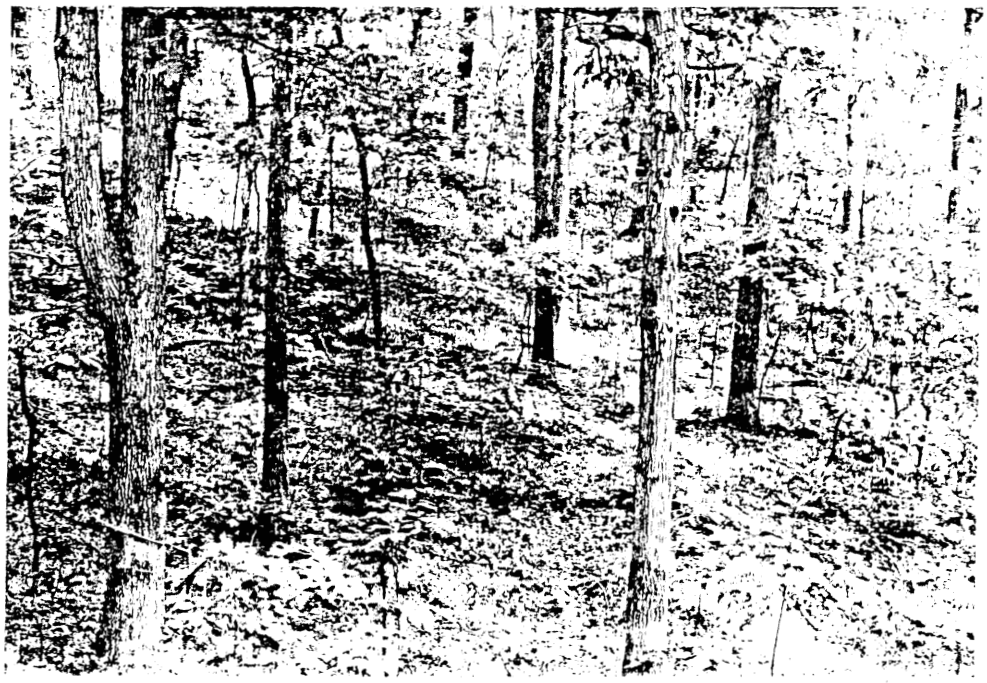

Figure 19. A white oak (Quercus alba) stand on south-facing slope in northwest part of Burke Branch RNA -photo by M. Hutchison, July 28, 1987

Figure 20. Large white oaks (Quercus alba) in a white oak-black oak-northern red oak stand on a north-facing slope along the north fork of Burke Creek -photo by M. Hutchison, July 28, 1987

USDA-FOREST SERVICE

PHOTOGRAPHIC RECORD

(See FSM 1643.52)

PHOTOGRAPHER: M. D. Hutchison

DATE SUBMITTE: September,

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TEMP. (1)	PERMANENT (To be filled in by the WO) (2)	(3)	(4)	(5)	(6)	(7)
Fig. 21			July 28, 1987	Illinois, Shawnee National Forest, Vienna Dist. Pope Co.	large old post oak (Quercus stellata) in post oak-blackjack oak stand along south-facing slope at Burke Branch RNA	35 m C

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PHOTOGRAPHIC RECORD

(See FSM 1643.52)

PHOTOGRAPHER: M. D. Hutchison

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TEMP. (1)	PERMANENT (To be filled in by the WO) (2)	(3)	(4)	(5)	(6)	(7)
Fig. 22			July 28, 1987	Illinois, Shawnee National Forest, Vienna Dist. Pope Co.	large old scarlet oak (Quercus coccinea) in post oak-blackjack oak stand along south-facing slope at Burke Branch RNA	35 m C

Figure 21. Large old post oak (Quercus stellata) in post oak-blackjack oak stand along south-facing dry slope in north part of Burke Branch RNA -photo by M. Hutchison, July 28, 1987

Figure 22. Large old scarlet oak (Quercus coccinea) in post oak-blackjack oak stand (same location as Figure 21) -photo by M. Hutchison, July 28, 1987

USDA-FOREST SERVICE

PHOTOGRAPHIC RECORD

(See FSM 1643.52)

PHOTOGRAPHER: M. D. Hutchison

DATE SUBMITTED: September,

HEADQUARTERS UNIT:

LOCATION:

INITIAL DISTRIBUTION OF PRINTS AND FORM 1600-1:

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Fig. 23			July 28, 1987	Illinois, Shawnee National Forest, Vienna Dist. Pope Co.	sugar maple (Acer saccharum) and sycamore (Platanus occidentalis) trees growing along bank of Burke Creek at Burke Branch RNA	35 m C

USDA-FOREST SERVICE

PHOTOGRAPHIC RECORD

(See FSM 1643.52)

PHOTOGRAPHER	DATE SUBMITTED
M. D. Hutchison	September, 1
HEADQUARTERS UNIT	LOCATION

INITIAL DISTRIBUTION OF PRINTS AND FORM 1800-11

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	TEMP. (1)	PERMANENT (To be filled in by the WO) (2)	(3)	(4)	(5)	(6)	(7)
Fig. 24				July 28, 1987	Illinois, Shawnee National Forest, Vienna Dist. Pope Co.	large sycamore (Platanus occidentalis) along bank of Burke Creek at Burke Branch RNA	35 m C

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Figure 23. Sugar maple (Acer saccharum) and sycamore (Platanus occidentalis) trees growing along bank of Burke Creek in southeast part of RNA -photo by M. Hutchison, July 28, 1987

Figure 24. Large sycamore (Platanus occidentalis) along bank of Burke Creek (same location as Figure 23) showing channel scouring and widening -photo by M. Hutchison, July 28, 1987

USDA-FOREST SERVICE

PHOTOGRAPHIC RECORD

(See FSM 1643.52)

PHOTOGRAPHER	DATE SUBMITTED
M. D. Hutchison	September, 19

HEADQUARTERS UNIT	LOCATION

INITIAL DISTRIBUTION OF PRINTS AND FORM 1600-1:

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Fig. 25			July 28, 1987	Illinois, Shawnee National Forest, Vienna Dist. Pope Co.	looking north along Forest Service Road 1382 bordering Burke Branch RNA	35 mm. C

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1600-1 (8/67)

USDA-FOREST SERVICE

PHOTOGRAPHIC RECORD

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M. D. Hutchison	September,

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TEMP. (1)	PERMANENT (To be filled in by the WO) (2)	(3)	(4)	(5)	(6)	(7)
Fig. 26			July 28, 1987	Illinois, Shawnee National Forest, Vienna Dist. Pope Co.	eroding bank of south fork of Burke Creek at Burke Branch RNA	35 mr C

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1600-1 (8/6

Figure 25. Looking north along Forest Service Road 1382 which forms part of RNA boundary along northwest side (RNA is to right or east)
-photo by M. Hutchison, July 28, 1987

Figure 26. Eroding bank of south fork of Burke Creek showing reworked material (sands and pebbles) from terrace deposits and older formations
-photo by M. Hutchison, July 28, 1987

USDA-FOREST SERVICE

PHOTOGRAPHIC RECORD

(See FSM 1643.52)

PHOTOGRAPHER	DATE SUBMITTED
M. D. Hutchison	September, 19
HEADQUARTERS UNIT	LOCATION

INITIAL DISTRIBUTION OF PRINTS AND FORM 1800-11

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Fig. 27			July 28, 1987	Illinois, Shawnee National Forest, Vienna Dist. Pope Co.	close view of pebbles in bed of Burke Creek at Burke Branch RNA	35 mm. C

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(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. 28			Oct. 7, 1986	Illinois, Shawnee National Forest, Vienna Dist. Pope Co.	close view of eroded Glen Dean Limestone along north fork of Burke Creek at Burke Branch RNA	35 mm BW

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Figure 27. Close view of pebbles in bed of Burke Creek; this is reworked material eroded from deposits in stream bottom and from older formations upstream; note conglomerates; fossils are abundant here
-photo by M. Hutchison, July 28, 1987

Figure 28. Close view of eroded Glen Dean Limestone along north fork of Burke Creek on line between sections 3 and 4
-photo by M. Hutchison, Oct. 7, 1986

USDA-FOREST SERVICE

PHOTOGRAPHIC RECORD

(See FSM 1643.52)

PHOTOGRAPHER	DATE SUBMITTED
M. D. Hutchison	September, 19
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Fig. 31			July 28, 1987	Illinois, Shawnee National Forest, Vienna Dist. Pope Co.	common crayfish (probably Camarellus shufeldtii) at Burke Creek at Burke Branch RNA	35 mm. C

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USDA-FOREST SERVICE

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Fig. 32			July 28, 1987	Illinois, Shawnee National Forest, Vienna Dist. Pope Co.	eastern box turtle (Terrapene carolina) along Burke Creek at Burke Branch RNA	35 mm. C

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Figure 31. A common crayfish (probably *Camarellus shufeldtii*) at Burke Creek; this is a Coastal Plain species barely entering Illinois
-photo by M. Hutchison, July 28, 1987

Figure 32. An eastern box turtle (*Terrapene carolina*), a very common reptile in the sandy bottom along Burke Creek
-photo by M. Hutchison, July 28, 1987

USDA-FOREST SERVICE

PHOTOGRAPHIC RECORD

(See FSM 1643.52)

PHOTOGRAPHER	DATE SUBMITTED
M. D. Hutchison	September, 198

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Fig. 33			Oct. 7, 1986	Illinois, Shawnee National Forest, Vienna Dist. Pope Co.	a ringneck snake (Diadophis punctatus) at Burke Branch RNA	35 mm. BW

USDA-FOREST SERVICE

PHOTOGRAPHIC RECORD

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TEMP. (1)	PERMANENT (To be filled in by the WO) (2)	(3)	(4)	(5)	(6)	(7)
Fig. 34			Oct. 7, 1986	Illinois, Shawnee National Forest, Vienna Dist. Pope Co.	ginseng (Panax quinquefolius) growing along Burke Creek at Burke Branch RNA	35 mm. BW

Figure 33. A ringneck snake (Diadophis punctatus) at Burke Branch RNA
-photo by M. Hutchison, Oct. 7, 1986

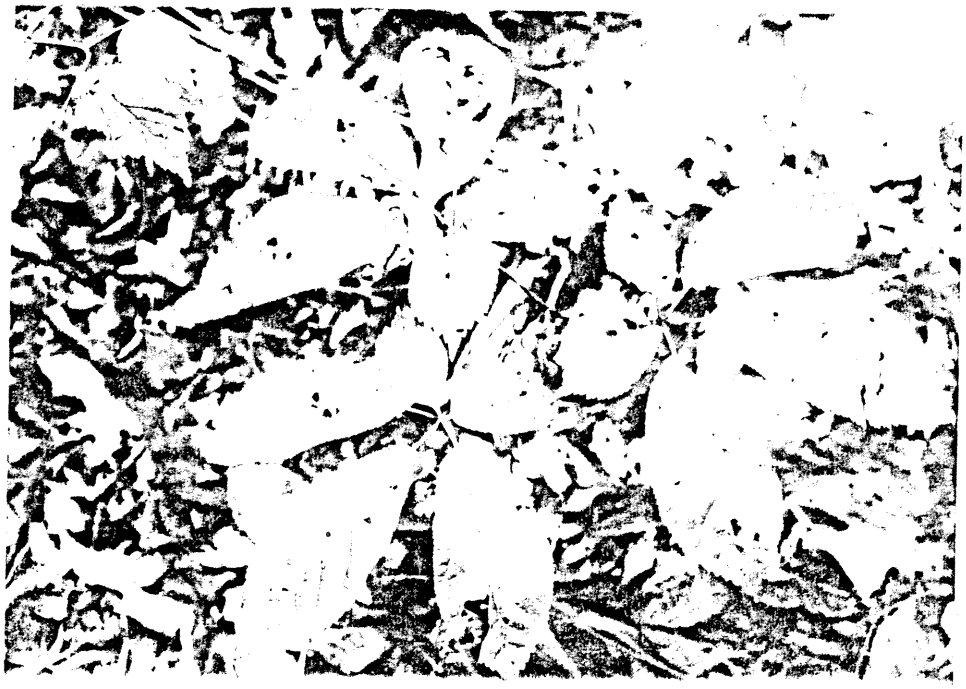


Figure 34. Ginseng (Panax quinquefolius), a species listed as Threatened in Illinois, is fairly common on the mesic sandy bottom along Burke Creek
-photo by M. Hutchison, Oct. 7, 1986

Fig. 9
Burke Branch RNA
Pope Co., Ill.

Fig. 10
Burke Branch RNA
Pope Co., Ill.

Fig. 11
Burke Branch RNA
Pope Co., Ill.

Fig. 12
Burke Branch RNA
Pope Co., Ill

Fig. 13
Burke Branch RNA
Pope Co., Ill.

Fig. 14
Burke Branch RNA
Pope Co., Ill

Fig. 15
Burke Branch RNA
Pope Co., Ill

Fig. 16
Burke Branch RNA
Pope Co., Ill

Fig. 17
Burke Branch RNA
Pope Co., Ill.

Fig. 18
Burke Branch RNA
Pope Co., Ill.

Fig. 19
Burke Branch RNA
Pope Co., Ill.

Fig. 20
Burke Branch RNA
Pope Co., Ill.

Fig. 21
Burke Branch RNA
Pope Co., Ill.

Fig. 22
Burke Branch RNA
Pope Co., Ill.

Fig. 23
Burke Branch RNA
Pope Co., Ill.

Fig. 24
Burke Branch RNA
Pope Co., Ill.

Fig. 25
Burke Branch RNA
Pope Co., Ill.

Fig. 26
Burke Branch RNA
Pope Co., Ill.

Fig. 27
Burke Branch RNA
Pope Co., Ill.

Fig. 28
Burke Branch R
Pope Co., Ill.

Fig. 29
Burke Branch RNA
Pope Co., Ill.

Fig. 30
Burke Branch RNA
Pope Co., Ill.

Fig. 31
Burke Branch RNA
Pope Co., Ill.

Fig. 32
Burke Branch RI
Pope Co., Ill.

Fig. 33
Burke Branch RNA
Pope Co., Ill.

Fig. 34
Burke Branch RNA
Pope Co., Ill.

SIGNATURE PAGE

for

RESEARCH NATURAL AREA ESTABLISHMENT RECORD

Burke Branch Research Natural Area

Shawnee National Forest

Pope County, Illinois

The undersigned certify that all applicable land management planning and environmental analysis requirements have been met[1] 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 James H. Johnson Date 3/10/88
James Johnson, District Ranger,
Vienna District

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

Recommended by Tamara L. Hanan Date 1/10/91
Floyd Marita, Regional Forester,
Eastern Region

Recommended by [illegible] Date [illegible]
Ronald D. Lindmark, Station Director,
North Central Station

1/ and that boundaries are clearly identified in accordance with FSM 4063.21, Mapping and Recordation and FSM 4063.41 5.e(3)

TITLE PAGE

Establishment Record for the Burke Branch
Research Natural Area within the Shawnee
National Forest, Pope County, Illinois

ESTABLISHMENT RECORD FOR THE BURKE BRANCH RESEARCH NATURAL AREA WITHIN THE SHAWNEE NATIONAL FOREST POPE COUNTY, ILLINOIS

INTRODUCTION

The Burke Branch Research Natural Area (RNA) is a 206-acre (83.4-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, i.e. dry upland forest, dry-mesic upland forest, and mesic upland forest (Figure 8). There is a small remnant of the mesic barrens natural community, a type that is very rare in the Midwest (Figure 8).

There are three plant species known from Burke Branch that are recommended for Regional Sensitive status in the Shawnee National Forest, Land and Resource Management Plan 1986: beard grass (Gymnopogon ambiguus), black cohosh (Cimicifuga rubifolia), and a loosestrife (Lysimachia fraseri). Three plants are present, great chickweed (Stellaria pubera), goldenseal (Hydrastis canadensis), and grass leaved lily (Stenanthium gramineum), that are Shawnee National Forest Listed Species (Shawnee National Forest, Land and Resource Management Plan, 1986). Three of the species listed above are Illinois Endangered plants: the beard grass, great chickweed, and the loosestrife. The grass leaved lily and goldenseal are listed as Threatened in Illinois. Ginseng (Panax quinquefolius), which also occurs within the RNA, is a State Threatened Species (Natural Land Institute, 1981).

Two Shawnee National Forest Listed animal species are reported from the RNA, the loggerhead shrike (Lanius ludovicianus) and the Bewick's wren (Thryomanes bewickii). They are also Illinois Threatened Species.

The Burke Branch RNA is geologically significant. It is in the northernmost part of the Mississippi Embayment (a part of the Gulf Coastal Plain) but is a southern extension of the Shawnee Hills (Ross, 1964). It contains outcrops of Mississippian, Cretaceous, Tertiary, and Pleistocene sediments. The two main branches of Burke Creek display a sharp contrast in the beds of the channels, and there are excellent examples of geologic features and geomorphic processes within the RNA (Figures 11, 12, 27, and 28).

Four Society of American Foresters (SAF) cover types are present: Type 40 (post oak-blackjack oak), Type 52 (white oak-black oak-northern red oak), Type 53 (white oak), and Type 59 (yellow poplar-white oak-northern red oak). Types 40, 52, and 53 are indicated as needed in the RNA system (Shawnee National Forest, Land and Resource

Management Plan, 1986). Two Kuchler Potential Natural Vegetation (PNV) cover types are present: oak-hickory forest and mixed mesophytic forest. Several variants and small stands with other dominants are also present (Figure 7).

The RNA is the major part of the Burke Branch Botanical Area Natural Area identified by the Illinois Natural Areas Inventory (1978) as being of significance because: 1) it had been recognized as a special use area (a Botanical Area) by the Shawnee National Forest, 2) it had medium and high quality mesic barrens remnants, 3) it contained a State Endangered grass (Gymnopogon ambiguus), a State Endangered loosestrife (Lysimachia fraseri), a State Endangered chickweed (Stellaria pubera), and several other rare plants (INAI, 1978; see Appendix I).

Burke Branch is a part of the Barren Creek watershed which drains north and east and enters the Ohio River just south of the eastern end of the Cache River-Bay Creek Basin (Figure 1). The RNA is within the Lesser Shawnee Hills Section of the Shawnee Hills Natural Division and is a part of the Interior Low Plateaus Physiographic Province (Schwegman, 1973).

The Public Land Survey surveyors, describing this region in 1806, noted the lack of good timber. A major part of two townships in the region was called "barrens" or "barren land." The soil was generally "poor," and there were briers and brushy thickets with scattered, limby black oaks and post oaks. Grass was common in the area.

The Burke Branch RNA was in private ownership prior to its acquisition by the federal government to become a part of the Shawnee National Forest. Most of the property was purchased during the period 1937-1949; one tract was acquired in 1969. Very little of the upland in the RNA has ever been cultivated or significantly disturbed by livestock. There are young forest stands in the wider parts of the stream bottoms that were once agricultural fields (Figure 9). These were originally open barrens that were cultivated or pastured for several years and then abandoned during the 1930's. The barrens vegetation had partially recovered by the 1950's and 1960's, but woody encroachment in recent years has almost eliminated the barrens grasses and forbs (Figures 9 and 10). There has been some selective logging in most of the area but none of significance in recent years. Due to the rugged terrain and thin rocky soils, the area has never been suitable for agricultural use. Trees grow slowly and are of poor form and quality for lumber over most of the area.

The area is not particularly scenic, and access is not easy. There has been very little public use except for illegal off road vehicle riding in the gravel stream beds

and along the stream banks. An occasional hunter crosses the area or walks the stream banks.

In 1965, the area was first recognized as being significant because of the presence of several rare plant species. It was listed as a significant natural area by the Illinois Nature Preserves Commission in 1966 (Thompson and Hutchison, 1966). The area was proposed for study as a Botanical area by the Shawnee National Forest in 1970 (Forest Service Handbook, Shawnee Supplement No. 9, November, 1970).

In 1975, Dr. David Funk of the Forestry Sciences Laboratory, Carbondale, Illinois (Forest Service Research Branch) reported on his field check of the Burke Branch area. He recommended establishment as an RNA. His letter also documents that District Ranger Clutts and Forest Supervisor Hendricks concurred and that the joint R9-NC-NE RNA Committee endorsed the idea. On June 3, 1980, a draft establishment report for Burke Branch was received by the Shawnee National Forest. It had been prepared in 1978 by personnel at the Forestry Sciences Lab in Carbondale (Shawnee National Forest, Land and Resource Management Plan, 1976).

During the Illinois Natural Areas Inventory of 1976-78, the area was identified as being of state-wide significance for its mesic barrens and rare plant species.

In 1981, Dr. George Rink of the Forestry Sciences Lab in Carbondale prepared and submitted an "Evaluation of Potential Research Natural Areas in Southern Illinois." In this report, Dr. Rink recommends that the Burke Branch area be designated as an RNA (Rink, 1981).

LAND MANAGEMENT PLANNING

The Burke Branch 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 Burke Branch 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

One small remnant of the mesic barrens natural community is still present at the Burke Branch RNA. It is less than 1 acre (.4 hectares) in size. Other mesic barrens sites known to be present prior to the recent encroachment of woody vegetation (and subsequent shading of the barrens forbs and grasses) may be restorable with management (Figure 8). The barrens, and particularly mesic barrens, is a community type considered by The Nature Conservancy to be critically endangered throughout its range (critically imperiled both globally and in the State, with an element rank of G1S1). In presettlement times, the barrens in this region were a mixture of woody shrubs and prairie species. They were generally on poor drouthy soils. Along the stream bottoms, the barrens occurred on low sandy ridges that were mesic and subject to overflow. In 1800, almost all of this township was barrens with scattered trees, thickets, and small groves. Today, the original barrens community type has almost disappeared in the Midwest due to agricultural disturbance, exotics, and the encroachment of trees. Many of the original barrens grasses and forbs can still be found along Burke Creek, especially in the southwest corner of the RNA (Figures 14, 15, and 16). Enough barrens plants may still occur at other sites on sandy ridges along the north fork of Burke Creek for the community to be restored to its presettlement condition.

There are sites with high to very high quality natural communities, i.e. dry upland forest, dry-mesic upland forest, and mesic upland forest. The undisturbed stands are mostly on steep rocky slopes and in places that have been

unsuitable for agriculture and difficult to log. Individual trees on the thin drouthy soils are very old (Figure 22). High quality forests are rare in the Midwest.

The Burke Branch RNA includes SAF types 40, 52, and 53 that are listed as needed in the RNA system (Shawnee National Forest, Land and Resource Management Plan, 1986). There is a diversity of natural community types and species present that adds to the value of the area for research purposes.

Beard grass (Gymnopogon ambiguus), a plant recommended for Regional Sensitive status, is a barrens species that was known to be present in the RNA until about 1966. A brief search for the plant in 1987 was unsuccessful, but it may still occur here. This is also an Illinois Endangered Species.

Black cohosh (Cimicifuga rubifolia), a plant recommended for Regional Sensitive status, is a woodland species that occurs in the RNA.

A loosestrife (Lysimachia fraseri), a plant recommended for Regional Sensitive status, is a woodland species that was known to be present in the RNA until about 1966. A brief search for the plant in 1987 was unsuccessful, but it may still occur here. This is also an Illinois Endangered Species.

Great chickweed (Stellaria pubera), a Shawnee National Forest Listed Species, is a woodland plant that occurs in the RNA. It is also an Illinois Endangered Species.

Goldenseal (Hydrastis canadensis), a Forest Listed Species, is a woodland plant that occurs in the RNA. It is also an Illinois Threatened Species.

The grass leaved lily (Stenanthium gramineum), a Forest Listed Species, is a woodland plant that occurs in the RNA. It is also an Illinois Threatened Species.

Ginseng (Panax quinquefolius), an Illinois Threatened Species, is a woodland plant that occurs in the RNA. Ginseng is a species of international concern, and its harvest is regulated in Illinois.

The loggerhead shrike (Lanius ludovicianus) is a bird reported as occurring in the RNA. This is a Forest Listed Species. It is also listed as Illinois Threatened.

The Bewick's wren (Thryomanes bewickii) is a bird reported as occurring in the RNA. This is a Forest Listed Species that is also listed as Illinois Threatened.

The Burke Branch RNA is geologically significant. It has bedrock outcrops of several formations and excellent examples of a diversity of geologic features at the northernmost extension of the Mississippi Embayment. There is a sharp contrast in the beds of the two main stream channels in the RNA, and in the character of north versus south slope orientation.

Burke Creek and its tributaries have cut deep into the bedrock exposing sandstones, limestones, and shales of the Mississippian formations. Cretaceous and Tertiary gravels are also exposed and make up much of the stream bed material. Sandy and gravelly bottoms along the channels have a diversity of plant species. Many of the barrens species are plants usually considered to be more characteristic of the prairies further to the north and west.

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 Burke Branch Research Natural Area is in a relatively rugged section of the Lesser Shawnee Hills at the northernmost extension of the Mississippi Embayment (Figure 1). The bedrock is Mississippian sandstone, limestone, and shale capped with Cretaceous and Tertiary sands and gravels. The area includes deeply incised streams with V-shaped valleys. The two main branches of Burke Creek join within the RNA boundaries, and they display a sharp contrast in the beds of their channels. The north fork has boulders and cobbles of sandstone with some limestone (Figure 11); the south fork has a bed consisting largely of pebbles (Figure 27). A smaller south-flowing tributary branch enters the north fork, and a textbook example of an alluvial fan marks its junction. The narrow flood plains have low ridges of sand. Elevation within the RNA ranges from 550 feet (167.6 meters) to 360 feet (109.7 meters) above mean sea level.

The streams are nearly dry during the summer and fall months, but there are isolated pools that maintain a population of fishes. At least two springs (one on the north fork, and one on the south fork) help keep permanent water in the streams.

There is a diversity of plant species with habitat types related to aspect, soil depth, and bedrock and soil types. The area is nearly all forested, although a small

barrens remnant on the south fork of Burke Creek still has an open canopy with scattered, shrubby trees. Valleys drain to the east, and there are north and south slopes that differ in tree species and stand structure. The tallest largest trees grow on the lower mesic slopes. The rocky south-facing slopes have shrubbier timber.

The sandy bottoms had more extensive barrens, dominated by prairie plants, in presettlement times. Here, and in the adjacent rocky woods, is where most of the rare plants known from the area occur.

The dry upland forests are dominated by post oak (Quercus stellata) and blackjack oak (Q. marilandica) with thickets of farkleberry (Vaccinium arboreum) (Figure 21). Scarlet oak (Q. coccinea) is also common (Figure 22). The dry-mesic upland forests are dominated by white oak with some northern red oak (Q. rubra), black oak (Q. velutina), and southern red oak (Q. falcata) (Figure 20). The mesic bottoms have white oak, tuliptree (Liriodendron tulipifera), sugar maple (Acer saccharum), ashes (Fraxinus spp.), elms (Ulmus spp.), northern red oak, river birch (Betula nigra), and sycamore (Platanus occidentalis) (Figure 17). The barrens remnant has Indian grass (Sorghastrum nutans), big bluestem (Andropogon gerardii), rosinweed (Silphium integrifolium), and tickseed (Coreopsis tripteris) (Figure 15). There are many ferns on the north-facing slopes bordering the streams.

There are three plant species known from the Burke Branch RNA that are recommended for Regional Sensitive status in the Shawnee National Forest, Land and Resource Management Plan, 1986: beard grass (Gymnopogon ambiguus), black cohosh (Cimicifuga rubifolia), and a loosestrife (Lysimachia fraseri). Three plants are present, great chickweed (Stellaria pubera), goldenseal (Hydrastis canadensis), and grass leaved lily (Stenanthium gramineum), that are Shawnee National Forest Listed Species (Shawnee National Forest, Land and Resource Management Plan, 1986). Three of the species listed above are Illinois Endangered plants: the beard grass, great chickweed, and the loosestrife. The grass leaved lily and goldenseal are listed as Threatened in Illinois. Ginseng (Panax quinquefolius), which also occurs within the RNA, is a State Threatened Species (Natural Land Institute, 1981).

Two Shawnee National Forest Listed animal species are reported from the RNA, the loggerhead shrike (Lanius ludovicianus) and the Bewick's wren (Thryomanes bewickii). They are also Illinois Threatened Species.

LOCATION

The Burke Branch Research Natural Area is on the Vienna

Ranger District of the Shawnee National Forest. It is in Pope County, in the extreme southeastern tip of Illinois. Latitude is 37 14' North, and longitude is 88 31' West. The area is in Sections 4, 5, and 8, Township 15 South, Range 6 East of the 3rd P.M. (Figures 3 and 4).

BEGINNING AT A POINT ON THE NORTH-SOUTH 1/4 LINE, 27 CHAINS SOUTH OF THE NORTH 1/4 CORNER OF SECTION 4, TOWNSHIP 15 SOUTH, RANGE 6 EAST 3RD P.M., POPE COUNTY, ILLINOIS.

THENCE SOUTH ALONG SAID 1/4 LINE APPROXIMATELY 33 CHAINS TO THE CENTER-SOUTH 1/16 CORNER OF SAID SECTION 4.

THENCE EAST ALONG SOUTH 1/16 LINE APPROXIMATELY 10 CHAINS TO THE CENTER-WEST-SOUTHEAST 1/64 CORNER OF SAID SECTION 4.

THENCE SOUTH APPROXIMATELY 7 CHAINS TO THE NORTH EDGE OF BURKE CREEK.

THENCE S 53 W APPROXIMATELY 7 CHAINS TO THE TO THE BASE OF A NORTH FACING SLOPE.

THENCE SOUTH APPROXIMATELY 8 CHAINS TO A POINT ON THE SOUTH LINE OF SAID SECTION 4, 43 CHAINS EAST OF THE SOUTHWEST CORNER OF SECTION 4.

THENCE WEST ALONG THE SOUTH LINE OF SECTION 4, 43 CHAINS TO THE SOUTHWEST CORNER OF SAID SECTION 4.

THENCE WEST ALONG THE SOUTH LINE OF SECTION 5, T. 15 S., R. 6 E. APPROXIMATELY 3 CHAINS TO THE EAST EDGE OF A FOREST ROAD NO. 1382.

THENCE NORTHWESTERLY FOLLOWING EAST EDGE OF SAID ROAD APPROXIMATELY 15 CHAINS TO THE NORTH EDGE OF BURKE CREEK.

THENCE EASTERLY ALONG THE NORTH EDGE OF BURKE CREEK APPROXIMATELY 11 CHAINS TO THE LINE COMMON TO SECTIONS 4 AND 5.

THENCE N 40 E APPROXIMATELY 64 CHAINS TO THE POINT OF BEGINNING.

Access to the Burke Branch RNA is best beginning at Golconda, Illinois, the county seat of Pope County. From the intersection of State Highway 146 and County Road No. 1, take County Road 1, (Bay City Black Top) south out of Golconda approximately 8.5 miles to the intersection of County Road No. 159. Then take County Road No. 159 west approximately 2.5 miles to the intersection of County Road No. 161. Then take County Road No. 161 south approximately 1.2 miles to the intersection of Forest Road No. 1382. Taking Forest Road No. 1382 south approximately 1 mile will lead you to the Northwest corner of the RNA at Burke Creek.

Elevation ranges from 550 feet (167.6 meters) above mean sea level on the ridge in the northwest corner, to 360 feet (109.7 meters) above mean sea level at the southeast corner where Burke Creek leaves the RNA.

AREA BY COVER TYPES

The Burke Branch Research Natural Area is nearly all forested. The following are SAF and Kuchler PNV cover types represented within the RNA (Figure 7):

SAF Cover Type	Kuchler PNV Type	Acres	Hectares
#40 post oak-blackjack oak	#91 oak-hickory	20	8.1
#52 white oak-black oak-northern red oak	#91 oak-hickory	100	40.5
#53 white oak	#91 oak-hickory	36	14.6
#59 yellow poplar-white oak-northern red oak	#94 mixed mesophytic forest	50	20.2

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

Natural Community	Plant Community
Mesic barrens	big bluestem
Dry upland forest	southern red oak-black oak post oak
Dry upland forest	chinkapin oak
Dry-mesic upland forest	white oak
Dry-mesic upland forest	white oak-northern red oak sugar maple
Mesic bottomland forest	sugar maple-sycamore
Successional field	bluestem spp.

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

dry upland forest
dry-mesic upland forest
mesic bottomland forest
mesic barrens

PHYSICAL AND CLIMATIC CONDITIONS

The climatological data are from the collection station at New Burnside. The period of record is 1931-64. New Burnside is 30 miles (48.3 kilometers) north-northwest of the Burke Branch Research Natural Area. The following description is copied from the Soil Survey of Pope, Hardin, and Massac Counties, Illinois (1975):

> The Pope 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 Burke Branch RNA is in a rugged section of the Lesser Shawnee Hills that projects south into the northernmost extension of the Mississippi Embayment. The Shawnee Hills are within the Interior Low Plateaus Physiographic Province. The Mississippi Embayment is a part of the Gulf Coastal Plain. Burke Creek and its tributaries have cut deep V-shaped channels exposing sandstones, limestones, and shales of the Mississippian formations. Sands and gravels of Cretaceous and Tertiary age cap the high ridges. The rocky stream channels have narrow sandy flood plains.

The area is almost all forested. One small barrens site in the southwest corner of the RNA has an open canopy with grasses and forbs.

Much of the area is rocky with thin soils. South-facing slopes are drouthy and have a thin cover of trees that are short, limby, and often partly dead. Along the north-facing slopes and in the stream bottoms, there are stands of relatively large tall trees. Some level sites in the stream bottoms were once cleared for agriculture. They are now young forest stands with sapling and pole-size timber.

DESCRIPTION OF VALUES

Flora

The following natural community types occur within the Burke Branch Research Natural Area: dry upland forest, dry-mesic upland forest, mesic bottomland forest, and mesic barrens (Figure 8). The barrens remnant that is still recognizable is less than 1 acre (.4 hectares) in area. Other barrens community sites that existed as recently as 1976 are also located on the map (Figure 8). Encroachment of trees and subsequent shading has almost eliminated the barrens grasses and forbs from those sites on the north fork of Burke Creek.

The dry upland forest and dry-mesic upland forest sites are not completely separated on the map (Figure 8), because their boundaries are not all sharp and clear, and because small individual types are so intermingled.

Along Burke Creek and its north and south forks, there is a narrow but level bottomland forest area (Figure 17). The dominants in the old-growth stands are tuliptree, white oak, sugar maple, and northern red oak (*Quercus rubra*). Successional stands (areas that were once cleared) are dominated by sugar maple, red maple (*Acer rubrum*), ashes, and elms. Along the stream banks are river birch and large sycamores (Figure 24). Black gum (*Nyssa sylvatica*) is occasional. Dogwood (*Cornus florida*) and blue beech (*Carpinus caroliniana*) are common in the understory. It is in this mesic floodplain that low sandy ridges once supported a barrens community dominated by prairie forbs and grasses. In presettlement times, these barrens had Indian grass, big bluestem, little bluestem, rosinweed, tickseed, and species now very rare in the region, such as beard grass (*Gymnopogon ambiguus*), horned rush (*Rhynchospora capitellata*), and yellow gentian (*Gentiana alba*). There were thickets of shrubs, including sumac (*Rhus copallina*), hazel (*Corylus americana*), dogwood (*Cornus* spp.), and sassafras (*Sassafras albidum*). Large limby post oaks were occasional and scattered along the floodplain. Most of the original species can still be found in the barrens remnant that occurs south of Burke Creek, but invading saplings and Japanese honeysuckle (*Lonicera japonica*) are slowly shading the natural opening (Figure 15).

On the dry-mesic slopes, particularly where north-facing, the forest is dominated by white oak and northern red oak. Black oaks are common on some sites, and there are local stands where white oak makes up 90% of the canopy. Tuliptree is occasional, and southern red oaks (both *Quercus falcata falcata* and *Q. falcata pagodaefolia*) are not uncommon. Hickories (especially *Carya glabra*) are widespread but not abundant. There is a diversity of sizes

and ages, and scattered trees are 30 inches (76.2 centimeters) in diameter (Figure 20).

On the dry rocky slopes, especially where south- and west-facing, the trees are shorter and have wider crowns. Much of this dry forest area is dominated by white oaks with occasional large scarlet oaks, black oaks, and pignut hickories (Figure 19). The very drouthy sandstone slopes have post oaks, blackjack oaks, and thickets of farkleberry. The dry slopes with limestone outcrops have chinkapin oaks (Quercus muhlenbergii) and redcedars (Juniperus virginiana). Mosses and lichens are common, and canopy gaps have forbs and grasses typical of dry woodlands in southern Illinois. Small patches of little bluestem, beggar's lice (Desmodium spp.), goldenrods (Solidago spp.), and woodland sunflower (Helianthus divaricatus) are common. Greenbrier (Smilax bona-nox) is locally abundant.

There are three plant species known from Burke Branch that are recommended for Regional Sensitive status in the Shawnee National Forest, Land and Resource Management Plan, 1986: beard grass (Gymnopogon ambiguus), black cohosh (Cimicifuga rubifolia), and a loosestrife (Lysimachia fraseri). Three plants are present, great chickweed (Stellaria pubera), goldenseal (Hydrastis canadensis), and grass leaved lily (Stenanthium gramineum), that are Shawnee National Forest Listed Species (Shawnee National Forest, Land and Resource Management Plan, 1986). Three of the species listed above are Illinois Endangered plants: the beard grass, great chickweed, and the loosestrife. The grass leaved lily and goldenseal are listed as Threatened in Illinois. Ginseng (Panax quinquefolius), which also occurs within the RNA, is a State Threatened Species (Natural Land Institute, 1981).

Fauna

No Federally Endangered or Threatened animal species are currently known from Burke Branch.

The loggerhead shrike (Lanius ludovicianus) and the Bewick's wren (Thryomanes bewickii) are two birds reported as occurring in the RNA. These are Shawnee National Forest Listed Species and are also listed as Threatened in the State. It is likely that the red-shouldered hawk (Buteo lineatus) and the Cooper's hawk (Accipiter cooperii) are regular visitors to the area.

The streams have permanent pools that maintain a fish population. Several species of minnows (Cyprinidae), sunfishes (Centrarchidae), and darters (Percidae) are common in the clear waters.

The cave salamander (Eurycea lucifuga) has been reported from the RNA.

The eastern box turtle (Terrapene carolina), the five-lined skink (Eumeces fasciatus), and the Fowler's toad (Bufo fowleri) are common throughout the area.

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 (Canis latrans), gray fox (Urocyon cinereoargenteus), raccoon (Procyon lotor), opossum (Didelphis marsupialis), and gray squirrel (Sciurus carolinensis).

Geology (Figures 5 and 30)

Pleistocene loess mantles the upland and forms much of the soil on the slopes. It is thickest on the ridge tops, as much as 12 feet (3.7 meters) in places, and is of uniform silty texture. Mounds brown chert gravels underlie the loess on the hill tops and ridge crests. Some clay and fine-grained sand outcrops on the upper slope in the old roadway at the northwest edge of the RNA. There is quartzitic sandstone beneath the upper slope, and limestone outcrops on the lower slopes and in the stream bed (Figure 11). White sands and gravels are carried along the stream channels from their outcrops to the west.

The Mounds gravels are not well exposed in the RNA, but loose pebbles are found on the slopes, and iron-cemented blocks occur at eroded places on the upper slopes (Figure 27).

The Tar Springs Sandstone occupies the upper or midslopes. Some ledges and low cliffs are present, but interbedded shale zones cause breakup of the resistant quartzose layers. Blocks and boulders are scattered over the slope. These are abundant in the channels of the two northern streams (Figure 11). The sandstone is thinner and outcrops in the upper slope of the south valley. Few blocks reach the stream channel.

The Glen Dean Formation contains both limestone and shale. The shale is rarely exposed; Ross (1964) reports a bryozoan-rich shale unit 7 to 15 feet (2.1 to 4.6 meters) thick in the middle of the formation. Massive limestone units near the top and bottom of the formation form ledges. A prominent ledge 4 to 8 feet (1.2 to 2.4 meters) extends along the south valley wall some 50 feet (15.2 meters) above the valley floor (Figure 13).

The two main branches of Burke Creek display a sharp contrast in the beds of the channels. The north fork has boulders and cobbles of sandstone, and some limestone, while the south fork consists largely of pebbles. Headwaters of both are in areas of gravels and sand belonging to the

Cretaceous and Pliocene-Pleistocene formations (Figures 11 and 27).

The maturely dissected natural area also includes a third steep-sided valley. It flows south to enter the north fork. All of the valley bottoms contain narrow floodplains. The floodplain surface material is a mix of silt and sand becoming more sandy with depth (Figure 26). Stream channel banks expose coarser material beneath, especially in the north branch.

An unusually well-developed alluvial fan has formed at the junction of the north-south valley with the north fork of Burke Creek. Several distributary waterways mark the surface, some having recent accumulations of cobbles and large boulders. The topographic cross section is gently convex.

The Burke Creek channels are presently deepening, resulting also in the deepening of tributaries (Figure 24). On the alluvial fan, the western channel has deepened considerably. However, in high water overflow, waters course down the fan, and at the toe, a number of the distributaries are gullied and have retreating falls two to three feet (0.6 to 0.9 meters) high.

The most obvious Recent and modern active geomorphic processes are degradational processes of erosion by running water and mass wasting. The three dissecting stream valleys are tributary to Barren Creek, which owes its form to the deepening and aggradational cycles of the Ohio River. These cycles occurred during the Pleistocene Epoch, and their history and causes are still a matter of disagreement and research among geomorphologists.

After the post-Paleozoic interval of uplift and erosion, the surrounding region was depressed and received deposition of Coastal Plain sediments (largely non-marine) at the north end of the Mississippi Embayment. Cretaceous gravels and sands and interbedded clays once covered this area (probably Tertiary sediments as well). These deposits are eroded away from the RNA area, except for a few remnants, though they still cover the upland in the headwaters of the two main branches of Burke Creek.

Prior to Pleistocene dissection, a body of alluvial gravels and sands covered the entire region south of the Cache River-Bay Creek valley. Remnants of these brown, rounded and polished chert gravels occur on the ridge tops in the area. They are mostly obscured by loess, though the pebbles, and even cobbles, are readily recognizable in the stream beds (Figure 27).

Dissection of that gravel surface had occurred during the Pleistocene Epoch. The only deposits of that age are

the wind-blown silts which mantle the upland. These silts are the major materials in which the modern soils have been formed.

The floodplains of the two largest valleys show typical overflow features such as natural levees, depositional bars, and scour channels. However, in October 1986, after very heavy rains, overflow evidence was not observed. The third (north-south) valley clearly has a deepening channel. This channel has a bedload of cobbles and boulders (Figure 11). Though these rocks are very large, they are jammed in imbricate fashion against trees and each other (Figure 12). An interesting feature is a dam of rocks filling one channel and causing a diversion into a tributary channel. This has caused considerable deepening, undercutting, and slumping of the valley slope. Numerous rocky gullies are found, especially on the sides of the northern valleys.

Unconcentrated sheet wash is also a significant erosional process. On the steep valley slopes, sediment can be seen caught behind obstructions.

Mass wasting is likewise significant. Sandstone boulders and cobbles are scattered down the valley slopes; boulder fields occur in some places. Slumps are rather common along the stream channels. Other forms of mass wasting are not obvious, except rock fall at the low sandstone cliffs.

Solution of the Glen Dean Limestone has widened the joints and dissolved the rock surfaces (Figure 28). A spring is located on the south branch near the west margin of the natural area. It emerges from the limestone on the south valley wall at floodplain level. Another small spring flows into the north fork near the west boundary of the RNA.

References: Charles A. Ross. 1964. Geology of the Paducah and Smithland quadrangles in Illinois. Illinois State Geological Survey, Circular 360. 32 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 6)

Soils are derived primarily from the loess cover. Loess is thicker on the ridge crests where a soil profile is moderately well-developed. It is also thicker on north-facing slopes, a characteristic throughout the Shawnee National Forest where slopes are steep. On the south-facing slopes where the loess is very thin, some sand from the underlying bedrock is incorporated with the loessal silt. It is mainly on the drouthy, south-facing, upper slopes

where the dry forest vegetation is found. Rainwash and frequent repetitions of freeze-thaw are dominant processes. The hazard of erosion is very severe.

The Belknap silt loam (382) occurs in a small part of the RNA, along Burke Creek in the southeast corner. This is a deep, somewhat poorly drained soil on bottom lands. It formed in sediments along streams and is low in content of organic matter. It is usually acid.

The Burnside silt loam (427) occurs as a narrow band along the valley bottoms in the two main tributaries of Burke Creek (Figure 26). It formed in silty stream sediments that contain gravel and sandstone fragments. It is low in content of organic matter. This site is susceptible to flash flooding and stream cutting. Burnside soils are mostly acid.

The Wellston-Berks complex (986) is mapped on the north-facing slope at the south edge of the RNA and in ravines and on rugged slopes in the northwest corner. Limestone cliffs outcrop near the south edge, and there is a small cave on the slope. These soils formed in loess and underlying material weathered from sandstone or shale. They are low in organic matter and are strongly acid. Berks soil has less clay than Wellston soil.

The Wellston soils (339) are mapped separate from the Berks soils on some of the south- and west-facing, mid to lower slopes. These sites are drouthy and stony and are mostly on sandstone.

The Zanesville soils (340) are mapped on upper slopes, mostly south-facing, but where there are fewer stones and rock outcrops. They formed in loess and material weathered from sandstone, siltstone, and shale. They are mainly loam with some stones, are medium to strongly acid in reaction, and have a fragipan. They are low in organic matter content and are very subject to erosion.

The Muskingum and Berks soils (955) are mapped along the upper valley slopes of the north-south tributary and also on some of the south-facing and north-facing rocky slopes above the main streams. These are stony soils that formed in silty or loamy material. In some places, there are limestone outcrops; in others, the bedrock is sandstone. They are low in organic matter content, are acid in reaction, and are subject to erosion.

The Hosmer silt loam (214) occurs as very narrow bands along the ridge crests in the area. It formed in loess, has a fragipan, and is usually strongly acid.

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 Agriculture 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. Most of this area was purchased during the period 1937-1949. The last acquisition was 1969. There are no outstanding rights. According to Appendix E of the Shawnee National Forest, Final Environmental Impact Statement, Land and Resource Management Plan (1986), there is low potential for the presence of fluorite, lead, zinc, oil, and gas. There is no coal in the vicinity.

Cultural features

There are no known historical sites or cemeteries within the RNA. Some of the stands of young timber were once small fields that had been cleared for agriculture or used for livestock pasture.

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 Burke Branch RNA. According to Appendix E of the Shawnee National Forest, Final Environmental Impact Statement, Land and Resource Management Plan (1986), there is low potential for the presence of fluorite, lead, zinc, oil, and gas. There is no coal in the vicinity.

Grazing

This area is not under any range allotment and is unsuitable for livestock grazing. It is nearly all forested. 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 (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 Burke Branch as an RNA will maintain the minimal erosional condition of the watershed, and thus help protect the water quality of the recipient streams and rivers. Protection of the natural vegetative cover in the area may be an important factor in maintaining the unpolluted character and cool waters of the tributary streams of Barren Creek. High water quality is important for the protection of rare plants and animals which are directly associated with the beds of these streams (Figure 31).

Recreational values

Except for some illegal off road vehicle riding, there has been little recreational use of the RNA in the past. An occasional deer hunter crosses the area, and there is evidence of infrequent horseback riding along the stream edges. Off road vehicle riders use old roads and trails along the west edge of the RNA, and in the past, have made trails in the gravelly stream beds and along their banks. There are no special attractions to cause public use to increase significantly. Adequate supervision and management should prevent serious detrimental recreational use from developing. (See Errata Sheet) PJE

Wildlife and plant values

Management of the area as an RNA will help to preserve habitats for all wildlife and plant species native to the site.

Some maintenance is required to control exotics and keep woody invasion from eliminating the barrens community, but 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

The RNA is within the Burke Branch RARE II area proposed by various groups for study as a wilderness area. It was not recommended for wilderness study in the Shawnee National Forest, Land and Resource Management Plan, III-7, 1986.
(See Errata Sheet) PJE

Transportation plans

There should be no Forest Service transportation plans that conflict with protection of the RNA. Forest Service

Rec'd w/ Concurrence of PJE 12 March '91

Road 1382 was improved in 1987 (smoothed and drained, with water bars constructed) (Figure 25). This road borders a part of the west edge of the RNA, and may enter the RNA boundaries for a short distance (its exact location was difficult to determine during the field work for this report) (Figure 4). Gates have been installed to divert ORV traffic away from the RNA.

No other roads are in the RNA, and none should be needed for Forest Service management of properties in the area.

MANAGEMENT PRESCRIPTION (See Errata Sheet) PJE

The primary objective of the Burke Branch 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 barrens types representative of the Midwest, as well as other plant communities that have special and unique characteristics of scientific interest and importance.

Vegetative management

Exotics are not a serious problem in the forested part of the RNA, but removal and control of certain agressive species throughout the area, such as Japanese honeysuckle (*Lonicera japonica*), would be desirable. Such control is important to protect the barrens and rare plants.

Prescribed burning and hand removal of trees and shrubs are permitted to help control exotics and the invasion of woody vegetation into the naturally open areas, i.e. the barrens. It is assumed that the tendency of natural openings in the Midwest to succeed to forest will result in the disappearance of these communities without fire or the replication of control measures that kept them open in presettlement times. Initially, annual burning may be necessary, but eventually, prescribed burning will not be necessary every year, and a regular schedule of vegetative management activities will be developed as results are monitored. Those sites identified as barrens in earlier reports will be managed for restoration of the barrens vegetation (INAI, 1978, and SNF Handbook, Shawnee Supplement No. 9, 1970).

ADMINISTRATIVE RECORDS AND PROTECTION

The administrator and protector of the Burke Branch Research Natural Area is:

District Ranger
Vienna District
USDA - Forest Service
Vienna, Illinois 62995

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.

(See Errata Sheet) PJS

REFERENCES

Bier, J. A. 1980. Landforms of Illinois. Illinois State Geological Survey, Urbana. Map.

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

Forest Service Handbook, Shawnee Supplement No. 9. 1970. Management plan for Burke Branch Botanical Area, Shawnee National Forest, Illinois. Shawnee National Forest, Harrisburg, Illinois. 12 pages.

Harris, S. E., 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.

Illinois Natural Areas Inventory. 1976-78. Project conducted by University of Illinois and Natural Land Institute under contract to Department of Conservation. Area data on file and available from the Illinois Department of Conservation, Springfield.

Illinois Official Highway Map. 1985-86. Department of Transportation, Springfield.

Kuchler, A. W. 1964. Potential natural vegetation. Special Publication No. 36, American Geographic Society, New York. Map and "Manual to Accompany the Map." (Number revisions by U. S. Geol. Survey in 1969).

Little, E. L. 1953. Check list of native and naturalized trees of the United States (including Alaska). Agriculture Handbook No. 41, Forest Service, Washington, D. C. 472 pages.

Natural Land Institute. 1981. Endangered and threatened vertebrate animals and vascular plants of Illinois. Rockford, Illinois. 189 pages plus appendices.

Parks, W. D., 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.

Public Land Survey. 1806. Field notes and plats of the original land survey for the State of Illinois. Original documents at the Illinois State Archives, Springield.

Rink, G. 1981. Evaluation of potential research natural areas in southern Illinois. North Central Forest Experiment Station, Forestry Sciences Laboratory, Carbondale, Illinois. 3 pages.

Rolfe Survey. 1890 to 1892. First topographic survey of the State of Illinois. Illinois State Geological Survey, Urbana.

Ross, C. A. 1964. Geology of the Paducah and Smithland quadrangles in Illinois. Illinois State Geological Survey, Circular 360, Urbana. 32 pages plus map.

Schwegman, J. E. 1973. Comprehensive plan for the Illinois Nature Preserves System Part 2--The natural divisions of Illinois. Illinois Nature Preserves Commission, [current address: 524 S. 2nd St., Springfield, Ill.]. 32 pages plus map.

Shawnee National Forest map (scale 1/4" = 1 mile). U. S. Department of Agriculture, Forest Service.

Shawnee National Forest. 1986. Land and resource management plan [with Final Environmental Impact Statement and Appendices]. Eastern Region, USDA-Forest Service, Washington, D. C. 3 volumes with maps.

Thompson, M. P., and M. D. Hutchison. 1967. Information and evaluations concerning natural areas visited in southern Illinois during August and September, 1966. Report prepared by the Cooperative Wildlife Research Laboratory, Southern Illinois University, and sponsored by the Illinois Nature Preserves Commission and Southern Illinois University, Carbondale. 20 pages.

United States Geological Survey map (modified for USDA Forest Service use), Paducah NE Quadrangle, 7.5' series. 1967. U. S. Government Printing Office.

West, K. A. 1980. A Natural Heritage Program for the Shawnee National Forest (Illinois): A report on protection and management of national forest natural areas. Illinois Department of Conservation, Benton. 557 pages.

White, J. 1978. Illinois Natural Areas Inventory technical report. Inventory performed under contract to the Illinois Department of Conservation by the Department of Landscape Architecture, University of Illinois, Urbana-Champaign, and the Natural Land Institute, Rockford, Illinois. 426 pages including appendices.

Worthen, A. H. 1866. Geological survey of Illinois, Vol. I, Chapter XVIII. Illinois State Geological Survey, Urbana. Pages 428-455.

APPENDIX I.

Computer printout of data collected for the Burke Branch Botanical Area Natural Area by the Illinois Natural Areas Inventory, 1976-78.

Note that the boundaries of the INAI area differ from the RNA boundaries; the INAI area includes some pine plantations that were left out of the RNA.

Illinois Natural Areas Inventory
Natural Land Institute

AREA # 1022

COUNTIES: 76 Pope

REFERENCE NUMBER: 81

AREA NAME: Burke Branch Botanical Area

NATURAL AREA CATAGORIES & SIGNIFICANT FEATURES:

CAT.	CODE / DESCRIPTION	
V	Shawnee National Forest special use area	
I	BC3.8	
II	233	Gymnopogon ambiguus (Sandy barren along stream)
II	234	Stellaria pubera (Rocky crevices in woods)
II	235	Lysimachia fraseri (Along creek bank)

EXCEPTIONAL FEATURES:

CAT.	CODE / DESCRIPTION	
II	180	Cimicifuga rubifolia (Rocky woods)
II	106	Chamaelirium luteum (Rocky woods)
VII	Intermittent stream	

PRESERVATION VALUE SCORE: 5

EVALUATOR: 3 Hutchinson

LEGAL LOCATION:

TWP	RNG	PM	SEC	QUARTER	QUARTER QUARTERS
15S	6E	3	4		5&6&C&12+&15
15S	6E	3	5		8&9&16
15S	6E	3	8		1
15S	6E	3	9		2&3&4

TOPOGRAPHIC QUADRANGLES: 286a Paducah-NE 7.5

SPECIFIC STREAM : Burke Creek

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

LEGISLATIVE DISTRICT: 59

MUNICIPALITY:- none

MINIMUM ALTITUDE: 370

MAXIMUM ALTITUDE: 550

TOPOGRAPHY:

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

INDIVIDUAL TOPOGRAPHIC FEATURES:

114 Ravine
24 Floodplain
101 Canyon

GEOLOGIC FORMATIONS:
216 Peoria Loess
218 Cahokia Alluvium
193 Mounds Gravel
181 McNairy Formation
129 Hardinsburg Sandstone
130 Glen Dean Limestone
131 Tar Springs Sandstone

SOIL ASSOCIATION (STATE) :

SOIL ASSOCIATION (COUNTY) :
Hosmer-Zanesville-Wellston

NATURAL COMMUNITY
3.8
Mesic barren

NATURAL DIVISION AND SECTION: 13b
Lesser Shawnee Hills Section, Shawnee Hills Divisi
COMMUNITY CLASS : 3 Savanna
RARITY INDEX: . 5 Very rare
NATURAL QUALITY:
2.00 acres of grade B ;
Old fields, reverting
5.00 acres of grade C ;
Old fields, reverting

SAF COVER TYPE: * Not collected

PLANT COMMUNITY:
13 Andropogon gerardi,big bluestem

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:
80.0 acres of grade C ;
Mature second growth

SAF COVER TYPE: * Not collected

PLANT COMMUNITY:
336 Quercus falcata,Spanish oak

209 Quercus velutina,black oak--
208 Quercus stellata,post oak

SAF COVER TYPE: * Not collected

PLANT COMMUNITY:
202 Quercus muhlenbergii,chinquapin oak

NATURAL COMMUNITY
1.2
Dry-mesic upland forest

NATURAL DIVISION AND SECTION: 13b
Lesser Shawnee Hills Section, Shawnee Hills Divisi
COMMUNITY CLASS : 1 Forest
RARITY INDEX: 3 Occasional
NATURAL QUALITY:
81.0 acres of grade C ;
Mature second growth

SAF COVER TYPE: 53 White oak

PLANT COMMUNITY:
195 Quercus alba,white oak

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

PLANT COMMUNITY:
195 Quercus alba,white oak--
206 Quercus rubra,red oak--
6 Acer saccharum,sugar maple

NATURAL COMMUNITY
1.4
Mesic floodplain forest

NATURAL DIVISION AND SECTION: 13b
Lesser Shawnee Hills Section, Shawnee Hills Divisi
COMMUNITY CLASS : 1 Forest
RARITY INDEX: 3 Occasional
NATURAL QUALITY:
12.0 acres of grade C ;
Mature second growth

SAF COVER TYPE: * Not collected

PLANT COMMUNITY:
6 Acer saccharum,sugar maple--
172 Platanus occidentalis,sycamore

NATURAL COMMUNITY

6.7
Tree plantation

NATURAL DIVISION AND SECTION: 13b
Lesser Shawnee Hills Section, Shawnee Hills Divisi
COMMUNITY CLASS : 6 Cultural
RARITY INDEX: 0 Not collected or not applicable
NATURAL QUALITY:
70.0 acres of grade E ;
pines

SAF COVER TYPE: * Not collected

PLANT COMMUNITY:
167 Pinus spp.,pines

NATURAL COMMUNITY
6.6
Successional field

NATURAL DIVISION AND SECTION: 13b
Lesser Shawnee Hills Section, Shawnee Hills Divisi
COMMUNITY CLASS : 6 Cultural
RARITY INDEX: 0 Not collected or not applicable
NATURAL QUALITY:
50.0 acres of grade D ;
Old fields, regrowth

SAF COVER TYPE: * Not collected

PLANT COMMUNITY:
12 Andropogon spp.,bluestem grasses

DIVERSITY INDEX: 4

TOTAL ACREAGE: 300

OWNERSHIP TYPE: 2 Public

NUMBER OF OWNERSHIPS: 1

USE OF NATURAL AREA:
22 Research and education visits

USE OF SURROUNDING LAND (% wildland): 70

USE OF SURROUNDING LAND (% farmland): 30

USE OF SURROUNDING LAND (% developed land): 0

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

DISTANCE TO SMSA: 93

NUMBER OF NEARBY SCHOOLS: 2

NEAREST SCHOOL: 85 Shawnee Community College, Karnak

NUMBER OF NEARBY D.O.C. FACILITIES: 3

MANAGEABILITY: 1

PRESERVATION STATUS:
2 Public land, formally designated as a natural area

THREATS:
4 No known threat

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

SAMPLING FORMS:
- none

DISCUSSION OF PRESERVATION VALUES:
The Shawnee National Forest recognizes Burke Branch as a special use area to be managed to protect its unique botanical values. It has medium and high quality mesic barren remnants and the endangered grass Gymnopogon ambiquus, an endangered loosestrife (Lysimachia fraseri), and the endangered chickweed Stellaria pubera. A number of other rare and unusual plants occur along the gravelly stream and rocky slope.

PUBLICATIONS:

CITATION # 486
Illinois Nature Preserves Commission. 1971. Illinois Nature Preserves two-yea report, 1969-1970. Ill. Nature Preserves Comm., Rockford. 50 p.

CITATION # 491
Illinois Nature Preserves Commission. 1973. Illinois Nature Preserves two-year report, 1971-72. Ill. Nature Preserves Comm., Rockford. 65 p.

CITATION # 833
Anderson, R. C., and J. Schwegman. 1971. The response of southern Illinois barren vegetation to prescribed burning. Trans. Ill. State Acad. Sci. 64:28

CITATION # 1475
Schwegman, J. E. 1972. Additions to the flora of Illinois. Trans. Ill. State Acad. Sci. 65(3-4):42-44.

CITATION # 1473
Schwegman, J., and R. H. Mohlenbrock. 1968. Notes on the flora of extreme southern Illinois. Trans. Ill. State Acad. Sci. 61:317-319.

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 Burke Branch 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 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:

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 Burke Branch Research Natural Area and documenting the recommendations of the Forest for its designation and management

-Mesic barrens community.
-Beard grass (Gymnopogon ambiguus).
-Great chickweed (Stellaria pubera).
-Loosestrife (Lysimachia fraseri).
-Black cohosh (Cimicifuga rubifolia).
-Dry forest community.

Federal Threatened or Endangered Species:

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

Sensitive Species (proposed):

-Beard grass (Gymnopogon ambiguus).
-Black cohosh (Cimicifuga rubifolia).
-Loosestrife (Lysimachia fraseri).

Forest Listed Species:

-Great Chickweed (Stellaria pubera).
-Loggerhead Shrike (Lanius ludovicuanus).
-Bewick's Wren (Thryomanes bewickii).

Cave Hill

Location:

The area is located in Sections 34 and 35, T9S, R7E and in Sections 2, 3, and 10, T10S, R7E, Elizabethtown Ranger District, Saline County.

Area:

465 acres.

SAF Cover Types:

SAF 40, SAF 53.

General Information:

Cave Hill is a large sandstone cap with underlying limestone outcrops near its base. Glades are broken by the bluffs and have a discontinuous distribution being separated by stands of dry upland forest.

The dry upland forest of Cave Hill is an undisturbed forest community. There are no signs of logging or any other human disturbances.

Equality Cave is located in the area.

A system of trails traverse the area.

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

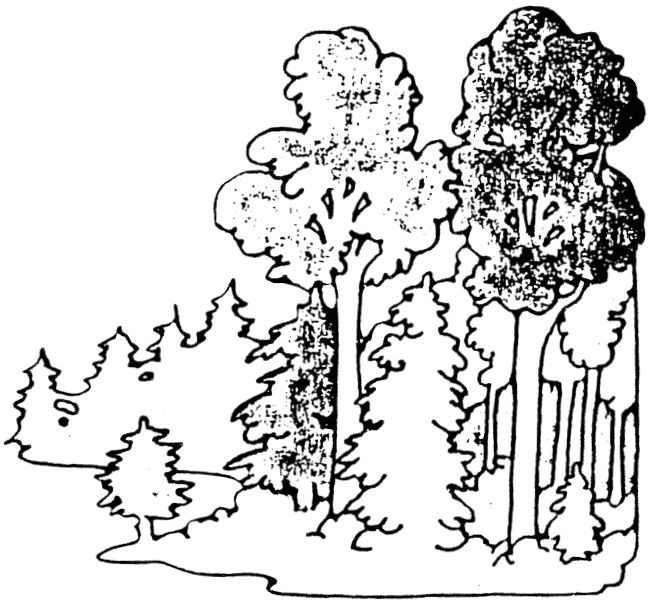
Alternative I emphasizes the maintenance and enhancement of wildlife habitat and preservation of unique natural features. A variety of motorized and nonmotorized recreation features are provided. All proposed Research Natural Areas are recommended for further evaluation.

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



APPENDIX E
Special Features

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: